ENCYCLOPÆDIA BRITANNICA

* 1768 *

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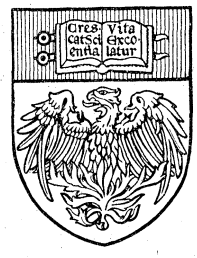
"LET KNOWLEDGE GROW FROM MORE TO MORE
AND THUS BE HUMAN LIFE ENRICHED."

ENCYCLOPÆDIA BRITANNICA

A New Survey of Universal Knowledge

Volume 13

JEREZ DE LA FRONTERA to LIBERTY, STATUE OF



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PRINTED IN THE U.S.A.

FOUNDED A.D. 1768

ENCYCLOPÆDIA BRITANNICA

Volume 13

JEREZ DE LA FRONTERA to LIBERTY, STATUE OF

JEREZ DE LA FRONTERA (formerly XERES), a town of southern Spain, in the province of Cádiz, near the right bank of the river Guadalete, and on the Seville-Cádiz railway, about 7 mi. from the Atlantic coast. Pop. (1940), 65,166 (mun., 89,525). Jerez is built in the midst of a fertile plain. It has been variously identified with the Roman Municipium Seriense; with Asido, perhaps the original of the Moorish Sherish; and with Hasta Regia, a name which may survive in the designation of La Mesa de Asta, a neighbouring hill. Jerez was taken from the Moors by Ferdinand III of Castile (1217–1252); but it was twice recaptured before Alphonso X finally occupied it in 1264. Towards the close of the 14th century it received the title *de la Frontera, i.e.,* "of the frontier," common to several towns on the Moorish border. Characteristic features of Jerez are the *bodegas,* or wine-lodges, for the manufacture and storage of sherry, and the vineyards. The old English word *sherris* is the 16th century pronunciation of the name Jerez. Few towns of southern Spain display greater commercial activity than Jerez. During the civil war of 1936–39, it fell into the control of Gen. Francisco Franco's insurgents shortly after the outbreak of hostilities.

JEREZ DE LOS CABALLEROS, a town of south-western Spain, in the province of Badajoz, situated on two heights overlooking the river Ardila, a tributary of the Guadiana, 12 mi. E. of the Portuguese frontier. Pop. (1940) 12,486 (mun., 16,154). The town is said to have been founded by Alphonso IX of Leon in 1229; in 1232 his son St. Ferdinand gave it to the knights templar. Hence the name *Jerez de los Caballeros,* "Jerez of the knights." Vasco Núñez de Balboa, discoverer of the Pacific, was born here. The old town is surrounded by a Moorish wall with six gates; the newer portion is well built, and planted with orange and other fruit trees.

JERICHO, an ancient town of importance in the Dead sea valley, 5 mi. N. of the Dead sea. According to the account given in Joshua it was the first Canaanite city to be attacked by the Israelites. The view has recently been put forward, based on the excavations, that Jericho was destroyed in the 14th century B.C. and that it was already a heap of ruins in the time of Joshua. Its refortification was due to Hiel, a man of Bethel (1 Ki. xvi. 34), and is depicted later as the headquarters of a prophetic school (2 Ki. ii.). Elisha cured the poisonous waters of its spring, now known as *'Ain es-Sultān.* It was at Jericho that the Babylonians scattered Zedekiah's army (2 Ki. xxv.) and brought to an end the kingdom of Judah. In the New Testament Jericho comes to mind in the stories of blind Bartimeus, the publican Zacchaeus of small stature, and the good Samaritan. Bacchides and Aristobulus took it and Pompey encamped here on his way to Jerusalem. Herod and Vespasian severally caused panic among the inhabitants and flight at their approach. Herod made it his winter residence, built a palace, baths, theatre and a fortress, and in Jericho he died. The city changed its site several times. The mound of *Tell es-Sultān,* excavated by Sellin 1907–09, covers the site of the Canaanite city. The Roman, Herodian and Crusaders' cities were on different sites.

Modern.—Er-Rīha, the site of the Crusaders' city, lies 825 ft. below sea-level; pop. about 1,000 (900 Muslims). Under settled government it shows signs of prosperity. It has a Russian hospice, Greek church, Latin chapel and several hotels. It is a popular resort for British officials and the richer Arabs of Jerusalem. Palms, oranges, bananas, figs, etc., grow and ripen early.

See C. F. Lehmann-Haupt, "Jericho," *Klio.* 14 (1914) 264; C. Watzinger, "Jericho: Die Ergebnisse der Ausgrabungen" (*z. D.M.G.*) (1926), 131 *seq.,* W. J. Phythian-Adams, "Israelite Tradition and the Date of Joshua," *Pal. Expl. Fund Quart. Stat.* (1927) 34 *seq.* (E. Ro.)

JERITZA, MARIA (1888–), soprano, born at Brno, Moravia, made her début at Olmütz in 1909, and sang for the Vienna *Volksoper* and then appeared at the Imperial Opera House, Vienna, 1912, where she sang until she went to the United States. Her American début was made at the Metropolitan Opera House in 1921 as Marietta in *Die tote Stadt* by Erich Korngold. There she repeated her Viennese successes. Her most notable rôles have been in *La Tosca, Die tote Stadt, Tannhäuser, Fedora, Thaïs, Der Rosenkavalier* and *Turandot,* in which last of Puccini's operas she sang at the first New York production Nov. 16, 1926. Her autobiography, *Sunshine and Music,* appeared in 1924.

JERKIN, a short close-fitting jacket, made usually of leather, and without sleeves, the typical male upper garment of the 16th and 17th centuries. In architecture the term "jerkin-roofed" is applied to a form of gable end, the gable being cut off half way up the roof and sloping back like a "hipped roof" to the edge.

JEROBOAM is the name, in the Bible, of two kings of northern Israel.

1. Son of Nebat (10th century B.C.). A *corvée* overseer under Solomon, who incurred the suspicion of the king as an instrument of the popular democratic and prophetic parties. He fled to Egypt, but was recalled by the northern tribes on the refusal of Rehoboam, son of Solomon, to accept the constitutional terms offered to him at his accession. To counteract the political influence of the sanctuary of the house of David at Jerusalem, he established (or perhaps, rather, especially favoured) the bull-cults of Bethel and Dan, a step which the later historian regarded as responsible for all the religious failings and political disasters of the north. The inevitable war between Jeroboam and Rehoboam seems to have gone at first in favour of the South, but the power of Judah was permanently checked by an Egyptian invasion under Sheshonk, who captured a number of cities in Palestine (not including Jerusalem) and exacted an enormous tribute from Rehoboam.

2. Son of Joash (8th century B.C.). The last of the great kings of Israel, after whose death the country fell into confusion and ultimate servitude. Aided, perhaps, by Assyrian pressure from the east, he brought to an end the long struggle between Syria and Israel, and definitely established the superiority of the latter over Damascus. The record in 1 Kings xiv. 23 states that his kingdom extended from the borders of Hamath on the Orontes to the Dead Sea, and it seems clear that he recovered territory in Transjordania, which had long been in the hands of Damascus. Two cities in that district are apparently mentioned in Am. vi. 13—Ashtoreth-Karnaim and Lodebar—as having been recently captured in 760. The reign of Jeroboam II. saw the greatest success and outward prosperity which Israel had known since the days of Solomon, though the social conditions depicted by Amos meant a national rottenness that could only end in disaster. (T. H. R.)

JEROME, ST. (HIERONYMUS, in full EUSEBIUS SOPHRONIUS HIERONYMUS) (*c.* 340–420), was born at Stridon (modern Stridova), a town on the border of Dalmatia, destroyed by the Goths in A.D. 377. Jerome appears to have been born about 340; his parents were Christians, orthodox though living among people mostly Arians and wealthy. He was at first educated at home, Bonosus, a life-long friend, sharing his youthful studies, and was afterwards sent to Rome. Donatus taught him grammar and explained the Latin poets. Victorinus taught him rhetoric. He attended the law-courts, and listened to the Roman advocates pleading in the Forum. He went to the schools of philosophy, and heard lectures on Plato, Diogenes, Clitomachus and Carneades; the conjunction of names shows how philosophy had become a dead tradition. His Sundays were spent in the catacombs in discovering graves of the martyrs and deciphering inscriptions. Pope Liberius baptized him in 360.

Jerome returned to Stridon, a scholar, with a scholar's tastes and cravings for knowledge. From Stridon he went to Aquileia, where he made friends among the monks of the large monastery, notably Rufinus. From Aquileia he went to Gaul (366–370). He stayed some time at Treves studying and observing, and then returned to Stridon, and from Stridon to Aquileia. He settled down to literary work in Aquileia (370–373) and composed there his first original tract, *De muliere septies percussa,* in the form of a letter to his friend Innocentius. Some dispute caused him to leave Aquileia suddenly; and with a few companions, Innocentius, Evagrius, and Heliodorus being among them, he started for a long tour in the East. The epistle to Rufinus (3rd in Vallarsi's enumeration) tells us that they passed Thrace, visiting Athens, Bithynia, Galatia, Pontus, Cappadocia and Cilicia, to Antioch. At Antioch the party remained some time.

Innocentius died of a fever, and Jerome was dangerously ill. This illness induced a spiritual change, and he resolved to renounce whatever kept him back from God. His greatest temptation was the study of the literature of pagan Rome. In a dream Christ reproached him with caring more to be a Ciceronian than a Christian. He disliked the uncouth style of the Scriptures. "O Lord," he prayed, "thou knowest that whenever I have and study secular mss. I deny thee," and he made a resolve henceforth to devote his scholarship to the Holy Scripture. "David was to be henceforth his Simonides, Pindar and Alcaeus, his Flaccus, Catullus and Severus." Fortified by these resolves he betook himself to a hermit life in the wastes of Chalcis, S.E. from Antioch (373–379). Chalcis was the Thebaid of Syria. Jerome discovered and copied mss., and began to study Hebrew. There also he wrote the life of St. Paul of Thebes. Just then the Meletian schism, which arose over the relation of the orthodox to Arian bishops and to those baptized by Arians, distressed the church at Antioch (*see* MELETIUS OF ANTIOCH), and Jerome joined the fray. He was guided by the practice of Rome and the West; having discovered what was the Western practice, he set tongue and pen to work with his usual bitterness (*Altercatio luciferiani et orthodoxi*).

At Antioch in 379 he was ordained presbyter. From there he went to Constantinople, where he met Gregory of Nazianzus, and with his aid tried to perfect himself in Greek. His studies resulted in the translation of the *Chronicon* of Eusebius, with a continuation[1] of twenty-eight homilies of Origen on Jeremiah and Ezekiel, and of nine homilies of Origen on the visions of Isaiah.

In 381 Meletius died, and Pope Damasus interfered in the dispute at Antioch. Jerome was called to Rome in 382, and was made secretary during the investigation. Damasus saw how his vast scholarship might be made of use to the church. Damasus suggested to him to revise the "Old Latin" translation of the Bible; and to this task he henceforth devoted his great abilities. At Rome were published the Gospels (with a dedication to Pope Damasus, an explanatory introduction, and the canons of Eusebius), the rest of the New Testament and the version of the Psalms from the Septuagint known as the *Psalterium romanum,* which was followed (*c.* 388) by the *Psalterium gallicanum,* based on the Hexaplar Greek text. Jerome was a zealous defender of that monastic life which was beginning to take such a large place in the church of the 4th century, and he found enthusiastic disciples among the Roman ladies. A number of widows and maidens met together in the house of Marcella to study the Scriptures with him; he taught them Hebrew, and preached the virtues of the celibate life. His arguments and exhortations may be gathered from many of his epistles and from his tract *Adversus Helvidium,* in which he defends the perpetual virginity of Mary against Helvidius, who maintained that she bore children to Joseph. His influence over these ladies alarmed their relatives and excited the suspicions of the regular priesthood and of the populace, but while Pope Damasus lived Jerome remained secure.

Damasus died in 384, and was succeeded by Siricius, who did not show much friendship for Jerome. He found it expedient to leave Rome, and set out for the East in 385. His letters (especially Ep. 45) are full of outcries against his enemies and of indignant protestations that he had done nothing unbecoming a Christian, that he had taken no money, nor gifts great nor small, that he had no delight in silken attire, sparkling gems or gold ornaments, that no matron moved him unless by penitence and fasting, etc. His route is given in the third book *In Rufinum;* he went by Rhegium and Cyprus, where he was entertained by Bishop Epiphanius, to Antioch. There he was joined by two wealthy Roman ladies, Paula, a widow, and Eustochium, her daughter, one of Jerome's Hebrew students. They came accompanied by a band of Roman maidens vowed to live a celibate life in a nunnery in Palestine. Accompanied by these ladies Jerome made the tour of Palestine.

From Palestine Jerome and his companions went to Egypt, remaining some time in Alexandria, and they visited the convents of the Nitrian desert. When they returned to Palestine they all settled at Bethlehem, where Paula built four monasteries, three for nuns and one for monks. She was at the head of the nunneries until her death in 404, when Eustochium succeeded her; Jerome presided over the fourth monastery. Here he did most of his literary work and, throwing aside his unfinished plan of a translation from Origen's Hexaplar text, translated the Old Testament directly from the Hebrew, with the aid of Jewish scholars. He mentions a rabbi from Lydda, a rabbi from Tiberias, and above all Rabbi

[1] *Cf.* Schoene's critical edition (Berlin, 1866, 1875).

Ben Anina, who came to him by night secretly for fear of the Jews. Jerome makes the synagogue responsible for the accuracy of his version: "Let him who would challenge aught in this translation," he says, "ask the Jews." The result of all this labour was the Latin translation of the Scriptures, which afterwards became the Vulgate or authorized version; but the Vulgate as we have it now suffered a good deal from changes made under the influence of the older translations; the text became very corrupt during the middle ages, and in particular all the Apocrypha, except Tobit and Judith, which Jerome translated from the Chaldee, were added from the older versions. (*See* BIBLE: *O. T. Versions.*)

Earlier in life Jerome had a great admiration for Origen, and translated many of his works, and this lasted after he had settled at Bethlehem, for in 389 he translated Origen's homilies on Luke; but he came to change his opinion and wrote violently against two admirers of the great Alexandrian scholar, John, bishop of Jerusalem, and his own former friend Rufinus. At Bethlehem also he found time to finish *Didymi de spiritu sancto liber,* a translation begun at Rome at the request of Pope Damasus, to denounce the revival of Gnostic heresies by Jovinianus and Vigilantius (*Adv. Jovinianum lib. II.* and *Contra Vigilantium liber*), and to repeat his admiration of the hermit life in his *Vita S. Hilarionis eremitae,* in his *Vita Malchi monachi captivi,* in his translations of the Rule of St. Pachomius (the Benedict of Egypt), and in his *S. Pachomii et S. Theodorici epistolae et verba mystica.* He also wrote at Bethlehem *De viris illustribus sive de scriptoribus ecclesiasticis,* a church history in biographies, ending with the life of the author; *De nominibus Hebraicis,* compiled from Philo and Origen; and *De situ et nominibus locorum Hebraicorum.*[2] At Bethlehem, too, he wrote *Quaestiones Hebraicae* on Genesis,[3] and a series of commentaries on Isaiah, Jeremiah, Ezekiel, Daniel, the Twelve Minor Prophets, Matthew and the Epistles of St. Paul. About 394 Jerome came to know Augustine, for whom he held a high regard. He engaged in the Pelagian controversy with more than even his usual bitterness (*Dialogi contra pelagianos*); and his opponents forced him to flee and to remain in concealment for nearly two years. He returned to Bethlehem in 418, and after a lingering illness died on Sept. 30, 420.

Jerome "is one of the few Fathers to whom the title of Saint appears to have been given in recognition of services rendered to the Church rather than for eminent sanctity. He is the great Christian scholar of his age, rather than the profound theologian or the wise guide of souls." His great work was the Vulgate, but his achievements in other fields would have sufficed to distinguish him. His commentaries are valuable because of his knowledge of Greek and Hebrew, his varied interests, and his comparative freedom from allegory. To him we owe the distinction between canonical and apocryphal writings; in the *Prologus Galeatus* prefixed to his version of Samuel and Kings, he says that the church reads the Apocrypha "for the edification of the people, not for confirming the authority of ecclesiastical doctrines." He was a pioneer in the fields of patrology and of biblical archaeology. In controversy he was too fond of mingling personal abuse with legitimate argument, and this weakness mars his letters, which were held in high admiration in the early middle ages, and are valuable for their history of the man and his times.

Editions of the complete works: Erasmus (9 vols., Basle, 1516–20); Mar. Victorius, bishop of Rieti (9 vols., Rome, 1565–72); F. Calixtus and A. Tribbechovius (12 vols., Frankfort and Leipzig, 1684–90); J. Martianay (5 vols., incomplete Benedictine ed., Paris, 1693–1706); D. Vallarsi (11 vols., Verona, 1734–42), the best; Migne, *Patrol. Ser. Lat.* (xxii.–xxix.). The *De viris illust.* was edited by Herding in 1879. A selection is given in translation by W. H. Fremantle, "Select Library of Nicene and Post Nicene Fathers," 2nd series, vol. vi. (New York, 1893). Biographies are prefixed to most of the above editions. *See* also lives by F. Z. Collombet (Paris and Lyons, 1844); O. Zöckler (Gotha, 1865); E. L. Cutts (London, 1878); C. Martin (London, 1888); P. Largent (Paris, 1898); F. W. Farrar, *Lives of the Fathers,* ii. 150–297 (Edinburgh, 1889). Additional literature is cited in Hauck-Herzog's *Realencyk. für prot. Theol.* viii. 42.

[2]Compare the critical edition of these two works in Lagarde's *Onomastica sacra* (Götting. 1870).

[3]*See* Lagarde's edition appended to his *Genesis Graece* (Leipzig, 1868).

JEROME, JEROME KLAPKA (1859–1927), English author, was born on May 2, 1859. He was educated at Marylebone Grammar School, and was by turns clerk, schoolmaster and actor, before he settled down to journalism. He made his reputation as a humorist in 1889 with *Idle Thoughts of an Idle Fellow* and *Three Men in a Boat.* He was co-editor (1892–97) of the *Idler* with Robert Barr, and editor (1893–97) of *To-Day.* A one-act play of his, *Barbara,* was produced at the Globe theatre in 1886, and was followed by others, but his greatest success was scored with *The Passing of the Third Floor Back* (1907), with Forbes-Robertson in the principal rôle. He died on June 14, 1927. *See* his *My Life and Times* (1926).

JEROME, city in the copper and gold-mining district of Yavapai county, Arizona, U.S.A., near the Verde river, 90 mi. N. of Phoenix. It is served by the Verde Tunnel and Smelter railroad (freight), connecting at Clarkdale (6·5 mi. E.) with the Santa Fe. The population was 4,932 in 1930, and had decreased to 2,295 by 1940. Copper production in the county in 1939, most of it from the Jerome district, amounted to 76,406,260 lbs. The city was incorporated in 1899.

JEROME OF PRAGUE (d. 1416), an early Bohemian church-reformer and friend of John Hus. Jerome is stated to have belonged to a noble Bohemian family and to have been a few years younger than Hus. After beginning his studies at the University of Prague, Jerome proceeded to Oxford in 1398. There he became greatly impressed by the writings of Wycliffe, of whose *Dialogus* and *Trialogus* he made copies. He soon proceeded to the University of Paris and afterwards continued his studies at Cologne and Heidelberg, returning to Prague in 1407. In 1403 he is stated to have undertaken a journey to Jerusalem. At Paris his advocacy of the views of Wycliffe brought him into conflict with John Gerson, chancellor of the university. In Prague Jerome gave offence by exhibiting a portrait of Wycliffe in his room. Jerome became a friend of Hus, and took part in all the controversies of the university. When in 1408 a French embassy to King Wenceslaus of Bohemia proposed that the papal schism should be terminated by the refusal of the temporal authorities further to recognize either of the rival popes, Wenceslaus summoned the members of the university. The re-organization of the university was also discussed, and as Wenceslaus for a time favoured the Germans, Hus and Jerome, as leaders of the Bohemians, were threatened with death by fire should they oppose the king's will.

In 1410 Jerome went to Buda, where King Sigismund of Hungary resided, and, though a layman, preached before the king denouncing strongly the rapacity and immorality of the clergy. Sigismund shortly afterwards received a letter from the archbishop of Prague accusing Jerome. He was imprisoned for a short time. Appearing at Vienna, he was again brought before the ecclesiastical authorities. He was accused of spreading Wycliffe's doctrines, and his general conduct at Oxford, Paris, Cologne, Prague and Ofen was censured. Jerome vowed that he would not leave Vienna till he had cleared himself from the accusation of heresy. He then secretly left Vienna, declaring that this promise had been forced on him. He went first to Vöttau in Moravia, and then to Prague. In 1412 the representatives of Pope Gregory XII. offered indulgences for sale at Prague, the object being to raise money for the pope's campaign against King Ladislaus of Naples. At a meeting of the members of the university both Hus and Jerome spoke strongly against the sale of indulgences. The fiery eloquence of Jerome obtained for him greater success even than that of Hus, particularly among the younger students. Shortly afterwards Jerome proceeded to Poland—it is said on the invitation of King Ladislaus. He again met with opposition from the Roman Church.

During his stay in northern Europe Jerome received the news that Hus had been summoned to appear before the council of Constance. He wrote to his friend advising him to do so and adding that he would also proceed there to afford him assistance. Contrary to the advice of Hus he arrived at Constance on April 4, 1415. Advised to fly immediately to Bohemia, he succeeded in reaching Hirschau, only 25 m. from the Bohemian frontier. He was here arrested and brought back in chains to Constance, where

he was examined by judges appointed by the council. His courage failed him in prison and, to regain his freedom, he renounced the doctrines of Wycliffe and Hus. He declared that Hus had been justly executed and stated in a letter addressed on Aug. 12, 1415 to Lacek, lord of Kravář—the only literary document of Jerome that has been preserved—that "the dead man (Hus) had written many false and harmful things." Full confidence was not placed in Jerome's recantation. He claimed to be heard at a general meeting of the council, and this was granted to him. He now again maintained all the theories which he had formerly advocated, and, after a trial that lasted only one day, he was condemned to be burnt as a heretic. The sentence was immediately carried out on May 30, 1416, and he met his death with fortitude.

See all works dealing with Hus; and indeed all histories of Bohemia contain detailed accounts of the career of Jerome. *The Lives of John Wicliffe, Lord Cobham, John Huss, Jerome of Prague and Ziżka* by William Gilpin (1765) still has a certain value.

JERROLD, DOUGLAS WILLIAM (1803–1857), English dramatist and man of letters, was born in London on Jan. 3, 1803. His father, Samuel Jerrold, actor, was at that time lessee of the little theatre of Wilsby near Cranbrook in Kent, but in 1807 he removed to Sheerness. Dec. 1813 the son joined the guardship "Namur," and served as midshipman until the peace of 1815. He saw nothing of the war save a number of wounded soldiers from Waterloo; but till his dying day there lingered traces of his early passion for the sea. The peace of 1815 ruined Samuel Jerrold; there was no more prize money. On Jan. 1, 1816, he removed with his family to London, where the ex-midshipman began the world again as a printer's apprentice, and in 1819 became a compositor in the printing-office of the *Sunday Monitor*.

Jerrold soon began to write for the press, and then for the stage. His first piece was a comedy *More Frightened than Hurt* (Sadler's Wells, 1821), and he was presently engaged by Davidge at the Coburg theatre to produce dramas and farces at a few pounds a week. In 1829 he made a resounding success with the three-act melodrama, *Black-eyed Susan* (Surrey theatre). He now achieved a salary of £5 a week as dramatic writer, and was independent enough to refuse to do adaptations. *The Bride of Ludgate* (Dec. 8, 1831) was the first of a number of his plays produced at Drury Lane. The other patent houses threw their doors open to him also (the Adelphi had already done so); and in 1836 Jerrold became co-manager of the Strand theatre with W. J. Hammond, his brother-in-law. The venture was not successful, and the partnership was dissolved. While it lasted Jerrold wrote his only tragedy, *The Painter of Ghent,* and himself appeared in the title-rôle. He continued to write sparkling comedies till 1854, the date of his last piece, *The Heart of Gold.*

Meanwhile he was a contributor to the *Monthly Magazine, Blackwood's,* the *New Monthly,* and the *Athenaeum.* To *Punch,* the publication which of all others is associated with his name, he contributed from its second number in 1841 till within a few days of his death. He founded and edited for some time, though with indifferent success, the *Illuminated Magazine, Jerrold's Shilling Magazine,* and *Douglas Jerrold's Weekly Newspaper;* and under his editorship *Lloyd's Weekly Newspaper* rose from almost nonentity to a circulation of 182,000. Douglas Jerrold died at his house, Kilburn Priory, in London, on June 8, 1857.

Among the best known of his numerous works are: *Men of Character* (1838), including "Job Pippin: The man who couldn't help it," and other sketches of the same kind; *Cakes and Ale* (2 vols., 1842), a collection of short papers and whimsical stories; some more serious novels—*The Story of a Feather* (1844), *The Chronicles of Clovernook* (1846), *A Man made of Money* (1849), and *St. Giles and St. James* (1851); and various series of papers reprinted from *Punch—Punch's Letters to his Son* (1843), *Punch's Complete Letter-writer* (1845), and the famous *Mrs. Caudle's Curtain Lectures* (1846).

See W. B. Jerrold, *Life and Remains of Douglas Jerrold* (1859); and W. Jerrold, *Douglas Jerrold* (2 vols., 1914). A collected edition of his writings appeared in 1851–54, and *The Works of Douglas Jerrold,* with a memoir by his son, W. B. Jerrold, in 1863–64; but neither is complete. Among the numerous selections from his tales and witticisms are two edited by his grandson, Walter Jerrold, *Bons Mots of Charles Dickens and Douglas Jerrold* (new ed. 1904), and *The Essays of Douglas Jerrold* (1903), illustrated by H. M. Brock. *See* also *The Wit and Opinions of Douglas Jerrold* (1858), ed. W. B. Jerrold.

His eldest son, WILLIAM BLANCHARD JERROLD (1826–1884), was editor of *Lloyd's Weekly Newspaper* from 1857 to 1883. During the Civil War in America he strongly supported the North, and several of his leading articles were reprinted and placarded in New York by the Federal Government. Four of his plays were successfully produced on the London stage, the popular farce *Cool as a Cucumber* (Lyceum, 1851) being the best known.

Among his books are *A Story of Social Distinction* (1848), *Life and Remains of Douglas Jerrold* (1859), *Up and Down in the World* (1863), *The Children of Lutetia* (1864), *Cent per Cent* (1871), *At Home in Paris* (1871), *The Best of all Good Company* (1871–73), *Life of Napoleon III.* (1874), and *The Life of George Cruikshank* (1882).

JERSEY, EARLS OF. Sir Edward Villiers (*c.* 1656–1711), son of Sir Edward Villiers (1620–89), of Richmond, Surrey, was created Baron Villiers and Viscount Villiers in 1691 and earl of Jersey in 1697. His grandfather, Sir Edward Villiers (*c.* 1585–1626), master of the mint and president of Munster, was half-brother of George Villiers, 1st duke of Buckingham, and of Christopher Villiers, 1st earl of Anglesey; his sister was Elizabeth Villiers, the mistress of William III., and afterwards countess of Orkney. Villiers was knight-marshal of the royal household in succession to his father; master of the horse to Queen Mary; and lord chamberlain to William III. and Queen Anne. In 1696 he represented his country at the congress of Ryswick; he was ambassador at The Hague, and after 1697 in Paris. In 1699 he was made secretary of state for the southern department, and on three occasions he was one of the lords justices of England. After his dismissal from office by Anne in 1704 he was concerned in the Jacobite schemes. He died on Aug. 25, 1711.

The 2nd earl was William (*c.* 1682–1721), son of the above, an adherent of the exiled house of Stuart. The 3rd earl was the latter's son William (d. 1769), who succeeded his kinsman John Fitzgerald (*c.* 1692–1766) as 6th Viscount Grandison. The 3rd earl's son, George Bussy, the 4th earl (1735–1805), was the "prince of Maccaronies" at the Court of George III. The 4th earl's son, George, 5th earl of Jersey (1773–1859), married Sarah Sophia (1785–1867), daughter of John Fane, 10th earl of Westmorland, and granddaughter of Robert Child, the banker. She inherited her grandfather's wealth, including his interest in Child's bank, and with her husband took the name of Child-Villiers. Victor Albert George Child-Villiers (b. 1845) succeeded his father George Augustus (1808–59), as 7th earl of Jersey in 1859. He was governor of New South Wales in 1890–93. The ninth earl, grandson of the above, succeeded his father on Dec. 31, 1923.

JERSEY (British), largest of the Channel Islands, is the southernmost of the more important islands of the group. Its chief town, St. Helier (in 49° 12′ N., 2° 7′ W.), is only 40 mi. from St. Malo, Brittany. It is 10 mi. long and 6¼ mi. broad; area is 44.87 sq.mi. Pop. (1931), 49,127. German forces occupied the island after the defeat of France in June 1940.

The island is highest (nearly 500 ft.) in the north, where there is fine cliff scenery, and slopes southward, thereby raising its temperature. The east, south and west coasts consist of a succession of large open shallow bays, separated by rocky headlands. The principal bays are Grève au Lançons, Grève de Lecq, St. John's and Bouley bays on the north; St. Catherine's and Grouville bays on the east; St. Clement's, St. Aubin's and St. Brelade's bays on the south; and St. Ouen's bay, the wide sweep of which occupies nearly the whole of the west coast. The sea in many places has encroached on the land, but there are large accumulations of drift and blown sand on the west coast.

The surface of the country is broken by valleys, the heads of which are characteristic sites for churches. The soil is generally loam, but in the west is shallow, light and sandy. The subsoil is usually gravel. The average annual rainfall is 32·7 in., 4 in. less than that of Guernsey. Plants indigenous to warm climates flourish in the open. The typical form of settlement is that of separate farms with enclosed fields, which, on the introduction of root crops in the 17th century, superseded open fields with scattered holdings. Traces of Palaeolithic man have been found in Jersey, and there is abundant evidence of his presence in Neolithic and Aeneolithic times. Among its many megalithic monuments, La Hougue Bie is specially noted. Celtic saints have left

their mark in place names, notably in the fisher-havens of St. Brelade, St. Aubin and St. Helier. St. Aubin became the chief port of the island, but from the 17th century onwards St. Helier developed at its expense. Roman remains are scarce. In addition to important local fisheries, Jersey helped in the exploitation of the Newfoundland area, owning a fishing-bank and a fleet. Industries consequent on this activity were the knitting of "jerseys" with wool imported from England, ship-building and fine furniture-making with tropical woods for inlaying. The fertility of the soil, long maintained by the use of "Vraic," or seaweed, was further increased by the introduction of the parsnip and the turnip (17th century) which necessitated a deep plough worked by co-operative effort. This gave rise to social festivals associated with La Grande Charrue. Agricultural improvement expressed itself in the 18th century in the building of fine farm houses. The possibility of winter feeding led to improved stock-raising. The island is famous for its breed of cows; all others are excluded, and early in the 19th century a public herd book was instituted. In Jersey 21.6% of the males are agriculturalists. Owing to climatic advantages, Jersey is able to concentrate on outdoor, intensive cultivation, especially of potatoes followed by crops of tomatoes. Glass houses take a secondary place for the cultivation of grapes, flowers, etc. Orchards have been improved, and much wall fruit is grown. Communications with England ordinarily are maintained principally from Southampton and Weymouth, and there are regular steamship services from St. Malo. The Jersey Ry. ran from St. Helier through St. Aubin, to Corbière; and the Jersey Eastern Ry. followed the southern and eastern coasts to Gorey. The former was closed in 1937 and the latter in 1929. The island has a network of good roads and a motor-bus service.

Jersey is under a form of government distinct from that of the bailiwick of Guernsey. (*See* CHANNEL ISLANDS.) There are 12 civil parishes, that of St. Helier being the chief town. Pop. (1931) 24,986, excluding visitors. The island's population nearly doubled between 1821 and 1891, but thereafter declined a little.

St. Brelade's church, the oldest in the island, dating from the 11th century, shows some Norman style, St. Helier's is 14th century work. Among very early chapels (10th century or earlier) are the Chapelle-ès-Pêcheurs (with 14th century frescoes) at St. Brelade's, and the chapel in the manor of Rozel. The castle of Mont Orgueil, of which there are remains, is believed to be on the site of a Roman stronghold, and Grosnez castle is said to have been built as a refuge, probably in the 14th century.

JERSEY CITY, city, eastern New Jersey, U.S.A., on a peninsula between the Hudson river and New York bay on the east and the Hackensack river and Newark bay on the west, opposite the lower end of Manhattan island, with which it is connected by the Hudson river tunnels, the Vehicular tunnel (opened 1927) and by ferries; the county seat of Hudson county, the second city of the state in size. It is served by the Baltimore and Ohio, the Central of New Jersey, the Erie, the Hudson and Manhattan, the Lehigh Valley and the Pennsylvania railways, and for freight also by the Lackawanna and the New York Central; and by many steamship lines which have their terminals either within the city limits or near by. The population was 298,103 in 1920 and 316,715 in 1930, of whom 233,574 were native white (73·7%), 70,313 were foreign-born white (22·2%) and 12,575 Negro (4·0%). The population by the 1940 federal census was 301,173.

The city has an area of 20·2 sq.mi. and a water front of 11 mi. Bergen hill, a southernly prolongation of the Palisades, extends through it from north to south, rising at the north end to nearly 200 ft. Along the crest runs the fine Hudson County boulevard, 19 mi. long and 100 ft. wide. The eastern water front, and part of the western, is occupied by manufacturing and shipping, while the better residential sections are on the hill, which since the opening of the Hudson tubes in 1909 has been brought close to the financial district of New York city. A conspicuous feature of the Hudson river front is the immense electric clock, visible for many miles, on one of the Colgate-Palmolive-Peet factories. The dial is 50 ft. across, and the minute-hand (weighing about a ton) moves thirty-one inches every minute. The public-school system of Jersey City includes thirty-five elementary, four public high schools, vocational and evening schools, a school for crippled children, and special classes for children who are mentally defective, incorrigible, retarded and anaemic and also for children defective in sight and in hearing. Children defective in speech are under the care of a special supervisor. Health examinations as well as physical education are provided throughout the system. There are also 20 parochial and 10 other private schools.

Jersey City has a large foreign and coastwise shipping trade, but since it is a part of the Port of New York no separate statistics are available. Its manufacturing industries are numerous, large and highly diversified. Among the leading activities are foundry and machine shops, can and container factories, electrical machinery, bakeries, patent medicines, car and railroad repairs, chemicals, meat preparations and paints and varnishes. The aggregate output of the factories in 1940 was valued at $265,236,322. The assessed valuation of property for 1940 was $603,479,000. The gross bonded debt in Feb. 1941, was $68,204,176. Since 1913 it has had a commission form of government.

The site of Jersey City was part of the patroonship of Pavonia granted to Michiel Pauw in 1630. At that time it was a small sandy peninsula (an island at high tide) known as Powles (Paulus) Hook. Settlement began in 1633, and a small agricultural and trading community grew up. In 1764 a new post route between New York and Philadelphia passed through it, and a direct ferry to New York was established. Early in the American Revolution, Powles Hook was fortified by the Americans, but they abandoned it soon after the battle of Long island, and on September 23, 1776, it was occupied by the British. On August 19, 1779, in one of the most brilliant exploits of the war, the British garrison was taken by Major Henry Lee ("Light-Horse Harry").

In 1804 Powles Hook (117 ac. with perhaps fifteen inhabitants) was acquired by three enterprising New York lawyers, who laid it out as a town and formed a corporation for its government. The town was incorporated in 1820 as the City of Jersey, a part of the township of Bergen. In 1838 it was reincorporated as a separate municipality and in 1855 as a city. From time to time the area was increased by annexations of territory and by filling in the tidal lands, until the present city is over one hundred times the size of Powles Hook. The population of Jersey City, which had grown to 6,856 in 1850, was quadrupled in the following decade and tripled in the next, reaching 82,546 in 1870. It continued to increase rapidly until the year 1920, since when the growth has been slower.

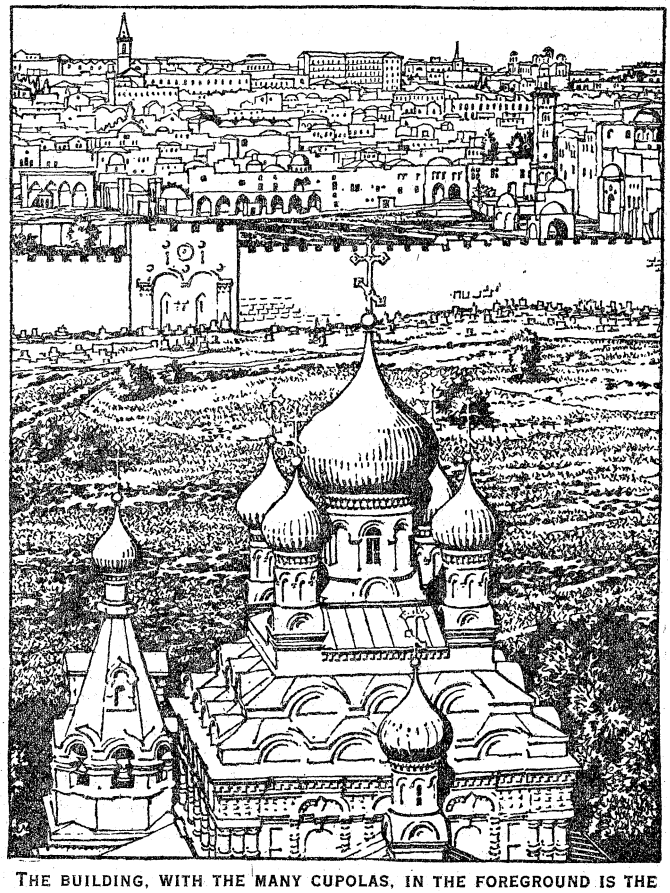
JERSEY SHORE, a borough of Lycoming county, Pa., U.S.A., on the Susquehanna river, 12 mi. W.S.W. of Williamsport. It is on federal highway 220 and is served by the New York Central and the Pennsylvania railways. The population was 6,103 in 1920 (96% native white) and was 5,432 by the federal census in 1940. The borough has railroad shops and other manufacturing industries. It was settled about 1780 and incorporated in 1825.

JERUSALEM is the seat of the government of Palestine under the mandate given to Great Britain in July 1922 and the chief town of its province. Pop. (1939) 129,802.

Certain letters found at Tell-el-Amarna in Egypt, written by an early ruler of Jerusalem, show that the name existed under the form *Urusalim, i.e.,* "City of Salim" or "City of Peace," in pre-Israelite days. The emperor Hadrian, when he rebuilt the city, changed the name to Aelia Capitolina. The Arabs usually designate Jerusalem by names expressive of holiness, such as Beit el Makdis and El Mukaddis or briefly El Kuds, *i.e.,* the Sanctuary. The city stands on a rocky plateau consisting of thin beds of hard siliceous chalk (*misse*) which overrie a thick bed of soft white limestone (*meleke*). The plateau projects southwards from the main line of the Judean hills, at an average altitude of 2,500ft. above the Mediterranean and 3,800ft. above the level of the Dead sea. On the east the valley of the Kidron separates this plateau from the ridge of the Mount of Olives, which is 100 to 200ft. higher, while the Wadi Er Rababi bounds Jerusalem on the west and south, meeting the Valley of Kidron near the lower Pool of Siloam. Both valleys fall rapidly as they approach their point of junction. Originally, the plateau was intersected by a

deep valley, called Tyropoeon by Josephus, which followed a course first southeast and then west of south, and joined the two main valleys of Kidron and Er Rababi at Siloam. Another shorter valley, taking an easterly direction, joined the Tyropoeon; while a third ravine passed across the northern part of the Haram enclosure and fell into the valley of the Kidron. The exact form of these three interior valleys, which had an important influence on the construction and history of the city, is being gradually revealed by exploration. During the summer months the heat on the plateau is tempered by a sea-breeze, and there is usually a sharp fall of temperature at night; but in spring and autumn the oppressive east and southeast winds blow across the heated depression of the Ghor. A dry season, which lasts from May to October, is followed by a rainy season. Snow falls two years out of three. The mean annual temperature at Jerusalem is 62.8°, the maximum 112° and the minimum 25°. The mean monthly temperature is lowest (47.2°) in February and highest (76.3°) in August. The mean annual rainfall is about 26 inches, the precipitation occurring mostly from November to April.

Many factors have made the traditions of holiness that have grown around this city. It became important at an early date as a fortress at the side of the trade-routes that ran from Hebron to Bethel and Shechem, or branched from the Bethel road to Jericho and across Jordan, or ran along the western side of the Dead sea. Melchisedek, the priest king of Jerusalem, held an important position among his neighbours in the story in Genesis. The city set on the Judean hills held out for a long time against the



THE BUILDING, WITH THE MANY CUPOLAS, IN THE FOREGROUND IS THE RUSSIAN CHURCH

Israelites. When it fell to David it had already a long tradition of holiness, and the conqueror's great concern was to build a temple. Remains of the north wall and tower of the Jebusite city have been found. To the Jews in exile it became the idealized city, and on their return it was the capital of their traditions. After the fall of the city to the Romans its religious meaning led it to become a glorious memory in the West, and later rulers used this to gather enthusiasm to send out armies to capture what was still an important focus of trade. Apart from this political and military interest the city itself has come to mean less and less, but around it memories have grown up, in men's minds, visions of an ideal city and a perfect order of society.

The Modern City.—Prior to 1858 Jerusalem was wholly confined within its 16th century walls. After 1858 the modern building period began with Jewish religious quarters built with the help of Sir Moses Montefiore, especially Meah-Shearim. Later on Catholic and Greek Orthodox monasteries and quarters were added. After World War I new Jewish quarters, with many buildings equipped with modern accommodations, were erected, like Rehavia, Beth Hakerem and Talpioth. Somewhat older are the German and Greek suburbs near the railway station on the plain of Rephaim. In recent times modern Arab quarters have been built at Talbieh and on the way to the Mount Scopus.

The years after 1920 completely changed the aspects of Jerusalem. An excellent water supply system was built which pumps water from the plains near the seacoast up the steep elevation on which Jerusalem is built. The ancient water supply, leading from the springs of Birket-el-'Arub to Solomon's Pools, was opened for modern use and a second reservoir opened at Lifta. Electric power was introduced and the city built excellent macadamized motor roads. Great public buildings were added, among them the residence of the High Commissioner, a museum of antiquities, built with the help of a grant by John Rockefeller, and the palatial Y.M.C.A. hostel, also erected with American funds. Modern principles of town planning were taken into consideration and a special effort was made to embellish the barren rocks with trees and gardens. The Hebrew university on Mount Scopus, near the Mount of Olives, was formally opened on April 1, 1925. The university possessed a number of large and representative buildings, among them a library, the greatest library in the near east. The university devoted special attention to the study of Jewish and Arabic civilization and language, and to research in chemistry, microbiology and agriculture, of immediate importance for the development of the country.

With all its modern buildings Jerusalem kept its aspects of a holy city. Special care was taken to adjust the new quarters to the character of the city. The beautiful stone, used in buildings throughout the city, helped to unify the impression in spite of the differences between the broad modern boulevards in the newer sections and the narrow and covered streets in the ancient section within the walls.

Jerusalem is the seat of ecclesiastical authorities of many faiths. It is the third holy city of Islam, ranking immediately after Mecca and Medina, and that explains the high esteem of the Mufti of Jerusalem in the Islamic world. Jerusalem is the residence of the chief rabbis of the Jewish community, one for the Ashkenasic and one for the Sefardic branch of Judaism. Among the many Christian dignitaries there is a Roman Catholic patriarch, a Greek Orthodox patriarch and an Armenian patriarch. The number of synagogues, churches, monasteries and mosques recalls the universal importance of Jerusalem for western mankind even today, as does the wealth of types of all human races and creeds intermingling in the crowded thoroughfares of this ancient city now awakened to new life.

(X.; H. Ko.)

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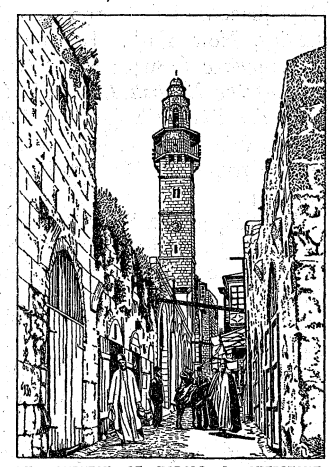
HISTORY

Jerusalem is the product of human effort, not of geographical configuration. Her site is not specially distinguished. Some famous towns seem, from their beginning, to have been designed by nature for their ultimate purpose. Inevitably, by reason of their position, they have suggested to their earliest inhabitants the ideal capital, fortress or port destined to exercise influence and com-

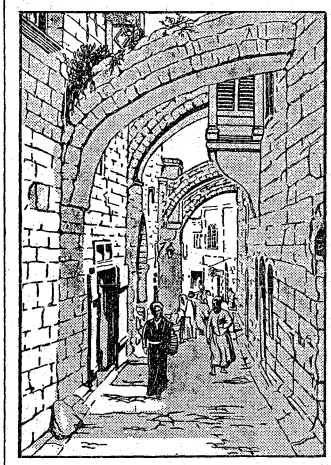
mand afar. Jerusalem has not attained her importance automatically. She has been assigned a situation that is typical of her subsequent history, a situation responsive to the hand of man but needing to be discovered, developed and adapted to her function in the world. Jerusalem is the meeting place of east and west; poised on the watershed between the desert and the sea she has united them. "Central, but aloof, defensible but not commanding . . . left alone by the main currents of the world's history, Jerusalem had been but a small highland township, her character compounded of the rock, the olive and the desert. Sion, the Rock-fort, Olivet and Gethsemane, the Oilpress, the Tower of the Flock and the wilderness of the Shepherds, would still have been names typical of her life, and the things they illustrate have remained the material substance of her history to the present day. But she became the bride of kings and the mother of prophets" (G. A. Smith, *op. cit. inf.*, i., 4). While yet an insignificant hill-fort, known as *Urusalim* or burg of safety, she served as an outpost for the mighty Pharaoh, with whom Abdi Khiba, her king, corresponded in the cuneiform script, the highest form of polite letters of the age. For she lay close to the desert and her soldiers could traverse the wilderness of Judea in a day and soon reach the trade routes they were bound by treaty to defend. Jerusalem could control the desert but was and is influenced by it, for the desert reaches almost to her walls. She is between the sea and the western trade route by the maritime plain on one side and the trans-Jordanic caravan road on the other. Hence she was not naturally an entrepot; when she subsequently played her part in commerce her influence was military or political. Her water supply has always been poor and her timber scanty. Her industries were local and her main visitors were pilgrims. Jerusalem faces the east and calls the east westward. Her call has been answered in peace and war. In her 33 centuries of history she has suffered at the hands of nature and of man. She has been rocked by earthquakes and sacked by invaders. She has endured over 20 sieges and blockades, about 18 reconstructions and two periods of desolation, after Nebuchadrezzar and Hadrian, when history is silent: six times has she passed from one religion to another. Her valleys have been filled and her hills levelled, her streets and buildings destroyed and her people slain and exiled. But Jerusalem has remained. Her spirit is eternal.



BY COURTESY OF HAROLD J. SHEPSTONE, F.R.G.S.

THE MINARET IS KNOWN AS SALADIN'S TOWER, AND MARKS THE SITE OF THE PATRIARCH'S PALACE AT THE TIME OF THE CRUSADES

Early History.—The history of Jerusalem goes back to the Stone age. About 2500 B.C. Semites settled in Palestine from Arabia and many flint weapons have been found near Jerusalem. About 1400 B.C., before Joshua's invasion of the country, the city was a vassal of Egypt. Among the Tell el Amarna tablets (*see* TEL EL AMARNA) there are some seven which are from Urusalim, as the city was then called, which speak of coming attack and ask for Egyptian aid. The Egyptians seem to have maintained a garrison there but when the Israelites invaded the country the city was in the hands of the Jebusites. At the division, it fell in the portions of Judah and Benjamin, the tribal boundary passing through the city, which was not completely captured till seven years after David's accession. On the eastern hill, on the site of the Jebusite Zion, he placed the royal city, and, north of this, he chose a place for the Temple which his son Solomon was to build. Across the Tyropoeon valley, on the western hill, was the civil town. This is the view generally accepted, but there are scholars who contest these identifications. In 1870 the excavations of the late Sir A. Warren showed that the Tyropoeon valley passed under the south-west corner of the present Haram area. Probably the Holy of Holies stood over the rock in the so-called Mosque of Omar. Solomon fortified the city with a wall, the "old wall" of Josephus. After his death Jerusalem was plundered by Shishak of Egypt and suffered a further loss of prestige by Jeroboam's rebellion, which alienated ten tribes and left the house of David with only Judah, Benjamin and some of the Levites. In Amaziah's reign (*c.* 790 B.C.?), Joash, King of Israel, captured Jerusalem and broke down the northern wall (2 Kings xiv., 8–14), which, however, Uzziah, son of Amaziah (780–740 B.C.) repaired. When Judah became tributary to Assyria, Hezekiah improved the defences of his capital and arranged for a water supply, foreseeing the impending attack. This came in 701 but failed. In 586 Jerusalem was destroyed by Nebuchadrezzar and the fortifications were dismantled.



BY COURTESY OF HAROLD J. SHEPSTONE, F.R.G.S.

VIA DOLOROSA. THE ROAD BELIEVED TO HAVE BEEN TRAVERSED BY CHRIST ON HIS WAY TO CALVARY

Nehemiah's Work.—About 445 Nehemiah rebuilt the walls, including both hills in the periphery. His scheme provided for (1) the following gates: on the east wall, the East Gate, the Horse Gate, the Water Gate: on the south wall, the Fountain Gate, the Dung Gate, the Valley Gate: on the west wall there were no gates; on the north wall the Gate of Ephraim, the Old Gate, the Fish Gate and the Sheep Gate; (2) the towers Hananeel and Neah; (3) the governor's house. Hananeel stood north-west of the Temple and later formed the basis first of the citadel of Simon Maccabaeus and afterwards of Herod's Antonia. Nehemiah speaks of the Tomb of David, but the site cannot be identified. Twelve years after Alexander's peaceful entry into Jerusalem in 332 B.C., Ptolemy I., of Egypt, partially demolished the fortifications, which remained in ruins until their restoration by Simon II. (219–199 B.C.). The new walls were soon overthrown. In 168 B.C. Antiochus Epiphanes destroyed them again when he captured Jerusalem and laid the Temple waste. The city now sunk to the lowest state since the Captivity. Antiochus brought in a Greek garrison and built for them a citadel, the Akra, which commanded the eastern hill and the city of David. The site of the Akra is much disputed: the position at the north-east corner of the present al-Aksa mosque suits the mutually consistent accounts in Josephus and the books of the Maccabees. The huge underground cistern which is there may well have been the garrison's water supply. Judas Maccabaeus recaptured Jerusalem but the Akra defied him. The Jews erected walls to cut it off from the city and Temple. The Akra fell to Simon Maccabaeus who demolished it and also lowered the hill on which it stood to prevent the Temple from being dominated again. The effect of this was to join the city and the Temple. To replace the Akra he built another citadel, mentioned above. Somewhere about this time a second or outer wall was built, to the north of the first wall. Pompey besieged and took Jerusalem in 65 B.C. In 54 Crassus plundered the Temple.

Herod's Changes.—In 37 Herod became king and having secured almost despotic power, proceeded to make such radical architectural changes that Jerusalem became a new city. Herod's great aim was to found a dynasty and make his kingdom remarkable culturally and politically. "Twice had Israel the opportunity of becoming a great world power and on both occasions the nation deliberately rejected it" (F. J. Foakes Jackson, *Biblical History of the Hebrews,* Camb. 1921, p. 216); and the same author draws a striking parallel between Solomon and Herod: "both were men of exceptional ability . . . both made the Temple of Jerusalem a wonder of the world; both had strong sympathy with foreign ideas; both cherished great schemes for the aggrandizement of the nation which were regarded in Israel as contrary to

its true destiny." Herod sought to achieve his ends by turning to Rome, as Solomon had turned to Tyre. At Rome, architecture was then particularly favoured. Herod had diplomatically enjoyed the favour first of Antony and then of Augustus. Augustus claimed to have "found Rome brick and left it marble" (Suet. Aug. 29: *Enc. Brit.* 11th ed., vol. 23, p. 585, n. 2 endorses this) and Herod determined to do the same for Jerusalem. His chief enterprises were the following: (1) He completely rebuilt the Temple from its foundations, doubling the area of the enclosure—a great part of the Haram walls date from his day; (2) he restored the fortifications and added to their strength by constructing the great fort of Antonia, north-west of the Temple; (3) on the western hill he raised a magnificent palace, defended by three great towers, named Mariamne, Hippicus and Phasaelus: the Tower of David, by the present Jaffa gate, is on the foundations of one of these towers; (4) he erected a theatre; (5) a gymnasium. His successor Archelaus (4 B.C.–A.D. 6) lost much of Herod's power which passed to the Procurators, under one of whom, Pilate, Jesus was crucified. The church of the Holy Sepulchre (*see* SEPULCHRE, HOLY) is now considered not to mark the site of his burial. Of other buildings in Jerusalem, *e.g.*, the Xystus or stone chamber where the Sanhedrin (*see* SYNEDRIUM) met, little is known. Herod Agrippa (41–44) built a third wall, the course of which is now (1928) being recovered by the Archaeological Society of Hebrew University.

Titus and Hadrian.—The Romans would not allow the work to continue and when Titus besieged Jerusalem in 70 the wall was not complete. Titus, attacking from the north, captured successively the third and second walls, Antonia, the Temple and the upper city. It is probable that his orders for the complete destruction of the Temple and fortifications with the exception of the three towers, were not carried out. The Roman garrison which he left remained at Jerusalem until the Jewish war of Freedom under Bar Kochba in 132. Following the defeat of the Jews, Jerusalem was devastated more completely than by Titus. The site was ploughed over and a new city, Aelia Capitolina, so-called in honour of (Aelius) Hadrianus, was built over the ruins. From this Jews were excluded, but Christians, who had not sided with the Jews, might enter. Temples were dedicated to Bacchus, Venus and Serapis and over the former sanctuary a shrine of Jupiter Capitolinus was reared. A boar, the symbol of the X. Legion, was placed over the southern gate. Other buildings now constructed were the Theatre, the Demosia, the Tetranymphon, the Dodecapylon and the Codra. For two centuries little is known of Jerusalem. In 326 Constantine ordered Bishop Macarius to recover the sites of the Crucifixion and the burial of Jesus: two great churches were built, one of which, the church of the Holy Sepulchre, stood where its present namesake stands: of the Basilica of the Cross no trace remains. In 460 the empress Eudocia repaired the walls and extended them so as to include Siloam, building also churches; of these one, above the Siloam pool, was recovered by F. J. Bliss, another over the reputed tomb of Stephen, north of the Damascus gate, was discovered in 1874.

Justinian's basilica, with adjacent hospitals for the sick and for pilgrims, built in the 6th century, is described by Procopius: this building probably occupied the so-called "Tomb of David." In 614 Chosroes II., of Persia, captured Jerusalem and damaged many buildings, including the church of the Sepulchre. Heraclius defeated Chosroes and re-entered Jerusalem in 629. In 637 Omar ousted the Romans but was careful not to harm the city. He built a wooden mosque which the Caliph Abdul Malik rebuilt in 688: this mosque is el-Aksa. Abdul Malik also constructed the Dome of the Rock (*Kubbet es-Sahra* or Mosque of Omar). In 1099 the Crusaders, under Godfrey of Bouillon, entered Jerusalem and a terrible carnage ensued. Jerusalem became the capital of the Latin kingdom (*see* CRUSADES) until Saladin reconquered it in 1187 and repaired the walls. Soon after 1167 Benjamin of Tudela visited Jerusalem and left a description of the city in his *Itinerary*. Excepting from 1229–39 and 1243–44 Jerusalem remained in Muslim hands until its capture (1917) by Allenby. In 1517 Selim I. of Turkey took Jerusalem from the Egyptians: the present configuration of the walls is due to him. As a result of the World War Jerusalem is the capital of Palestine, a mandated territory of the British empire.

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JERUSALEM, SYNOD OF (1672). By far the most important of the many synods held at Jerusalem (*see* Wetzer and Welte, *Kirchenlexikon,* 2nd ed., vi. 1357 *sqq.*) is that of 1672; and its confession is the most vital statement of faith made in the Greek Church during the past thousand years. It refutes article by article the confession of Cyril Lucaris, which appeared in Latin at Geneva in 1629, and in Greek, with the addition of four "questions," in 1633. Lucaris, who died in 1638 as patriarch of Constantinople, had corresponded with Western scholars and had imbibed Calvinistic views. The great opposition which arose during his lifetime continued after his death. Against Calvinism the synod of 1672 aimed its rejection of unconditional predestination and of justification by faith alone, also its advocacy of what are substantially the Roman doctrines of transubstantiation and of purgatory; against the Church of Rome, however, it renamed the rejection of the *filioque,* affirming once more that the Holy Spirit proceeds from the Father only. The 18 canons of the synod are also known as the "Confession of Dositheus" (the President).

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JESPERSEN, JENS OTTO HARRY (1860–1943), Danish philologist, was born at Randers, Denmark, on July 16, 1860. In 1893 he was appointed professor at the University of Copenhagen. From 1909–10 he lectured at Columbia university, New York. His most important works are *Progress in Language* (1894); *Phonetics* (1897–99); *Growth and Structure of the English Language* (1905, Prix Volney, 1906); *Lehrbuch der Phonetik* (1913); *Language, its Nature, Development and Origin* (1922); *Philosophy of Grammar* (1924), and an autobiography in Danish. He died in Roskilde, Denmark, April 30, 1943.

JESSE, in the Bible, the father of David (*q.v.*), and as such often regarded as the first in the genealogy of Jesus Christ. (*Cf.* Isa. xi. 1, 10.) Hence the design representing the descent of Jesus from the royal line of David, which was formerly a favourite ecclesiastical ornament, is called a "tree of Jesse." From a recumbent figure of Jesse springs a tree bearing in its branches the chief figures in the line of descent, and terminating in the figure of Jesus, or of the Virgin and Child. There are remains of such a tree in the church of St. Mary at Abergavenny, carved in wood, and supposed to have once stood behind the high altar. Jesse candelabra were also made. At Laon and Amiens there are sculptured Jesses over the central west doorways of the cathedrals. The design was chiefly used in windows. The great east window at Wells and the window at the west end of the nave at Chartres are fine examples.

JESSEL, SIR GEORGE (1824–1883), English judge, was born in London on Feb. 13, 1824. He was the son of Zadok Aaron Jessel, a Jewish coral merchant. George Jessel was educated at a school for Jews at Kew, and at University College, London. He entered as a student at Lincoln's Inn in 1842 and was called to the bar in 1847. He secured a tolerably large practice quickly, but Lord Chancellor Westbury delayed his career by preventing him from becoming Q.C. till 1865. Jessel entered parliament as Liberal member for Dover in 1868, and although neither his intellect nor his oratory was of a class likely to commend itself to his fellow-members, he attracted Gladstone's attention by two learned

speeches on the Bankruptcy Bill which was before the house in 1869, with the result that in 1871 he was appointed solicitor-general. His reputation at this time stood high in the chancery courts; on the common law side he was unknown, and on the first occasion upon which he came into the court of Queen's bench to move on behalf of the Crown, there was very nearly a collision between him and the bench.

In 1873 Jessel succeeded Lord Romilly as master of the rolls. From 1873 to 1881 Jessel sat as a judge of first instance in the rolls court, being also a member of the court of appeal. In November 1874 the first Judicature Act came into effect, and in 1881 the Judicature Act of that year made the master of the rolls the ordinary president of the first court of appeal, relieving him of his duties as a judge of first instance. In the court of appeal Jessel presided almost to the day of his death. He sat for the last time on March 16, 1883, and died on March 21.

As a judge of first instance Jessel was a revelation to those accustomed to the proverbial slowness of the chancery courts and of the master of the rolls who preceded him. He disposed of the business before him with rapidity combined with correctness of judgment, and he not only had no arrears himself, but was frequently able to help other judges to clear their lists. His knowledge of law and equity was wide and accurate, and his memory for cases and command of the principles laid down in them extraordinary. In the rolls court he never reserved a judgment, not even in the Epping forest case (*Commissioners of Sewers* v. *Glasse,* L.R. 19 Eq.; *The Times,* 11th November 1874), in which the evidence and arguments lasted 22 days (150 witnesses being examined in court, while the documents went back to the days of King John), and in the court of appeal he did so only twice, and then in deference to the wishes of his colleagues. Never during the 19th century was the business of any court performed so rapidly, punctually, and satisfactorily as it was when Jessel presided.

Jessel was master of the rolls at a momentous period of legal history. The Judicature Acts, completing the fusion of law and equity, were passed while he was judge of first instance, and were still new to the courts when he died. His knowledge and power of assimilating knowledge of all subjects, his mastery of every branch of law with which he had to concern himself, as well as of equity, together with his willingness to give effect to the new system, caused it to be said when he died that the success of the Judicature Acts would have been impossible without him. His faults as a judge lay in his disposition to be intolerant of those who endeavoured to persist in argument after he had made up his mind; but though he was peremptory with the most eminent counsel, young men had no cause to complain of his treatment of them.

Jessel's career marks an epoch on the bench, owing to the active part taken by him in rendering the Judicature Acts effective, and also because he was the last judge capable of sitting in the House of Commons, a privilege of which he did not avail himself. He was the first Jew who, as solicitor-general, took a share in the executive government of his country, the first Jew who was sworn a regular member of the privy council, and the first Jew who took a seat on the judicial bench of Great Britain; he was also, for many years after being called to the bar, so situated that any one might have driven him from it, because, being a Jew, he was not qualified to be a member of the bar.

See *The Times,* March 23, 1883; E. Manson, *Builders of our Law* (1904).

JESSORE, a town and district of British India, in the Presidency of Bengal. The town is on the Bhairab river, and it has a railway station. Pop. (1941) 18,410.

The DISTRICT OF JESSORE has an area of 2,925 sq.mi. Pop. (1941) 1,828,216. The district, lying in the central portion of the Gangetic delta, is an alluvial plain intersected by rivers and watercourses, which in the south spread out into large marshes. Within the last century the rivers in the interior of Jessore have ceased to be true deltaic rivers. Some rivers, such as the Madhumati, still have active currents, but others have degenerated, except in the rains, into chains of long, almost stagnant pools. The rivers in the south are however affected by the tides. Owing to the changes due to its moribund rivers and obstructed drainage the population suffers from fever and other diseases and is declining. The staple crop is rice. The principal industry is the manufacture of sugar from date palms.

JESTER, a provider of "jests" or amusements, a buffoon, especially a professional fool at a royal court or in a nobleman's household. (*See* FOOL.)

JESUATI, a religious order founded by Giovanni Colombini of Siena in 1360. Colombini had been a prosperous merchant and a senator in his native city, but, coming under ecstatic religious influences, abandoned secular affairs and his wife and daughter (after making provision for them), and with a friend of like temperament, Francesco Miani, gave himself to a life of apostolic poverty, penitential discipline, hospital service and public preaching. When Urban V. returned from Avignon to Rome in 1367, Colombini craved his sanction for the new order and a distinctive habit. Before this was granted he had to clear the movement of a suspicion that it was connected with the heretical sect of Fraticelli, and he died on July 31, 1367, soon after the papal approval had been given. The guidance of the new order, whose members (all lay brothers) gave themselves entirely to works of mercy, devolved upon Miani. Paul V. in 1606 arranged for a small proportion of clerical members, and later in the 17th century the Jesuati became so secularized that the order was dissolved by Clement IX. in 1668.

See T. Kennedy, art. "John Columbine, Blessed" in the *Catholic Encyclopaedia:* Max Heimbucher, *Orden u. Kongregationen,* II. 240.

JESUITS, the name commonly given to the members of the Society of Jesus. (*See* JESUS, SOCIETY OF.)

JESUS, SOCIETY OF, a Catholic Religious Order, founded in 1540 by St. Ignatius Loyola. It is a mendicant Order of clerks regular. Its members rely on alms for their support. They have for their end the spiritual perfection not only of themselves but of all men. In the beginning Ignatius used the Spanish term *Compañia* to express the soldier spirit of loyalty to the captain, Jesus. This name was Latinized by Ignatius into that of *Societas.* The Pope, Paul III, in 1540, ruled that the official title should be *Societas Jesu.* The word "Jesuit," originating in the preceding century, was fixed on Ignatius' companions as a term of reproach and contempt. Gradually it was accepted by the Society and acquired an honourable meaning. The two understandings of the name persist to our day so that the Jesuits have been always regarded by some as a Society to be feared and condemned and by others as the most laudable and esteemed Religious Order in the Catholic Church.

FOUNDATION AND INSTITUTE (1539–1556)

The establishment of the Society of Jesus as a Religious Order evolved in the mind of Ignatius Loyola (*See* LOYOLA, ST. IGNATIUS OF) through a term of years and a series of clarifications. Born in 1491 in the ancestral castle in Guipúzcoa, Ignatius was early inducted into the career of the soldier. In 1521, campaigning for the defence of Navarre against the French, he was struck down by a cannon-ball at Pampeluna. The period of inactivity that necessarily followed turned him from military pursuits to religious aspirations. His definite conversion dated from his pilgrimage to Montserrat and his life as a recluse at Manresa where he was inspired with the ideas which later were formulated in the *Spiritual Exercises.* His first apostolic impulse was for labour in the Holy Land, whither he went in 1523. Visioning more clearly, however, he realized that education and companions were required to execute his plans for God's greater glory. He devoted eleven years to study at Barcelona, Alcala, Salamanca, and finally at Paris. Through these student years, his extraordinary zeal and charity often caused him to be persecuted and imprisoned, but upon examination he was always vindicated.

At Paris he attracted to himself six brilliant young university students: Peter Faber, a Savoyard; Francis Xavier, of Navarre; James Laynez, Alphonsus Salmeron, Nicholas Bobadilla, Spaniards; and the Portuguese, Simon Rodriguez. In 1534 these seven bound themselves by vows to poverty, chastity, and to a pilgrimage to Jerusalem. Three others joined the brotherhood in 1536, namely, Claude LeJay, a Savoyard, and the Frenchmen, Jean

Codure and Paschase Broët. Being prevented by the wars with the Turks from going to the Holy Land, the companions went to Rome in order to place themselves at the disposal of the Pope. They were ordained priests, and consulted among themselves through months as to their future mode of life. Thus far, they followed no rule and were subject to no communal authority. They saw the necessity of obedience to an authority and of seeking means to perpetuate their brotherhood. In 1539, Ignatius drew up a *Formula Instituti,* which, after some hesitation, Paul III approved on September 27, 1540, in the Bull *Regimini militantis Ecclesiae.* The membership was limited to sixty. In April, 1541, Ignatius was chosen General of the new Order.

The concept of the Society is briefly expressed in two documents composed by Ignatius: the *Spiritual Exercises* and the *General Examen* (*See* LOYOLA, SAINT IGNATIUS OF). The latter, intended for persons proposing to join, is a brief statement of the aims and requirements of the Society. The former is a concise memorandum for the guidance of a director and an exercitant in the performance of a carefully planned series of reflections, meditations, affective aspirations, self-examinations, and resolutions. The aim of the *Spiritual Exercises* is: (1) the purification of the soul from disordered affections and worldly standards; (2) the discovery of the Divine Will before making a choice of a state of life; (3) the consecration of the person's mind and will to the service of the Creator under the leadership of Jesus Christ. They are divided into four periods, designated as "weeks." The *Spiritual Exercises,* in a sense, are to the Society what the Rule (*regula*) is to the older Religious Orders. From them have been derived the ascetical teaching and practice of the members as well as methods of their apostolate.

Corresponding to the "Foundation," or fundamental considerations with which the *Exercises* begin, that "man is created to praise, reverence, and serve God our Lord, and so doing to save his soul," is the opening declaration of the *General Examen:* "The aim of this Society is not only to seek with the aid of the Divine grace the salvation and perfection of one's own soul but with the aid of the same earnestly to labour for the salvation and perfection of one's neighbor." Distinctive, in comparison with the older Orders, is the definiteness with which Ignatius relies upon the exterior and interior sacrifices required by the apostolate itself as a primary means of sanctification.

From the maximal orientation of the Ignatian apostolate to the "greater glory of God" stems the Ignatian universalism, by which the Society is traditionally the exponent of the "Catholic" or universal idea of the Catholic Church. At the same time the person-to-person following of Christ taught by the *Exercises* encourages the vigorously humanistic trend that characterizes Jesuit asceticism, preaching, and educational methods.

Ignatius' realism, akin to his humanism, prescribed for the Society a "common" manner of living (*Examen,* I., 60), without extraordinary penances, freed from obligatory recitation of the liturgical office in choir or even a prescribed uniform or "habit." The strictness of the rule of poverty is derived more from the rigid requirements of common ownership and dependence upon Superiors than from any striking outward observances; while chastity is safeguarded by intensive cultivation of the inner life. Obedience, while practically indispensable for the efficacy of an organized spiritual campaign, is filial, not servile; and is definitely limited by the boundaries of the Constitutions, the canonical structure of the Church, and the requirements of conscience and the moral law. The unique emphasis laid upon this virtue in the Ignatian scheme derives from Ignatius' insistence upon its transcendental aspect, by which obedience to a fellow human being, whose personal limitations are frankly acknowledged, is made the means of interiorly consecrating the noblest part of man's nature, his will and judgment, to the Creator from Whom he has received them.

Even before Papal approbation was given to the Society, the first members were employed in delicate and dangerous missions by the Pope. They first spread through Italy, preaching and bringing about reforms. In 1540, Rodriguez and Xavier started for India; Rodriguez was held in Portugal, but Xavier went on and became the great apostle of modern times. In that same year, Faber advanced into Germany and was joined by LeJay and Bobadilla; a short time later Canisius was admitted into the Society. Salmeron and Broët undertook the perilous Irish mission in 1541. When the Council of Trent convened in 1546, Laynez and Salmeron were named Papal theologians and with them were associated Canisius and LeJay. Other members established themselves in France and Spain. Thus, spreading through all the major countries of Europe, attracting followers, establishing residences, the first companions set the spirit that thereafter animated the Society of Jesus.

Ignatius remained at Rome, sending minute instructions to the dispersed brethren and receiving their reports. In 1541 he was empowered by the First Congregation to draw up the Constitutions. He experimented through six years, and tentatively reduced principles to practical applications. In 1547 he began the first draft and was ably assisted by his secretary, John Polanco. Three years later, the Constitutions were approved by the leading members of the Society and were confirmed by Julius III. After some slight modifications, they were put into force in all Jesuit communities throughout the world. The only conflict arose in Portugal where Rodriguez had impressed his own ideas on his companions. Strong action by Ignatius, however, obtained conformity in Portugal.

The Constitutions are a part of the "Institute of the Society of Jesus" which, in addition, contains also various papal documents approving the Order and enumerating its privileges, legislation of General Congregations, regulations of the Generals, etc. The Constitutions recognize three grades in the Society: scholastics, coadjutors and professed. Aspirants, besides conforming to Canon Law requirements, should have constancy of character, virtue, prudence and, if they are to be priests, learning. The aspirant goes through a brief "first probation." This familiarizes him with the spirit of the Order and affords a prayerful opportunity to stabilize his vocation. Two years of "noviceship" follow, devoted to his ascetical development under a skilled novice-master. To test his vocation he devotes himself to the *Spiritual Exercises* for thirty days and is assigned to menial occupations. If approved he takes the usual religious vows. Scholastics are those who have taken only their first vows. For about nine years the Scholastic studies literature, the sciences, philosophy and theology, two or three years teaching under carefully supervised conditions usually intervening between the last two courses. Following his ordination to the priesthood, he passes through a further year, the tertianship, devoted again to asceticism and another thirty days' retreat.

If he has evidenced a special fitness for the Society's work, he is now admitted to the profession. The "professed" constitute the Society in its fullest sense. They may hold any office. They alone participate in General Congregations. They make solemn Religious vows and, in addition, a special vow of obedience to the Pope. They also promise neither to desire nor to seek any dignity in or out of the Order. Others are admitted among the "formed spiritual coadjutors." Except for their exclusion from the very highest offices, these engage in all the activities of the Society. St. Ignatius advises that from among them rectors be usually selected. They bind themselves only by simple vows. Occasionally, because of special talents, some of these are raised to the profession. The Society also recognizes "temporal" coadjutors (lay brothers) who have for their duties domestic and kindred occupations, and live in community.

The General Congregation is the supreme governing and legislative body in the Society. It meets on the death of a General to elect his successor; also for extraordinary business. Though the General presides at its sessions, he is subject to it. Its personnel includes the Provincials with two delegates from each province elected by the respective Provincial Congregations. The General is chosen for life and, except for certain constitutional limitations, has complete authority and power in the Society. He is aided by a group of "Assistants," each representing a definite geographical section of the world. These assistancies are divided into provinces, each presided over by a Provincial. The latter is

responsible for the province and assigns men to their tasks but he may not interfere with the autonomy of the several houses or colleges. Provincials and local superiors are appointed by the General. He is kept informed of what goes on by official reports which he periodically gets from them and other officials in each house, college and province.

The work of the Society is practically coextensive with the needs and ideals of the apostolic ministry. Secular business and political activity are expressly forbidden. Administration of the Sacraments, preaching, missionary, charitable and educational work are the proper province of the Jesuit priest.

After Ignatius had achieved the final form of the Society through the Constitutions and had completed its organization as a world-wide Order, he offered his resignation as General on the plea of ill health. This was rejected, but Jerome Nadal was named his Vicar General. Ignatius saw two great projects brought to completion, the establishment of the Roman College in 1551 and that of the German College in Rome in the year following. By now he was worn out, and on July 30, 1556, he succumbed to an attack of Roman fever. At this time, the Society numbered about 1,000 members; but of these, only 40 were Professed Fathers. There had been established more than 100 communities which were divided into 11 Provinces: Italy, Sicily, Portugal, Aragon, Castille, Andalusia, Upper Germany, Lower Germany, France, India, Brazil, and a mission in Ethiopia.

EARLY HISTORY (1556–1750)

During the first two centuries of its existence, the Society devoted its energies to the strengthening of Catholicism in all the major countries of Europe, and to spreading the Faith in Asia, Africa, and the Americas. Though Ignatius had no intention of founding a teaching Order, wisdom soon dictated this activity as one of the greatest spiritual ministries. Educational work was adopted, almost reluctantly, with the college at Messina in 1547. The *Novum Organum* of Jesuit education is the *Ratio Studiorum*, the composition of which was begun in 1584. The first draft was issued in 1586, and a second in 1591; the final text, which had the force of law in all Jesuit colleges, was completed by Aquaviva in 1599. It is a compilation of general principles and detailed instructions for teachers. It is rather a spirit and a method than a mechanical formula or a blind pedagogical technique.

In Italy, the history of the Society until the middle of the eighteenth century was comparatively peaceful. The Jesuits enjoyed a high reputation for learning, their colleges were frequented by a host of students, and their missioners were successful preachers of the Gospel. Segneri attained renown for his eloquence; among the theologians, St. Robert Bellarmine, a Doctor of the Church, was preëminent; Pallivicino's history of the Council of Trent became a classic; and many Jesuits distinguished themselves in *belles lettres* and the natural sciences.

A more troubled career awaited the Society in Spain. Philip II. lent his aid to turbulent spirits, who threatened the internal peace of the Order under Father General Aquaviva. Disputes with certain other Religious Orders and friction at some universities were vexing problems. Yet the Society flourished until the accession of Charles III. in 1759. The Spanish Provinces were especially fruitful in profound scholarship. Only a few notable men can be mentioned. Among the theologians and philosophers, Suarez, Vasquez, Molina and Ripalda were outstanding. In moral theology, Sanchez, de Lugo, and Escobar were distinguished, though some opinions of the last named called for censure. The historian Mariana was a scholar of high ability. Many of his views on political and economic problems were centuries in advance of his age, but his teaching on tyrannicide aroused hostility and was disowned by the Society.

The history of the Society in Portugal was peaceful and brilliant. At the universities of Coimbra and Evora, Jesuits attained eminence as professors; the colleges flourished, and the apostolic work of the Province was singularly fruitful. The famous series of theological texts issued at Coimbra (the *Conimbricenses*) was an outstanding accomplishment. Molina taught at Coimbra; and there propounded his famous system on Grace and free will which has largely prevailed in subsequent theological thought.

In France, the story of the Society was chequered and often adverse. The Crown, many Bishops, and a large section of the nobility favoured the Order. But the University and Parlement of Paris were bitterly hostile to the nascent Society; and in the religious wars the Jesuits were an especial object of hatred to the Huguenot minority. After his conversion to Catholicism, Henry IV. favoured the Society. In the seventeenth century the French Provinces grew and flourished. The colleges, especially the famous La Flêche, attained European renown. Perhaps a majority of eminent Frenchmen in this century were alumni of Jesuit institutions. Yet many storms arose, particularly from the hostility of the Jansenists. The *Provincial Letters* of Pascal, a masterpiece of sarcasm and invective, but filled with distortion and calumny, was one fruit of Jansenistic opposition to "Jesuitism." Again, Gallicans of all schools distrusted the Society as a bulwark of Ultramontane teaching. Yet the Jesuits, until their expulsion in 1764, remained the leading educators of France. Among the more eminent of French Jesuit scholars, only Petavius, the founder of positive theology, and Bourdaloue, the "modern Chrysostom," can be mentioned.

In the Latin nations the Jesuits strove to strengthen the Catholic Faith and to improve moral standards. In the northern countries of Europe the Society struggled with advancing Protestantism. It became a leading factor in the Catholic Reaction, commonly known as the "Counter-Reformation." Though St. Ignatius, contrary to the usual impression, had no specific design of opposing the Reformation when he founded his Society, yet the Jesuits were largely instrumental in saving great sections of northern Europe to the Catholic Church and in regaining lost territory. In 1550, Protestantism seemed on the verge of a sweeping triumph in Poland, Hungary, Austria, Belgium, Bavaria, and the Rhineland. That these sections of Europe, fifty years later, were finally and overwhelmingly Catholic was due largely to the Jesuits.

In Germany, Blessed Peter Faber was the founder of the Counter-Reformation, but his disciple, St. Peter Canisius, merits the title of "Apostle of Germany." Through preaching, both popular and academic, by disputations and catechisms, through countless tracts and books, the Jesuits defended the Catholic Faith among the German and Slavic peoples. Wherever possible, they established colleges for the education of the laity, and seminaries for the training of priests. In Austria and Hungary the Society enjoyed peace and prosperity. In Bohemia it was an able instrument in defending the Catholic cause against the Hussite legacy and against Calvinistic infiltration. In Lutheran Germany the Society was rigorously proscribed and its colleges and works suffered greatly during the Thirty Years War. But the German Provinces were flourishing and active until the fatal year, 1773. The famous theological series published at the University of Wurzburg (*Wirceburgenses*) is a masterly summary of Catholic doctrine and a scholarly answer to Protestant objections. A host of Jesuit scholars and preachers attained eminence in German speaking lands.

The Society prospered in Belgium after the first initial struggle. The colleges were numerous and flourishing, while the sodalities were notably successful. The work of the Bollandists in scientific hagiography, begun in the early seventeenth century and continued until our own day, has gained the admiration of historians throughout the world. Among Belgian Jesuit scholars the great Lessius is pre-eminent. In Poland, also, Jesuits played a leading part in education until the Suppression.

In England, before the Society was fully organized, the penal laws were already in force. These laws drove young men to the continent and as refugees in Douai and Louvain, they fell under the influence of the Jesuits. Many of these entered the Society and the purpose evolved of returning to England for the encouragement of their fellow Catholics. Edmund Campion, Robert Persons, and a succession of others crossed the Channel resolved on martyrdom. Many suffered the death penalty under Elizabeth, the Stuarts and the Commonwealth. During this period, while some were working secretly in England, others were es-

tablishing English colleges in Valladolid, Seville, Liége, St. Omer, and elsewhere. After the period of martyrdom, the Jesuits resided quietly in England and carried on their educational projects abroad. Some controversies between them and the English secular and regular priests on matters of policy were finally settled by the decisions of the Pope.

The dominance of the Presbyterians prevented any but the most guarded entrance of Jesuits into Scotland. What few priests were able to labour among the remnants of Catholics were always under threat of death or banishment. Educational work, however, was carried on in Paris, Rome, and the Spanish Dominions. The Irish Jesuits, likewise, engaged in a two-fold work, that of labouring dangerously at home in keeping the Faith among the people despite the Elizabethan, Cromwellian and Georgian persecutions, and that of maintaining a supply of priests through ecclesiastical institutions on the continent, at Lisbon and Salamanca.

For most people, mention of the Jesuit foreign missions instantly evokes the memory of St. Francis Xavier. Heroic as were the proportions of this leader's apostolic labours, they formed but the spearhead of the campaign for Christ that was to be engaged with varying degrees of success in India, Japan, China, and the East coast of Africa. No little glamour of mystery clustered about the visit of Blessed Rudolph Aquaviva to the Court of Akbar the Great, but the results were not comparable to the numerous conversions which followed the less spectacular attempt of Ven. Robert de Nobili to win souls by himself becoming a Brahmin and permitting his neophytes to retain not only their caste system but the veneration of ancestors. Subsequent condemnation of the so-called Malabar rites choked off this hopeful missionary enterprise just at the moment when Fathers Lopez and Acosta were making another application of the same principle among the Pariahs. In the seventeenth century, the Jesuits spread in fan-like thrusts into Tibet, Persia, and East Africa, penetrating as far as Abyssinia. Apart from a French mission at Pondicherry, most of this work was coextensive with the colonial empire of Spain and Portugal in the Orient. The reform of scandal-giving Christians was an indispensable preliminary to the conversion of the natives. In the foundation of colleges, seminaries, hospitals and schools, provision was always made for Europeans as well as Hindus, Chinese and Japanese.

One of the most flourishing missions was that to Japan. For St. Francis Xavier, this was a land of his predilection and he prophesied that the dwellers of the island empire would be slow to embrace Christianity but, once convinced, would remain unshakable. By 1582, thirty years after his death, the number of Christians was estimated at 200,000 with 250 churches. At the time of the great martyrdom in 1597, this number had soared above a million. Fifteen years later, there were 1,800,000 Christians and 140 Jesuit missionaries. A period of intense persecution ensued. All Jesuits who landed in the island during this interval were forthwith executed. During the Suppression of the Society the mission suffered from a species of progressive strangulation, but by a miracle of perseverance, compact practising bodies of Christians were found more than two centuries later when Japan finally was thrown open to world intercourse.

The harvest in China, though rich in quality, was not so impressive in mere numbers. The Jesuit scientists, esteemed for their skill in mathematics, astronomy, physics and chemistry, were kept at court and in the higher circles of Chinese society. Perhaps the best known of the Jesuits who worked in China was Father Matteo Ricci. His scientific apparatus was a source of never-ending admiration to the curious Chinese. In connection with their research, the members of the Society established four colleges, one seminary, and forty mission stations.

The Mexican Province of the Society of Jesus was founded by Father Pedro Sanchez and fourteen fellow Jesuits in 1572. The first Jesuit college was opened in Mexico City in 1573. Rapid progress was made and in 1581 and 1582, respectively, missionaries were sent out from Mexico to Cuba and to the Philippines. The pioneer labours in Mexico were marked by several martyrdoms. By the year 1753, however, some 100 Christian villages had been organized and about 120,000 Indians brought to some state of civilization. This rapid and fruitful expansion extended northwards into California and in the south as far as Guatemala and Nicaragua. It was due to men like Father Kino (the discoverer of California) and Fathers Ugarte, Salvatierra and Glandorf. The cultural work in the colleges kept pace with that of the missionaries. In 1749, less than 200 years after its foundation, the Mexican province contained 678 members, with 48 houses, of which 32 were teaching establishments, without counting the elementary schools among the recently baptized Indians.

Sent out from Mexico, two Jesuits, Fathers Antonio Sedeno and Alfonso Sanchez, arrived in the Philippines in 1581. Their first college was opened in Manila in 1590 and became a university in 1623. In 1605 the mission of the Philippines became an independent province and by 1768 it counted 158 members, distributed in three colleges, 4 seminaries, 15 residences and 6 missions. Among the natives, 93 Christian villages had been established with some 200,000 converts. Within this period, 19 missionaries were put to death by the natives.

In South America, Brazil was the first country to be evangelized by the Jesuits. Five of their Order accompanied the Viceroy Thome de Souze to Bahia in 1549. In 1570 forty Jesuits were martyred by Calvinist pirates as they were on their way to Brazil; and twelve others were soon to shed their blood in the Mission.

The Province of Peru was founded by five Jesuits in 1571. Churches and colleges were soon opened and by 1603 the Jesuits numbered 376. The provinces and vice-provinces of Paraguay, Colombia, Venezuela, Chile and Argentine were, like Ecuador, outgrowths from Peru. In Colombia besides the two colleges at Bogotá and Cartagena (where St. Peter Claver alone baptized and instructed more than 300,000 Negroes) the Jesuits had one seminary and three other colleges. Missions were also established among the Indians of the Orinoco and Magdalena. Founded in 1593 by seven Fathers from Peru, Chile became an independent province in 1648. The Argentine was in its origin, a part of the Province of Paraguay. The famous Missions of Paraguay were established by missionaries from the then called Province of Paraguay and extended over a territory which today is divided between Brazil, Bolivia, Argentine, Uruguay and Paraguay. The missions were organized into some 57 villages (*reducciones*) and harboured about 114,000 converted Indians.

In 1566, the Spanish Jesuits made a brave effort to evangelize the Indians of Florida. Father Martinez, the "first Jesuit martyr of North America," was slain in that year at a point on the coast opposite Havana. His fate did not discourage Father Segura and Quiros, who after some years in Florida turned their attention to the North and attempted to found a mission on the banks of the Rappahannock in Virginia. Here in February, 1571, they were killed by the natives together with three lay brothers and three catechists, who had all been received into the Society. Needs of the apostolate in other parts of New Spain ended the short-lived mission in Florida.

At a time when the Catholic Church in England herself was in the throes of persecution, it despatched the first English-speaking priests to North America. Five Jesuits, headed by Father Andrew White, arrived with the Maryland colonial expedition of Cecil Calvert in 1634. For ten years the Fathers laboured on behalf of Catholics, Protestants, and the Indians. Full approval was given by the English Jesuits to the broad policy of religious freedom adopted by the Calverts. Governor Thomas Dongan of New York, who likewise had a Jesuit chaplain, maintained the same ideal of liberty. The plans of the pioneer Jesuits for higher education were realized by the foundation of a school at New Town, an enterprise which culminated in the erection of Georgetown College (1789) under the direction of Bishop John Carroll, who never lost his love of the Society which he had served until the Suppression.

In New France, after some abortive attempts beginning in 1611, the French Jesuits established themselves in 1632 at Quebec. For more than a century and a half they laboured for the conversion of the natives, enduring hardships that are almost unbelievable. The Church has recognized Sts. Isaac Jogues, Jean

de Brebeuf and six others as martyrs, but many more died heroically in the name of Christ. Lavish praise has been given these French Jesuits for their discoveries of large portions of what are now Canada and the United States, and for their accurate observations on the aborigines, topography and natural sciences. They sent back to France each year lengthy reports which were annually published and are now celebrated as the *Jesuit Relations* (1610–1791). In 1635, they established a college for the French as well as for the Indians in Quebec. They strove too to colonize the natives as well as to Christianize them.

More than two centuries had now passed since Ignatius and his first companions prayed and conferred over the form that the Society of Jesus should eventually take. With the Society moulded during his lifetime, no essential changes were ever introduced by his successors, though Francis Borgia and Claudius Aquaviva, the third and fifth Generals, respectively, brought about many modifications. The growth in numbers and in the variety and importance of the apostolic work undertaken was truly amazing. In 1579, twenty-three years after Ignatius' death, there were 5,165 members and 21 provinces. When Vitelleschi was elected the sixth General, in 1615, there were 13,112 members and 32 provinces. At the death of Gonzalez, the thirteenth General, in 1705, there were 19,998 members and 37 provinces. In 1749, when the hostile forces in Spain, Naples, Portugal and France were combining to crush the Society, it numbered 22,589 members, of whom 11,293 were priests, distributed through 39 provinces. There were 24 Professed Houses, 669 colleges, 61 novitiates, 176 seminaries, and 273 missions among the savages. The Catholic Church has recognized the sanctity of 23 members who lived during this period by canonizing them as Saints. It has given the title of Blessed to more than a hundred other martyrs and confessors, and has permitted the introduction of the names of nearly two hundred more for canonization. Despite its glorious defence of the Church, or rather, because it had defended it so well, the Society of Jesus was now doomed to extinction.

SUPPRESSION AND RESTORATION (1750–1814)

The chief causes which led to the Suppression of the Society in 1773 were the following: (1) The power of the Society within the Church and at the Catholic Courts aroused enmity. Royal confessors were usually Jesuits, and some of them were charged with exercising undue influence in political affairs; (2) The Society was the strongest bulwark of Ultramontane teaching in Catholic Europe; (3) Friction with the Sorbonne and other universities was frequent; (4) The controversies with Dominicans and Franciscans, concerning the doctrine of Grace, the "Chinese Rites," etc., left a legacy of ill-feeling; (5) The lax teaching, on certain points, of a few Jesuit moralists was falsely attributed to the entire Order; (6) Pascal and the Jansenists distrusted and hated the Society; (7) Above all, after 1750 deistic "philosophy" largely dominated the educated and ruling classes in Catholic Europe. Voltaire and the Encyclopaedists united with Jansenists and the statesmen of "enlightened despotism" to crush the Jesuits.

In 1759 Pombal banished the Society from Portugal and Brazil. In France, Jansenists and philosophers became active against the Jesuits. De Choiseul, the Chief Minister of State, and La Pompadour, were hostile to the Society. In 1762 the Parlement of Paris made the case of Father La Valette, whose mission activities had become involved in quasi-commercial transactions, an occasion for condemning the *Institute* and "blind obedience" of the Society as "immoral." Despite the protests of a majority of the episcopate, in 1764, Louis XV. reluctantly yielded his consent to the expulsion of the Society from France. In 1767 Charles III. of Spain violently expelled all Jesuits from his vast Empire. The King was dominated by anti-clerical Ministers; but the real reason for his violent act has remained "buried in his royal heart." In the same year Tanucci expelled the Society from Naples. The Bourbon Courts and Portugal now sought to coerce the Holy See into entirely suppressing the hated Order.

In the Papal Conclave of 1769, twenty-three Cardinals were "vetoed" as "Zelanti" or pro-Jesuit. On May 19, 1769, Cardinal Ganganelli was chosen Pope unanimously, and took the name of Clement XIV. He had expressed the view that the Suppression might become necessary: "Sometimes we must cut down a mast to save the ship." Still, he ratified the privileges of the Society in a most laudatory Brief after his accession. Monino, the Spanish Ambassador, threatened schism unless the Pope yielded. In Germany and Austria, on the contrary, bishops, princes and cities presented memorials in behalf of the Order. Clement XIV. attempted to avert the evil day by diplomatic concessions but finally yielded. On July 21, 1773, appeared the Brief of Suppression, *Dominus ac Redemptor Noster*. This Brief (not a Bull) is narrative rather than judicial in tone. Clement XIV. cited certain past difficulties of the Society and enumerated present complaints against it, notably charges of political and mercantile activities and the hostility of the Bourbon Courts and of Portugal. The Pope thus concluded the Brief: "For the sake of peace, and because the Society can no longer attain the aims for which it was founded, and on secret grounds which we enclose in our heart, we suppress the said Society."

The "secret grounds" have never been disclosed, but it is probable that Clement XIV. meant the threats to which he had been subjected. The Brief became effective only when promulgated by the Bishops. It condemns neither the teaching, nor the morals, nor the discipline of the Jesuits. As Spittler notes, "It is useless either as a justification or a condemnation" of the Society. It was not preceded by any judicial investigation, and Clement XIV. based it upon motives of policy.

Some verdicts of historians upon the Suppression merit notice. Ranke (Romische Papste III., 205) writes: "The Jesuits were destroyed chiefly because they defended the strongest conception of the supremacy of the Roman See." St. Alphonsus Ligouri declared that the Suppression was due to "a plot of Jansenists and infidels." Pope Pius XI. called the Suppression "a painful page of history." It seems clear that the elements which pushed forward the Suppression were the Jansenists, the anti-Christian philosophers, and the advocates of unlimited secular absolutism; that Clement XIV. acted under coercion; and that, when free, Bishops, and the laity in general, bore witness to the learning and priestly zeal of the Society.

The chief effects of the Suppression were the following: (1) A severe blow was dealt to Catholic higher education in Europe. The spread of deistic philosophy and of revolutionary doctrine was freed from a powerful obstacle. Charles III. had unwittingly removed one great support of the Spanish Crown when he crushed the Society in his Empire. (2) The damage to the foreign missions was extreme. The Reductions of Paraguay fell into ruin; and in India, China and throughout Latin America, the Suppression of the Society caused a gap which could not be filled. (3) Sorel deemed the Suppression a "death blow to Papal prestige."

Two sovereigns refused to permit the publication of the Brief of Suppression, Frederick II. of Prussia and Catherine II. of Russia. As long as Frederick lived, he encouraged the continuance of the Jesuit colleges in Prussia, but his successor, in 1786, seized the institutions and revenues and sent the Fathers into exile. Catherine declared she wished the Society to continue as a teaching body in White Russia, that portion which Russia received in the spoliation of Poland. In 1776, there were 145 members scattered through 12 establishments. In 1780, a novitiate was opened for the perpetuation of the Order. In that same year, Catherine asked Pius VI. for sanction in her protection of the Society. While the Pope would not agree, he did not disagree; the survival, then, was considered not illegitimate.

The Brief *Catholicae Fidei* issued in 1801 by Pius VII. positively approved of the corporate existence of the Russian Society, and Francis Kareu was created General. Meanwhile, former members of the Society were being received, either in person or by name. Catherine, and her two successors, Paul I. and Alexander I., proved friendly protectors and patrons of the Order. By a Papal Brief, the Society was extended from Russia to Naples in 1804, but was dispersed two years later.

Several former ex-Jesuits in Belgium, in 1794, united in a community called the "Fathers of the Sacred Heart." In 1797, a similar body, retaining the rule and the spirit of the Society, was aggregated under the name of the "Fathers of the Faith." With the sanction of the Pope the two communities merged; but dissatisfaction with the Superior, Father Paccanari, who opposed a union with the Russian Society, caused many to leave the community and to seek entrance in Russia. In 1803, 11 ex-Jesuits in Maryland were received corporately by Gabriel Gruber, then General. During these years, Pius VI. and Pius VII. were prudently working toward a restoration of the Society. As soon as Pius VII. returned to Rome from his captivity in France, he issued a Bull *Sollicitudo Omnium Ecclesiarum,* dated August 7, 1814, whereby the Society of Jesus was restored throughout the world. Seventeen months after the Bull re-established the Society throughout the world, the Jesuits were banished from St. Petersburg; and in 1820 Alexander I. decreed that they must all leave Russia, charging them with causing too many conversions from the Orthodox Church. Though they were still refused admission into Portugal, they were welcomed by the countries which had brought about the Suppression, Italy, France and Spain.

THE MODERN SOCIETY (1814–1935)

After its restoration, the Society had a gradual growth from a few hundred in 1814 until at the beginning of 1935 (the last figures available) it numbered 24,732 (10,799 priests, 8,717 Scholastics, and 5,216 lay brothers), distributed through 44 provinces. This represented a growth of nearly 8,000 in 20 years. In its new life, it has devoted itself to practically the same work that had characterized it from the start; foreign missions, colleges, research in science and letters, preaching and writing, with some new features made necessary by the times.

It must be said, however, that it met with greater obstacles than ever before. During the nineteenth century, the revolutionary movements that swept all continental and South American countries and were invariably directed against religion as well as against the State, usually picked the Jesuits as their first targets. Thus they were expelled from France in 1830, again in 1845, in 1880, and in 1901, but as a result of hundreds of them serving in the World War, returned in 1919; from Spain in 1820, 1835, 1854, during the first Republic in 1868, and more recently under the second Republic in 1931; from Switzerland under the Sonderbund in 1847; from Austria and Poland in 1848; from Italy at various times before the unification in 1870; from Germany in 1872 by Bismarck during the Kulturkampf, not to return until after the World War; and from Portugal in 1834 and 1910. The frequent revolutions in South America and Mexico unfailingly saw them dispersed under violent threats; but in the countries which did not suffer these revolutionary upheavals, as Belgium, England, Canada, Ireland, and the United States, they were left in peace. In most of the nations which attacked them, however, they did not actually leave the country, except for those younger men who were still pursuing their studies; the rest adopted the garb of secular priests and carried on their priestly work as best they might. In most cases, it must be said that their expulsion or dispersion was logical, since because of the very prominence of their work itself, they were usually looked upon by the revolutionaries as spokesmen for the Church, against which the movement really was directed. The action against them usually took the form of new laws or the resurrection of old laws, but sometimes also of violence, as when, for instance, in Madrid in 1822 twenty-two Jesuits were murdered by the mobs, and again in Madrid in 1931, when their principal houses were burned with destruction of libraries and manuscripts. Confiscation of property invariably followed, as in France in 1880 when they lost 26 colleges and again in 1901 when they lost 32.

In spite of these obstacles and of frequent exile, and sometimes because of it, their influence soon spread over the whole Catholic world. As soon as its numbers warranted, the Society immediately applied to the Holy See to have foreign missions assigned to it in place of those which had been destroyed by the Suppression. Thus in 1821, Peter De Smet came to the United States to work among the Indians with whom he had a long and glorious apostolate. In 1834 the Belgian Jesuits were in Calcutta, in 1835 the Spanish in Argentina, in 1837 the French in Madras in India, in 1839 the Sicilians in the Aegean Islands, in 1841 the French in Nanking, China, and in 1844 in Madagascar, in 1848 the Irish in Australia, in 1851 the English in Jamaica, in 1853 the Spanish in Cuba and in 1859 in the Philippines, in 1854 the Germans in Bombay in India. The days of exploration were over, and the time was one of organization and expansion. At the beginning of 1935 there were 3,204 Jesuits in the missions in Ceylon, India, Japan, China, Java, Iraq, Syria, Egypt, South Africa, the Congo, and Madagascar; and in South America, Mexico, and the United States among the Indians; 131 English Jesuits were in mission fields in Africa and British Guiana; 478 Americans were in Iraq, China, the Philippines, India, Alaska, Jamaica, and the Indian reservations in the United States. Of recent years the growth of missionaries from the United States has been phenomenal.

The educational system of the Jesuits had a similarly extraordinary growth. In the United States, Georgetown College, founded 1789, became a university in 1815 and at St. Louis, Missouri, the college founded in 1829 became a university in 1832; Spring Hill College at Mobile, Ala., founded in 1830, was given the power to grant Pontifical degrees in 1840; other colleges and universities sprang up, notably, Santa Clara (1851), in California, Boston College (1863) and Holy Cross (1843), Worcester, in Massachusetts, Marquette (1864), in Milwaukee, Wis., Fordham (1841), in New York, St. Ignatius (1870), later Loyola University, in Chicago. In 1936 with 5,039 members in the United States the Jesuits had 23 colleges and universities with 16,439 students in the various schools and faculties. In England, Stonyhurst College was the outgrowth of the exiled college at St. Omer (1592), France, which migrated to England in 1794. In 1936, 899 English Jesuits were working in eight colleges: Mount St. Mary's (1842), St. Francis Xavier (1842), Liverpool, Beaumont (1861), Old Windsor, Glasgow (1870), Wimbledon (1887), London, Stamford Hill (1894), London, Leeds (1901). In Canada, the Jesuits returned from St. Mary's, Ky., where the Fathers of the French Province had commenced work in 1834. They have in Montreal, Loyola College, St. Jean de Brebeuf, and Ste. Marie, and colleges in Quebec and other Canadian cities.

While still retaining the essential features of the *Ratio Studiorum* the colleges of the Society have adapted themselves to the growth of the educational theory and practice in the world at large, and have aimed at being, above all, practical educators. In the field of research, they have been particularly conspicuous in astronomy and geophysics. Many of their astronomical observatories are well known, as Havana (1858), Manila (1865), Stonyhurst (1842), Georgetown (1842), Zicha-wei, China (1873), Tortosa, Spain (1904). As astronomers the Italian Angelo Secchi, the German Johannes Georg Hagen, the English Stephen Perry and others have enjoyed first rank in the world. In the United States, the seismological stations at Georgetown, St. Louis, Fordham, Cleveland, and lately Weston (Mass.) College, have contributed much to world knowledge of earthquakes. In meteorology, the observations and inventions of Father Algué were of invaluable service in forecasting typhoons and hurricanes in the Philippines and the West Indies before the perfecting of radio service. In physics, Theodor Wulf was outstanding in Germany. In psychology, in the first rank have stood Lindworksy and Maréchal, and in biology, Erich Wasmann. As was to be expected, the sacred sciences, theology and the Bible, claimed many of their best men: in the nineteenth century Franzelin, Mazzella, Perrone, Palmieri, De Bonniot, De San, Sabetti, Genicot, Ballerini, Gury, Patrizi, Cornely, Knabenbauer, and in the twentieth Billot, De la Taille, and Fonck have been outstanding. In hagiography, the great work of the Bollandists at Brussels was carried on first under De Buck and then under De Smedt, and the *Analecta Bollandiana* (1882) was founded to continue further researches in the lives of the Saints narrated in earlier volumes of the *Acta Sanctorum.*

A special characteristic of the new Society has been the entry into the field of periodical literature, necessitated by the similar

growth in the secular field, and a great part of its polemical and apologetic work has been carried on in special magazines. In 1850, the first of these, *La Civiltà Cattolica,* was founded at the express wish of Pope Pius IX., and was followed by *Etudes* in Paris (1856), *Stimmen aus Maria Laach,* now *Stimmen der Zeit* (1865), in Germany, the *Month* (1864), in England, *Studien* (1868), in Holland, the *Irish Monthly* (1874), in Ireland, *Razón y Fe* (1900), in Spain, *Przeglad Powszechny* (1901), in Poland, *America* (1909), in New York, the successor to the *Messenger, Studies* (1912), in Ireland, *Brotéria* (1914), in Lisbon, *Thought* (1926), in New York, *Zivot* (1925), in Jugoslavia, *Estudios* (1934), in Buenos Aires, *The New Review* (1934), in Calcutta, *Revista Taveriana* (1934), in Bogota, and *Streven* (1935), in Belgium. A special development was the devotional magazine called the *Messenger of the Sacred Heart,* of which there are now 67 publications in 40 different languages. Due to governmental restrictions in Europe, the radio field was largely closed to them, but in the United States they were not slow to avail themselves of this medium and WWL in New Orleans, WEW in St. Louis, and WHAD in Milwaukee, were founded and conducted by them.

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(The author has been greatly assisted in the preparation of this article by members of the Order, to whom he extends his thanks.)

(F. X. T.)

JESUS CHRIST. The principal problem which is presented by the New Testament to the historian is the problem of accounting for the faith of the early Christians in one whom they had known as Jesus the carpenter's son of Nazareth, and whom they had seen die the shameful death of a criminal outside Jerusalem. We have evidence that a very few weeks after that event His followers, who had scattered in dismay, were reunited at Jerusalem, men and women to the number of about 120, feeling themselves to be bound together in a religious society through a common conviction, a common expectation and a common attitude towards Jesus. They were fully persuaded that He was alive, and that He had been seen by individuals and by groups of His followers. They were eagerly expecting that He would quite shortly return as the Messiah of their race, the Son of God with power, and they adopted an attitude to Him which, though still undefined, was an attitude of religious faith. The strength and the sincerity of their conviction were tested by persecution and proved by their steadfastness. The religious quality of their attitude to Jesus was evinced by devotion, self-sacrifice and a sense of obligation to Him which swept away the last barrier of selfishness. And they had a message concerning this same Jesus which they proceeded to proclaim with enthusiasm and amazing success. The Church of Christ became a fact of history.

What manner of man was it whose life and character, teaching and experience, are to account for this phenomenon? The answer must be looked for in the three Gospels of Mark, Matthew and Luke, commonly known as the Synoptic Gospels, with some assis-

tance, slight but important, from the Acts of the Apostles, and the Epistles of St. Paul. All three Gospels were the work of men who were believers in Christ, and were intended primarily at least for the benefit of those who already believed. Luke definitely announces his purpose is to confirm Theophilus in the certainty of the things wherein he had been instructed; and though Matthew and Mark make no similar statement, it is equally clear that their purpose was similar; it was not either to prove anything not already accepted or to persuade other men to believe, but to give connected and permanent form to narratives of what Jesus had done and said which had hitherto been current in the Christian community, either as oral tradition or in preliminary attempts to reduce the tradition to writing. Their own faith did not rest upon the story which they told; for the earliest preaching was not the proclamation of the historic Jesus but the proclamation of "Christ and Him crucified," that is to say, the witness of believers to the risen, living and glorified Christ whose connection with the life of men and with the purpose of God might be learnt from the fact that He had been crucified. The Gospels were written in order to satisfy the eager desire to know more fully and to know with certainty the earthly life of Him in whom men believed as the living Saviour and Lord.

DISTINCTIONS BETWEEN THE GOSPELS

While this is the purpose common to all three Evangelists, there are important distinctions between them in respect of the material which they have at command, the way in which they severally handle it, and the aspects of life and thought in which they are severally interested. They all show great and equal interest in the account of the Trial and Passion of Jesus which they relate with fulness and detail; but in the account of the previous ministry of Jesus, Mark confines himself mainly to narrative, reporting in comparison but little of what Jesus taught, few of His parables and little of His discourse. Luke and Matthew, while incorporating nearly all of Mark in their Gospels, add, each in his own different way, a large amount of discourse material which had probably been already collected in a document commonly described as the second Source (Q). And to the material thus collected from two sources both Luke and Matthew add material of their own. That which is peculiar to Luke may possibly represent the earliest stratum of his Gospel with which he combined first (Q) and afterwards Mark (Streeter).

According to the dates now commonly assigned to these Gospels Mark was composed before the fall of Jerusalem in A.D. 70 but not before A.D. 60, Luke and Matthew after the fall but not later than A.D. 80. But if Harnack is right in the view he still (1928) holds with conviction that the Acts of the Apostles was completed before the death of Paul, then Luke's Gospel would fall early in the '60s and Mark's would be earlier still. And if Streeter's theory referred to in the foregoing paragraph proved to be correct, the occasion for Luke's collecting of the earliest draft of his Gospel would be found in his visit to Caesarea about A.D. 43.

According to a tradition which has very early authority Mark acted as attendant to Peter and also as his interpreter; and much if not all of his material was derived from the accounts which Peter was in the habit of giving of the life and death and resurrection of Jesus. His Gospel was probably written at Rome and primarily for the benefit of Gentile Christians. Taking Mark as a witness to the interest of such an audience we should infer that it was strongly directed to Jesus as a healer, as one who had power over demons, power from which it could be concluded that He had overcome the prince of the demons; to Jesus as a teacher who neglected no opportunity of teaching, and was eagerly listened to whether by the crowds or by the inner circle of disciples; to Jesus as the embodiment of a Gospel, great and good news, the acceptance of which or of whom transformed life by setting it in the key of faith in God and assured hope of His Kingdom; to Jesus as standing to God in the relation of Son to the Father, and prescribing the destiny of men in terms of their relation to Himself. (The opinion that Mark bears evidence of having been influenced by Pauline thought and teaching has been shown to be groundless, M. Werner, 1923.)

The Gospel of Matthew, written primarily for such Christians as like himself were of Jewish origin, reflects something of their national consciousness and particularly their interest in Jesus as the Messiah of the Jews. Long before his time pious research and even pious imagination had been at work on the Old Testament collecting all the phrases which bore or could be made to bear on the figure and the experiences of the Messiah. And Matthew's delight is to discover either in the Old Testament itself or in some such collection language which illustrates and confirms the belief that in Jesus had been found the Hope of Israel. It is natural that he should conceive of the teaching of Jesus as a new law, and bring out the contrast between the new law and the old; that his interest in this aspect of the teaching should lead him to group into connected instructions utterances which properly belonged to various occasions; that modifications which he introduces should be suggested by his interest in the Church's task of evangelization or by the internal problems of the Church itself; that on occasion he has modified a narrative in order to adjust it to a prophecy. His outlook on the future is sombre; he elaborates the eschatological element in the teaching of Jesus, to whose Person an increasing majesty is attached, even as His function as Judge is emphasized. "Matthew conceives Christianity as the fulfilment of Judaism;" the divine Lawgiver who has fully revealed the word of God is the Jesus whom the Jews rejected and crucified. He cometh quickly to judgment.

The interests reflected in Luke's Gospels are less those of his audience or of the school to which he belongs than his own personal ones. He is a Gentile, free from all trace of Jewish nationalism, interested in men as men, in the perennial problem of rich and poor, emphasizing at once the drastic demands of the Gospel and the universality of the appeal made by Jesus, His personal contacts with individual men and women, the occasions of social intercourse, and the infinite graciousness and tenderness of the Master. "If Matthew is the Gospel of judgment, Luke is the Gospel of mercy. If there is something of pessimism in Matthew, Luke is full of hope."

The influence of these several interests by which the Evangelists were moved is seen alike in their selection of material and in their handling of it, oftentimes in quite subtle modulations of their sources. And it is this rather than any special dogmatic purpose, still less any "deliberate falsification or conscious idealization" which accounts for the differences between the Gospels, and explains how it is that though we have three portraits distinguishable from one another we feel them all to be portraits of the same Person.

Apart from the Birth stories at the opening of Matthew and Luke (the exact significance of which in this respect is ambiguous) there is nothing in these three Gospels to suggest that their writers thought of Jesus as other than human, a human being specially endued with the Spirit of God and standing in an unbroken relation to God which justified His being spoken of as the "Son of God." Even Matthew refers to Him as the carpenter's son and records that after Peter had acknowledged Him as Messiah he "took Him and began to rebuke Him" (Matt. xvi. 22). And in Luke the two disciples on the way to Emmaus can still speak of Him as "a prophet mighty in deed and word before God and all the people" (Luke, xxiv. 19). It is very singular that in spite of the fact that before Mark was composed "the Lord" had become the description of Jesus common among Christians, He is never so described in the second Gospel (nor yet in the first, though the word is freely used to refer to God). All three relate the Passion of Jesus with a fulness and emphasis of its great significance; but except the "ransom" passage (Mark x. 45) and certain words at the Last Supper there is no indication of the meaning which was afterwards attached to it. It is not even suggested that the death of Jesus had any relation to sin or forgiveness. Had the "ransom" saying been suggested by Paul it would not stand as it does in its isolated vagueness.

HIS MINISTRY

The Three Stages.—Any attempt to write a "Life of Jesus" should be frankly abandoned. The material for it certainly does not exist. It has been calculated that the total number of days in

His life regarding which we have any record does not exceed 50. And, moreover, the notes of time by which many of the episodes are connected are now seen to form the setting in which each Evangelist has put the different sections of his material, and represent rather his narrative-style than the actual time-relation between the events. At the same time, the ministry described by the Synoptists falls into three well-marked stages, the first mainly in Galilee, the third in Jerusalem and its neighbourhood, and the intermediate one a period of travel and sojourn either in Peraea according to Mark, or, if we follow the indications of Luke, in the neighbourhood of Samaria. Within this framework we have a continuous narrative only in the third section; in the other two a series of events and episodes, utterances, discourses, discussions and parables, the order of which is of less significance than their meaning. For what is true of all of them is conspicuously true of many, that even taken separately they convey an adequate, though it may not be a complete, impression of His character or His teaching or His significance for men. "It is precisely the greatness of Jesus, and the peculiarity of the tradition regarding Him, that every one of His brief sayings and every one of His parables and the stories concerning Him display His inner character entire, and display it so clearly that even the unlearned men may receive from it the deepest impression."

"Jesus was at the outset (of His ministry) about 30 years of age." His birth took place in the reign of Herod (d. 4 B.C.), and His crucifixion probably in A.D. 29 or 30. These dates confirm the impression produced by careful comparison between the Synoptic Gospels and John, that a duration of nearly three years for the ministry suggested by the data of the latter is probably correct rather than one of some 18 months, which is all we should infer from the former.

The ministry of Jesus was heralded by that of John the Baptist, a stern reproduction of one of the ancient prophets such as Elijah. He appeared in the unpopulated district in the Jordan valley proclaiming that the Kingdom of Heaven was at hand, which on his lips meant a day of judgment for the wicked. He called on those who listened to him to repent. And those who so repented he "baptized in the Jordan." This procedure was something so novel as to secure for him the description of "the baptizer"; it was an outward and visible sign of the repentance to which was granted "remission of sins," and probably was understood to seal admittance to the coming Kingdom. Large crowds flocked to his preaching. Many repented and were baptized. Others who remained at home said, "He has a devil." A further feature of his preaching was the repeated announcement that he was but a forerunner, that he would be followed by one stronger and nobler than he, who would baptize with Holy Spirit, while he himself baptized with water only. According to the tradition preserved by the fourth Gospel John actually pointed out Jesus to two of his own disciples ("Behold the Lamb of God, which taketh away the sin of the world," John i. 29), and they thenceforth quitted John and became followers of Jesus. Nevertheless, the movement started by John survived, possibly as a rival to the Church, against whose claims the writer of the fourth Gospel finds it necessary to protest.

His Baptism and Temptations.—Jesus Himself was baptized at the hands of John. That He thereby exposed himself to misunderstanding may be admitted, though the Synoptic Gospels significantly omit any reference to confession of sin in His case. This, however, is not the difficulty referred to in Matthew. It is that John, himself a kinsman of Jesus, shrinks from seeming to claim moral superiority by conferring baptism upon Him. Jesus brushed aside the objection, waiving the claim which John makes for Him, as He afterwards waived the claim to be excused the temple tax. In this ceremony of initiation and consecration to the ideals of the coming Kingdom He is resolved to be one with His brethren, even at the risk of misunderstanding. It is the first public symbol of the self-identification of one who was holy with those who were sinners.

The baptism itself was immediately followed by the coming of the Holy Spirit upon Jesus, and by the Divine assurance conveyed to Him in words of Scripture which sealed His vocation to be Messiah, the Messianic Son of God. At what period of His life the possibility of such a vocation first dawned on Him we cannot say. Doubtless it grew on Him. When He came to His baptism He was willing to accept it. After His baptism He knew it to be God's will. And already the specific character of His Messiahship was grasped by Him, as is indicated by the combination with the Messianic text from Psalm ii. of familiar words from Isaiah xlii. referring to the Suffering Servant. Jesus devoted Himself to be a Messiah who should effect the redemption of God's people through suffering, and at His baptism He received the Divine confirmation of this self-dedication.

It is this Messianic self-consciousness which gives the clue to the meaning of the Temptations which followed. These were far removed from the temptations of ordinary men, so far indeed that only this Messianic consciousness can account for them. In solitude and fasting Jesus faced and settled the problem of the Messiahship, tested and rejected one after another of the policies which offered themselves for consideration. The Messianic endowment of the Spirit was not to be employed in order to satisfy physical need or appetite. It had to do with that higher form of life which was nourished by the self-communication of God. Neither was it to be employed to produce supernatural evidence of His claim, even though Scripture could be quoted to confirm its validity. Even He had no right to put God to such a test for such a purpose. Finally, the possibility was suggested of accomplishing the Messianic task of making the kingdoms of this world "the kingdom of our Lord and of His Christ," by forming an alliance with evil, attempting, as a policy of compromise, to "serve God and Mammon." The subsequent course of His ministry shows how each of the "temptations" had been triumphantly overcome.

Characteristics of the Ministry.—The Synoptic Gospels agree in representing the public ministry of Jesus as commencing after John the Baptist had been thrown into prison by Herod. "Jesus came into Galilee proclaiming the Gospel of God, that the time is fulfilled and the Kingdom of God has drawn near." The burden of the message was the same as that of the Baptist, but on the lips of Jesus it was great and glad news, a Gospel in the presence of which, or in the power of which, men could be called on to believe in God. From Capharnaum which appears to have served as a centre this message was carried by Jesus through the length and breadth of Galilee.

In the synagogues and in private houses, on the hill-slopes and by the lakeside He taught the crowds who flocked to hear Him. He believed in teaching. Because He had compassion on the multitude, "He began to teach them many things." To this proclamation of the Kingdom and this teaching Jesus added a ministry of healing, largely described in terms of the casting out of demons. For, according to the ideas of the time, not only nervous diseases but many other forms of sickness and physical disability were believed to be due to possession by a demon or unclean spirit. This gave rise to a class of persons, "exorcists," who professed, and not always in vain, to be able to cure disease by casting out the demon. And Jesus did not shrink from drawing attention to the parallel between Himself and them. But it is clear that His "mighty acts of healing" had a scope and were on a scale far beyond the reach of such men. The Evangelists report an extension of His power beyond cases of a psychical or psychophysical nature, to include the curing of fever, paralysis, leprosy, blindness, deaf-mutism and even the raising of the dead, as having characterized His ministry. Of a different class and yet falling under the head of "wonders" were the so-called "nature-miracles" of which the Evangelists relate several.

The Miracles.—There can be no doubt that the Evangelists believed that these things happened as they describe them. There is equally no doubt that many of them would be differently described and differently accounted for by modern observers, who are as eager to find out the secondary causes as earlier observers were ready to do justice to the primary one. They "gave glory to God," and sometimes no doubt thought that they gave the greater glory by enhancing the supernatural character of the event. In general, it must be born in mind that "miracles" were

far from being unexpected or rare. St. Paul claimed to have worked "signs" in circumstances which put his sincerity beyond challenge, and he is witness to the fact that the Apostles wrought signs and wonders. Even the raising of the dead was not a thing so incredible as it is to us. Irenaeus believed that two cases occurred in his own time. If this seems to reduce the "evidential value" of miracles, it must be replied that there is very little to indicate that specific evidential value attached to the miracles of Jesus. There are two instances but only two where anything like an appeal is made to miracle in order to prove anything, the healing of the paralytic and the answer to the messengers from the Baptist. In the one case it is an argument from the power of physical healing to the power of spiritual restoration. In the other it is not the miraculous character of the events which is emphasized but their quality; "to the poor the Gospel is preached" (Luke vii. 22).

Otherwise no appeal is made to the miracles in order to prove anything. That they were not understood to prove the Messiahship of Jesus is clear from the insistent demand of the Pharisees for "a sign," by which they meant some portent which would, so they thought, make it impossible for men not to believe, *e.g.*, casting Himself down from the pediment of the Temple. And when Jesus sternly refused to give such a sign, He made it clear that miracles were neither intended nor calculated to produce faith. There are indications that there came a point in His ministry when He became chary of healing indiscriminately. This is shown by a new emphasis on His "compassion" as the motive of particular miracles, or on "faith" as the condition of His performing them. He may well have recognized that the popular enthusiasm due to the working of such miracles on a large scale, so far from furthering His mission, was only too likely to wreck it. And, further, that in too many cases those who were healed were satisfied with the physical boon and were indifferent to the higher gifts He had to give. They failed to show even that rudimentary attachment to Himself which could deserve the name of faith; and He was "unable" to do any mighty works where He found that "faith" wholly wanting.

A miracle has been well defined as "the supremacy of the spiritual forces of the world to an extraordinary degree over the mere material." In our inability to measure such spiritual forces we dare not *a priori* set any limit to their efficacy, and the test of probability, for any particular miracle lies not in what we conceive to be its physical possibility, but in its moral significance and value. The Evangelists record the miracles of Jesus not as demonstrating His Messiahship or His divinity, but as spontaneous expressions of a personality filled with the Spirit of God and indications of a character wholly animated by sympathy for men.

To teaching and healing as characteristics of the ministry must be added companionship. Jesus was not only accessible to men and women of all types and classes; He went forth to meet them, threw round them the compelling atmosphere of interest and care. Levi the tax-farmer, Simon the Zealot, Zacchaeus, Martha, Mary and Lazarus, Simon the Leper, these were typical instances. Many He drew into a wide circle of "followers," who accompanied Him in His circuit of Galilee; some into a yet closer circle of professed "disciples." Twelve He selected "that they might be with Him;" to these, who had shown a real initial receptivity He revealed "the mysteries of the Kingdom," and some of the depths of His own personality. These, when gathered into His fellowship (or "name") and to some extent imbued with His spirit He sent forth with power to cast out demons, to proclaim still more widely the coming Kingdom.

The earliest result of this ministry in Galilee was seen in a wave of popular interest and enthusiasm. "The common people heard Him gladly" (Mark xii. 37). They crowded the house where He was, the street where He walked, the beach to which His boat was moored. His fame spread through all Galilee and even "beyond Jordan," to Judaea and Idumaea. On the other hand opposition began to show itself. The religious authorities were alarmed at the independence of this unauthorized teacher, who ignored the traditional rules by which they had fenced the law of the Sabbath, who encouraged His disciples to drop the practice of fasting, who dared even to reach back behind the law of Moses itself and proclaim on His own authority the wider principles on which that law rested. Alarm deepened into suspicion, suspicion into dislike and hostility, as attempts made by scribes and Pharisees to challenge Him in argument were met and worsted by Jesus. Already the Pharisees began to conspire with their traditional foes the court-party "how they might destroy him." At the same time it became only too clear that the popular enthusiasm was but fleeting. The parable of the Sower is probably a reading off of the disappointing experience. Much of the seed which He had sown had fallen either on stony ground or among thorns; and even what sprouted had either withered away or been choked. Nazareth itself, His home town, showed conspicuously its contemptuous want of faith. Jesus withdrew from Galilee; His continuous ministry there came to an end. Through "the district of Tyre and Sidon" (where He broke through the barrier of Jewish exclusiveness by healing the daughter of a Gentile woman) He fetched a wide circuit by the valley of the upper Jordan, and after a brief visit to Galilee turned north again, to arrive at Caesarea Philippi at the southern base of Mount Hermon.

PETER'S DISCOVERY

The Messiahship.—The most momentous result of the ministry up to this point is seen in the acknowledgment made by Peter (apparently with the tacit consent of his fellow disciples), "Thou art the Messiah." This was in answer to a direct question put by Jesus; and according to Matthew it was followed by a blessing pronounced upon Peter, together with the announcement "flesh and blood hath not revealed it unto thee but My Father which is in heaven" (xvi. 17). Peter's discovery was due not to any external testimony but to what we should call a spiritual intuition; Jesus accepted the description, but enjoined His followers to keep it as a secret to themselves.

What were the reasons which led Peter to make this discovery and declaration? It is exceedingly difficult to say. Certainly they do not lie upon the surface of the Gospel narrative. There was no form of the Jewish expectation of a Messiah to which the appearance and activities of Jesus in the least corresponded; He was far enough removed from a warrior-prince who should restore the political glories of David's reign; He was not less removed from the transcendental figure of the Son of Man coming on the clouds of Heaven to judge the enemies of God and of Israel. The stories of a miraculous birth were not yet current; neither the Immanuel prophecies nor those of the Suffering Servant could give any help. Miracles, regarded merely as evidence of supernatural power, did not point out the Messiah. It was no part of the expectation concerning Him that He would work miracles. That the Messiah should teach, that He should claim to forgive sin, that He should seek to draw men into fellowship with Himself, that He should call them to take His yoke upon them—all these distinguishing features in the Synoptic portrait of Jesus were wanting in any picture of the Messiah drawn by Jewish imagination.

Seeking for the explanation of Peter's "confession" we appear compelled to find it in subtler forces which had been playing upon the disciples, the qualities of character displayed in the acts and words of Jesus, the influence of His personality mediated through daily intercourse, the sense of mystery and awe produced by His moral majesty ("Depart from me, for I am a sinful man, O Lord"), the growing conviction that somehow their relation to God was bound up with their relation to Him; all this combined to produce a profound impression in the effort to describe which Peter, when challenged, grasped at the highest religious conception which could be attached to a man, and said "Thou art the Messiah."

Neither for Jesus nor for His disciples was the title adequate. It had many associations which were actually out of harmony with His true mission and with the methods by which it was to be accomplished. Yet it was the best available description of the vocation which He had accepted, which His followers felt Him to be fulfilling. The title placed Him in direct connection with the delivering or redeeming purpose of God revealed by the prophets, and with the divine theodicy expected by the Jews.

Prediction of Suffering and Death.—According to these Evan-

gelists Jesus proceeded at once to exhibit more clearly His conception of the Messianic vocation by the startling and reiterated announcement of His impending arrest, death and resurrection. He foresaw His fate, and accepted it as part of the Divine purpose He was called to fulfil. He was to transform the rôle of the Messiah into that of the Suffering Servant. The disciples were utterly perplexed or frankly incredulous. "This saying was hid from them" and they did not understand what was said. The Transfiguration which followed on the first of these announcements is best understood as a parallel to the Baptism and a fore-gleam of the Resurrection. In it Jesus received the Divine confirmation of His self-devotion to the way of the Cross; He stood in line and in harmony with the monumental figures in the Divine revelation, and He enjoyed a foretaste of "the glory that should follow." From that time forward we see Him with His face "set to go unto Jerusalem"; for, as He said, "it cannot be that a prophet perish away from Jerusalem." And we get in Mark the wonderful silhouette, as of figures on the sky-line and against the sunset, Jesus in front and alone "iam totus in passione sua" as Bengel puts it; behind him the twelve or the inner circle of disciples, who were "the nearest bit of the world for Him as He was the first inkling of eternity for them"; they were filled with awe and wonder. Behind them again came those less closely attached, less akin to His spirit; and "they were afraid."

So these Evangelists bring Jesus to Jerusalem by way of Jericho. The feast of Passover was approaching. Crowds of pilgrims, many of them from Galilee, travelled by the same road. Jesus for a moment dropped the veil which concealed His Messiahship from all but those who were in spiritual sympathy with Himself. He arranged to enter the city in a guise which would recall a Messianic prophecy of Zechariah, "lowly and riding upon an ass," a Messiah who was a man of peace. Whether the crowd recognized the symbol, or whether it was the prophet of Galilee whom they recognized, a wave of enthusiasm seized them. They surrounded Him with joyous acclamations and so conducted Him to the gate of the city. Either on the same or the following day He visited the Temple, and being moved to indignation at its desecration through the exploiting of the religious needs of the people by avaricious traffickers and money-changers, drove them forth before Him by the force of His anger. They had turned God's house of prayer into "a bandit's cave." This drastic exhibition of moral authority seems to have been the cause which brought to a head the hostility of "the chief priests and scribes," among whom the former at any rate reaped a rich revenue from the traffic. They finally resolved on His destruction, but felt compelled by His popularity with the people, especially the Galilean pilgrims, to proceed with caution. The following days were spent by Jesus in the courts and porticoes of the Temple, where He taught and dealt with questions, some captious, some sincere, which were submitted to Him by opponents or by friends. The nights He appears to have spent at Bethany or on the Mount of Olives.

Judas Iscariot.—Two days before the Passover an unexpected opportunity was presented to His enemies when one of His own followers, one indeed of the Twelve, Judas Iscariot, went to the high priest with an offer to betray Jesus into their hands, probably by pointing out where He could be arrested quietly. Innumerable explanations have been suggested for this treachery; its ultimate root was probably disappointed personal ambition working on an imperfect allegiance, fastening on Jesus as the cause of the disappointment and passing through disloyalty and dislike to hatred. And, "hates any man the thing he would not kill?"

The Last Supper.—Even for Judas there remained still an opportunity "to see one instant and be saved." For he was present at the Last Supper, when Jesus manifested to His followers that "He loved them to the end." We shall probably do wisely if we follow here the tradition preserved in the fourth Gospel rather than that which appears to underlie the Synoptic Gospels. The latter certainly seems to imply that it was the Passover meal of which Jesus and His disciples partook; John clearly understands that it took place on the night before the Passover, and that Jesus went to death on the following day, at the time when the Passover lambs were being sacrificed; this would further account for the absence from the Synoptic reports of nearly all the features characteristic of the Passover meal. The Last Supper then corresponded probably to the weekly "Sanctification of the Sabbath" when the common meal had a specially religious character, and just before the Sabbath began the head of the household pronounced a solemn benediction over a cup of wine. No doubt Jesus had been in the habit of observing this weekly ceremony with His disciples. If on this occasion He anticipated it by 24 hours, and introduced it by saying "Much have I desired to eat this (coming) Passover with you" intimating that that would not be so, this occasion would at once be charged with special significance and solemnity.

There are several variations in the reports of what Jesus said at the Last Supper as given by the three Evangelists (with whose record we must take into account that given by Paul in 1 Corinthians). Luke's account as found in the common text appears to have been assimilated to Paul's; but when the true text is restored it varies more from Paul's than either of the others. The probable meaning of the words spoken by Jesus may perhaps best be given in a paraphrase. He took a loaf and blessed and broke it and said, "This represents Me as I give Myself in sacrifice to be the spiritual nourishment of men": and He took a cup and gave thanks and gave to them saying, "This represents Me as I give Myself in sacrifice to seal the new covenant." The central purpose of the rite would appear to be that there might be brought vividly to the consciousness of His followers the real Presence of their Master when He had passed from their sight, such a Presence as carried with it the continuation of all the aspects of His ministry which had entered into their experience while He was visibly with them. The command, "Do this to bring Me to remembrance," which is found only in Paul, may be an authentic word of Jesus or it may be an inference from the experience of the Church; "He was known of them in the breaking of bread."

From the upper room Jesus and His disciples went through the darkness to Gethsemane, outside the city, "where was a garden." There, withdrawn from His followers and even from the inner circle of closest friends, Jesus went through the agony of a human soul facing shame, suffering and death. Escape was still possible. The prayer rose to His lips that He might be spared the necessity of drinking "this cup," only to be cancelled in the next moment with "Nevertheless not what I will, but what thou willest." He returned to His companions to find them sleeping. Then came the lights, the clamour of voices, the crowd of chief priests and temple officers and Judas leading the way to betray His Master with a kiss. Jesus was seized and led away a prisoner. As to His disciples "they forsook him and fled, all of them."

CRUCIFIXION AND RESURRECTION

The Trial of Jesus.—There is considerable variation between the Evangelists in the reports which they give of the judicial or quasi-judicial proceedings which followed. Mark reports a formal meeting of the Sanhedrin held at once in the house of the High Priest; which seems unlikely especially if it were followed by another formal meeting next morning. Luke reports that Jesus was taken to the house of the high priest, but defers the investigation till the next day. The tendency of Mark's narrative is to throw a greater responsibility upon the Jewish authorities, and to suggest that the Sanhedrin had more independent jurisdiction than probably belonged to it. The object of the chief priests was to frame a charge against Jesus which would lie in a Roman court; and this they found in the admission which He made to the High Priest that he was the Messiah. For that admission could be easily interpreted to Roman ears as involving a claim to be "the King of the Jews," and one who was therefore politically dangerous. Evidence that He had publicly made such a claim does not appear to have been forthcoming. But when directly challenged by the High Priest "Art thou the Messiah, the Son of the Blessed One?" Jesus replied, "I am," the first and only time when, according to Mark, He formulated the claim in express words. On this His own confession the Sanhedrin adjudged Him guilty of blasphemy, and after being overwhelmed with brutal insults He was hurried off to be tried before the Roman governor,

Pontius Pilate.

Luke, whose account of these events is largely independent of the other two Synoptists, describes the religious authorities as laying three distinct charges against Jesus, out of which Pilate selects for following up the charge that He called himself "Christ a king." To Pilate's question whether He did indeed claim to be King of the Jews He returned only an ambiguous reply. What follows is in effect an account of the struggle in Pilate's mind between his conviction that his prisoner was an innocent man and that it was "through envy" that the high priests had sent him for trial, and the fear lest by offending the Jews he might be involved in a riot at Jerusalem and a charge of maladministration at Rome. As a last resource he threw on the crowd the responsibility of choosing whether they would have Jesus or another prisoner, Barabbas, a bandit, released to them. When they had chosen Barabbas and Pilate asked what then was he to do with Jesus, the shout went up, "Crucify him," and Pilate gave sentence that it should be as they demanded.

The Gospel narratives present Jesus as bearing Himself throughout with unswerving dignity towards men, with uncomplaining submission towards God. Deserted by His followers, betrayed by one of His Apostles, publicly denied by another, beaten and spat upon by the soldiers, jeered by the populace, crucified between two criminals, forsaken by man, and, as it seemed, by God, no form of bitterness was wanting to the cup which He drank, the cup of failure, shame, pain and death. He "obeyed unto the death of the Cross," "for the glory that was set before Him."

The Resurrection.—On "the third day," the first day of the week, the same Jesus appeared to some of those who had known Him and believed on Him, alive. And on the conviction that He rose from the dead and "liveth for evermore" the faith and life and hope of the Christian Church are founded. It is to this faith that the Gospel narratives bear collective witness, despite their variations as to the mode and circumstances of the event. The earliest and the strongest evidence for the Resurrection of Jesus is provided by the Acts of the Apostles and the Epistles of St. Paul. The early chapters of the Acts (whatever be the date of their final composition) contain source-material which testifies to the existence, very shortly after the death of Jesus, of a fellowship or community of men and women for whom the verdict of the Cross had been reversed. They were bound together by a common loyalty to Jesus, a common readiness to suffer "for his name," and a common expectation of His early and visible return. That by which they were animated and sustained was the belief that He was alive, and apart from such a belief there is no explanation to be given of the existence of such a community. Evidence of the vividness and impressiveness of this conviction is provided in the conversion of Saul of Tarsus, for which we must find one of the predisposing causes in the tenacious witness borne to the Resurrection by the disciples whom he had "haled and committed to prison." Some 20 years after, when writing to the Corinthians, Paul summarizes part at least of the Gospel which he had been taught when he became a Christian and which he in turn transmitted to others; and in the short list of points he includes the fact that Christ "hath been raised on the third day," and goes on to recite a list of persons to whom He had appeared—Peter, the Twelve, more than five hundred brethren at once, James, all the Apostles, himself. But the fact or event of the Resurrection is for Paul only the beginning of a new and risen life for Jesus of which His followers have experimental proof in daily life and in victory over the world and sin. The living Saviour is even more real to him than the historical fact that He had risen from the dead. And Paul is not alone; the Epistle of Peter, that to the Hebrews and the Apocalypse bear witness to the like conviction confirmed by the like experience.

The real historical evidence for the Resurrection is the fact that it was believed and preached, and that it produced its fruit and effect in the phenomenon of the Christian Church, long before any of our Gospels were written. And it is in the light of this fact that the narratives of the Evangelists must be read. All three attest the fact that Jesus rose from the dead. Mark's Gospel breaks off before recording any appearance to His disciples. Both Luke and Matthew record several occasions on which He so appeared; but they severally reproduce different traditions. The appearances which Matthew describes take place with one exception in Galilee whither he reports that the apostles were instructed to proceed; Luke, on the other hand, records appearances in Judaea only, and seems even to be at pains to remove the allusions to Galilee. The two traditions are not mutually exclusive, but if one only corresponds to the facts, the Jerusalem one is probably to be preferred. Close examination discloses other discrepancies between the narratives; but these do not affect the central witness which they convey, "The Lord is risen indeed, and hath appeared." The detail to which the greatest significance attaches is at the close of the story of Emmaus, "He was known of them in the breaking of bread," the germ of later Eucharistic practice and Eucharistic experience.

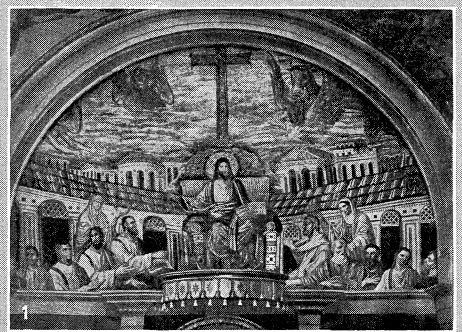
EARLY LIFE AND TEACHING

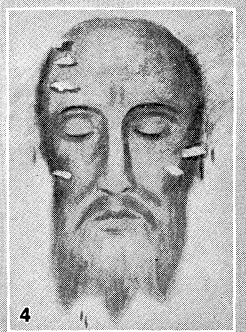
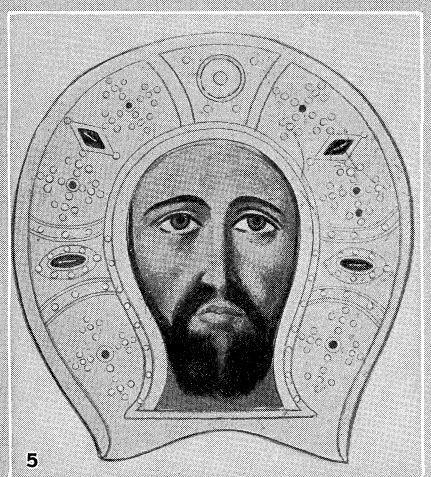
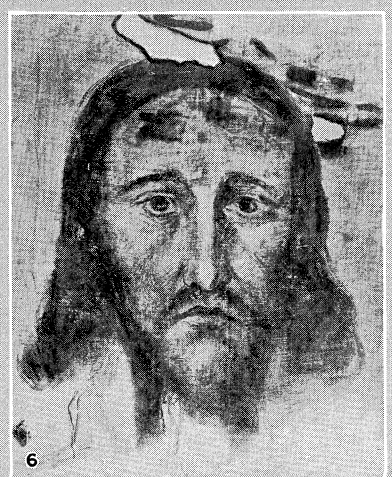
His Birth and Boyhood.—Mark's Gospel opens when Jesus "began to be about thirty years of age." It is to Matthew and Luke that we owe all that is reported about the period before that. Throughout this section the two narratives are independent of one another, Luke being the more copious of the two. He relates the promise of the birth of a son first to Elizabeth, then to Mary, and the visit of Mary to Elizabeth. Then he describes the birth first of John the Baptist, then of Jesus, and completes his record with an account of the presentation of Jesus in the Temple after His circumcision and of His visit to the Temple with His parents when 12 years old. Luke reserves to a later point the genealogy of Jesus, with which Matthew opens his Gospel; and whereas the former carries the list back from Jesus who was "as was supposed, the son of Joseph," to Adam "the son of God," the latter starts from Abraham and works down to Joseph "the husband of Mary, of whom was born Jesus which is called Christ." Matthew then describes the birth of Jesus (without any foregoing Annunciation), the visit of the Magi, the flight into Egypt and the return to Nazareth.

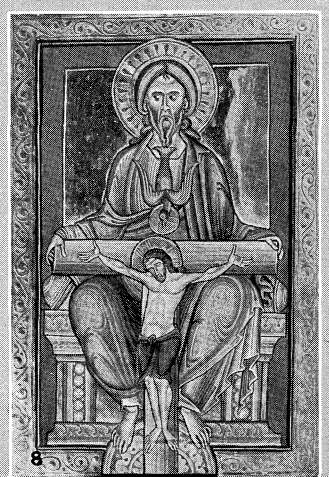
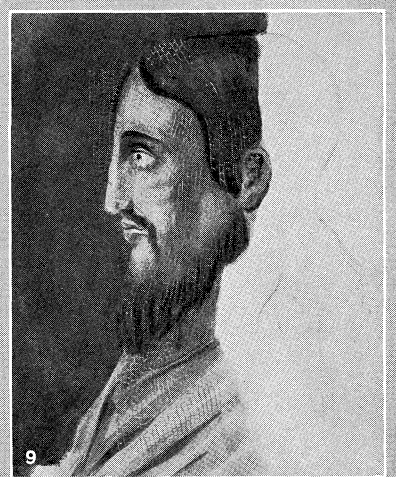
There can be no doubt that both the First Gospel and the Third —in the form in which we have it—represent the birth of Jesus as supernatural in character. His mother was betrothed to Joseph, but still a virgin when He was born. With regard to Luke's account, however, it is possible that the passages which provide the evidence to this effect represent later insertions by the hand of the Evangelist himself. And while the story of the Annunciation in Matthew emphasizes the Messianic rank and function of the son who is to be born rather than what we should mean by the Divine Sonship, both Gospels have this in common that though ascribing supernatural powers to Jesus, they neither describe nor exhibit Him as other than man. The emergence of a high conception of Christ's Person which led ultimately to the acknowledgment of His Divinity took place before either of these Gospels was written, but it proceeded along different lines, and apparently without any reference to or inference from a Virgin Birth, which does not appear to have formed part of the Apostolic preaching. Neither Paul nor Mark betrays any knowledge of the tradition. It follows that it did not form an essential factor in the presentation of Jesus which we find in Mark or in the interpretation of Him which we owe to Paul. It is probable that "Luke became acquainted with the tradition for the first time, either when he was in process of writing his Gospel, or immediately afterwards. The First Gospel presupposes the Virgin Birth tradition, which had probably been known to its readers for some time, sufficiently long for problems to be raised and for difficulties to be started" (Vincent Taylor).

His Work and Teaching.—Mark has preserved but little of the teaching of Jesus compared with Luke and Matthew, who have incorporated in their Gospels large sections of the discourse-document known as Q as well as other discourse material which each of them had received independently. The earliest collection of such material may possibly have been made by Luke at Caesarea about A.D. 43.

Jesus was primarily conspicuous in the eyes of His contemporaries as a healer and a teacher. When He was moved with



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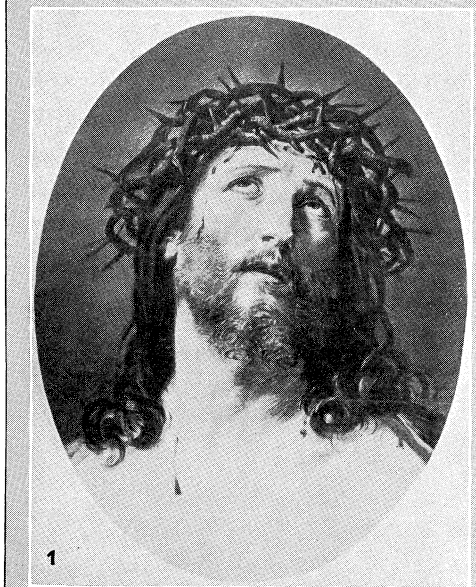
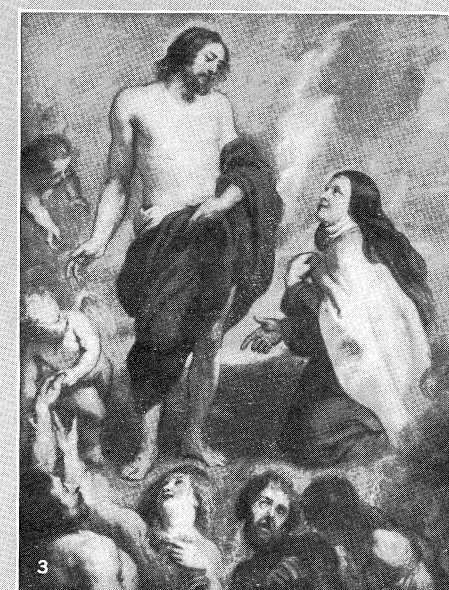
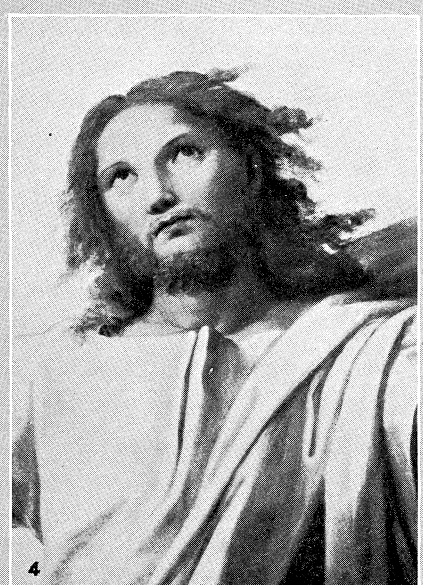
REPRESENTATIONS OF JESUS CHRIST 2ND TO 17TH CENTURY

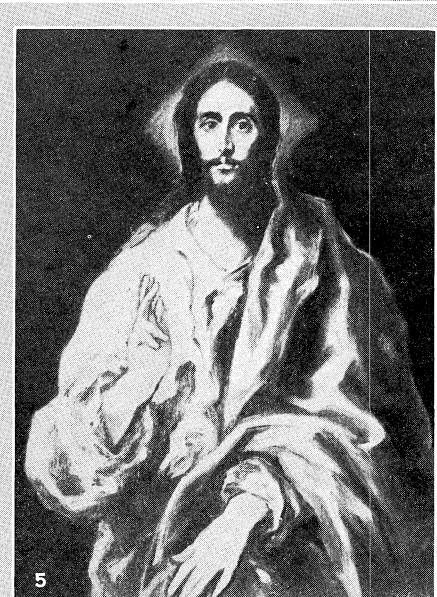
1. Mosaic of "Christ Enthroned"; 4th cent. Church of Sta. Pudenziana, Rome
2. Right hand panel of altar-piece, "The Crucifixion," by Roger Van der Weyden (1400–64), Flemish. The Prado, Madrid
3. "Division of the Sheep and Goats"; Byzantine mosaic of the 6th century. Church of S. Apollinare, Nuovo, Ravenna, Italy
4. Painting on cloth in the Sacristy of St. Peter's, Rome. The definitely ascertained history of this piece reaches back to 2nd century
5. Head of Christ painted on cypress wood; by tradition attributed to St. Luke, but probably 3rd century. Vatican Library, Rome
6. Painting on cloth of the head of Christ; 2nd century. Church of S. Bartolomeo, Genoa
7. "The Good Shepherd," early Christian conception of Christ without a beard; 3rd cent. Lateran Museum, Rome
8. "The Trinity," from a German illuminated manuscript; 12th–13th cent. Pierpont Morgan Library, New York
9. Mosaic of the head of Christ, from the Roman Catacombs
10. Cloth bands in which are woven pictures of incidents in the life of Christ; Egyptian or Syrian, 5th–6th cent.
11. Palestine Coptic ivory carving, "The Ascension"; late 6th or early 7th cent.
12. Coins in use during the reign of Justinian II. (8th cent.), showing the image of Christ
13. Byzantine cloisonné enamel, of Christ; late 11th cent.

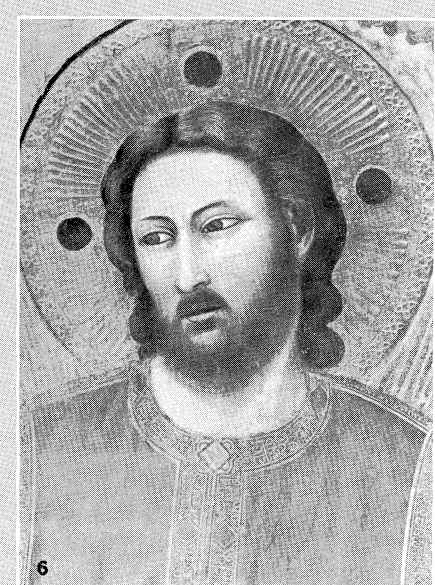
JESUS CHRIST











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PAINTINGS OF JESUS CHRIST, FROM THE 14TH TO 17TH CENTURIES

1. "Ecce Homo," pastel by Guido Reni (1575–1642), Italian. In the National Gallery, London
2. "Christ at Emmaus," Rembrandt Van Rijn (1606–1669), Dutch. In the Louvre, Paris
3. "St. Teresa Praying to Christ," Peter Paul Rubens (1577–1640), Flemish. In Royal Museum, Antwerp
4. Head of Christ, from "The Transfiguration," Rafaello Sanzio (1483–1520), Italian. In Vatican Gallery
5. "Christ," by El Greco (Domenico Theotocopuli, *c.* 1542–1614) of the Spanish School. In the Cathedral at Toledo, Spain
6. Detail, head of Christ, from "The Last Judgment." Giotto di Bondone (1267?–1337), Italian. In the Arena Chapel, Padua

compassion for the multitude "he began to teach them many things." He is constantly presented as "teaching" in the synagogues, in a house, in the Temple, by the lake-side; and His teaching was effective—"the common people heard him gladly." There was novelty in it, not only in its contents but in its quality. He "taught as One having authority, and not as the scribes." So He was both addressed and described as the Teacher, as John was described as the Baptizer. When men addressed Him as "Rabbi," they gave expression to the respect they felt for Him, His character and His teaching; though it is an anachronism for us to refer to Him as "a Jewish Rabbi" since it was only after the fall of Jerusalem that the title took on its modern connotation.

His Task.—It is well to try to realize the nature and magnitude of the task which Jesus set Himself as a Teacher, measured as it may be partly by the teaching itself and partly by what He has accomplished at least for a section of mankind. It was a task of almost incalculable difficulty, nothing less than to give to plain, matter-of-fact men a vision of reality which would become for them a permanent factor of experience and an inspiration for ethical development. It was to lift thought, feeling and aspiration in such men from the level at which they are bounded by the horizon of this present life to the level they attain when that horizon disappears. It was to reveal and commend the possibility of a "life" of a different quality from that which is nourished "by bread alone," a life natural to the family of God, alike in its joy, its ethical character and its permanence. And He had to do this, making use not only of a language already familiar to His people, but of thought-forms with which they were familiar, however inadequately they might body forth His own conceptions. Illustrations may be found in "the Kingdom of God" and "the Son of Man," regarding both of which He had much to say, though both of them brought up from the past associated ideas which did not necessarily form part of His own conception.

The Kingdom of God.—The ministry of Jesus opened with His arrival in Galilee proclaiming the Gospel, the great and good news of God, that "the time is fulfilled and the Kingdom of God has drawn near," and much of His recorded teaching was devoted to instruction about the Kingdom, its character, its incommensurable value and the conditions of belonging to it. The interpretation of the phrase which commends itself to many scholars is "the sovereignty of God." But that is altogether too abstract to do justice to the conception of Jesus. He presents the Kingdom as something which is both sought and given, both entering into and entered by men, as destined to arrive in the future yet actually within reach of men now, to arrive one day like a flash yet to grow quietly as the seed grows to the full corn in the ear. We can only do justice to a conception so plastic by recognizing it as involving both the rule and the realm of God; and though it is a mistake to identify the Kingdom with the Church, the Church is the nearest approximation in human life to the fulfilment of the idea. The Kingdom consists of persons who enter it and live within it in happy acceptance of the rule of God and in loyal relation with one another. Thus it is a society, divinely constituted and divinely controlled. It is thus one aspect of the highest good and men are urged to seek it before all else, to count no cost too great to pay for securing it. At the same time it is a thing given, given as the highest conceivable gift by a Father to His children. It has a consummation in the future, being nothing less than the world-purpose of God: and yet it is present already. Its distance is measured not by time, but by a man's moral preparedness to receive it; its blessings can be experienced not only "in the coming Age" but "at this present time." It would be only in accordance with the Jewish habit of identifying the king with his people if we said that the Kingdom had come because He, the King, had come. And it took visible form from the moment when two or three were gathered together in His name, that is, in a common relation to Jesus, as He was known.

The Soul or Higher Life.—Jesus similarly inculcated the incommensurable value of the human soul, the human personality as capable of acquaintance and contact with the unseen world of spiritual reality. He represented as the greatest conceivable disaster the loss of that organ or faculty, as the highest conceivable ambition the saving or preserving of it. Again, no cost was to be reckoned too great for the securing of this, the highest good conceived in its individual character. "What shall it profit a man if he gain the whole world and lose his own soul?" And the way to save his soul, his true self, was for a man to treat it as a farmer treats his seed, to be ready for sufficient reason to throw it away. "To one who will think concretely of human relations Christ's paradox, 'He that saveth his life shall lose it,' reveals itself as a simple commonplace of experience, expressing the self-transcendence of personality" (McMaster).

Sin.—It is from this point of view that we can best approach the teaching of Jesus on the subject of sin. He saw sin as the great danger, and the great injurer of human happiness; it destroyed or jeopardized the highest good, whether in the present or in the future. In His handling of the subject, however, we note a distinction of great importance. In regard to actions in which the man himself is the chief or primary victim, or dispositions which employ the organs of the body as instruments of evil, Jesus emphasizes not so much their sinfulness as their danger. They destroy or jeopardize a man's opportunity of "life"; they endanger his participation in the highest good. And they are therefore so serious, so alarming that in order to avoid the danger a man would wisely cut off the member which is for him the organ of evil.

Under this head fall most of those actions or dispositions which even now men commonly reckon as "sins." But Jesus gave a wide extension to the field covered by the term as well as a much deeper conception of the consequences of sin at their worst. The stress laid by the Law, especially as interpreted by some of the Pharisees, upon ritual purity and ritual cleansing encouraged the view that what "defiled" a man was contact with certain external things. This rendered him ceremonially "unclean," disqualified for worship and sacrifice. Jesus, on the other hand, while He emphasized the fact that the dispositions which prompted to acts of sin were as culpable in the sight of God as the acts themselves, swept away the whole theory of ritual defilement, and proclaimed that what really "defiled" a man, and disqualified him for worship or fellowship with God, was what "came out of him," the expressions in action of a character centred upon self and averse from God. And in the list which He gave of the things which thus disqualify a man Jesus made very significant additions to what had been branded as forbidden by Moses and by most moralists. He added such things as envy, insatiableness, vituperation or railing (A.V. "blasphemy"), insolent superiority and moral insensibility. The last of these corresponds to "the sin against the Holy Ghost," something for which there can be no forgiveness, the victim of it having rendered himself impervious to the arrival of mercy. The others are all cases of injury done to the happiness of human individuals or of groups. In a word, morality is changed from a system of commandments and prohibitions whose justification is hid from men, into a system for the protection of the true welfare and happiness of the individual and of the community. If whatever injures these is what is now branded as "sin," it means that God Himself has taken these under His protection.

God.—Jesus took as the basis of His teaching the conception of God as it had been developed and moralized by the prophets from the 8th to the 6th centuries B.C. He was a God who is one, who has character and whose character is known—"a God full of compassion and gracious, slow to anger, and plenteous in mercy and truth . . . and that will by no means clear the guilty," a God who for very love demanded goodness in His worshippers. Sin was not less truly sin because, as we have seen, Jesus emphasized those aspects of it which infringed the happiness of men rather than the honour of God. And the Divine reaction against it was not to be thought less stringent when Jesus completed the work of the prophets by concentrating men's thought on the Fatherhood of God and making that central to His interpretation of life. The idea of divine Fatherhood had not failed to make its appearance in the Jewish scriptures, canonical and uncanonical, as indeed it appears in many religions. But the allusions are rare, and most of these perfunctory. Jesus does not appear to have

made the Fatherhood of God the subject of definite teaching. He did not argue about it; He did not attempt to prove it; but He recognized and employed the conception as no one had ever done before Him, as the dominating and normative aspect of God in His relation to men. On His lips the name ("the Father," "My Father," "your Father") displaces almost entirely every other name for God. And that it is no mere title appears from the two facts—first, that the gratuitous love and faithfulness which the name connotes represent precisely the aspect of the Divine character which finds special emphasis and illustration in His teaching, and, secondly, it is the further and ultimately the complete realization of Sonship to this Father in which His followers are invited to find the motive and goal of Christian conduct. For while Jesus assumes that God is the Father of all men, He does not assume that all men are His sons. The relationship is for men potential. It requires to be realized in thought and practice, recovered through "repentance." One aspect of the highest good was to "know the Father," and of this knowledge Jesus Himself was the indispensable organ and mediator. He and He alone had the power to communicate it, and it lay with Him to determine to whom the revelation should be made. The fourth Gospel crystallizes the whole situation when it reports Jesus as saying "He that hath seen me hath seen the Father."

Jesus' Ethical Teaching.—The ethical ideals of Jesus differed radically from those of Moses in that they were not embodied in any code of commandments or prohibitions. He ought never to have been presented to the world as a lawgiver or a legislator; Paul, in fact, shows profound affinity with his Master when he so emphatically lays down the principle, "the written code killeth." Jesus promulgated only one law which was of universal application, binding on all men in all circumstances—"thou shalt love." This was a demand for the complete reversal of the current of natural human interest and ambition. Hitherto directed to the self, its well-being, safety and happiness, it is now to be directed to the not-self. And the not-self is comprehensively analysed into two objects, God and our "neighbour," that is to say, the man who is thrown across our path. The sole universal demand or command of Jesus is that men shall care for God with all their heart and mind, and that they shall care for their "neighbour" as they care for themselves. Other utterances which take the form of precepts or commandments either convey in reality urgent advice ("Seek ye first the kingdom of God") or apply like "Sell that thou hast" to the case, any case, where earthly possessions are choking spiritual instincts; or, like "Turn to him the other cheek also," are startlingly vivid illustrations of the kind of conduct which may be expected of one who truly cares for his neighbour as he does for himself. For such a one the motive of personal rancour or revenge has ceased to operate. He will no longer claim what is granted to him by the Mosaic legislation, "an eye for an eye and a tooth for a tooth." Once more Paul has seized the real meaning of this teaching, "Why do ye not rather put up with injury, why do ye not rather submit to being defrauded?" The ambition of Christ's followers in such circumstances is expressed in the saying "if he hear thee, thou hast gained thy brother." It follows also that it is mistaken and vain to look to the recorded teaching of Christ for rules to guide men in circumstances which He did not contemplate, and in particular, in respect of political and economic problems which were non-existent in His time. That is not to say that Jesus has no guidance to give in these matters. He has left no written code, but those who have accepted His one commandment can have conscience and judgment so educated by His spirit that the application of the law of love to any given circumstances is within reach of their discovery.

The Future.—Under the influence of the Apocalypses the Jewish religious hopes of the future had taken a largely conventional form. The final scene in a series of dramatic pictures represented the catastrophic end of the present Age or World-order. It was associated with a day of judgment when the righteous would be finally separated from the unrighteous, and was to be connected with or preceded by the coming of the Messianic Son of Man "with the clouds of heaven." Prior to that, however, there was to be a time of terrible trial and tribulation for God's people, the "woes" antecedent to the Messiah's coming. The reward of the righteous was conceived largely in terms of material prosperity and happiness, the punishment of the wicked in terms of physical suffering. It is exceedingly difficult to bring all the recorded utterances of Jesus on the subject into any single and coherent view. It is far from improbable that even before the material for our Gospels was collected there were two schools of thought in the Church, the one predominantly interested in the catastrophic aspect of the Kingdom's coming, the other in the evolutionary and ethical aspect; and that according to the prevailing interest the material received emphasis and expansion. Still, it is not possible to eliminate entirely either the catastrophic or the evolutionary form of expectation from the teaching of Jesus, and we must be prepared to recognize a paradox or seeming contradiction in the view which He held. But these points are to be noticed. Jesus no doubt began by sharing the conventional anticipations of His time. But up to a certain point in the unfolding picture (and that was the point reached in His experience) He was able to criticize these anticipations, and did so in the light of two convictions. The first was that the Kingdom was essentially and wholly spiritual; this led Him to discard firmly and completely all forms of nationalistic and of eudaemonistic hope. The second, which would be a corollary from His Messianic consciousness, was that in a true sense the Kingdom had already arrived. The conditions and methods of its growth were evidently dictated by its spiritual character. Nevertheless, it was obviously incomplete, whether it were looked at extensively or intensively. And it was also part of its character that it comes from the other world. It is not the result of human activity, but a gift of God. It need not surprise us if, the experience of Jesus stopping where it did, He continued to expect a consummation which would be sudden and catastrophic and would include His own visible return. He described the coming of the Kingdom as impending, yet not immediate, and clothed the expectation of His own return in the traditional symbolism of the Danielic Son of Man.

His Self-consciousness.—How Jesus thought of Himself is a question of great difficulty and delicacy, and we must be prepared to find some promising lines of approach yielding disappointing results. That He ranked Himself as a prophet appears from a few passages such as "It cannot be that a prophet perish out of Jerusalem." He frequently referred to Himself as the Son of Man; but while this must be maintained in face of influential opinions to the contrary, the result for our purpose is less important than we might expect, for the possible meanings of the phrase are as numerous as the sources from which it may possibly have been derived. They range from simple "man" through "man in his human weakness" and the representative "Man" to the supernatural man from heaven foreshadowed in Daniel. If we had to postulate one source and one meaning for the phrase as used by Jesus of Himself, it would probably be found in Psalm lxxx., where the poignant appeal to God for the redemption of Israel runs out on the hope of a "son of man whom thou madest strong for thyself." But possibly what commended the title to Jesus was just the many-sidedness of its meaning; it set men questioning about Him and sent them to seek for an answer in the literature of Jewish hope.

The case is not very different in regard to the title "Messiah." Jesus did not, according to the Synoptic Gospels, proclaim Himself to be the Messiah; but He accepted the acknowledgment that He was the Messiah when it was made by Peter. He admitted it to the high priest at His trial, and from His Temptation onwards we see Him discharging a vocation which could best be described in terms of Messiahship, the vocation of one anointed by the Spirit of God and equipped for the fulfilment of the age-long purpose of God to deliver His people. At the same time, as a description of His vocation as He conceived it, the title was neither accurate nor adequate: there was not in the mind of the Jews of His time any accepted or uniform portrait of the Messiah to which He could be said to conform. That the Messiah would employ force either as a national king or in the exercise of a

Divine prerogative was a feature which was commonly taken for granted, but one which Jesus deliberately rejected. That He would teach, make disciples, forgive sins, suffer—these found no place in any form of Messianic expectation; yet these were conspicuous characteristics of His ministry. As factors common to Messianic expectation and to the consciousness of Jesus we should probably recognize the rôle of Deliverer, King and Judge, and particularly commissioned representative of God. But the meaning of the first three of these at least was so transformed in His thought that the words are little more than a shell into which He put His own content. Whether it is Peter conferring the title or Jesus accepting it, they must both be understood as employing a term which was far from expressing accurately or adequately the impression made on the one or the consciousness of the other. Jesus himself was the author of the Messianic conception which He fulfilled.

A more fruitful line of enquiry regarding the self-consciousness of Jesus begins with the recognition that He attached the highest significance both to His own presence in the world and to the attitude which men took up to Him. The beginning of a new era was to be found between John the Baptist and Himself. "Blessed are the eyes which see what ye see"—things that many prophets and kings had desired to see. The repeated references to the reasons why He had come or been sent, together with the reasons themselves testify to the same consciousness. Conversely, the privilege involved in His presence carried with it great responsibility. Men would classify themselves according as they responded or failed to respond to the appeal of His personality and His message. Those who were obtuse to this appeal would meet a fate less tolerable even than that of Sodom. Men are not in the Synoptic Gospels directly called on to "believe on" Him. Yet He looked for a faith which rested on Himself as object, a confident self-committal which involved readiness to receive all that He had to give, not merely a physical boon but His teaching and His spirit. The absence of such faith precluded Him on occasion from doing any "mighty works." On the other hand, to "receive" Him, just as "to be worthy" of Him is represented as a priceless privilege. "Whosoever receiveth me, receiveth not me but him that sent me." The thought which finds expression in these various forms is firmly embedded in the Synoptic Gospels, and involves on the part of Jesus a tacit claim of a stupendous character.

Jesus never refers to Himself as the "Son of God," and the title when bestowed upon Him by others probably involves no more than the acknowledgment that He was the Messiah. But He does describe Himself as "the Son" absolutely, and in one passage, one in which at the same time He disclaims omniscience, He sets himself as "the Son" below the Father but above the angels. Moreover, He uses the word "Father" in the same absolute way to define His relationship to God—"my Father in heaven"; "all things have been given unto me by my Father." And we find striking, because indirect testimony to the same consciousness when in the parable of the Wicked Husbandman introducing a figure which clearly represents Himself, He says: "last of all he sent his son." It is in this manner of referring to Himself and to God, and in the life He lived in entire consonance with a relation which could be so described that we discover the deepest thing in the self-consciousness of Jesus, a profound and controlling sense of a relation to God, personal, intimate and permanent, which could only be described in terms of Sonship. As there is only one person who can be called the Father, so there is only one who can be called the Son in this absolute way. And the whole tenor of His life was such as to reveal not only the Fatherhood of God but His own Sonship to the Father. It is conceivable that He did not always realize the uniqueness of this relationship, that in early life He thought of the privilege as one which He shared with other men, but that experience of life and deeper knowledge of human nature forced upon Him the discovery that in this He stood alone. The first manifestation of the Divine in Jesus lay in this that He did not suffer this singular privilege which was His to separate Him from other men. He bridged what must have been an ever widening gulf; while remaining one with God He did not cease to be one with men, in sorrow, temptation and pain; and so in all save that relation to God, which He called Sonship, and in the moral perfectness which was its emblem and its fruit.

In claiming Sonship Jesus claimed a relation to God which was on an entirely different plane from the Messiahship. The one was personal, ethical and inherent, the other functional and official. And what contributed most to the transformation of His conception of Messiahship was the linking with it of another conception of His function which was symbolized by the figure of the Suffering Servant in Isaiah. The combination appears to have been made for the first time by Jesus Himself, and He made it deliberately and completely: the redeeming work of the Messiah was to be accomplished only through suffering and death; and so he set himself to the way of the Cross, not in dumb acceptance of the inevitable, but in obedient fulfilment of the purpose and method of God, and anticipating as "the glory that should follow" the final establishment of a "kingdom" of redeemed sons of God.

The counterpart to this kingdom in which God was to rule unchallenged was the kingdom in which evil forces held sway, those spirit-forces of evil which found their summation and impersonation in Satan or Beelzebub. Some measure of control over human affairs and destiny was understood to have passed, temporarily at least, to these evil forces. "God," as Stephen put it, "handed them over to serve the host of heaven," "spirit-forces in the unseen," "the prince of this world." And Jesus claimed that the first stage in His redeeming function was already achieved. His power over the demons, the rank and file of Satan's forces, was proof that He had already engaged the "strong man" in a determined struggle, and had worsted him; a proof of the fall of this kingdom of evil was found by Him in the success of the disciples whom He sent forth to preach and heal, and was expressed in similar terms. But Jesus also connected Himself with other aspects of redemption. "The Son of man came not to be ministered unto but to minister, and to give his life a ransom for the sake of many." The language belongs to the same field of thought as the prophecies about the Suffering Servant, whose soul was made "a sin-offering," "by whose stripes we are healed." The picture is that of an ideal Israel suffering for the sins of actual Israel and by that suffering redeeming their fellow-men. In that picture Jesus saw a foreshadowing of Himself, and in the results of the Servant's suffering a promise of the results of His own.

Yet another field of thought in the Old Testament provided another formulation for this factor in His self-consciousness. When on the occasion of the Last Supper He took the cup and said "This cup is my blood of the new covenant," He brought Himself significantly into connection with the "new covenant" which according to Jeremiah God would one day establish between Himself and His people (the *Zadokite Document* of Schechter shows that this expectation was still cherished in some quarters). His words suggested that the new covenant was about to be sealed with His blood as with the blood of sacrifice.

HIS "GRACE"

The Impression Jesus Made.—Jesus' words and deeds (and it must be remembered that only a fraction of them have been handed down in the Gospels), together with all the subtle play of His personality upon those whom He had chosen to be "with Him," produced a profound impression on His followers. It was indeed an impression of such a kind that even in His lifetime they entered upon a personal relation to Jesus which may be rightly described as "believing on Him" (Joh. Weiss). In analyzing this impression probably the first thing to recognize, as it was first and most widely felt, was His "grace." Luke, describing the natural growth of the boy, records that "he increased in wisdom and stature, and in grace before God and man." And the Synoptic Gospels provide many illustrations of that attractiveness which is the by-product of "grace." Negatively, there was nothing about Him of superiority, of aloofness, of self-consciousness or of indifference to the common life of common men. Positively, there was a ready sympathy, an understanding tenderness, a way of meeting men, as if each one, even the degraded and the

outcast, had already a place in His interest. We see the effect of this in the way in which men and women "sway to His orbit as He moves." It bespeaks a deep-seated characteristic, a radiant adequacy which is not for itself alone, but continuously bestows itself in unconscious enriching and enheartening of others. Grace is in fact the atmosphere which love creates around itself. And the fourth Gospel, which so often concentrates to the glittering pin-point of a star what we have seen shimmering like a nebula in the Synoptic Gospels, sums up the impression produced by a thousand contacts, "We beheld his glory . . . full of *grace* and reality"; John thus witnessing to the discovery that the Divine glory was no longer to be sought in material splendour but in qualities of character.

His Authority and Power.—A second factor in the impression made by Jesus which was felt from the beginning and increasingly to the end was power, power greater in intensity and wider in scope than had been felt before, and yet wholly independent of force, prestige, social or ecclesiastical position or any of the ordinary sanctions of authority. This power was felt in Him—witness the testimony that "He spake with authority and not as the scribes." The scribes claimed and exercised authority of a certain kind, *coercive* authority, to an unusual degree. What men recognized in Jesus was authority of a different kind, *persuasive* authority, the authority of truth pressed home by a unique personality. Further, men observed Him exercising power over the unseen world, over demons and so over disease, and by an extension of the scope of such power easier for them to accept than for us, power over forces of nature, regarded as not wholly impersonal. They saw in Him many different forms "the supremacy of the spiritual forces of the world to an extraordinarily marked degree over the material." They felt His power, they observed it, and they also heard Him claim it, authority to interpret (and to interpret so as to transcend) the sacred Law of Moses, authority to forgive sins, authority to fix the destiny of men in accordance with the attitude which they took up towards Himself. Men must have seen in him such spiritual power and such consciousness of authority that they could without amazement hear him say, "All things have been delivered unto me of my Father."

His Moral Supremacy.—A factor in the impression which would be at first only surmised as moral superiority but afterwards realized with startling clearness was the moral supremacy of Jesus. If in all else men who knew Him felt Him to be one with themselves, they early began to feel the difference between themselves and Him in the sphere of character, and must have been led to reflect on the reason for it in His relation to God. We see its effects in the reluctance of John to baptise Jesus; "I have need to be baptised of thee, and comest thou to me?" Himself a stern ascetic he recognized in Jesus one before whose moral character he himself must bow. The like conviction due to the same cause finds expression in the words of Peter: "Depart from me, for I am a sinful man, O Lord." What was the measure of the difference? Can it be fully described as moral superiority? Or did it amount to moral perfection, without stain of sin? If we accept the witness of the New Testament as a whole, we shall have no hesitation in saying that it was the latter. That alone accounts wholly for the impression which Jesus made, and that alone is consistent with what we can discover of His own consciousness.

This supreme distinction in the character of Jesus is commonly referred to His Sinlessness. The description is not, however, a very happy one; it is better to state and emphasize the unique supremacy and perfect adequacy of His moral ideal, and then His own perfect fulfilment of that ideal. Both the nature of the claim and the justification of it are contained in one utterance, "My meat is to do the will of Him that sent me." When we acknowledge the moral perfectness of Jesus, we mean that He knew the will of God and that in the doing of it He found His greatest joy and the nourishment of the highest life within Him. His is the only character in history which abides the test of the two commandments which He re-enunciated as the great commandments of the Law. These ethical principles, which even for those who have the stimulus of His example and the inspiration of His Spirit remain an ideal towards which they flutter, were for Him the sole motives of daily life. They continuously governed His relation to God on the one hand and to men on the other; and the death which was the natural and accepted issue of the kind of life He lived in the kind of world that man has made, was but the supreme expression of the twin principles of perfect love to God and perfect love to man. And the man who loves God and man perfectly is the perfect man.

In Fashion as a Man.—Certain words of Peter spoken at the time of Pentecost, "A man approved of God," describe Jesus as He was known and regarded by His contemporaries. He was "found in fashion as a man," that is, in all particulars which presented themselves to outward observation He appeared and behaved as one of the human race. He "was made man." The Gospels leave no room for doubt as to the completeness with which these statements are to be accepted. From them we learn that Jesus passed through the natural stages of development, physical and mental, that He hungered, thirsted, was weary and slept, that He could be surprised and require information, that He suffered pain and died. He not only made no claim to omniscience, He distinctly waived it. This is not to deny that He had insight such as no other ever had, into human nature, into the hearts of men and the purposes and methods of God. But there is no reason to suppose that He thought of the earth as other than the centre of the solar system, of any other than David as the author of the Psalms, or did not share the belief of His age that demons were the cause of disease. Indeed, any claim to omniscience would be not only inconsistent with the whole impression created by the Gospels, it could not be reconciled with the cardinal experiences of the Temptation, of Gethsemane and of Calvary. Unless such experiences were to be utterly unreal, Jesus must have entered into them and passed through them under the ordinary limitations of human knowledge, subject only to such modifications of human knowledge as might be due to prophetic insight or the sure vision of God.

There is still less reason to predicate omnipotence of Jesus. There is no indication that He ever acted independently of God, or as an independent God. Rather does He acknowledge dependence upon God, by His habit of prayer and in such words as "this kind goeth not forth save by prayer." He even repudiates the ascription to Himself of goodness in the absolute sense in which it belongs to God alone. It is a remarkable testimony to the truly historical character of these Gospels that though they were not finally set down until the Christian Church had begun to look up to the risen Christ as to a Divine Being, the records on the one hand preserve all the evidence of His true humanity and on the other nowhere suggest that He thought of Himself as God.

Confirmations.—We are not left without valuable confirmation of certain aspects of the character of Jesus which have presented themselves in the Gospels. Peter in the Acts describes Him, still in language which falls short of the faith of the later Church, as one whom "God anointed with the Holy Ghost and with power; who went about doing good and healing all that were oppressed by the devil." It must have been out of a wide knowledge of the things said and done by Jesus that Paul drew his conclusions about Him, and the salient features of His character and conduct. He was one who "pleased not himself"; "ye know the *grace* of the Lord Jesus"; "purity and disinterestedness," these were qualities of His character (2 Cor. xi. 3). "Endurance" and "obedience," "deference and considerateness," these were displayed in His life and conduct. Paul further attests the belief that "he knew no sin," Peter that He "did no sin," the writer to the Hebrews that though tempted at all points like as we are, He was "yet without sin." And however we may account for it, Paul's ethical teaching is in closest harmony with the ethical teaching of Jesus. Both make love the central and sufficient motive of their system: "love is the fulfilling of the law." And in the application of the central principle to the details of conduct there is a startling combination of similarity of result with marked difference of form; even the "desire not to give needless offence" which is so characteristic of Paul reproduces a feature in the conduct of Jesus. A portrait of the ideal man constructed from the teaching of Jesus would be

indeed hard to distinguish from a similar portrait drawn from the materials supplied by St. Paul. Unless we are to postulate two creative minds working on the same subject and independently arriving at practically the same unique result, we must regard Paul as confirming, all the more emphatically because indirectly, the ethical teaching of Jesus as recorded in our Gospels.

The Interpretation.—The phenomena which we have been collecting and classifying taken together constitute the fact of Jesus, the fact whose impact on certain of His contemporaries is necessary to account for the emergence of the Christian Fellowship or Church. We have now to recall the successive attempts to interpret this fact, to place it rightly in its context of human history and Divine purpose. Jesus Himself invited reflection on this problem: "Whom say men that I am?" And the Synoptic Gospels record the earliest stages of the solution. The people whose knowledge of Him was comparatively superficial said that He was a prophet, or "one of the prophets" specifying certain names. And Jesus accepted the description. Those whom He had chosen to be "with Him" recognized in Him "the Messiah," employing, as we have seen, the highest category which could be applied to a human being, yet one which fell short of exhaustively describing the totality of the impressions He had made upon them. When in these Gospels we find Him also referred to as "the Son of David" or "the Son of God," nothing is really added to the description of Him as Messiah, as even the second of these phrases is drawn from the traditional description of the ideal king. It seems probable that He accepted the designation "the Messiah" even as they conferred it, with a sense, much deeper than theirs, that it was the best available, and that it was a true conception only in so far as its contents were such as He put into it.

PAUL'S INTERPRETATION

But neither "prophet" nor "Messiah" gave a complete account of what the disciples had felt and found in Jesus. In particular, the ideas connected with the Suffering Servant and with Sonship were still waiting to be subsumed under some larger, loftier conception. Not till after the Crucifixion and the Resurrection were even all the materials ready for a complete and final interpretation of Jesus; and even then we see the primitive Church fumbling after such an interpretation. He was "a Prince and a Saviour," "Lord and Christ." But even here the title Lord is at the stage of transition from its use as an address of courtesy in the Gospels to its use in the fullest religious sense by Paul. Nevertheless, "the language of words always lags behind the inner secret of Christianity," and we see in the Acts evidence of that "surrender of soul which precedes the articulate utterance of the creeds." Men and women "believed on" Jesus even before they were prepared to give dogmatic expression to their faith: they looked up to Him as in Heaven, "at the right hand of God"; they offered prayer to Him, and worship, which probably means that they reverently sought to realize His fellowship in the breaking of bread; they were inexpressibly grateful to Him because, as they believed, He had died "for their sins." Yet, in the matter of dogmatic interpretation there is no evidence that they got beyond Peter's "God was with him." It was left to Paul setting all he knew (and it was not little) of the life and teaching, the character and personality, of Jesus, in the light of Christian experience, to draw the next of the widening circles, and include much that the previous interpretation had omitted. He proclaimed that at and through the Resurrection Jesus had been publicly instated as Son of God with power; and if the phrase has not wholly lost its official Messianic connotation, it certainly includes a reference to the personal Sonship, which Paul elsewhere makes clear by speaking of Him as God's "own Son" "the Son of his love."

It may not be possible to decide whether it was the primitive community or Paul himself who first put full religious content into the title "Lord" as used of Christ. Probably it was the former. But the Apostle undoubtedly adopted the title in its full meaning, and did much to make that meaning clear by transferring to "the Lord Jesus Christ" many of the ideas and phrases which in the Old Testament had been specifically assigned to the Lord Jehovah. God "gave unto Him that name that is above every name—the name of 'Lord.'" At the same time by equating Christ with the Wisdom of God and with the Glory of God, as well as ascribing to Him Sonship in an absolute sense. Paul claimed for Jesus Christ a relation to God which was inherent and unique, ethical and personal, eternal. While, however, Paul in many ways and in many aspects, equated Christ with God, he definitely stopped short of speaking of him as "God." While the Hellenic world light-heartedly added to its pantheon one after another of its mystery-heroes or saviours of their country, the Christian Church was withheld by the conception of God which it inherited from Judaism, from giving this form of expression to its conviction regarding Jesus and its experience of the living Christ until at least the close of the first century. That final step in the interpretation of Jesus, is recorded, if it is recorded in the New Testament at all, in the Fourth Gospel; and it is not certain that we find it even there.

The Fourth Gospel.—We come lastly to the witness of the Fourth Gospel, placing it here not only because this Gospel is the latest of the documents relevant to our purpose, but because the writer, whoever he was, combines to a singular degree dependence on the teaching which we find in Paul with striking originality of his own. It is now generally understood that his work has much less the character of an historical record than of an interpretation of Jesus, an interpretation in the light of Christian experience and of the situation of the Church towards the end of the first century. That is not to say that "John" does not confirm, sometimes directly, sometimes indirectly, many parts of the story of Jesus which are familiar to us from the Synoptic Gospels. There are even matters on which he appears to have preserved a more trustworthy tradition than the Synoptic Gospels. But alike in the selection of the material and in the way in which it is handled the Evangelist is guided by the interpretation which has now been put upon Jesus and by his desire to commend that interpretation to men. His work is not best described as an allegory or as a series of allegories but as a series of transparencies, episodes, actions and teaching through which and behind which is seen not obscurely the glory of a Divine Being, who is the Life and the Light of men. This does not mean that the truly human nature of Jesus is either overlooked or obscured. Rather is it insisted on with emphasis; but it is treated as the vehicle for the self-revelation of the Logos which, having been in the beginning, and with God, and "divine," had entered human life and history as the Word "made flesh." It was this interpretation which took up into itself and fused into one all the factors predicated by Paul, but made a further advance upon Paul by relating the religious convictions of the Church concerning Jesus to the philosophical language and ideas of the time. But the identification of Jesus with the Logos was not tantamount to recognizing Him as "God." Neither the "Word of God" in Hebrew nomenclature nor the Logos in Greek speculation was "God," though it was definitely "divine." And it is not certain that even the words which Thomas addressed to Jesus (xx. 28) meant what they suggest in the English version. They may mean, "it is Jesus himself, and now I recognize him as Divine" (Burkitt). If so, the final step in the interpretation of Jesus, the recognition of his Deity belongs to the truth into which the Spirit has led the Church since the New Testament was complete. The New Testament enshrines a rich and variegated record of the experience and teaching of Jesus, of the impression on His followers into which these were translated, of the convictions to which the impression and their own experience of the living Christ gave rise. And if the intellectual conclusion drawn within the first century is most truly expressed by saying that the Church gave Jesus "the value of God," it is clear also that there was still something in the record waiting to be subsumed in a final interpretation, the fact that Jesus has given new values to God. If God were to appear upon earth to-day, the Christian world would expect him to be like Jesus.

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Basileia Theou (1926); E. F. Scott, *The Kingdom and Messiah* (1911). (*c*) Interpretation: C. Gore, *The Doctrine of Christ* (1922); B. Latham, *Pastor Pastorum;* W. M. Macgregor, *Jesus Christ the Son of God* (1907); G. A. Smith, *Jerusalem* (1907); A. E. Rawlinson, *The New Testament Doctrine of the Christ* (1926); Joh. Weiss, *Christ, the Beginnings of Dogma* (1911); *Jesus im Glauben des 19ten Jahrhunderts;* Leipoldt, *Das Gotteserlebniss Jesu* (1927); H. R. Mackintosh, *The Doctrine of the Person of Christ* (1912); A. Schweitzer, *The Quest of the Historical Jesus* (2nd ed., 1911) (an analytic account of the modern treatment of the subject). (C. A. Sc.)

THE RELIGIOUS AND HISTORICAL BACKGROUND[1]

The land in which Christianity arose has never been an isolated one, least of all in that age when, by common consent, a new era was inaugurated in human history. Indeed, Galilee itself, the home of its Founder, lay in close proximity to the Greek cities of the Decapolis; it was more susceptible to external influences than was Jerusalem, with its temple and its stricter Judaism, and well deserved its old name "Galilee of the Nations." Two great "positive" religions (*i.e.,* religions explicitly due to personal founders) had already firmly established themselves. Of these, Buddhism (*see* BUDDHA AND BUDDHISM) under King Asoka (3rd century B.C.) had sent its missionaries as far afield as Egypt and Cyrene; but its influence seems negligible, in marked contrast to its subsequent steady conquests in the Far East. On the other hand, the religion of Persia (*see* ZOROASTER), which has become weak in the East, was far more important in the West, and directly or indirectly exerted very considerable influence on the literature of Judaism and in Asia Minor. Between all these religions many striking parallels can, at one time or another, be found; but the difficulty of dating the sources frequently makes it impossible to determine on which side the debt, if any, really lies. Thus, certain Jewish doctrines (*e.g.,* the merits of the fathers), in the form in which they are preserved, may be due to a Jewish "counter-reformation" after the birth of Christianity.

A broad survey of the Roman world reveals a more or less continuous development from the Hellenistic age to the Byzantine age, in the middle of which the novel "detested superstition," as Tacitus styles Christianity, makes its appearance as an accomplished fact. The general religious situation over that large area—the centre of gravity of which may be said to have been Egypt—was exceedingly complex. We see Stoicism, Epicureanism and a variety of mystical cults. There are a number of outstanding figures—Posidonius of Apamea, Philo of Alexandria, Seneca, Marcus Aurelius, Hillel—to name only five. Egyptian and Anatolian cults moved Romewards, and great Baals (Jupiter of Doliche, Jupiter of Heliopolis-Baalbek), with the cult of the Persian Mithras, almost reached the Atlantic. At their gates the Jews had Graeco-Semitic cults of Zeus, Apollo and Dionysus, and a "good, bountiful and compassionate Baal of Heaven"; at Gaza was "Our Lord" (Marna), and at Askalon the "Face of Baal" (Phanebal). There were anticipations of some profound change from the famous Fourth Eclogue of Virgil to the varied Messianic and cataclysmic beliefs of the Jews, and changes ensued. In the 2nd century A.D. there was the recognition at Alexandria that a new era had begun with the new Sothic cycle (A.D. 139–143). In Syria, the amazing emperor Heliogabalus (*q.v.*) was one of other signs of an oriental revival of which, apart from Christianity, the Sasanian renascence is of considerable historical importance. (*See* PERSIA, *History.*) And in India, the Bhagavad Gita was henceforth to exercise the most powerful influence depicting a Krishna who to many minds has seemed a worthy rival of the Christ who was conquering the West.

In Christianity itself the differing tendencies, sects and heresies, indicate the diversity of minds in whom the seeds of the new religion were producing growths most of which could not endure or be tolerated. (*See,* for a noteworthy example, SOLOMON, ODES OF.) "False" Messiahs, Essenes and Zealots, and especially John the Baptist, reflect in their turn significant movements. Hence if, to use a modern phrase, "reconstruction" was in the air, the fundamental facts are two: (*a*) the victory of Christianity and its progressive development amid the conditions of its age, and (*b*) the primary and impressive fact that "the stone which the builders rejected" became the foundation stone of a veritable new era (Acts iv. 11).

What was there in Jesus to achieve this result? The world has agreed to recognize sundry men of outstanding genius—Homer, Plato, Dante, Shakespeare. . . . Men of unequalled spiritual genius are to be found among the prophets, psalmists and writers of old Israel. Yet, possible though it might be to produce parallels or analogies for the several sayings and acts of Jesus, there is no record, no hint among the sages, seers and saints of his or any other age of any personality so rich as he in all that has won men's hearts. None the less, he did not stand quite alone; the story of the Gospels, set forth as it is on a relatively small canvas, its simplicity and directness, the ability of the writers to present their narratives and to interpret what Jesus meant for them—all this points to men, also uniquely gifted, and able to paint so vitalizing a picture because they stood so near to the mind of their Master. There was, in truth, a certain qualitative difference between Jesus and his first interpreters, on the one hand, and, on the other, the various reformers and reforming or revolutionary movements of his age—*see* notably JOHN THE BAPTIST (Matt. xi. 11). A certain organic unity distinguishes the personality of Jesus as described in the Gospels, and this gave Christianity, from the first, a decisive individuality despite the striking points of contact between it, its background and other religions.

JESUS AS THE LAST OF THE PROPHETS

Some centuries earlier the religion of Israel had reached its high-water mark in the "Second Isaiah" (Is. xl. *sqq.*), and more especially in the idea of the "Servant of the Lord." To Christians it has always seemed natural to pass from the great figures of that earlier age (Jeremiah and the writers and actors in the Second Isaiah), to Jesus of Nazareth, and this earlier age, like that of Jesus, cannot be isolated from the more or less contemporary events in religion elsewhere. (*See* HEBREW RELIGION, sec. 9 end, 14 end.) Similarly, the rise of the first great prophets, Amos and Hosea (8th century B.C.), the "Mosaic" age (that of the "Amarna" period) and the age of Abraham (*c.* 1st Babylonian dynasty and 12th Egyptian dynasty) are part of far-reaching changes in history, religion and civilization. Indeed, with Eduard Meyer (*Gesch. des Altertums,* i. 1, secs. 592 *sqq.*) and George Foote Moore (*Hist. of Religions,* i. p. viii. *seq.*), we may see earlier examples, *c.* 5000, and again *c.* 3000 (more recently confirmed by the discoveries at Ur) of a *simultaneity* which the latter has compared to geological epochs. Whatever be the true explanation of these striking facts, here are clearly-marked stages in man's increasing knowledge of himself and of the universe. There is a *continuity* to the rise of Christianity; a progressive development runs through the Old Testament (as interpreted by modern biblical criticism); it passes to the New, and subsequently bases itself upon the Bible. This line of development stands in contrast to the religious history of lands and peoples which fall outside it; although the comparative study of religions finds a real relationship among the ideas and beliefs of all peoples, even the most rudimentary. But the development is no mechanical one. At certain periods the clash of conflicting ideas can be very clearly discerned, so that the progressive advance is evidently due to the victory of those tendencies and ideas which, for whatever reason, were most vital and pregnant.

Viewed in the light of the history of Palestine, Jesus is the last of the Hebrew prophets. (*See* HEBREW RELIGION, sec 21.) The inability of Judaism to accept him must, therefore, be contrasted with the remarkable reorganization of the religion of Israel through the prophets, at an age (before and in 6th cent. B.C.) when the old empires of Egypt, Assyria and Babylonia, lost or were losing their old creative power. It is also important to observe that the line of development is not narrowly Hebrew, or even Semitic. The influence of non-Semitic peoples upon Palestine can be traced or suspected from ancient times to the rise of Christianity; and this religion was not so distinctively oriental in the way that Hinduism, Buddhism, and Islam have been. Even

[1]This article considers the relation of Jesus to the religious and historical background of the period, and His place in the history of religions. For a discussion of the life and teaching of Jesus, as these may be gathered from the sources, *see* the preceding article.

Islam has been indebted in its progress to Greeks and to Persians in the East (*cf.* articles AVICENNA, FARABI, KINDI), and to intercourse with Spaniards in the West. The spirituality and the fertility of thought of the great non-Christian religions deserve a much more appreciative study than they have often received, but the differences in the *rate* and the *nature* of development among all the world's religions are not without significance. At all events, Christianity, utilizing Greek and Latin thought as it grew, has found itself obliged to face problems other and more profound than those of oriental peoples. Judaism, too, though sharing the Old Testament with Christianity, and making important contributions to Western thought in and after the middle ages, has not been compelled to work out those questions, which, arising out of the whole Bible, have directly or indirectly spurred on and directed Western research. Christianity arose in a world which, in a sense, was being prepared for it. If the East had been Hellenized, the West was being orientalized. But it had to recharge, reshape, and revitalize current ideas and beliefs; and if it has progressed it is because it made an exceptionally heavy demand upon the intellectual no less than upon the moral and spiritual life of its adherents, and had to overcome powerful and well-equipped rival or hostile tendencies.

Everywhere men had been able to find in the universe, or within themselves—and in Indian thought the two are ultimately one—that which answered their needs and called forth their best. Osiris and Marduk were effective gods in Egypt and Babylonia; and in Krishna, it has been said, every Indian ideal, instinct and conviction found sanction and embodiment. Even among rudimentary religions the totems, ancestral deities and friendly spirits can be the mainstay of the social life. Throughout there are to be found fundamental resemblances. But the differences are no less fundamental, owing to the way in which the primary beliefs and ideas are shaped. There are typical needs and universal difficulties, but the closer the parallels the more significant do differences become—of this a careful comparison of treatment of the person of founders of religions affords many interesting examples. It was during the middle of the 1st millenium B.C. that there arose religions addressing themselves to individuals; but Christianity differs from Zoroastrianism and Buddhism, and also from the religion of Mohammed, by its organic connection with its Jewish environment. It carried on and "fulfilled" the great essential ideas of the parent religion. Israel had been conscious of a peculiarly intimate personal relationship with its God. The majesty and might of the Deity meant both the insignificance of the individual, but also the glory and the mission of one who had such a God as his own. Great ideas were hammered out and tested through centuries of hard and strenuous history, and from the first Christianity felt that the religion of Israel had now reached its culminating point, and that the Israel of old was replaced by the Christian body, the body of Christ.

The efforts to preserve unchanged the teaching of a Founder or to develop its essential character can be followed in the history of religions. The rapid growth of legends and miracles, and the necessity for forming a "canonical" history can be seen most recently in the rise of Babiism (*q.v.*). Moreover, the extraordinary development of Buddhism from an ethical brotherhood to an elaborate religion is "a radical transformation . . . comparable to that which out of the religion of Jesus made Catholic Christianity" (G. F. Moore). It illustrates the effort to adapt a new religion to the most diverse needs. In this process the transition from the male Avalokitesvara to Kwan-yin (Kwan-non) the "goddess of mercy" of the Far East reflects the demand for Divine female attributes, even as in the Near East, the great mother-goddesses continued to survive in the Virgin Mother. To satisfy popular needs a religion has often moved away from the plain life and teaching of its Founder; and whereas Jesus himself repudiated the suggestion that he should prove his greatness by working marvels (*cf.* Mark viii. 11 *seq.*, also the Temptation), popular religion, by demanding tangible and physical proofs of his uniqueness (*e.g.*, the Virgin birth), diverted attention from that which really made him unique. But already, earlier, in Israel, the prohibition to put God to the test (Deut. vi. 16) had to contend with popular stories of the proofs and signs of Yahweh's might, or of his readiness or ability to fulfil his word. (*Cf.* Abraham, Gen. xv. 8; Moses, Ex. iii. *seq.*; Gideon, Judges vi.; Hezekiah, 2 Ki. xviii.)

Religions tend to undergo some weakening of their earlier spiritual value. (*Cf.* Christ as a wonder-worker, or as merely an ethical teacher, or a social reformer.) But from time to time there are demands for a return to what is felt to be fundamental and essential, and the "return" can be an "advance" with an enrichment of spiritual meaning. The Fourth Gospel is a striking example of the way in which a reinterpretation, after the lapse of some decades, has been felt to be so true that the four Gospels have seemed to be a single unit even as the whole book of Isaiah, the whole Old Testament and the whole Bible have been felt by many to be single organic units, and not the highly composite works that they are. On the other hand, the return to the past illustrated in the antiquarianism of Babylonia and of Egypt, and later of the unsuccessful Sassanian revival proves that an old system must be adjusted to later conditions if it is to endure.

THE ESSENTIAL NATURE OF RELIGION

Just as the common assumption that religion, in general, sprang from some *single* element (*e.g.*, fear, ghosts, sex, or magic), is disproved by the fact that early religion is essentially a practical, social, religious system, so the higher religions, in turn, are not based upon the utterances and acts of a single Founder, but are organic systematic bodies of ideas. With these the test of truth is not only the ordinary social effectiveness of the religion, but the value of the theological and philosophical developments which sooner or later are required among peoples at a higher stage of mental growth. The distinction which students of religion are obliged to draw between magic and religion reflects the fact that religious beliefs and practices are found to differ markedly in their social, ethical or logical value. But while any harmful social or ethical consequences (*e.g.*, human sacrifice) sooner or later do not fail to arouse the reformer, questions of intellectual value and the conflict between religious ideas and ordinary contemporary knowledge are much more obscure.

Religion typically implies certain ideas of the nature of man and the universe which are commonly of the utmost importance for man's knowledge of the world in which he lives. Both the pre-existence of Christ and his profound "cosmic" significance (*cf.* Rom. viii. 19 *sqq.*, Col. i.) are not without parallels as far back as the Pharaohs of Egypt. Gods were often believed to be immanent in nature or in natural processes; or the universe was something living; it was a man, or man in some sense partook of the essence of the universe. If the moralist would enjoin man to live in harmony with the order that rules in the universe, the mystic would feel his oneness with it, or the devotee might seek union with its God. The attempt to frame a "rational" description of the universe may perhaps be traced back to the noteworthy conception of a universal cosmic "order" (*rita*) under the guardianship of the ethical god Varuna. (*See* HEBREW RELIGION, sec. 4.) Later there was a differentiation, and while Zoroastrianism develops the idea of *ethical* order, also under an ethical god (Ahura-Mazda), a *naturalistic* treatment arose in the West in Ionia. Indian thought, on the other hand, emphasized the essential unreality of the world, and by a tremendous leap, identified the ultimate principle of the individual with that of the universe. Of course, men often enough were not, and are not, conscious of the real problems which religious experience brings. Religion might give a man all the knowledge of the universe that he wanted; it might also deprecate curiosity concerning God's handiwork. If intense religious experience made the world seem transitory and unreal, the decisive conviction of its reality subordinated all deeper religious enquiry to the current knowledge. When Christianity arose there was abundant speculation of a theological, philosophical, and pseudo-scientific character, and had the idea of Christ as an immanent cosmic principle been developed, there would have been, instead of a theology, virtually a theory of the universe. (*Cf.* MANICHAEISM.)

Characteristic of the age were the catastrophic anticipations

and forebodings. A changed world was demanded, or was believed to be imminent. Overwhelming spiritual experiences imply or require a sphere other than that of earthly life. Religion demands a sphere of its own, or it makes one. Renunciation and seclusion from the world of active life were no novelty—Buddhism and Taoism had their monks; but religion is also dominating and imperialist, and the Old Testament illustrates the extremes of submission, passivity, and self-centredness, and the zeal of a religion proud of its strength and its efficiency and of its significance for the world at large. Christianity, like Judaism, accepted the world. God moulded history for Israel; "righteousness" and "salvation" had material implications even as "sin" meant misfortune and unhappy conditions, the fruit of men's wrongdoing. Christianity, like Judaism, was for active practical use; and the Jesus of the Gospels, the reverse of an ecstatic or unstable character, even gives point to his teaching by utilizing examples of successful capacity (the parable of the Talents and of lack of preparation for war [Luke xiv. 31]). Neither the life after death (*cf.* the "psychic" body of 1 Cor. xv. 44), nor the conditions after an anticipated cataclysm could be regarded as entirely other than what earthly experience could suggest, even as the earlier Messianic expectations (in Is. xi. 4–6) are not of a sinless age, but of an age of absolute justice and peace.

Jesus follows in the line of Jeremiah's New Covenant and the Book of Deuteronomy in his appeal to the individual, whose worth he so wonderfully magnifies. In Jesus himself his followers saw supreme "Divine Personality, and Perfect Man"; he was the ideal "Son of Man," and this co-existence of the perfectly divine and perfectly human lies at the centre of the new religion and of later theological development of the doctrine of the person of Jesus Christ. From the individual Jesus required complete faith and trust in God and the highest social ideals. The most spiritual type of life was that manifested in the simplest and humblest duties, and while the truest religion was to show itself in human activity, the individual who was true to humanity's highest ideals was in fact fulfilling the Law of Christ.

Now, the meaning of the example and teaching of Jesus for the real nature of man and his environment was much more than a religious or a theological problem. Nor could philosophy solve it. Philosophy has always been a late comer in the history of human development. It follows upon the anthropomorphic and mythological explanation of things. It betokens an introspective and detached mind and a knowledge of the inner life for which Indian and Iranian religions afforded the earliest examples. But the Indo-Iranian peoples, like the Semites, had relatively little positive knowledge, and the Greeks, on the other hand, with all their acuteness and skill, had little real religious instinct. In this respect the more practical West and the more mystical East have always diverged. Philosophy wavered between an explanation of religious (spiritual, mystical) experience and a reasonable account of man and of the universe wherein he lived; and whereas there has grown up in the Western world an antithesis between "religion" and "science," the true antithesis is the more complex one, (1) between different qualities of religion (in their social and other value), and (2) between religious and related experience (the "numinous") and all that comes through the senses and may be called "non-religious."

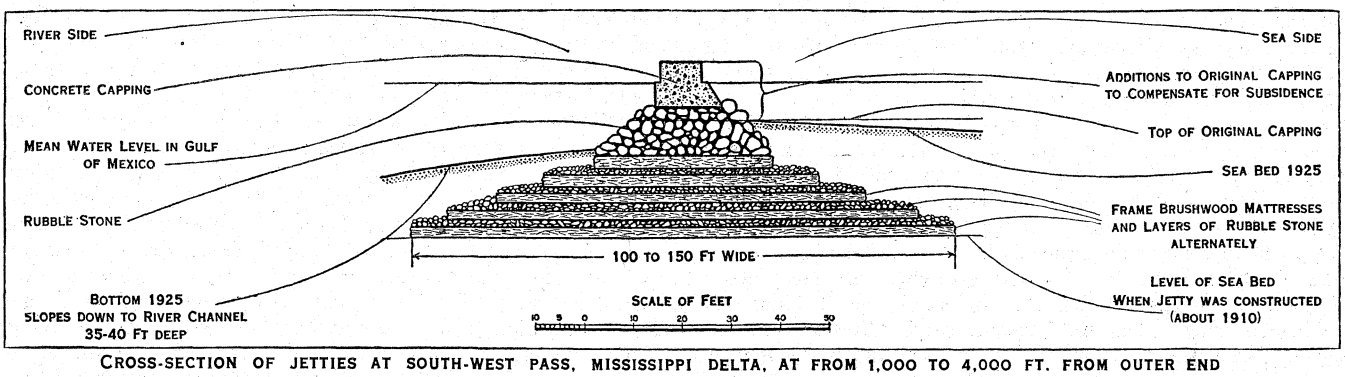
The ideal of Christianity has been fullness of life. In being true to self man has found the self to which to be true, and the supreme self-consciousness which distinguishes the religion of Israel finds its climax in renunciation as a step towards the fullest life. Men have to learn the one thing needful, and with the refusal of the rich man whom Jesus loved (Mark x. 21) contrast his own recognition of what was required of himself. The great refusals mean decay and death. In common with the prophets of Israel Jesus combines compassion and consolation, warning and grief for warning unheeded. From Amos and Hosea onwards, there is a Divine Law as well as a Divine Love; and neither individuals nor nations can offend with impunity. Israel, the firstborn of Yahweh, suffers when she offends against the Divine Law, but Jesus the "only begotten" goes to his death fulfilling his destiny (*cf.* Mark viii., 31–33) and "fulfils" what the Israelite "servant of the Lord" had begun (Is. liii.). The whole process, as unfolded in the history of religion, has a more than religious significance, for the great religious ideas concern the very nature of the universe. There is an increasing consciousness of what the universe demands of men (*cf.* earlier, Micah vi. 8); and the vicissitudes of Christianity and other religions have been so shaped by spiritual needs, and by moral needs, and by mental or intellectual needs that religion itself represents something from which ethical and intellectual demands cannot be isolated. When the Founder of Christianity set up the ideal of a normal life wherein the religious and non-religious sides should be in harmonious relation, it followed that all that religion represents must be a normal and a natural part of man, and the "philosophy"—if that term be retained—which grows most naturally out of the personality of the Founder, must make explicit the ideal harmonious interrelation of spiritual, ethical and intellectual aspects of life and thought.

The old ego-centric conceptions of the universe, which modern knowledge of space and time has put in the background, find their explanation in man's consciousness of his essential unity with the universe or of his relation with its God. But the immense accumulation of facts concerning the universe as revealed to man by his senses is confronted by a no less impressive mass of data of religion and of religious and all related experience. The history of civilization proves that the religious and non-religious types of experience can never be lastingly severed, and the modern study of man's mental processes and world of thought is preparing the way for a better knowledge of the part played by religion, in particular by Christianity, in enabling man to understand his total environment.

Christianity, centring upon an ideally perfect Personality, has to shape men towards an increasingly fuller consciousness of the ultimate truths of God, man and the universe. Its career and the stages leading up to it can be placed, as has been seen, upon the background of history and religion. But while the line of development can be clearly traced back, its future course cannot be easily foreshadowed. Christianity is based upon a single book, or rather a collection of books (*see* BIBLE) covering the centuries during which there were the profoundest developments of which we know, and upon which the Bible is the only direct source of knowledge. Entirely characteristic is the utterly uncompromising recognition that God is no respecter of persons or peoples, but that the Divine purpose in all its workings is not arbitrary. Certain awe-inspiring ideas of God and man were realized, and have proved capable of continuous reinterpretation; but the real significance of the great religious truths has yet to be restated in the light of modern knowledge. (S. A. C.)

JET, a substance which seems to be a peculiar kind of lignite or anthracite; often cut and polished for ornaments. (Fr. *jais,* Ger. *Gagat.*) The word "jet" probably comes, through O.Fr. *jaiet,* (from the classical *gagates,* a word which was derived, according to Pliny, from Gagas, in Lycia, where jet, or a similar substance, was originally found). Jet was used in Britain in prehistoric times; many round barrows of the bronze age have yielded jet beads, buttons, rings, armlets and other ornaments. The abundance of jet in Britain is alluded to by Gaius Iulius Solinus (*fl.* 3rd century) and jet ornaments are found with Roman relics in Britain. Probably the supply was obtained from the coast of Yorkshire, especially near Whitby, where nodules of jet were formerly picked up on the shore. Caedmon refers to this jet, and at a later date it was used for rosary beads by the monks of Whitby Abbey.

The Whitby jet occurs in irregular masses, often of lenticular shape, embedded in hard shales known as jet-rock and belonging to that division of the Upper Lias which is termed the zone of *Ammonites serpentinus.* Microscopic examination of jet occasionally reveals the structure of coniferous wood, which A. C. Seward has shown to be araucarian. Probably masses of wood were brought down by a river, and drifted out to sea, where they sank and were buried in a deposit of fine mud which eventually hardened into shale. Under pressure, perhaps assisted by heat, and with exclusion of air, the wood suffered a peculiar kind of decom-



CROSS-SECTION OF JETTIES AT SOUTH-WEST PASS, MISSISSIPPI DELTA, AT FROM 1,000 TO 4,000 FT. FROM OUTER END

position, probably modified by the presence of salt water, as suggested by Percy E. Spielmann. Scales of fish and other fossils of the jet-rock are frequently impregnated with bituminous products, which may replace the original tissues. Drops of liquid bitumen occur in the cavities of some fossils, whilst inflammable gas is not uncommon in the jet-workings, and petroleum may be detected by its smell. Iron pyrites is often associated with the jet.

Formerly sufficient jet was found in loose pieces on the shore, set free by the disintegration of the cliffs, or washed up from a submarine source. When this supply became insufficient, the rock was attacked by the jet-workers; ultimately the workings took the form of true mines, levels being driven into the shales not only at their outcrop in the cliffs but in some of the inland dales of the Yorkshire moorlands, such as Eskdale. The best jet has a uniform black colour, and is hard, compact and homogeneous in texture, breaking with a conchoidal fracture. It must be tough enough to be readily carved or turned on the lathe, and sufficiently compact in texture to receive a high polish. The final polish was formerly given by means of rouge, which produces a beautiful velvety surface, but rotten-stone and lampblack are often employed instead. The softer kinds, not capable of being freely worked, are known as bastard jet. A soft jet is obtained from the estuarine series of the Lower Oolites of Yorkshire.

See P. E. Spielmann, "On the Origin of Jet," *Chemical News* (Dec. 14, 1906); C. Fox-Strangways, "The Jurassic Rocks of Britain, vol. i., Yorkshire," *Mem. Geol. Surv.* (1892); J. A. Bower, "Whitby Jet and its Manufacture," *Journ. Soc. Arts* (1874, vol. xxii. p. 80).

JETHRO, the priest of Midian, in the Bible, whose daughter Zipporah became the wife of Moses. He was a priest of Yahweh, and resided at the sacred mountain where the deity commissioned Moses to deliver the Israelites from Egypt. Subsequently Jethro came to Moses (probably at Kadesh), a great sacrificial feast was held, and the priest instructed Moses in legislative procedure. Jethro was invited to accompany the people into the promised land, and later, we find his clan settling in the south of Judah (Judg. i. 16); *see* KENITES.

JETSAM: *see* FLOTSAM, JETSAM AND LIGAN.

JETTY. The term jetty, derived from Fr. *jetée,* and therefore signifying something "thrown out," is applied to a variety of structures connected with river, dock and maritime works. Their forms and construction are as varied as their uses and the word jetty is, moreover, often applied to structures which are better described as breakwaters or piers. They are sometimes high open-work structures of timber, reinforced concrete, or steel and iron, braced together; sometimes they are low solid projections of rubble stone, concrete or masonry, and occasionally only differ from breakwaters in their object. The most common uses to which the term jetty should be applied are:—(1) The regulation of river channels where jetties are projected from the banks towards deep water. (2) Structures in continuation of river channels at their outlets into deep water, and at the entrances to harbours of lagoon type. (3) Projections from the sides of docks, or in tidal basins, harbours and rivers, alongside which ships may lie for discharging and taking in cargo. These are sometimes described as piers, particularly when of solid construction, and are commonly so called in North American ports. (4) Structures outside the entrances to docks forming the sides of and protecting a convenient approach channel, and (5) An outwork of timber or reinforced concrete piles framed together and protecting a pier, including bridge piers in navigable waters.

Jetties for Regulating Rivers.—Jetties intended to act as groynes are often extended at intervals from one or both banks of a river to contract a wide channel and, by concentration of the current, to produce a deepening of the central channel. Similarly jetties are sometimes projected from the concave bank of a river to check the erosion on that side. They are variously termed spurs, spur dikes or jetties, cross dikes and groynes, and are formed of timber or of mounds of rubble stone, or of combinations of these materials. Fascines and mattress work weighted and covered by rubble are also frequently employed. This system of river regulation occasions a greater scour abreast the ends of the groynes than in the intervening channels and consequently sometimes produces an irregular depth. Longitudinal training works are therefore preferred for the regulation of many rivers. The jetty system does, however, possess the advantage that the length of the groynes may be easily reduced or increased as experience of their effect on the channel shows to be advisable. Spur dikes have been employed in recent years in this way at the south-west pass of the Mississippi outlet. (*See* RIVER AND RIVER ENGINEERING.)

Jetties at Harbour Entrances.—Parallel or nearly parallel jetties are frequently constructed at the entrances to ports on sandy coasts, particularly those formed at the mouths of rivers and at the outlets of lagoons and land-locked bays obstructed by bars. (*See* HARBOURS.) The older jetties at such ports as Calais, Dunkirk and Ostend were usually formed of clay or rubble hearting covered on the top by fascine-work and stone pitching and held together by timber piles and bracing. The timber-work was carried high enough to form a platform above the level of the highest tides. The newer jetties at Dunkirk were founded on the sandy beach by sinking caissons by the aid of compressed air to a depth of 23ft. below low water spring-tides. A solid masonry structure was raised above the concrete foundations to about half-tide level and above that again an open timber-work superstructure was carried up to well above high water. Compressed-air sinking has been employed in forming the foundations of entrance jetties at other French ports as, for instance, at Boulogne, where a new jetty 1740ft. long on the north side of the channel to the inner harbour was built between 1913–27. The channel depth is about 17ft. at low-water, but the jetty is designed for a future depth of at least 20ft. at low-water spring tides. In this case the open superstructure of the jetty above the solid masonry work is of reinforced concrete.

The jetties at the entrances to the Venetian lagoon at Lido and Malamocco (*see* HARBOURS) are of rubble stone surmounted by a small masonry superstructure brought up above water level. Those at the Charleston (S.C.) harbour entrance were originally built of fascine mattresses weighted with stone, but are now formed entirely of rubble. The converging jetties carried out from each shore of Dublin bay for deepening the approach to the river Liffey and Dublin harbour are also of rubble.

Jetties at the Outlets of Tideless Rivers.—Jetties have been constructed at the outlets of many rivers flowing into tideless (or nearly tideless) seas as at Swinemünde, on the Baltic,

and Tampico in the gulf of Mexico, with the objects of prolonging the scour of the river and protecting the channel from being shoaled by littoral drift. The most interesting application of parallel jetties is in connection with the mouths of deltaic rivers flowing into tideless seas. In such cases the construction of jetties, by a virtual prolongation of the river banks, extends the scour of the river out to the bar. Jetties prolonging the Sulina branch of the Danube into the Black sea, and the south and south-west passes of the Mississippi into the Gulf of Mexico (fig. 1) have concentrated the discharge of these rivers so as to scour the bars obstructing the access to them and have effected considerable increase in depth in the navigable channels. The sediment-bearing waters are moreover carried by this concentration of discharge sufficiently far out to come under the influence of littoral currents, which by conveying away some of the sediment, postpone the eventual formation of a fresh bar further out. It is, however, very seldom that jetties alone suffice to secure the maintenance of a sufficient depth of water for modern requirements, and recourse has been had to intensive suction dredging both at Sulina and the Mississippi passes. (*See* RIVER AND RIVER ENGINEERING.)

Jetties at the Mouths of Tidal Rivers.—Rivers whose discharge is generally feeble and which debouch on an exposed coast subject to littoral drift are liable to have their outlets blocked during severe storms. This is specially the case when the river is narrow near its mouth and the tidal range is small. Sea action piles up sand and shingle to the obstruction of the outlet and the river is thus forced to seek another exit at a weak spot of the beach which, along a low coast, may be some distance off. The new outlet in its turn may be blocked up, so that the river from time to time shifts the position of its mouth. This inconvenient cycle of changes may be stopped by fixing the outlet of the river at a suitable site, by carrying a jetty on each side of this outlet across the beach, thereby concentrating its discharge in a definite channel and protecting the mouth from being blocked up by littoral drift. This system was long ago applied to the shifting outlet of the river Yare to the south of Yarmouth. Later it was successfully employed for fixing the wandering mouth of the Adur near Shoreham, and of the Adour flowing into the bay of Biscay below Bayonne. Timber-piled jetties filled with rubble stone have often been employed in such cases.

When the new channel was cut across the Hook of Holland to provide a straighter and deeper outlet channel for the river Maas, forming the approach channel to Rotterdam, jetties formed of fascine mattresses weighted with stone were carried across the foreshore on either side of the cut to protect the channel from littoral drift and confine the discharge of the river. (*See* HARBOURS and RIVER AND RIVER ENGINEERING.)

Jetties in Docks, Rivers, etc.—Openwork timber or reinforced concrete jetties are often constructed in docks (*q.v.*) with sloping sides, being carried across the slope so that vessels may lie alongside them in deep water. Similar structures are also employed in open basins, harbours and rivers as well as in docks for supporting coal-loading tips and hoists, and for berthing vessels carrying oil in bulk. Continuous quayage is not essential in these cases and for oil berths nothing more is required than adequate dolphin and fendering structures (against which vessels may lie) and comparatively light structures connecting with the shore for carrying the necessary pipes, etc., for loading and discharging the oil. (*See* plans of Colombo and other harbours in HARBOURS.) Examples of reinforced concrete jetties carrying coal hoists will be found among the illustrations in the article DOCKS. Long and wide structures projected from the sides of docks and basins, designed for berthing vessels on either side, are virtually continuous wharves or quays and are more properly called piers. A convenient distinction is to restrict the term jetty, as applied to berthing, to those structures intended for berthing ships across their ends or in front of a T-shaped head and to openwork island structures only connected with the shore by bridges or approach viaducts. Long openwork structures thrown out into a river and curving round so as to provide shipping berths more or less parallel with the river bank, such as the Tilbury river jetty and the coal-staiths at Dunston on the Tyne and at Blyth, are correctly termed jetties. Jetties of open steel and iron construction are also used, both for cargo and passenger traffic, particularly in tropical ports (*see* DOCKS).

Jetties at Dock Entrances.—Jetties of pilework and occasionally of solid character are constructed outside the entrances to docks on each side of the channel from the river or sea approach so as to form a funnel-shaped passage leading to the lock entrance. These jetties serve to guide vessels entering or leaving the docks, to protect them from the effect of tidal or river currents and, in some cases, as convenient lay-bys where a vessel may, if necessary, tie up when waiting for the gates to be opened. The entrance jetties at Avonmouth are solid constructions, founded on concrete monoliths, with timber face work; those at the King George V. dock, London, and at Immingham are of open timber work. Timber-piled jetties filled in with rubble stone are also employed, as at Swansea. In this instance they serve as minor breakwaters sheltering the entrance to the river and docks and prevent, to some extent, sand from entering the dredged channel.

Jetties Alongside Piers, etc.—Timber and, in recent times, reinforced concrete jetties are frequently employed as adjuncts to breakwater and pier structures, serving as landing places and for other purposes, as for instance oil-bunkering and watering. The word jetty is also used to describe a timber fendering structure or outwork constructed in connection with swing and other bridges in navigable waters to protect the bridge piers from damage by vessels passing through the navigation openings.

(N. G. G.)

JEVER, a town of Germany, in the *Land* of Oldenburg, 13 m. by rail N.W. of Wilhelmshaven, and connected with the North sea by a navigable canal. Pop. (1933) 6,191. The castle of Jever was built by Prince Edo Wiemken (d. 1410), the ruler of Jeverland, a populous district which in 1575 came under the rule of the dukes of Oldenburg. In 1603 it passed to the house of Anhalt and was later the property of the empress Catherine II. of Russia, a member of this family. In 1814 it came again into the possession of Oldenburg. The chief industries are spinning, dairying, brewing and milling; there is also a trade in cattle.

JEVONS, WILLIAM STANLEY (1835–1882), English economist and logician, was born at Liverpool on Sept. 1, 1835. His father, Thomas Jevons, a man of strong scientific tastes and a writer on legal and economic subjects, was an iron merchant. His mother was the daughter of William Roscoe. He was educated at University college school and University college, London. In 1853 he was appointed assayer to the new mint in Australia. He left England for Sydney in June 1854, and remained there for five years. In the autumn of 1859 he returned to University college, London, proceeding in due course to the B.A. and M.A. degrees of the University of London. Although he now gave his principal attention to the moral sciences, his interest in natural science continued throughout his life, and his intimate knowledge of the physical sciences contributed to the success of his chief logical work, *The Principles of Science.* In 1866 he was elected professor of logic and mental and moral philosophy and Cobden professor of political economy in Owens college. Next year he married Harriet Ann Taylor, whose father had been the founder and proprietor of the *Manchester Guardian.* Jevons, who suffered from ill health, found the delivery of lectures covering so wide a range of subjects burdensome, and in 1876 he was glad to exchange the Owens professorship for the professorship of political economy in University college, London. He found his professorial duties irksome, and in 1880 he resigned. On Aug. 13, 1882, he was drowned whilst bathing near Hastings.

Jevons arrived quite early in his career at the doctrines that constituted his most characteristic and original contributions to economics and logic. The theory of utility, which became the keynote of his general theory of political economy, was practically formulated in a letter written in 1860; and the germ of his logical principles of the substitution of similars may be found in the view which he propounded in another letter written in 1861, that "philosophy would be found to consist solely in pointing

out the likeness of things." The theory of utility above referred to, namely, that the degree of utility of a commodity is some continuous mathematical function of the quantity of the commodity available, together with the implied doctrine that economics is essentially a mathematical science, took more definite form in a paper on "A General Mathematical Theory of Political Economy," written for the British Association in 1862. This paper does not appear to have attracted much attention either in 1862 or on its publication four years later in the *Journal of the Statistical Society;* and it was not till 1871, when the *Theory of Political Economy* appeared, that Jevons set forth his doctrines in a fully developed form. After the publication of this work Jevons became acquainted with the applications of mathematics to political economy made by earlier writers, notably A. A. Cournot and H. H. Gossen. The theory of utility was about 1870 being independently developed on somewhat similar lines by Carl Menger in Austria and M. E. L. Walras in Switzerland. As regards the discovery of the connection between value in exchange and final (or marginal) utility, the priority belongs to Gossen, but this in no way detracts from the great importance of the service which Jevons rendered to English economics by his fresh discovery of the principle. In his reaction from the prevailing view he sometimes expressed himself without due qualification: the declaration, for instance, made at the commencement of the *Theory of Political Economy,* that "value depends entirely upon utility," lent itself to misinterpretation.

It was not, however, as a theorist dealing with the fundamental data of economic science, but as a brilliant writer on practical economic questions, that Jevons first received general recognition. *A Serious Fall in the Value of Gold* (1863) and *The Coal Question* (1865) placed him in the front rank as a writer on applied economics and statistics; and he would be remembered as one of the leading economists of the 19th century even had his *Theory of Political Economy* never been written. Amongst his economic works may be mentioned *Money and the Mechanism of Exchange* (1875), a *Primer on Political Economy* (1878), *The State in Relation to Labour* (1882), and two posthumous works, *Methods of Social Reform* and *Investigations in Currency and Finance.* The last-named volume contains Jevons's speculations on the connection between commercial crises and sun-spots. He was engaged at the time of his death upon the preparation of a large treatise on economics; this fragment was published in 1905 under the title of *The Principles of Economics: a Fragment of a Treatise on the Industrial Mechanism of Society, and other Papers.*

Jevons's work in logic went on *pari passu* with his work in political economy. In 1864 he published a small volume, entitled *Pure Logic; or, the Logic of Quality apart from Quantity,* which was based on Boole's system of logic, but freed from what he considered the false mathematical dress of that system. In the years immediately following he constructed a logical machine, exhibited before the Royal Society in 1870, by means of which the conclusion derivable from any given set of premisses could be mechanically obtained. In 1866 what he regarded as the great and universal principle of all reasoning dawned upon him; and in 1869 he published a sketch of this fundamental doctrine under the title of *The Substitution of Similars.* He expressed the principle in its simplest form as follows: "Whatever is true of a thing is true of its like," and he worked out in detail its various applications. In the following year appeared the *Elementary Lessons on Logic.* In the meantime he was engaged upon a much more important logical treatise, which appeared in 1874 under the title of *The Principles of Science.* In this work Jevons embodied the substance of his earlier works on pure logic and the substitution of similars; he also enunciated and developed the view that induction is simply inverse deduction; he treated in a luminous manner the general theory of probability, and the relation between probability and induction; and his knowledge of the various natural sciences enabled him throughout to relieve the abstract character of logical doctrine by concrete scientific illustrations. Jevons's general theory of induction was a revival of the theory laid down by Whewell and criticized by Mill; but it was put in a new form, and was free from some of the non-essential adjuncts which rendered Whewell's exposition open to attack. The work as a whole was one of the most notable contributions to logical doctrine that appeared in Great Britain in the 19th century. His *Studies in Deductive Logic,* consisting mainly of exercises and problems for the use of students, was published in 1880.

Jevons's strength lay in his power as an original thinker; and he is remembered by his constructive work as logician, economist and statistician.

See *Letters and Journal of W. Stanley Jevons,* edit. by his wife (1886). This work contains a bibliography of Jevons's writings.

JEW, THE WANDERING, a legendary Jew (*see* JEWS) doomed to wander till the second coming of Christ because he taunted Jesus as He passed bearing the cross, saying, "Go quicker." Jesus replied, "I go, but thou shalt wait till I return." This legend first appeared in a pamphlet alleged to have been printed at Leyden in 1602. This pamphlet relates that Paulus von Eizen (d. 1598), bishop of Schleswig, had met at Hamburg in 1542 a Jew named Ahasuerus, who declared he was "eternal" and was the same who had been thus punished by Jesus. The pamphlet is supposed to have been written by Chrysostomus Dudulaeus of Westphalia and printed by one Christoff Crutzer, but as no such author or printer is known—the latter name indeed refers directly to the legend—it has been conjectured that the whole story is a Protestant myth.

The story met with ready acceptance. Eight editions of the pamphlet appeared in 1602, and the 40th edition before 1700. It was translated into Dutch and Flemish with immense success. The first French edition appeared in 1609, and the story was known in England before 1625, when a parody was produced. Denmark and Sweden followed suit, and the expression "eternal Jew" passed into Czech. Thus the story in its usual form spread wherever there was a tincture of Protestantism. In southern Europe little is heard of it in this version, though Rudolph Botoreus, parliamentary advocate of Paris (*Comm. histor.,* 1604), speaks contemptuously of the popular belief in the Wandering Jew in Germany, Spain and Italy.

The popularity of the pamphlet soon led to reports of the appearance of this mysterious being almost everywhere. Besides the original meeting of the bishop and Ahasuerus, the Wandering Jew was stated to have appeared at Prague (1602), at Lübeck (1603), in Bavaria (1604), Brussels (1640), Paris (1644, by the "Turkish Spy"), Stamford (1658), and Astrakhan (1672). In the next century he was seen at Munich (1721), Brussels (1774), Newcastle (1790, *see* Brand, *Pop. Antiquities, s.v.*), and in London between 1818 and 1830 (see *Athenaeum,* 1866, ii. 561). The latest report of his appearance was near Salt Lake City in 1868, when he is said to have made himself known to a Mormon named O'Grady. It is difficult to tell in any one of these cases how far the story is an entire fiction and how far an ingenious imposture.

In most Teutonic languages the stress is laid on the perpetual character of the punishment and the man is known as the "eternal" Jew (Ger. *ewige Jude*). In Romance lands the usual form has reference to the wanderings (Fr. *le Juif errant*). The English form follows the Romance, possibly because derived from France. The actual name given to the mysterious Jew varies in the different versions: the original pamphlet calls him Ahasver, a name most inappropriately borrowed from the Book of Esther. In one of his appearances at Brussels his name is given as Isaac Laquedem—bad Hebrew for "Isaac of old"—and Dumas made use of this title. In the *Turkish Spy* he is called Paul Marrane, from the Marranos or secret Jews of Spain. In the few references to the legend in Spanish writings the Wandering Jew is called Juan Espera en Dios, which gives a more hopeful turn to the legend. Eugène Sue calls him Ahasvérus.

Under other names, a story very similar to that of the pamphlet of 1602 occurs nearly 400 years earlier on English soil. According to Roger of Wendover in his *Flores historiarum* for 1228, an Armenian archbishop, then visiting England, was asked by the monks of St. Albans about Joseph of Arimathaea, who had spoken to Jesus and was said to be still alive. The archbishop claimed to have seen him in Armenia under the name of Carthaphilus, who

had confessed that he had taunted Jesus. This Carthaphilus had afterwards been baptized by the name of Joseph. Matthew Paris, in copying Wendover, reported that other Armenians had confirmed the story on visiting St. Albans in 1252. A similar account is given in the chronicles of Philippe Mouskès (d. 1243). A variant was known to Guido Bonati, an astronomer quoted by Dante (*Inferno,* xx. 118), who calls his hero Butta Deus because he struck Jesus. Under this name he is said to have appeared at Mugello in 1413 and at Bologna in 1415.

SOURCE OF THE LEGEND

The source of all these reports is probably Matthew xvi. 28. These words indeed are quoted in the pamphlet of 1602. Again, a legend was based on John xxi. 20; while another legend (current in the 16th century) condemned Malchus, whose ear Peter cut off (John xviii. 10), to wander perpetually till the second coming for scoffing at Jesus. These legends and the utterance of Matt. xvi. 28 were "contaminated" with the legend of Joseph of Arimathaea and the Holy Grail, and took the form given in Wendover and Matthew Paris. But there is nothing to show the spread of this story among the people before the pamphlet of 1602, and it is difficult to see how this Carthaphilus could have given rise to the legend of the Wandering Jew, since he is not a Jew nor does he wander. The author of 1602 was probably acquainted with the story as given by Matthew Paris, since he gives almost the same account. But he gives a new name to his hero and directly connects his fate with Matt. xvi. 28.

The combination of eternal punishment with restless wandering has attracted the imagination of writers in almost all European tongues. The German Romantic poets have been especially attracted by the legend, which has been made the subject of poems by Schubart, Schreiber, W. Müller, Lenau, Chamisso, Schlegel, Mosen and Koehler. They were perhaps influenced by the example of Goethe, who in his *Autobiography* describes the plan of a poem he had designed on the Wandering Jew. More recently poems have been composed on the subject in German by Wilbrandt, Lienhard and others; in English by Robert Buchanan, and in Dutch by Heijermans. German novels also exist on the subject, by Franz Horn, Oeklers, Laun and Schucking, tragedies by Klinemann, Haushofer and Zedlitz. Sigismund Heller wrote three cantos on the wanderings of Ahasuerus, while Hans Andersen made of him an "Angel of Doubt." In France, E. Quinet published a prose epic on the subject in 1833, and Eugène Sue, in his best-known work, *Le Juif errant* (1844), associates the Jew with the legend of Herodias. In modern times the subject has been made still more popular by Gustave Doré's designs (1856), containing some of his most striking and imaginative work. This probably suggested Grenier's poem on the subject (1857).

In England, besides the ballads in Percy's *Reliques,* Godwin introduced the idea of an eternal witness of the course of civilization in his *St. Leon* (1799), and Shelley introduces Ahasuerus in *Queen Mab.* It is doubtful how far Swift derived his Struldbrugs from the notion of the Wandering Jew. George Croly's *Salathiel* (1828) gave a highly elaborate turn to the legend; this has been republished under the title *Tarry Thou Till I Come.*

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JEWEL, JOHN (1522–1571), English divine, bishop of Salisbury, son of John Jewel of Buden, Devonshire, was born on May 24, 1522, and educated at Merton college, Oxford. He became a fellow (1542) of Corpus Christi, made some mark as a teacher, and was after 1547 one of the chief disciples of Peter Martyr. He became public orator of the university, in which capacity he composed a congratulatory epistle to Mary on her accession. In 1554 he acted as notary to Cranmer and Ridley at their disputation, but in the autumn he signed a series of Catholic articles. He was, nevertheless, suspected, fled to London, and thence to Frankfort, where he sided with Coxe against Knox. He soon joined Martyr at Strasbourg, accompanied him to Zurich, and then paid a visit to Padua.

Under Elizabeth's succession he returned to England, and tried to secure what would now be called a low-church settlement of religion. Indeed, his attitude was hardly distinguishable from that of the Elizabethan Puritans, but he gradually modified it under the stress of office and responsibility. He was one of the disputants selected to confute the Romanists at the conference of Westminster after Easter 1559; he was select preacher at St. Paul's Cross on June 15, and in the autumn was engaged as one of the royal visitors of the western counties. In 1560 he became bishop of Salisbury.

Jewel now constituted himself the literary apologist of the Elizabethan settlement. He had on Nov. 26, 1559, in a sermon at St. Paul's Cross, challenged all comers to prove the Roman case out of the Scriptures, or the councils or Fathers for the first six hundred years after Christ. He repeated his challenge in 1560, and Dr. Henry Cole took it up. The chief result was Jewel's *Apologia ecclesiae Anglicanae* (1562), which in Bishop Creighton's words is "the first methodical statement of the position of the Church of England against the Church of Rome, and forms the groundwork of all subsequent controversy." Thomas Harding, an Oxford contemporary whom Jewel had deprived of his prebend in Salisbury Cathedral for recusancy, published an elaborate and bitter *Answer* in 1564, to which Jewel issued a *Reply* in 1565. Harding followed with a *Confutation,* and Jewel with a *Defence,* of the *Apology* in 1566 and 1567; the combatants ranged over the whole field of the Anglo-Roman controversy, and Jewel's theology was officially enjoined upon the Church by Archbishop Bancroft in the reign of James I. He was consulted by the government on such questions as England's attitude towards the council of Trent, and political considerations made him more and more hostile to Puritan demands with which he had previously sympathized. He wrote an attack on Cartwright, which was published after his death by Whitgift. He died on Sept. 23, 1571, and was buried in Salisbury Cathedral.

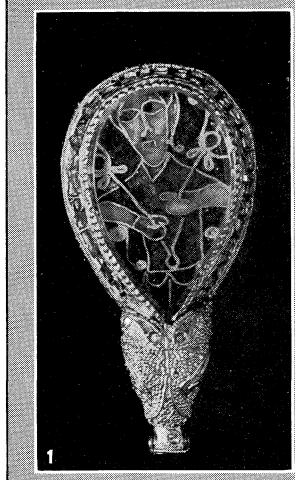
Jewel's works were published in a folio in 1609 under the direction of Bancroft who ordered the *Apology* to be placed in churches, in some of which it may still be seen chained to the lectern; other editions appeared at Oxford (1848, 8 vols.) and Cambridge (Parker Soc., 4 vols.). *See* also Gough's *Index to Parker Soc. Publ.;* Strype's *Works* (General Index); *Acts of the Privy Council; Calendars of Domestic and Spanish State Papers;* Dixon's and Frere's *Church Histories;* and *Dict. of Nat. Biography.*

JEWELLERY, a collective term for jewels, and so for the art of making them (O.F. *jouel*). Jewels are personal ornaments made of precious metals and precious stones, alone or combined. One type of jewel, including clasps and brooches of all kinds, arises from the decorative elaboration of a practical object; another type, of which pendants are an example, is derived from the primitive practice of wearing such objects as the teeth of wild animals, shells, or stones of strange colour or shape, hung round the neck with magical intent. Other jewels, such as earrings and bracelets, appear to be purely decorative in origin.

The origins of jewellery are lost in the mists of antiquity. The practice of wearing objects round the neck dates from the stone age, and gold was worked to make jewels before the use of bronze was known. For information about the jewels of Ur, *see* BABYLONIA AND ASSYRIA: *Early Sumerian Period;* for an account of Egyptian jewellery, *see* EGYPT: *Archaeology: Detail;* for Greek and Roman jewels, *see* SILVERSMITHS' AND GOLDSMITHS' WORK.

HISTORY OF EUROPEAN JEWELLERY

The Empire of Rome, which had extended to the Rhine, the Danube and the Scottish frontier, and the trade of Rome, which had passed beyond these limits through Bohemia to the northern countries, left behind them a tradition so strong that it long outlived the Roman empire itself. In all this region the form, technique and decoration of jewels were influenced by Roman usage. The use of gold filigree remained general; and the varied Roman fibula forms became the basis of yet more complicated brooches. The most important development was in the use of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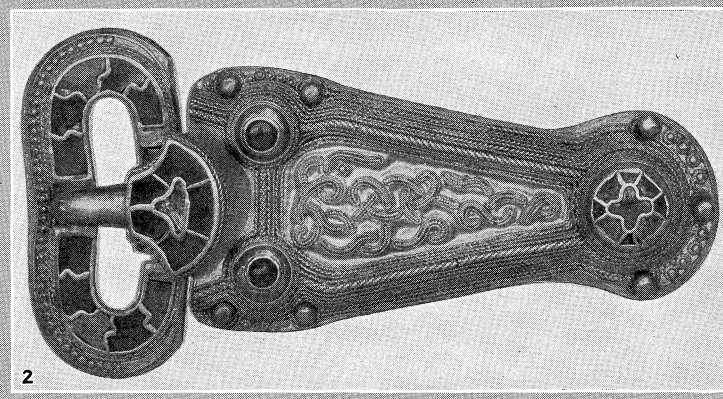
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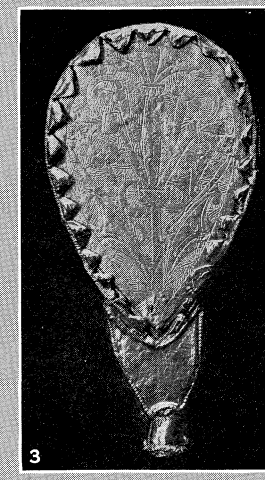
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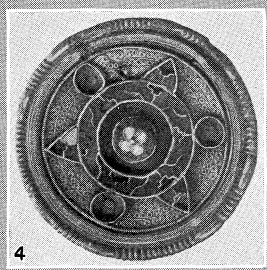
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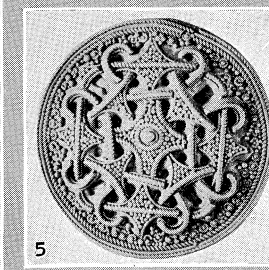
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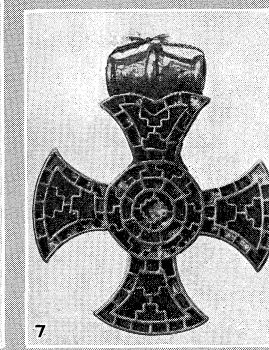
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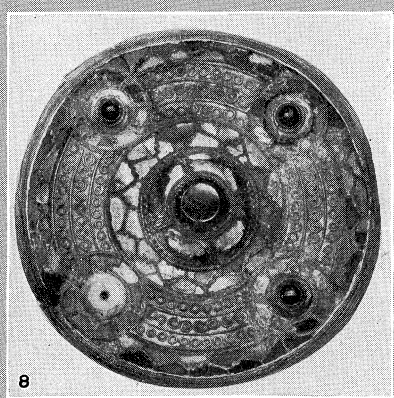
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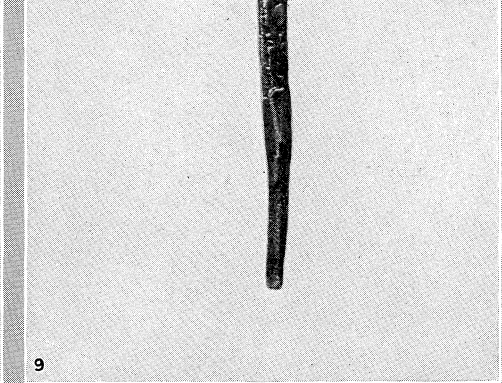
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EARLY ANGLO-SAXON, CELTIC AND SCANDINAVIAN JEWELLERY

1 and 3. The Alfred Jewel, of gold, found in 1693 at Newton Park, three miles from the isle of Athelney. Fig. 1. shows the front set with a plaque of cloisonné enamel held in place by a gold fret of the letters AELFRED MEC HEHT GEWYRCAN (Alfred ordered me to be made). Fig. 3 shows the engraved back

2. Seventh century buckle from Faversham, set with garnets and decorated with gold filigree

4. Kentish brooch of the 7th century, set with garnets and pastes and decorated with gold filigree

5. Silver filigree brooch of the 9th century from the province of Scania, Sweden

6. Gold engraved and nielloed ring of Aethelwulf, King of Wessex; inscribed Ethelvulfr: second quarter of the 9th century. This ring was found at Laverstock near Salisbury in A.D. 1780

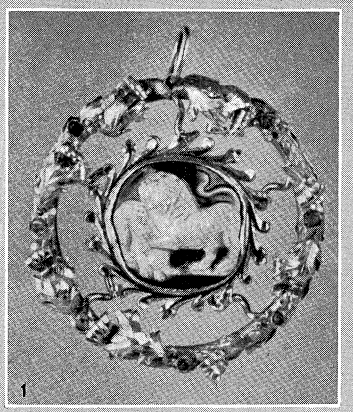
7. Saxon cross of the 7th century, made of gold and set with garnets, found at Ixworth

8. Kentish brooch of the 6th century, set with garnets and meerschaum, and decorated with gold filigree

9. Celtic penannular brooch of silver of the early 10th century

10. Gold bracteate of the 7th century from Faversham

JEWELLERY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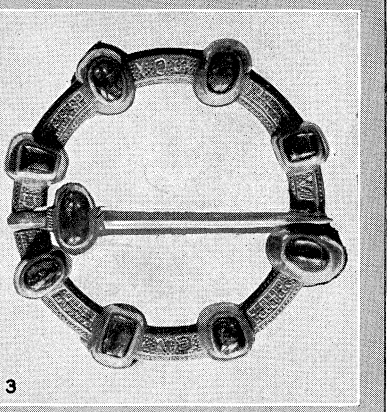
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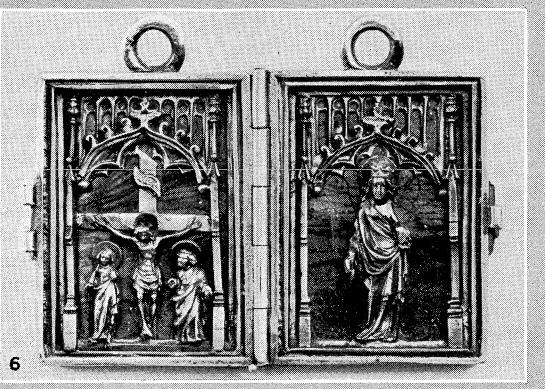
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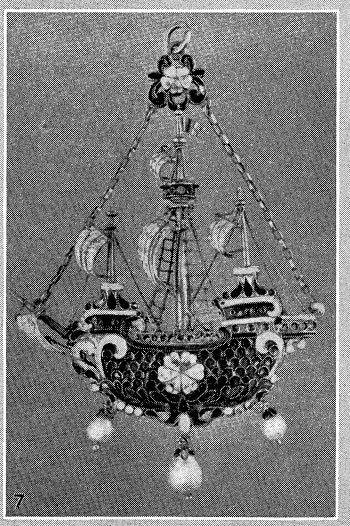
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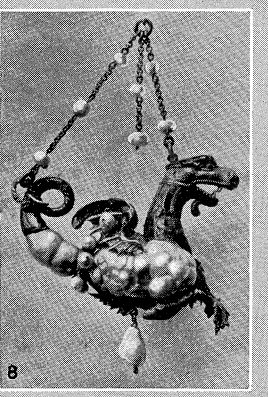
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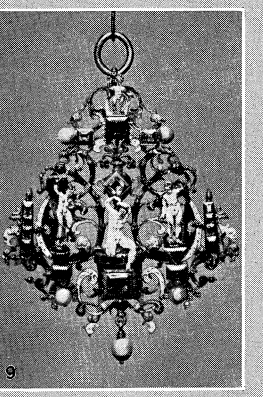
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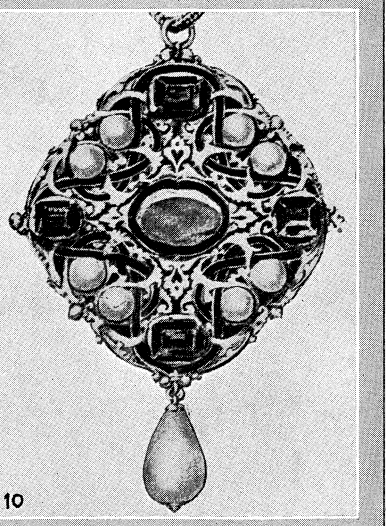
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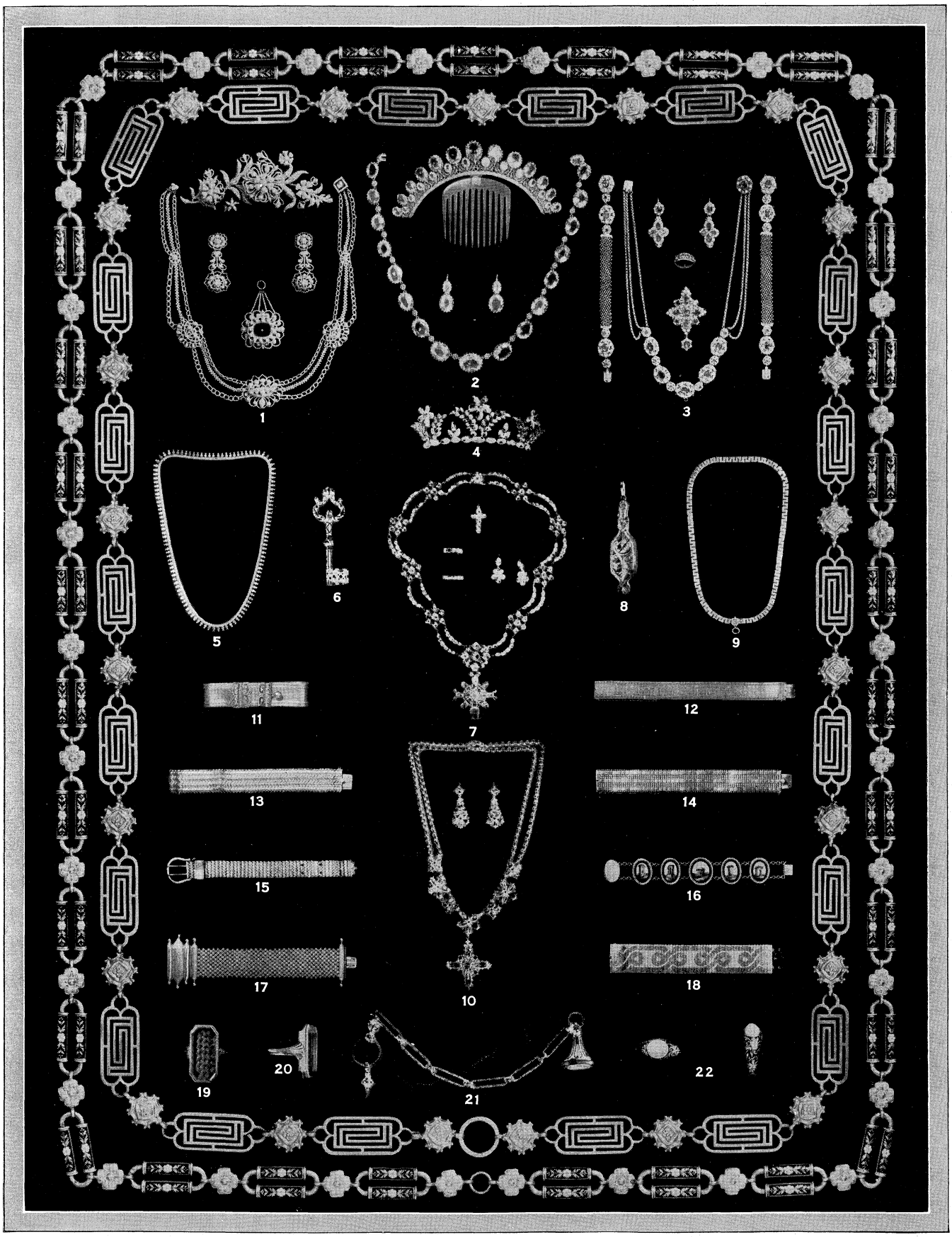
BROOCHES AND PENDANTS OF THE MIDDLE AGES AND THE RENAISSANCE

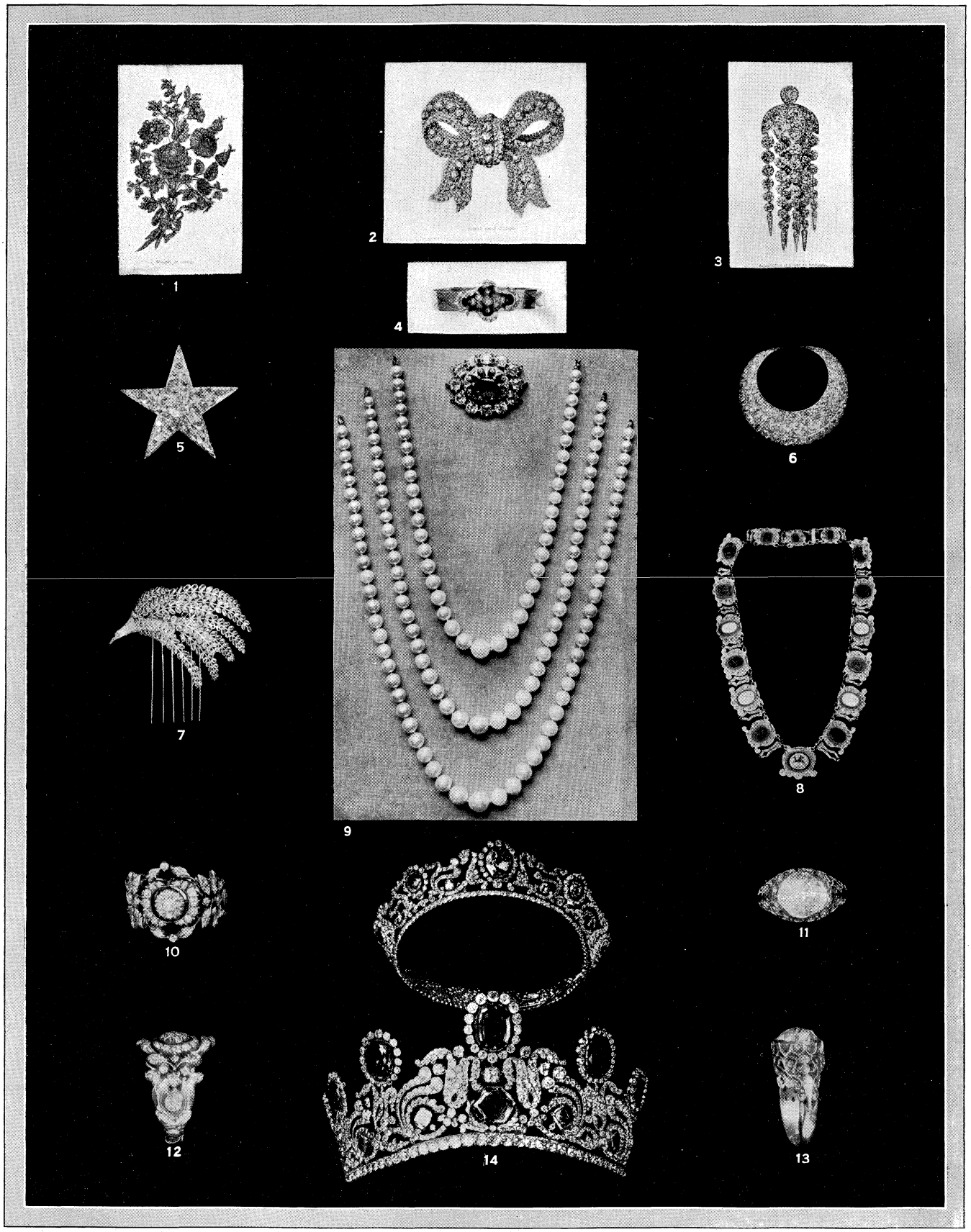
1. Brooch of gold set with a cameo. French, 14th century
2. "The Eagle Brooch," about 1120, of gold decorated with cloisonné enamel in translucent green and blue, turquoise, white and yellow
3. Ring brooch of gold, engraved and set with rubies and sapphires. French or English, late 13th century
4. Reliquary pendant of gold; the side shown is engraved with figure of St. John and the inscription *A mon derreyne*, the opposite side with the figure of a bishop. Both figures are between flowers of white enamel. English of about 1480
5. The "Phoenix" jewel; a bust of Queen Elizabeth cut from the Phoenix badge of 1574, mounted in a wreath of red and white roses of enamelled gold
6. "Tablet" of silver gilt, enamelled, with the scene of the crucifixion and the figure of the Virgin in relief. French or Rhenish, early 15th century
7. Enamelled pendant in the form of a ship. Italian, 16th century
8. Dragon-shaped pendant of gold, enamelled and set with baroque pearls. German, about 1570
9. Pendant of gold, enamelled and set with jewels, representing Hercules upholding the world in the garden of the Hesperides. South German, end of the 16th century
10. Design for a pendant of enamelled and jewelled gold, by Hans Holbein. About 1540



EUROPEAN JEWELLERY OF THE 19TH CENTURY

Outside chain in gold with decoration in black enamel, French Restoration period. Inside chain of open gold work, the work of a French provincial goldsmith about 1840. 1, 2, 3, 7, 10. Parures, 1830–40: (1) seed pearls, (2) topazes set in gold, (3, 10) pink tourmalines, (7) garnets. 4. Garnet head ornament, 1830. 5, 9. Gold necklaces, French, 1830. 6. Gold key decorated in black enamel, used with outside chain. 8. Gold lorgnette, French, 1850. 11–18. Gold bracelets, *c.* 1814–50: (15) silver gilt, (16) mosaics in gold with borders of blue enamel, (17) gold and coral tissue, Russian, (18) two-coloured gold. 19, 20. Front and side views of gold ring set with plaited hair, 1840. 21. Waistcoat chain in gold and enamel with seal, 1830. 22. Gold ring decorated in black enamel, set with turquoise, French Restoration period

JEWELLERY



PHOTOGRAPHS, (1, 2, 3) COPR. H. BONNAIRE FROM "CATALOGUE OF THE CROWN JEWELS OF FRANCE 1887"

FRENCH JEWELLERY OF THE 19TH CENTURY

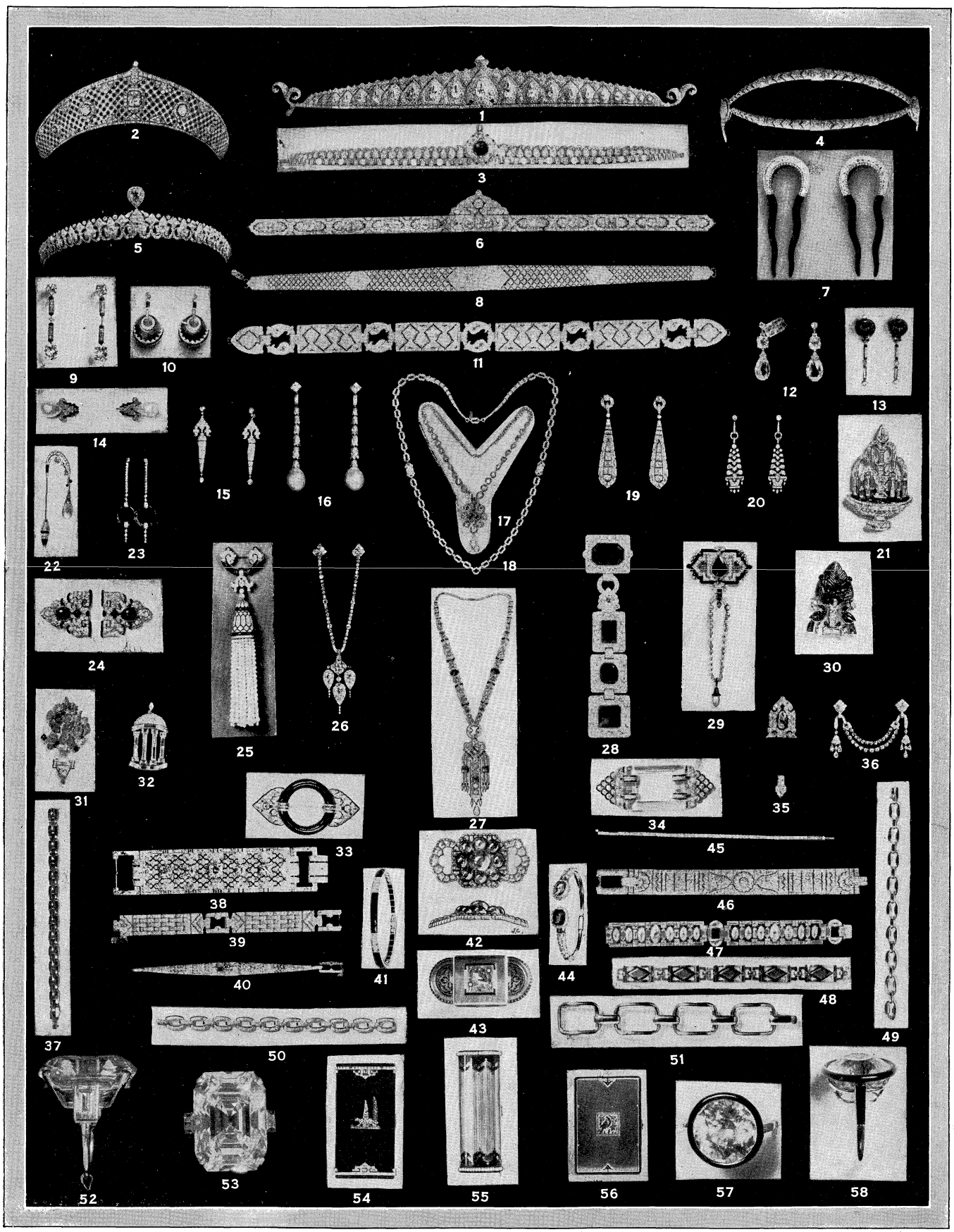
1. Diamond floral spray or bouquet, made in 1820. 2. Diamond bow knot as worn by the Empress Eugénie; made in 1863. 3. Diamond aiguillette pampille, made in 1868. 4. Bracelet, of gold and black enamel and rose diamonds; period of the Restoration. 5. Diamond star, made about 1360. 6. Diamond crescent brooch as worn by the Empress Eugénie; made in 1867. 7. Comb bird mounted in gold and topazes; period of the Restoration. 8. Necklace in gilt, copper and cameos; period 1835. 9. Necklace of three rows of pearls containing 145 pearls weighing 2136.94 grains with ruby and diamond cluster clasp, collected by Madame Thiers, who left it to the Louvre. They were bought at auction June 16th, 1924, and sold privately by Cartier. 10 and 12. Ring in rose diamonds mounted in gold; period 1850. 11 and 13. Ring in one large rose diamond mounted in gold; period 1850. 14. Diamond and sapphire coronet and tiara as worn by the Empress Eugénie

PHOTOGRAPHS, (7, 15, 16, 21, 26) COPR. H. BONNAIRE FROM REVUE DE LA BIJOUTERIE, JOAILLERIE, ORFÈVRERIE, 1901 TO 1902, MAISON DUJAERIE

MODERN JEWELLERY, FROM 1900–1914

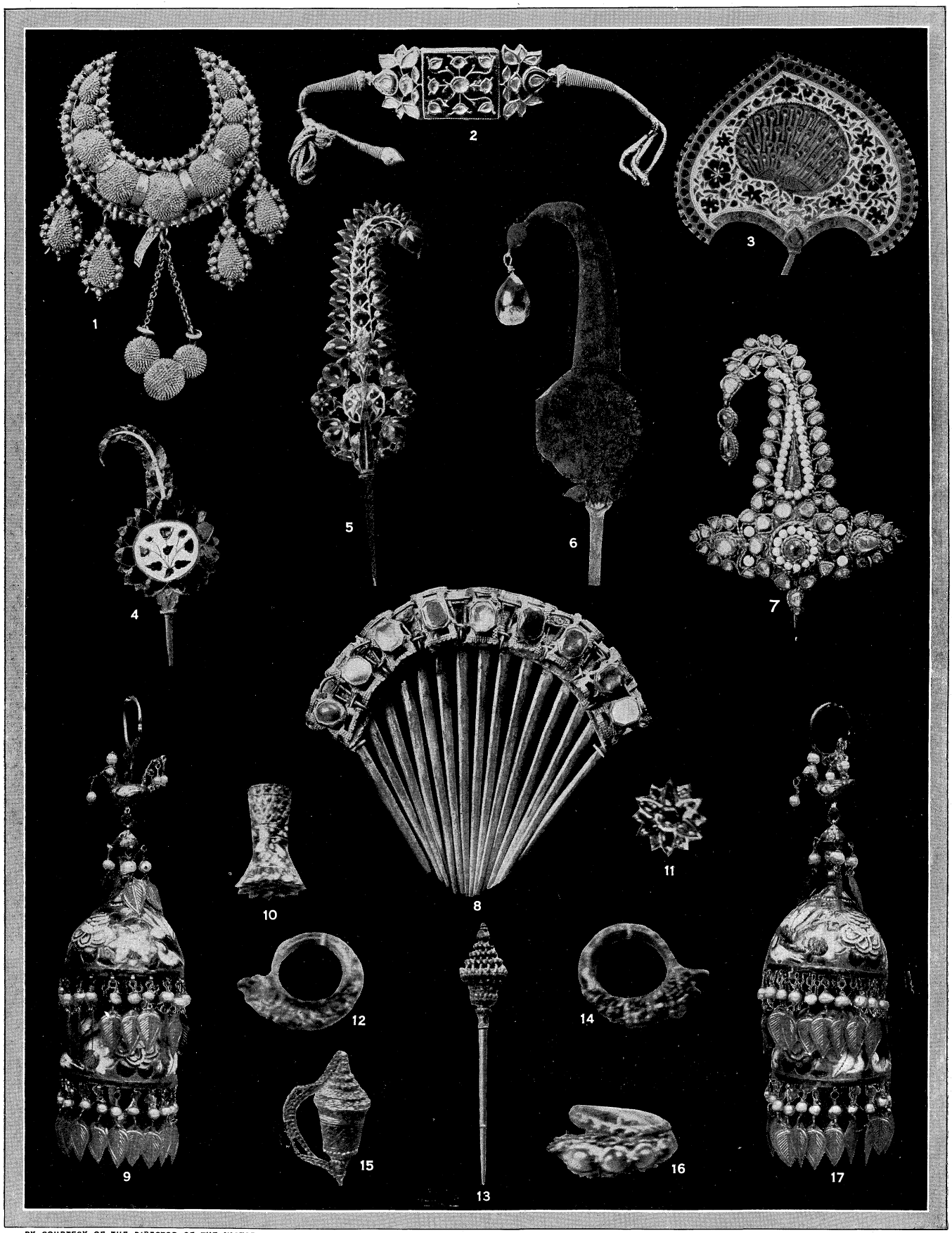
1, 12, 17, 18, 28, 31. Diamond pendants, (17) with emeralds. 2, 3, 4. Diamond tiaras. 5. Diamond comb. 6, 9, 23, 24, 25. Neckbands and sautoirs of diamonds on moiré ribbon. 7. Head ornament in diamonds and pearls. 8, 10, 13. Dog collars in diamonds, (10) with pearls. 11. Diamond fourche. 14. Diamond plaque for dog collar. 16. Fourche in translucent enamels and amethysts. 15, 22. Stomachers in diamonds, (15) with sapphires. 19. Pearl and diamond sapphire ring. 20, 29, 32. Diamond brooches. 21, 26. Back and front of bolero in diamonds and other precious stones. 27. Diamond necklace. 30, 33. Diamond bracelets. 34, 38. Diamond lorgnettes. 35, 37. Diamond buckles. 36. Hand bag with gold and enamel frame

JEWELLERY



EXAMPLES OF MODERN JEWELLERY

1, 2, 5. Diamond tiaras. 3, 4, 6, 8, 11. Flexible bandeaux of diamonds, (3) with emerald. 7. Diamond Fourches. 9, 10, 12, 13, 15, 16, 19, 20, 23. Earrings of diamonds, pearls, emeralds, onyx or crystal. 17, 18, 27. Diamond necklaces (17, 27) with emeralds. 14, 21, 22, 24, 25, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 42. Brooches in diamonds, and other precious stones. 37, 48, 49, 50, 51. Gold link bracelets, (48) with carnelians. 38, 39, 40, 45, 46, 47. Flexible bracelets in diamonds. 41, 44. Diamond bangles, (41) with onyx, (44) with emeralds. 43, 54, 55, 56. Vanity cases in gold and enamels. 52 and 53. Two views of emerald cut diamond ring. 57, 58. Two views of round diamond ring

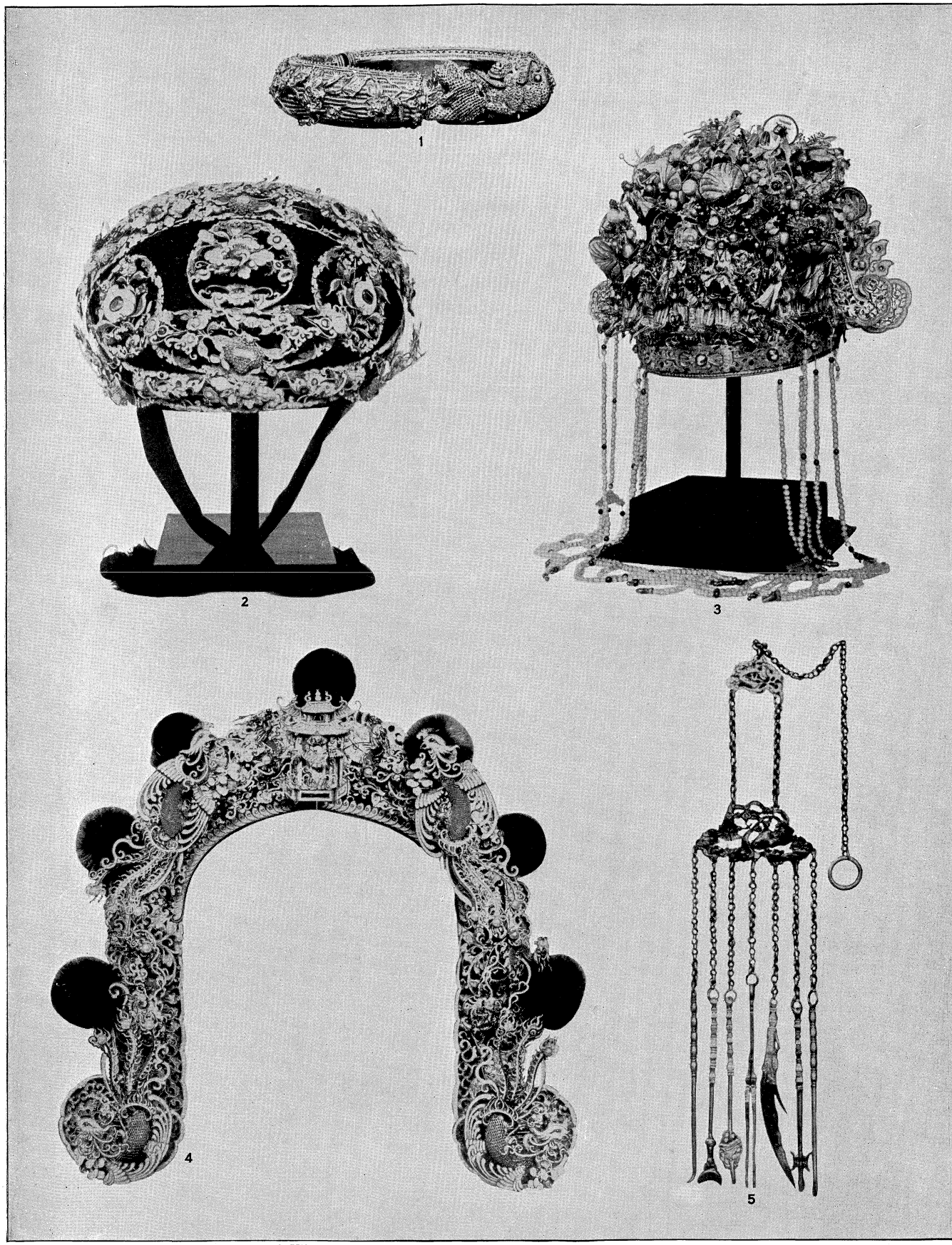


BY COURTESY OF THE DIRECTOR OF THE VICTORIA AND ALBERT MUSEUM

INDIAN, PERSIAN AND SIAMESE JEWELLERY

1. Crescent shaped brooch of granulated gold from Delhi. **2.** Glass armlet inlaid with diamonds set in gold, India. **3–6.** Turban ornaments of gold decorated with enamels. From Jaipur in Rajputana. **7.** Pine-shaped turban ornament from Benares set with precious stones. **8.** Nepalese silver comb with nine stones set in gold. **9 & 17.** Pair of gold enamelled earrings fringed with rows of seed pearls and gold leaves. Persian. **10 & 11.** Ear plugs of jewelled gold. Assam. **12, 14, 16.** Jewelled gold rings in forms of dragons. Siamese. **13.** Gold hair pin for knot on top of the head. Siamese. **15.** Gold case for scented ointment. Siamese

JEWELLERY



BY COURTESY OF THE DIRECTOR OF THE VICTORIA AND ALBERT MUSEUM

CHINESE (MANCHU) HEAD-DRESSES AND JEWELLERY

1. Bracelet of gold filigree work in the form of two dragons
2. Head-dress of silk and silver-gilt worn by a Manchu lady of high rank
3. Silver-gilt filigree cap, probably a wedding head-dress, worked in a design of human figures and insects; ornamented with kingfisher plumes, pearls and coral
4. Bride's head-dress of silver-gilt filigree with applied ornament in form of a temple, dragons and phoenixes. Height, 12 in.
5. Chatelaine of gilt metal chains and pendants holding seven silver-gilt implements for the toilet. Length 15¼ in.

thin slices of garnet set like enamel in metal cells (Plate A 2, 4, 7, 8), a technique ultimately derived from Egypt and probably transmitted through the Crimea. It is represented in the great 4th-century treasure found at Petrossa, 60 m. from Bucharest, and appears to have been in use nearly all over Europe between the 3rd and 8th centuries A.D. At the same time under Byzantine influence cloisonné enamel (*see* ENAMEL) was used for exceptional pieces, such as the famous Alfred jewel (Plate A, 1–3). This common tradition, however, was modified by each of the great European tribes into a style characteristic both in design and technique. Thanks to the general custom of burying their jewels with the dead these types of jewellery are well represented in European museums.

Ostrogothic Jewellery.—In Italy classical influence was strong, but the Ostrogoths developed the type of the Roman radiated fibula into brooches of great magnificence, and combined the Byzantine interlaced style with the northern style of animal decoration, to produce a type of ornament that was to be yet more fully developed in Scandinavia.

Visigothic.—The Visigoths used cloisonné work set with garnets or pastes, combined with pearls and cabochon gems set in fretted gold. The most splendid surviving Visigothic jewels are the crowns dedicated by Kings Svinthila (621–623) and Reccesvinthus (649–672), now in the Musée de Cluny, Paris, and the Real Armería, Madrid.

Frankish.—The Franks practised a more Germanic style, but with their settlement of Gaul came under the influence of the Gaulish classical tradition. Their characteristic forms are rosette or circular brooches, generally decorated with filigree, brooches shaped as birds, and buckles of heavy rectangular form. They also developed the Roman type of radiated fibula with oval foot and square or semicircular headplate (a type which was also used with a lozenge foot in the Rhineland), and occasionally used the classical fish and horse forms of brooch. The goldsmiths of the Belgian provinces practised a "chip carving" style of design, that was common over a wide area in the 5th century but was later characteristic of Scandinavia.

Scandinavian.—Scandinavia developed the common types along complex lines and produced fibulae of great size and elaboration. In the 5th century Sweden was the end of a Byzantine trade route, but after this period classical influences are very slight. The Swedish "bracteates," circular pendants of thin gold, are at first imitated from Roman medallions of the time of Constantine, but in the 5th century the local style of animal ornament supersedes this, and when coins are imitated they are Anglo-Saxon sceattas.

In Norway, too, fibula types of the 4th, 5th and early 6th centuries are derived from Roman or Crimean Gothic originals but after about 550 the types become national. The Scandinavian "tortoise" and trefoil brooches are entirely characteristic; the former date from the 7th to the early 11th century, while the latter are characteristic of the 9th and 10th centuries. These and cognate circular brooches (Plate I., fig. 5) are generally decorated with symmetrical designs of considerable beauty. The relations between Scandinavia and Ireland in the 8th and 9th centuries brought in the type of penannular brooch which in its attenuated northern form is characteristic of the Viking age.

English.—In England types from many of these areas were received and modified. The Continental type of gold filigree and garnet work was introduced by the Jutish settlements of Kent, the Isle of Wight and part of Hampshire (Pl. I., figs. 2, 4, 8). In Sussex, Surrey, Berks and Oxon "saucer" fibulae of a type found in the Hanover district are fairly common, while north of the Thames complex Scandinavian types are general. With the introduction of Christianity such forms as pendant crosses (Pl. I., fig. 7) come in, and Carolingian and Byzantine influence is evident.

Celtic.—Ireland, and in a lesser degree Scotland, had types of their own, of which the most interesting and characteristic is the penannular brooch. Generally of great size, and worn on the shoulder with the pin pointing upwards, it was richly decorated; and the finest example, the "Tara" brooch, represents the climax of Celtic art as it is known to us, with an infinite variety of the delicate interlaced patterns that are characteristic of Irish work. This probably dates from the 8th century. The type continued in use until the 10th century (Pl. I., fig. 9) or later.

Mediaeval Jewellery.—With the dawn of the Middle ages the barbarian tradition of form and pattern in jewellery comes to an end; jewellery takes its place as one of the many industrial arts, fostered first in the monastic workshops for the service of the Church, and then by the jewellers of the towns. At the same time our knowledge of it is drawn from different sources. After Carolingian times the custom of burying jewels with the dead fell into disuse; but with the development of graphic and plastic art more and more jewels were represented in painting and sculpture, and with the development of a settled society more and more were accurately described in wills and inventories.

The brooch continued to be the most characteristic ornament, but the Roman safety pin type fell into disuse. The mediaeval brooch is nearly always a ring-brooch, of which the pin is held in position by the pull of the stuff through which it passes. The ring-form was modified in endless ways: it might be partly filled in, as on the great Eagle brooch at Mainz (Pl. II., fig. 2) or its rim might be formed as a wreath or a heart or in more fantastic shape. The other characteristic mediaeval jewel is the reliquary or devotional pendant (Pl. II., figs. 4, 6) chased or enamelled with religious subjects, often set in an architectural frame. In the 14th and 15th centuries jewellery became increasingly a part of dress (*q.v.*), and was fashioned into belts and chaplets, hair nets and necklaces, and sewn upon garments. The personal motto of the wearer, or an amatory sentiment, was often inscribed upon jewels.

Renaissance Jewellery.—With the Renaissance (*q.v.*) the link between jewellery and costume became still closer. On occasions of ceremony the whole dress was sewn with jewels, as many portraits of the 16th century show. A new class of artificers in metal came into being, whose only concern was with such small objects as jewels. Henceforward a gradual loss of plastic quality is noticeable, compensated by an increasing skill in the cutting and display of gems. At the same time the development of the art of engraving, and the publication by this process of designs for jewels, helped to standardize their patterns throughout Europe. Both these developments, however, were gradual; and the design of Renaissance jewels shows no lack of individual fancy, and is often conditioned by the shape of an oddly-formed gem or baroque pearl. (Pl. II., fig. 8.) The Reformation and the classical revival combined to bring the religious symbolism of mediaeval jewel-design to an end; only in Italy and Spain did the mediaeval reliquary classical types survive; but an occasional allusion in subject (Pl. II., fig. 9) is all that is classical in Renaissance jewels. A new class of portrait-jewels came into being (Pl. II., fig. 5), and many jewelled cases of great beauty were made to contain portrait miniatures.

Jewels of the 17th and 18th Centuries.—With the 17th century a certain change is evident. Jewels cease to be works of art with some idea or fancy to express, and become mere personal ornaments beautiful in line and in material but without any deeper significance. (Pl. III., fig. 3.) Many improvements were made in technique; the art of gem-cutting was developed (*see* GEMS IN ART), and by the middle of the 17th century rose and brilliant cutting had almost superseded the older table cut diamond, and the enamellers produced painted flower enamels of great beauty (*see* ENAMEL), as well as enamels in such delicate technique as *émail en resille sur verre,* of which the ground is not metal but glass; and the jewellers learnt to mass their gems and to set them with great lightness and elegance in leafy settings of gold and silver (*see* SILVERSMITH'S AND GOLDSMITH'S WORK). (Pl. III., fig. 1.) With the development of this style, which in a modified form still influences jewellery design, the forms of jewels tended to become stereotyped. The characteristic jewel of the 18th century is the *parure:* ear-rings and brooch, necklace or clasp, and ring and sometimes shoulder-brooches or buckles, all to match, set with diamonds alone or in combination with rubies, topazes, sapphires or emeralds.

19th Century Jewellery.—With the change of fortune that accompanied the French Revolution the two categories continued

to exist. For State occasions the Napoleonic court imitated the *parures* of the ancient régime, with the addition of a jewelled coronet of classic form, while for every-day wear they, and poorer folk, contented themselves with *parures* set with semi-precious stones, or shell cameos in mounts of delicate filigree of gold enamelled with small patterns in black or blue. Other jewellery of modest intrinsic value depended on sentimental interest, and often contained the hair of a friend, relative or lover. With the Restoration in France and the shifting back of the centre of fashion to a class impoverished by revolution and war, such semi-precious jewellery became increasingly important, and quantities of topaz, amethysts and aquamarines were imported from Brazil and Mexico. Diamonds and precious stones were set in light flower, leaf and wheat ear patterns that could be executed in stones of lesser size. With the reign of Louis Philippe the influence of mediaeval and Renaissance decoration was shown in the use of Gothic arcadings and Baroque scrolls on jewels, but there was no revival of the refined technique of the earlier period. Jewellery, indeed, became steadily more stereotyped in its form and more industrial and mechanical in its production.

With the creation of the Second Empire (Pl. III., fig. 2) many jewels were designed on simple lines—frets, crescents, stars and so on—simply to display the diamonds with which they were set, while others attempted to imitate flowers with inartistic verisimilitude (Pl. III., fig. 5). A few jewellers, such as Lucien Falize in Paris and Giuliano in London, revived the Renaissance style alike in design and technique, and produced beautiful work in enamelled and jewelled gold. At the same time others—notably Castellani of Rome and Fontenay of Paris—drew inspiration from such classical jewellery as that of the Campana collection, and produced delicate "Etruscan" work in gold adorned with filigree.

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MODERN JEWELLERY

1851–1900.—In 1851 the wealth of European countries was rapidly increasing. Rich families had sprung up amongst the middle-class, and the nobility too had benefited by the rise of the industrial era. The jewellery made on the occasion of the Emperor Napoleon III.'s marriage was on a scale worthy of the most brilliant courts that France had known. The most precious stones were used, diamonds, pearls, sapphires and emeralds, in silver and gold settings. The base of the mountings was still in gold, but the front was made of silver, brilliantly polished in order to detract as little as possible from the diamonds themselves. The Empress Eugénie and Princess Mathilde revived the fashion of wearing strings of pearls in the evening. Large bracelets were also worn, mainly made of diamonds on a background of enamelled or engraved gold. Diadems were worn, curved to fit closely to the shape of the head.

When the brilliant court of Empress Eugénie was dispersed in 1870, inspiration and taste seemed momentarily to have deserted the French jewellers. Jewels were plentiful because the country was getting rich and the diamonds were more easily obtainable on account of the opening of the mines in South Africa. The jewellers turned to the choice of good stones and the manufacture of settings that would show off their beauty, but the designs, continually repeated, were generally poor.

The most characteristic jewels of this period were brooches and head ornaments made in the shape of crescents or stars, or with a bowknot design, and necklaces made of a succession of single stones, called *rivières*. The improvement in the settings which had taken place in the reign of Napoleon III. was due to a large extent to the fact that more liberal prices were paid to the working jewellers instead of the strict tariff which had been applied before. Something of the same kind also took place with regard to stones about 1878. A new class of purchasers came to Europe from South America and later North America, who were willing to pay very large sums for stones of exceptional size and quality. Whilst size had been the main attraction in the previous collections pearls were now chosen for their quality. Valuable stones were mounted and worn as rings, bracelets, earrings (mostly single diamonds called *solitaires* or large round pearls hanging from a small diamond), hairpins, feathers, or pendants. Gold jewellery having been replaced mostly by diamond jewellery, chiselled gold work was confined mainly to powder boxes, card cases, umbrella handles and handbags.

1900–1914.—The beginning of the 20th century marks a reaction against the monotony and lack of imagination of the style prevalent in jewellery since 1870. This reaction showed itself in two very different ways: (1) A number of jewellers favoured an idealistic interpretation of nature without any connection with past styles, which took the name of new art. This branch of the modernists attracted considerable attention at the 1900 "International Exhibition" in Paris. Their novelty lay not only in the designs, but in the choice of material—translucid enamels, ivory, horn. The beauty of the jewel was to come from the perfection of the artistic conception; the value of the precious stones employed was of less importance than their appropriateness to the scheme. Outside France, the new art in jewellery appealed principally to Germany, Austria, and Scandinavia. (2) In all countries, however, a larger section of the public favoured the other group of jewellers who, reacting against the soulless repetition of washed-out classic designs, turned back for inspiration to the old styles at their best periods.

As a reaction against the use of a relatively uniform scale of stones which gave jewels a heavy effect, small diamonds were used together and in contrast with the large stones they were to accompany. The diamonds were set in platinum instead of gold and silver. Platinum had been used experimentally since the 18th century, but it was only in 1900 that it started to be used exclusively in the setting of diamonds and found favour on account of its brightness and its superior hardness, which permitted of considerably lighter settings. As the new settings reduced the diamond to its proper size, the jewellers had to use larger diamonds than they had in the old settings which had made the stone appear larger than it actually was. All the jewels became more brilliant and more costly. Another change was that bracelets, worn in the preceding period in the shape of rigid and tightfitting bangles, were now made supple and loose.

A trimming revived from the 18th century was the velvet ribbon worn at the top of the neck with a small pendant hanging in front. These ribbons were edged with diamonds set on a mounting of platinum covered by black velvet. The fashion of the narrow velvet ribbon was followed by that of the jewelled *plaque de cou* occupying the front of the neck, worn either on a wide velvet ribbon or else attached to a number of rows of pearls clasped tightly round the neck. This again was followed by the diamond dog-collar.

At this period most ladies wore their hair "Pompadour" fashion in front, with a chignon at the back. This enabled them to wear diamond combs and diamond hairpins called *fourches*, mounted on large tortoiseshell pins. With this way of wearing the hair piled high on top of the head, diamonds and tiaras were no longer worn flat to the head, as in the Empire period and the Victorian era, but were mounted on metal frames, resting on the top of the head. The prevalent shape of the tiara was the so-called

"Russian" shape, or sun-rays, which could be turned into a necklace or the seven points carrying an important stone at the tip of each point. On the occasion of the coronation of King Edward VII. a great many of the tiaras of the English nobility were reset in a new style, and during his reign tiaras were worn at all important receptions. On such occasions the ladies also wore large brooches, sometimes called stomachers, occupying the entire front of the dress.

As mentioned above, the great preponderance of diamond rings over all other kinds came from the fact that most ladies chose diamond rings for their engagement rings; the diamond, being indestructible, was considered eminently suitable for such an occasion. These are now always set in platinum. The diamond ring is either a solitaire, a stone weighing from one to ten carats, or a single stone surrounded by one or two rows of smaller diamonds. The actual ring itself sometimes carries three or five smaller diamonds on each side of the main stone. After diamonds, pearls, sapphires, emeralds and rubies are the most worn.

Since 1907 the demand for pearls had grown very quickly. Not only were strings of large pearls worn, but neck-bands, bracelets and chains, made of small pearls strung together in patterns, were sold in numbers. Diamond pendants, which could no longer be worn on the neck because of the fashion of strings of pearls, were worn on long chains, hanging below the decolletage. The great quest of pearls took European jewellers to India, from whence they brought back emerald beads, until then worn almost exclusively in Indian jewels, and engraved emeralds of all shapes became a factor on the stone market of Europe. The dominating note of the jewels at the end of this period was the combination of diamonds and black onyx.

Jewellery for men's wear was mostly confined to rings, links, studs, waistcoat buttons, scarf pins and watch chains. For rings the favourite shapes were signet rings in gold, and the gypsy ring in gold or platinum. Of the fancy shapes the snake rings were mostly in favour. The keynote of the rings, like all the jewellery worn by men, was simplicity and unostentatiousness, in comparison with the jewels worn at the beginning of the century. This is also exemplified in the watch-chains which used to be composed of heavy links of gold and enamel, but were now made of fine, delicate links of gold and black enamel. Scarf pins were very much smaller, to suit the ties, which had also decreased very much in size. The pearl scarf pin was the favourite. For waistcoat buttons the favourite stones were the onyx and diamond.

The word cuff-links was new and described the two buttons united by a chain which began to be worn at this period. Until 1870 the buttons in these links were generally of a very simple character, made of gold and only remarkable because of the work in the gold itself. It was only from about 1880 that precious stones were included in sleeve-links, and then only for the evening. From the inclusion of a single stone in the centre of the link, these gradually began to be done in precious stones set in platinum.

Since 1914.—Owing to the fashion of bobbed hair, hairpins and combs were replaced by diamond slides; diamond bandeaux worn flat on the forehead and round the head were worn at most receptions, whilst tiaras were reserved for court functions. Through the fashion of short sleeves, the jewel most in demand was the bracelet; this was from half-an-inch to over two inches wide.

Large sums of money have been invested in rings, mostly diamonds, emeralds, pearls, rubies and sapphires. Where a diamond of 10-carat used to be considered large, 15-carat diamonds are now frequently worn, the largest stones being worn for rings weighing up to 40 carats.

The difference between jewels worn during the day and those worn in the evening is less noticeable. Rows of pearls of great value are worn everywhere, at any time. The modern tendency is to wear two or three strings held together by the same important diamond or emerald clasp at the back, and falling closely together in front.

The use of the wrist watch and of vanity and cigarette cases has become universal. Regarding the latter, while gold and enamel remain the foundation, they are enriched by semi-precious or precious stones. They are also made of hard stones, such as black onyx, Russian jade, lapis, amber and grey agate, decorated with diamonds. The less expensive cases are made of tortoiseshell, Russian birch, or compositions resembling hard stones.

The dominant note in modern jewellery is the intensive use of coloured stones, the cutting of the stones, and the design. While no new coloured stones have been found, the blending of so many different kinds of coloured stones together has probably never been seen before. The results were obtained by the combined use of precious stones, semi-precious stones and hard stones such as black onyx, jade, lapis, amber and agate. While in previous periods all the stones used were round or square, now, except for the small round diamonds, the stones are cut in a variety of shapes to fit the design. Even the most valuable diamonds, regardless of weight, are now cut in square or rectangular shapes, like emeralds, and in such a way that only the finest, cleanest stones can stand the test. The use of coloured stones engraved with oriental designs has added a new touch to modern jewels. (J. CAR.)

See C. Holme, *Modern design in Jewelry* (1902); H. Barth, *Das Geschmeide* (2 vols. 1903–04); C. J. Davenport, *Jewelry* (1905); H. Vever, *La Bijouterie française au XIX Siècle* (1906, etc.).

CHINESE, JAPANESE, INDIAN AND PERSIAN

Nature and Use.—There can be few branches of craftsmanship in which the characteristics of a race are more clearly expressed than in its jewellery. Not only is the refinement born of centuries of civilization to be set against the untutored love of mere glitter, but many other factors have to be considered. Some of these become obvious at once when a comparison of the jewellery of the Far East with that of western Europe or America is attempted. Even the circumstance that in such a comparison Japan would have to be left almost entirely out of the question is relevant. Living in a mountainous country with scanty natural resources, and parted from their neighbours by the ocean, the Japanese hardly know the meaning of jewellery.

The character of the personal ornaments depends to a large extent upon the minerals and metals which a country provides, upon its climate, and upon the amount and nature of the clothing worn. Consideration must also be given to religious beliefs and national customs, giving to this or that article of jewellery a special significance, and limiting its use to persons of a particular age, condition or station. Personal ornaments may serve as indispensable articles of dress, rather than as mere embellishments, and their nature is thus to a large extent determined by the purpose they serve. The influence of religion and ritual observance is too obvious to need emphasizing. In the East, the custom of accumulating savings in the form of jewellery is a factor not to be overlooked. A young bride's dowry may consist entirely of personal ornaments in gold or silver, or of a headdress strung with coins or precious stones. But others too find in jewellery a convenient means of holding their wealth, enabling them to have it continually with them, both for safeguarding and for use when occasion requires.

India.—The jeweller's craft in India is of the highest antiquity. The forms of ornamentation of the jewellery described in the ancient Hindu epics is said to denote an unbroken continuity of tradition from those times of shadowy history to the present day, and even the names have suffered little change. The code of Manu, which is believed to have taken its present form about 2,000 years ago, contains a description of the jeweller's craft, and mentions the fines for bad workmanship and the punishment for debasing gold.

A Hindu drama, "the Toy Cart," written about the same time, describes a jeweller's workshop where craftsmen examine pearls, topazes, emeralds, sapphires, lapis lazuli, coral and other jewels. Some set rubies in gold, some string gold beads on coloured thread, some string pearls, some grind lapis lazuli, some cut shells and some turn and pierce coral. Sir George Birdwood points out the close relationship of such operations to the practice of the present day. A dialogue in the drama has reference to the skill with which jewellery was even then imitated.

Few early examples of Indian jewellery have been preserved to the present day. The sculptures of Sanchi, Bharhut, Amravati and Orissa, and paintings such as those of Ajanta, demonstrate the similarity in appearance of the ancient jewellery to that still made and worn. Numerous representations of the Hindu gods, whether human or animal, illustrate the early use of tiaras, necklaces (sometimes hanging in festoons to the waist), armlets at the elbow, bracelets, anklets and other forms of jewellery.

One of the oldest known examples of ancient Indian jewellery in existence is a small relic casket found in a Buddhist shrine in the Kabul valley near Jellalabad. It is of gold, studded with balas rubies, and when found it contained burnt pearls and coral, and beads of sapphire, agate and crystal, besides a number of small gold ornaments. Coins found with the casket show that its workmanship is to be attributed to the 1st century B.C. It betrays Greek influence, due to the conquests of Alexander the Great.

The Indian goldsmiths are expert in the economy of the precious metals, beating gold and silver into the thinnest plates. Bracelets often end in the head of an animal; earrings represent the flower of the lotus; and various blossoms are fashioned for hairpins. It is principally in the south of India that elaborate gold jewellery is made with subjects in relief from the Hindu mythology. The ancient art of soldering gold in minute granulations has never been lost. The crescent-shaped gold brooch (Pl. VII., fig. 1) made at Delhi, with gold pendants and openwork setting, is an admirable example. Filigree is done in many places; the silversmiths of Cuttack, of Kashmir and of Bengal excel in this work. The armlet (Pl. VII., fig. 2) formed of diamonds set in gold upon a glass foundation is of Bengal workmanship. The back is ornamented with flowers in coloured enamels.

The art of enriching gold jewels with enamel has been carried to great technical perfection in India, particularly at Jaipur in Rajputana. The pattern is chased and engraved in sunk relief on the jewel, and the hollows filled with transparent enamel in brilliant hues, principally red (derived from copper and iron), green (from copper), and opaque white (from tin). The turban-ornament (Pl. VII., fig. 3) of gold is a beautiful example of Jaipur enamelling of the 18th century. The peacock and the surrounding floral ornament are in translucent coloured enamels on an opaque white ground. The rim was formerly mounted with a row of pearls. Three other chased gold turban-ornaments illustrated were made in the state-workshops of Jaipur in the 17th and early part of the 18th century. Two (Pl. VII., figs. 4–5) are enamelled in red, green and opaque white; the other (Pl. VII., fig. 6) is in green enamel. The last turban-ornament illustrated (Pl. VII., fig. 7) is of Benares workmanship. It is of gold, with rubies, emeralds, diamonds and pearls set in gold filigree.

Nepal, Assam, Burma and Siam.—A Nepalese silver comb (Pl. VII., fig. 8) has nine stones mounted in gold and attached by stout wire. The gold ear-plugs (Pl. VII., figs. 10–11) of the 18th century are from Assam. They are set with rubies and emeralds.

The jewellery of Burma and Siam has a semi-Chinese character. The Burmese necklaces, with their multitudinous strings of gold beads, sometimes interspersed with pearls and gems, are characteristic. Five Siamese gold ornaments are here reproduced. The hairpin (Pl. VII., fig. 13) is used for fixing the knot on the top of the head. The small urn-shaped case (Pl. VII., fig. 15) is for holding scented ointment. The jewelled rings (Pl. VII., figs. 12, 14, 16) are in the form of dragons.

Persia.—In Persia much of the jewellery is in enamelled gold. Shiraz is the chief centre of this work. A pair of massive gold earrings is here illustrated (Pl. VII., figs. 9 and 17). Each consists of two gold domes, enamelled with flowers in colours and fringed with rows of seed pearls and gold leaves. Talismans and amulets, much used in Persia, are sometimes of enamelled gold. Small silver boxes for carrying opium are often embossed in high relief.

China.—Jewellery in China is characterised by a delicacy and manipulative elaboration for which the Chinese craftsman shows great aptitude. Silver is by far the most usually employed of the precious metals, though ornaments are occasionally of solid gold. Silver jewellery is generally gilt to safeguard it from tarnishing. Rubies, amethysts and other precious and semi-precious stones are used—not cut in facets, but polished and set *en cabochon*. Gems and pearls are frequently drilled through and attached by means of a fine wire. Flexible strings of jewels, often interspersed with plaques of carved jade or enamel, are worn as personal ornaments and employed in a variety of other ways. This practice gives a distinctive character to Chinese jewellery.

Personal jewellery in China often takes the form, or bears the images, of the animals, real or fabulous, and the numerous ritual and symbolical objects of Chinese art and culture. A dragon or phoenix may form a bracelet or decorate a headdress or a hairpin. The "precious ornaments," or eight Buddhist emblems of happy augury, are strung with rows of pearls or used separately. It should be noticed that the first of the "precious ornaments" is a round jewel wreathed with a fillet, and that innumerable works of art represent the dragon pursuing or grasping the flaming jewel of omnipotence. Emblems often indicate the rank and office of the wearer, from the emperor downwards. Special ornaments were worn by the Manchu or Chinese ladies, and various limitations were imposed by sumptuary laws.

Gold and silver plaques were manipulated in several ways. They might be pressed into moulds, hammered in relief, cut into openwork patterns or engraved. The dexterity of the Chinese craftsman has carried the art of filigree (*q.v.*) in the precious metals to a degree of intricacy and minuteness unsurpassed elsewhere. It is used for the most elaborate headdresses and for all kinds of personal ornaments. Jewellery in gold and silver is often enamelled—gold generally in light blue obtained from copper, and silver in dark blue from a cobaltiferous ore; both colours are also used together.

The gold filigree bracelet (Pl. VIII., fig. 1) is in the form of two dragons. The headdress (Pl. VIII., fig. 2) was worn by a Manchu lady of high rank. It has a wire foundation covered with silk and mounted with panels of silver-gilt filigree in the form of bats (for happiness) and peaches (for longevity). It is overlaid with kingfisher plumes and enriched with amber, jadeite, amethysts, coral and pearls. The cap of state (Pl. VIII., fig. 3), from the Summer Palace, Peking, is also of silver-gilt filigree with kingfisher plumes and enrichment of pearls and coral. The ornament includes figures of Taoist immortals, birds and butterflies. The bride's headdress (Pl. VIII., fig. 4) is of the same materials, showing a temple-pavilion, dragons and phoenixes. The chatelaine (Pl. VIII., fig. 5) has a row of silver-gilt toilet articles. There are various forms of hairpins, hair-ornaments, cap-ornaments, earrings and buttons in silver and silver-gilt, with jewels, enamels and kingfisher plumes.

The Indian practice of inlaying precious stones in finger-rings and plaques of jade was copied in China, where jade and jadeite rank among the most valued of precious stones. Figure-subjects are sometimes carried out in gems and semi-precious stones, encrusted on plaques of white jade. Small personal ornaments of many kinds have been carved in jade. For Egyptian Jewellery *see* EGYPT: *Archaeology: Detail.*

See GEM; JADE; SILVERSMITHS' AND GOLDSMITHS' WORK.

Also *see* Sir G. Birdwood, *The Industrial Arts of India* (1880) and S. W. Bushell, *Chinese Art* (Victoria and Albert Museum handbook).

JEWETT, SARAH ORNE (1849–1909), American writer, was born in South Berwick (Me.), Sept. 3, 1849. She was a daughter of the physician Theodore H. Jewett, whom she has drawn in *A Country Doctor* (1884) and to whom she dedicated *Country By-Ways* (1881). She studied at the Berwick academy, but her chief training came from her long drives with her father as he visited his country patients. In 1869 she contributed her first story to the *Atlantic Monthly*. Her best work consists of short stories and sketches such as those in *The Country of the Pointed Firs* (1896). The people of Maine, with their characteristic speech, manners, and traditions, she described with peculiar charm and realism. The background, too, she touched in with loving care. She was awarded the degree of Litt.D. by Bowdoin college in 1901. She died at South Berwick (Me.), June 24, 1909.

Among her publications are: *Deephaven*, a series of sketches (1877); *Old Friends and New* (1879); *A Marsh Island* (1885), a novel; *A*

White Heron and Other Stories (1886); *The King of Folly Island and Other People* (1888); *Strangers and Wayfarers* (1890); *A Native of Winby and Other Tales* (1893); *The Queen's Twin and Other Stories* (1899); and *The Tory Lover* (1901), a historical novel. A selection of the best of her stories was made by Willa Cather (1925). *The Letters of Sarah Orne Jewett* were edited by Annie Fields (1911). C. M. Thompson treats sympathetically "The Art of Miss Jewett" in *The Atlantic Monthly,* vol. xciv. pp. 485–497.

JEWFISH, the name applied to several tropical American grouper fishes of the family Serranidae, especially the guasa (*Promicrops itaiara*) of the Caribbean sea, pale olive brown with darker spots, and reaching a weight of 500 lb. or more; the black sea bass (*Stereolepis gigas*) of southern California, reaching a length of 7 ft. and a weight of 500 lb., brown in colour, blotched with greenish-black and highly esteemed for the table; and the black jewfish (*Garrupa nigrita*), also reaching a weight of 500 lb., chocolate brown in colour and a favourite with anglers. It ranges from South Carolina south to Brazil.

JEWISH LITERATURE: *see* HEBREW LITERATURE.

JEWISH PHILOSOPHY. The term Jewish Philosophy is here used to denote the attempt of Jews to solve the general problems of Philosophy from the point of view of Judaism, and conversely to establish the doctrines of Judaism on a philosophic basis. It does not include, however, merely dogmatic statements about God, the universe and man, such as are found in the sacred books, for philosophy is characterized by method as well as content. Every general proposition concerning the nature and attributes of the Divine Being, the origin and processes of the universe, the nature, origin and destiny of man and the human soul, the rules of human conduct, and so on, belongs in content to philosophy. But the literature containing such propositions is not classed as philosophical unless the method is scientific, *i.e.,* rationalistic. Appeal to authority or faith or revelation is not a scientific or rationalistic method. Scientific method makes use of observation and inference, deductive and inductive. Authority, faith and revelation may themselves form the subjects of scientific study, and a rationalistic analysis of the topics mentioned would also come under philosophy. Accordingly, in a historical sketch of Jewish philosophy we exclude almost entirely the books of the Bible because, although the topics treated therein are also dealt with in philosophy, the method is not rationalistic, but dogmatic. The historians, the lawgivers and the prophets of the Bible appeal almost entirely to authority and revelation for opinion and guidance. The books of Job and Ecclesiastes form an exception and may be regarded as forming a transition from the purely dogmatic to the purely philosophic point of view. Nor can we include in this study the second literary monument of Judaism, the Talmud. And for the same reason. The Talmud is partly legal and partly legendary and homiletic. The legal and homiletical elements are based upon the Bible as revealed authority, and the legends are of course just legends. The fact is that the Hebrews in their creative period, both in Biblical and Talmudic times, had no scientific or rationalistic interests. We need not take literally the statement of Henry Sumner Maine: "Except the blind forces of Nature, nothing moves in this world which is not Greek in its origin"; but as concerns the application of rational analysis to the phenomena of nature and of human life, the opinion of Maine is correct. And if the Jews, too, in the course of their life as a people began to philosophize, the impulse thereto is to be traced to Greek influence.

In pre-Christian times the Jews of Alexandria for the first time in their history came into contact with Greek life and thought. Being separated from their native country, Palestine, they quickly assimilated the Greek mode of life and intellectual atmosphere. Hebrew became a foreign tongue to them, and they read the Pentateuch in a Greek translation. They did not, however, forget that they were Jews, and the thinkers among them revered the laws of Moses and the rest of the Biblical books as the Word of God. At the same time they had a thorough appreciation of Greek science and philosophy which they tried to make their own. Being attached to two diverse cultures they felt the need of a synthesis or harmonization. The result was what is known as the Judeo-Alexandrian School of Philosophy, a brief description of which will be given later. When, in the middle ages, beginning in the 10th century, the philosophic movement was inaugurated among the Jews in Kairuan and in Babylonia and later spread to Spain, Provence and other European countries, the impulse was again due, though indirectly, to Greek literature. The immediate incentive came from the Arabs. But the Arabs themselves owed their interest in philosophical studies to the Christians in Syria and Mesopotamia, who in turn were the disciples of the Greeks.

The Judeo-Alexandrian school may be traced back in its crude beginnings to the 2nd century B.C., and its culmination in the works of Philo Judaeus (b. *c.* 25 B.C.) is contemporaneous with Christianity. The philosophical movement among the Jews in the middle ages was not a continuation of the Alexandrian philosophy. The latter spent its force, so far as the Jews were concerned, in Philo, who had no Jewish successors, though the Fathers of the Church almost adopted him as their own, and traces of his influence are found in Clement of Alexandria, Origen, St. Ambrose, and in all likelihood also in the prologue of the Gospel of St. John. The early mediaeval Jewish philosophers, like Isaac Israeli, Al Mukammas, Saadia and others, made a fresh beginning to rationalize the Jewish faith, following the example of the Arabs among whom they lived.

CHARACTER AND CONTENT OF JEWISH PHILOSOPHY

One characteristic is common to both schools of Jewish philosophy which distinguishes them from the classical Greek philosophy to which in part they owed their existence. It is an attribute which Jewish philosophy shares with all religious philosophy, hence with Christian and Mohammedan scholasticism. All the Jewish philosophers believed in a twofold source of truth, revelation and reason. We derive our knowledge, so the theory runs, partly from our own efforts, sense-perception and reason, and partly from Divine revelation, which is recorded in the Bible. This view does not necessarily vitiate the scientific character of religious philosophy if a rational attempt is made to show that God does reveal Himself to mankind and that this revelation is recorded in the sacred books. And though the attempts in this direction, made by the mediaeval philosophers, seem to us crude and naïve, we must judge them from their point of view and not from our own. Literary criticism did not exist in those days, and tradition enjoyed greater authority than it does now. Philological and critical interpretation was in its infancy, and texts were as clay in the hands of exegetes.

The idea of a twofold source of truth necessarily suggested itself by the presence of two series of literary documents, the one appealing to reason, the other to revelation. This dualism raised the problem of the relation between the two sources, and the solution was that there is no conflict between them. They supplement each other, and properly so, since reason alone is inadequate in matters transcendental, requires maturity and time and effort in all matters, and is fallible at best. Conduct cannot wait upon reason, hence must rely upon revelation until reason comes limpingly after to confirm the data of revelation. Opinion and belief are also a matter of great moment, both in themselves as necessary to salvation and as bases of conduct. Here, too, therefore revelation is necessary until reason comes to confirm it.

This is satisfactory enough as theory, but does not apparently square with the facts. The two sources sometimes seem to conflict. Revelation teaches creation of the world in time, reason suggests to Aristotle that the world is eternal. Revelation teaches free will, reason suggests to certain philosophers that human acts are determined by past causes. Revelation speaks of God in anthropomorphic terms, reason proves that God is incorporeal. The greater part of Jewish philosophy is devoted to reconciling these apparent conflicts. And the solutions always take one of two forms. Either so-called reason is at fault, and for apparent reason is substituted a better reason which does agree with revelation, or the current interpretation of the revealed documents is at fault, and for apparent revelation is substituted true revelation which does agree with reason. Hence Biblical exegesis played a very important rôle in Jewish philosophy, and it was not an insuperable task for a

Jewish philosopher in the middle ages to adopt the greater part of the philosophy of the day, because exegesis had much greater latitude in those days. Particularly the Bible, since it was not an ordinary book, and was intended for young and old, the learned and the unlearned, must have more than one meaning, and each person sees in the Bible as much as he is capable of seeing.

PROBLEMS OF JEWISH PHILOSOPHY

Judeo-Alexandrian School.—The main philosophical problem in Philo, apart from the general one of the relation between revelation and reason, which was discussed above, is the nature and attributes of God. Here Philo, under the cultural influences of his day which are only vaguely understood, deviated from the classical Greek philosophy of Plato, Aristotle and the Stoics whom in eclectic fashion he ordinarily follows, as well as from the Old Testament. And herein consists his original contribution to philosophic and theologic thought. The Biblical conception of God is in many parts frankly anthropomorphic. The classic philosophy of the Greeks depersonalized God to a great extent and thought of Him as disembodied thought or reason. Philo, on the other hand, conceived of God as transcendent, *i.e.*, altogether unlike anything in human experience and hence unknowable and inconceivable to the human mind. His transcendence, moreover, makes it impossible for Him to mould matter into a world, and hence His relation to the world is only indirect. Certain powers emanate from Him, constituting subordinate beings or divinities through which the world has taken shape. Chief among these and embracing them all is the Logos, which represents God's reason, though it is at the same time a distinct personality and is once referred to as the Son of God. It is through this Logos that the transcendent God moulds matter into a world and rules it as the soul rules the body.

This doctrine of the Logos, which must have been a stumbling-block to the Jews, impairing, as it seemed, the basic monotheism of the Jewish religion, was eagerly accepted by the Church, and thereafter, in all Christian theology, patristic as well as scholastic, the Logos, incarnate in Jesus, was identified with the second person of the Trinity. This was perhaps the reason why Philo's philosophy was never more than an episode in Jewish thought.

The Mediaeval Period.—In the 10th century Judaism was divided into two sects, the Rabbinite and Karaite. They were divided on the question of the authority of the Rabbinic tradition. The Mishnah and the Talmud were rejected by the Karaites as authoritative interpretations of the Bible. To the Rabbinites, on the other hand, the Oral Law, as tradition was called, was coeval with the Written Law of Scripture and hence equally authoritative. Both of these schools of Judaism followed the example of the Arabs, who, in the East and later in Spain, were so enamoured with Greek scientific and philosophic thought that they assimilated the various phases of it with enthusiasm, and in the course of three or four centuries (from the 9th to the 12th) developed a rich literature of their own on the subjects of logic, ethics, metaphysics, mathematics, natural science and medicine. It stands to reason that the Karaites, who were not bound by tradition, found their philosophic path less beset with difficulties than the Rabbinites, but on the whole the progress of the two was more or less parallel, since the fundamental theological and metaphysical dogmas were the same.

The main problems which concerned the Jewish philosophers in the middle ages may be classed under the following heads: God, the World, Man, his Soul, Conduct, Revelation, Reward and Punishment. All other problems of logic, physics and metaphysics were merely auxiliary or instrumental. They were studied as means to an end, the end being a true understanding of God and His relation to the world and particularly to man. As the predominant philosophy among the Arabs changed, so did the Jewish thinkers pass from one point of view to another. And the Arabs, too, advanced from one mode of conceiving metaphysical problems to another according as more of ancient Greek philosophical literature became known to them in Arabic translation. The succession of schools, therefore, in Arabic and Jewish philosophy was not the same as among the Greeks, since it did not represent, as in the case of the originators, an immanent development based to a great degree on logical necessity and only incidentally affected by historical circumstances. Among the Arabs and the Jews, historical circumstances played a greater rôle than logical necessity. Thus the neo-Platonic point of view, which was the last stage in Greek thought, preceded, among the Arabs and the Jews, the Aristotelian stage, which was separated from neo-Platonism in the land of Greece by the intervening schools of the Stoics, the Epicureans and the Sceptics. At the same time it cannot be denied that there must have been an inherent reason why the phase of philosophic thought which became permanent among the three religions in the middle ages was Aristotelianism. Peoples as unlike as the European Christians, the Mohammedan Arabs and the Jews agreed in making Aristotle the supreme authority where reason was concerned, and not Plato or Plotinus. It was probably because the rationalism of Aristotle was the extreme antithesis to the supernaturalism and mysticism of the several religions that the great desideratum was to harmonize them. Such harmony alone was able to produce the satisfaction that is felt in unity.

PHILOSOPHERS OF THE MIDDLE AGES

The Jewish philosophers of the middle ages can be best classified under four heads as follows: Kalamists, neo-Platonists, Aristotelians and anti-rationalists. These divisions represent the predominating tendencies and are not to be taken strictly. Many of the mediaeval Jewish philosophers were eclectic in their teachings, either consciously or unconsciously; consciously, in that they tried to harmonize diverse systems; unconsciously, because their sources were confused, and spurious works as well as apocryphal sayings circulated under the name of Empedocles, Plato, Aristotle, etc.

Kalamists.—Kalam is the name given to a system of doctrine which originated among the Arabs in the 9th century and continued until the eleventh. The adherents of this form of teaching were called in Arabic Mutakallimun, which may be anglicized into Kalamists. They were the first to add reason as an aid in arriving at true knowledge. In seeking for a basis in reason for their theology, they adopted the atomistic doctrine of the pre-Aristotelian philosophers, Leucippus and Democritus. The basis of all physical being is atom and accident. The atom is the basic substance, the accident is the quality or attribute. God created both, and His will alone determines what accident is to be joined to what atom. There is no other causal activity in the world except the Divine will; natural law and necessity are fictions established by philosophers on the basis of observed repetitions. There is no inherent difference between the ordinary and the extraordinary, the normal and the abnormal, the natural and the supernatural or miraculous, except as repetitions in the physical world create in us habits of expectation that what has happened before will happen again. To God nothing is normal and nothing is abnormal. The rare phenomenon of the division of the Red sea and the daily phenomenon of the rising of the sun stand on the same footing. If we leave out the Divine will we have in these views an anticipation of David Hume.

These doctrines were preliminary to the more properly theological teachings which the Kalamists advocated. In conformity with their reliance on reason they elaborated proofs for the existence of God which were based upon the doctrine of the world's creation in time. They argued as follows: The world either had an origin in time or not. If it had no origin in time, it had existed from eternity, and no one made it. If, on the other hand, it had a beginning in time, it must have been made by someone, since nothing can make itself. Hence if the creation of the world in time can be proved, the existence of a Creator can be proved likewise. Accordingly they proceeded to prove that the world was created in time, and then based upon this conclusion the proof of the existence of God. They defended the unity of God against the Christians, His incorporeality against the anthropomorphists in their own midst, and invented ingenious and hair-splitting discussions concerning the Divine attributes so as to make the absolute unity of God consistent with the theology of

the Koran. Unity was understood in the absolute sense as excluding any and every kind of plurality. There is no such unity in our experience, since every object, no matter what, has parts and divisions or is capable of receiving them. Hence God is absolutely different from everything else, and when we say, He is living, wise and powerful, we must not be understood as ascribing to God three distinct qualities. In God they are one with Him and with each other, though we do not understand how.

The Kalamists also defended God's justice against the orthodox views of the arbitrariness of the Divine will and of fatalism or determinism. If good and evil, right and wrong, mean simply conformity to and deviation from God's will, then God's will is neither good nor evil, and God is neither just nor unjust. This is an untenable doctrine, hence they taught that good and evil are absolute and not relative to the Divine will. God wills the good because it is good and abhors evil because it is evil. Similarly if man is determined to act as he does, reward and punishment are not just. Hence to vindicate God's justice they taught freedom of man's will.

The earliest Jewish philosophers followed the teachings of the Arab Kalamists. Among the Karaites may be mentioned: Joseph Al Basir (11th century) and Jeshua ben Judah (11th century); among the Rabbinites, David ben Merwan Al Mukammas (10th century), Saadia Ben Joseph Al-Fayyumi (892–942), Bahya Ibn Pakuda (12th century), Joseph Ibn Zaddik (d. 1149). The Karaites followed the Arab Kalamists more closely than did the Rabbinites, but none of the Jewish Kalamists went so far as to deny natural law. Thus Saadia, whose philosophical work *Emunot ve-Deot* (Beliefs and Opinions) is based upon the Kalamistic model, rejects the doctrine of metempsychosis or transmigration of souls on the ground that there must be a certain kinship between a given soul and its body, that the soul of a human being cannot be associated with the body of a lower animal.

Neo-Platonists.—The next wave of philosophic tradition that passed over Arabic culture and hence over Jewish culture also in Mohammedan countries, was the neo-Platonic. Plotinus was the founder of this school of thought in the 3rd century, and it was the last attempt of the Greeks to establish a system of philosophy on purely scientific though pagan lines. As the name indicates it was a return to Plato in the sense of being a spiritualistic philosophy, which regarded the material, the concrete and the sensible as unreal and as the source of evil. The intelligible alone is real and good. By intelligible is meant that which can be grasped by intellect alone and not by the five senses. The neo-Platonists, however, went even beyond Plato in assuming that that which can be apprehended by intellectual thinking is not the highest reality, that beyond the intelligible is the transcendent, which cannot be subsumed under the categories of thought. This is God, the unknowable. But though God cannot be known as we understand knowledge, an exceptional individual may in rare instances reach the state of enthusiasm or ecstasy in which, losing consciousness of himself as an individual, he may momentarily enter into a mystic union with the source of all being. This idea of the transcendence of God and of mystic union with Him is found also in Philo; and as the precursor of the neo-Platonic philosophy, Ammonias Saccas, who was the teacher of Plotinus, lived in Alexandria, it is probable that the Philonian philosophy had its share in the formation of the neo-Platonic doctrine.

In their derivation of the universe from God the neo-Platonists used the method of emanation, which makes their system Pantheistic. There is no creation *ex nihilo,* nor do they start, as did Plato and Aristotle, with two ultimate principles, mind and matter, or form and matter, but beginning with the One good God, they allow everything else to emanate from Him as light emanates from a luminous object. First emanates Intellect (Greek *νοῦς*), then universal Soul (*ψυχή*), then Nature (*φύσις*), then Matter (*ὕλη*), which, as the last in the series, is farthest from the Source and hence the coarsest, the least real and the source of evil, which is pure negation and not anything positive.

The chief representative of the neo-Platonic philosophy in the Jewish literature of this subject is Solomon Ibn Gabirol (*c.*1021–*c.*1070), though neo-Platonic ideas are also found in Isaac Israeli (855–955), the oldest Jewish philosopher of the middle ages, Bahya, Pseudo-Bahya, Abraham bar Hiyya (12th century), Joseph Ibn Zaddik, Judah Halevi (12th century), Moses (1070–1138) and Abraham Ibn Ezra (1092–1167). Gabirol's *Fons Vitae* is completely neo-Platonic, though he deviates from the traditional neo-Platonic doctrine in placing universal matter and universal form in all the stages of existence as they emanate from God, instead of making matter the last stage in the emanation series. Matter itself changes its nature in the course of its descent and coarseness is not the property of matter as such, but the result of increasing distance from the source. The essential quality of matter is rather indeterminateness, as determination is the characteristic quality of form.

Aristotelians.—The last positive philosophic stage among the Jews of the middle ages was Aristotelianism, and to this system of philosophy belong the most important Jewish thinkers of that period, namely, Abraham Ibn Daud (1110–80), Moses Maimonides (1135–1204) and Gersonides (1288–1344). Aristotle's is the most rationalistic system of Greek antiquity, using the term rationalism not in contrast to empiricism but in opposition to mysticism. Perhaps intellectualism is the better word. Aristotle is regarded as the philosopher *par excellence* and all his works are studied with all their details, not necessarily the translations of them, but in the majority of instances paraphrases and commentaries on the works of Aristotle made by the Arabs Al Kindi, Al Farabi, Ibn Sina (Avicenna) and Ibn Roshd (Averroes).

Aristotle was the first to delimit the boundaries of the various branches of philosophy and to treat them systematically. Logic, physics, psychology, biology, metaphysics, ethics, politics, rhetoric and poetics are all rigidly distinguished, and each of them has a treatise or treatises devoted to it in the extant works of Aristotle. The politics and the poetics were rather neglected by the Jews, the former because the Jews had no State of their own and the latter because it had no bearing on theology or the Bible. To be sure there is poetry in the Bible, but the Jewish philosophers were interested in doctrine and not in literary form. All the other works of Aristotle, notably the logic, physics, psychology, metaphysics and ethics, were carefully studied, even if not at first hand, and the ideas contained therein were laid under contribution in the attempt to establish a scientific Jewish philosophy. Interest in Aristotle's problems was taken partly for their own sake, for the Jews did develop a scientific temper, and partly for an apologetic purpose to defend the dogmas of Judaism scientifically. And Biblical exegesis was introduced as an aid in the apologetic activity.

The most important part of the Aristotelian philosophy for the Jewish theologians was naturally his idea of God. His was the first scientific attempt to prove the existence of God irrespective of the religious motive. As is well known, Aristotle proves that the motion at the basis of all natural phenomena in the heavens and on earth requires for its existence an immovable mover, and an analysis of the concept of an immovable mover leads to the recognition of a being having the Divine attributes of unity and incorporeality. This demonstration was of immense importance for a religious philosophy and was adopted eagerly by the Jewish philosophers as soon as it became known to them. It took the place immediately of the Kalamistic proofs of the earlier writers and prepared the downfall of that system of doctrine. For Aristotle's proof of the existence of God could not be taken as an isolated bit of argumentation. Aristotle's ideas are not episodic, they are above all systematic. The argument for the existence of God carries with it the entire physical and metaphysical system of Aristotle without which it has no meaning. Hence Maimonides, in the second book of the *Guide of the Perplexed,* prefaces the Aristotelian proof with a list of 25 propositions, which sum up in the form of dogmatic conclusions the physical and metaphysical theories of Aristotle. Abraham Ibn Daud, in his *Exalted Faith,* does the same thing in a less concentrated and less skilful form. And Hasdai Crescas (1340–1410), the Anti-rationalist, undermines the Aristotelian doctrine by undertaking to refute, in his *Light of the Lord,* the 25 principles laid down by

Maimonides.

The difference in method between the Kalamistic proofs of the existence of God and the Aristotelian is that the former were all based upon the doctrine of the creation of the world in time. Creation was proved first and the existence of God followed from creation. The Aristotelian proof was direct, though in proving God's incorporeality the assumption is that the world is eternal. This meant, of course, that one had to exercise caution in availing oneself of the Aristotelian arsenal for the purpose of borrowing arms for the defence of Judaism. There were those —not at all insignificant persons—who made precisely this charge that, in following the teachings of Aristotle, Maimonides and his school were falsifying Judaism. Maimonides did make use of the Aristotelian proof in place of the Kalamistic because he did not believe the creation of the world in time to be demonstrable by reason. But neither did he believe that Aristotle had succeeded in proving the world's eternity. As a matter of pure logic he thinks that the balance of probability is in favor of creation, and in creation he believes.

The treatment of the Divine attributes in the philosophy of the Jewish Aristotelians is also based on Aristotelian ideas. Unity and incorporeality are derived in Aristotelian fashion from the concept of the "unmoved mover." Thus the Aristotelian conceptions of matter and form and motion and change and nature and potentiality and actuality are adopted and laid under contribution. Nevertheless the doctrine of Divine attributes in its details is not wholly Aristotelian. In the first place God is the Creator *ex nihilo* in accordance with the traditional interpretation of the creation story in Genesis and not merely the prime mover causing the combination of the eternal matter with the eternal forms as in Aristotle. Secondly, there is an element of neo-Platonic transcendence in the conception of God both in the philosophy of Maimonides and in that of the other Jewish Aristotelians, who differ only in the degree of transcendence they ascribe to God, Maimonides being extreme in his views on the subject, while Gersonides is more moderate.

The Aristotelian cosmology as it relates to the motions of the heavenly bodies and their several spiritual movers—the spirits of the spheres, as they were called, or the separate Intelligences—was also adopted in part and made use of to find a place for the Biblical doctrine of angels. The angels of which the Bible speaks are none other than the movers of the spheres, and they are immaterial beings.

Aristotle's psychology was also adopted in part, the soul being conceived of as the form or entelechy of the body and not as a pre-existing and distinct entity which was placed in the body, as the Platonic view has it. The different parts and faculties of the soul, the senses—internal and external—etc., were also understood in the Aristotelian manner. And similarly Aristotle's doctrine of dreams and divination and his conception of the Active Intellect were adapted to the Jewish doctrines of prophecy and immortality. Prophecy was explained on psychological principles as being a combination of reason and imagination, Moses alone being an exception in that his prophetic gift was wholly supernatural; while the immortality of the soul was ascribed only to the intellect or reason, which is immaterial. The Active Intellect of Aristotle, which could be conceived of in various ways, since Aristotle's description of it is obscure, was, in Arabic fashion, identified with the mover or spirit of the lunar sphere, and was regarded by Gersonides as the bestower of the prophetic information upon the reason of the human individual. The surviving human reason is after death absorbed in the Active Intellect, to whose illumination it owes all its theoretical knowledge, the natural knowledge of the philosopher as well as the supernatural of the prophet.

The ethics of Aristotle played a less important part in Jewish philosophy, as it did not come in direct conflict with any specific Biblical or Rabbinic doctrine. Nevertheless Maimonides made use of Aristotle's ideas in his commentary on the ethical treatise of the Mishnah called *Abot*. In his introduction to his commentary he lays down the Aristotelian analysis of the faculties of the human soul as the basis of his ethical doctrine and takes over from Aristotle the definition of virtue as the rational activity of the soul acquired as a permanent possession, the division of the virtues into theoretical and practical, and the doctrine of the mean, namely, that in those fields of human conduct to which the terms virtue and vice can be applied, excess and defect are both vices, while virtue is represented by the mean. Thus in the matter of spending money, excess in spending is extravagance, a vice, defect in spending is niggardliness, also a vice, moderation in spending is the virtue, and the same holds true in other lines of conduct.

More important, however, than the borrowing of these specific ethical doctrines is the general spirit of Aristotelian rationalism which Maimonides and others apply to the laws of the Pentateuch. Despite the statement in the Talmud that the so-called "statutes" (Heb. *hukkim*) represent the arbitrary will of God and should not be enquired into nor explained in a humanitarian spirit where no such interpretation is given in the Bible itself, Maimonides devotes a large part of his *Guide* to a rationalization and ethicization of the Pentateuchal laws. And where either seems impossible, as in the elaborate institution of sacrifices, he makes bold to brand the whole as superstition. The Israelites of that time, he says, under the influence of custom and the example of the surrounding nations, were attached to the sacrificial rites which they practised in honour of strange gods. It would have been impossible to wean them away from idol worship and to convert them to the worship of the true God if sacrifices were abolished. Hence a concession was made to the customs of the people and they were told to offer sacrifices to the Lord, in the hope that in the course of time as the true faith would educate them and purify and refine their conception of God, the sacrifices would fall away of themselves.

An important problem which pertains equally to ethics and theology was the doctrine of free will in its relation to the Divine attribute of omniscience. The doctrine of freedom is a necessary consequence of Divine justice. Reward and punishment, a fundamental dogma of Judaism, cannot be justified if man is not free to determine his will to do or to abstain. But if man is free, God's knowledge is limited in so far, because freedom means in the last analysis causelessness, and the causeless is from the nature of the case unknowable in advance of its occurrence. Maimonides's solution is that this argument does not hold of the Divine Being who is transcendent. He can know the unknowable. Ibn Daud and Gersonides admit that the causeless is as such unknowable and hence unknown to God also, but omniscience must not be understood in a sense which would make its meaning contradictory and absurd, any more than the attribute of omnipotence can be taken to mean that God can now make that which happened yesterday not to have happened, or to make a tree grow artificial flowers. Hasdai Crescas, whom we class among the anti-rationalists, saves God's omniscience by limiting human freedom, yet maintains the justice of reward and punishment by pointing out that such is the law of things, and there is a necessary connection between wrong-doing and suffering as there is between swallowing poison and death.

The Anti-Rationalists.—Among those who were conversant with the philosophical views of the day, neo-Platonic and Aristotelian, but refused to make of them a procrustean bed upon which to stretch the doctrines of Judaism, the foremost are Judah Halevi (fl. 12th century) and Hasdai Crescas. Judah Halevi was a poet and had no confidence in the theories and arguments of the philosophers. In the first place he distinguished between the method and aim of philosophy on the one hand and those of Judaism on the other. The philosopher uses the discursive reason and his aim is knowledge. Whether his subject matter is God or the shape and size of the earth, or the identity and number of the elements, his methods and aims are alike. Judaism is not a rationalistic philosophy, its purpose is not to impart theoretical information. Judaism is a mode of life based upon the historic fact of the Divine revelation to Moses and Israel on Sinai and His election of the people of Israel to bear testimony to His existence and will. The prophets are the teachers of Israel and not the philosophers. The prophets knew God directly and not

through logical inference. They were in communion with God, having personal experience of Him, and were attached to Him in love and devotion. They speak of Him with enthusiasm and their enthusiasm is contagious and makes disciples. The prophets of Israel constitute a higher species of being than the ordinary Israelite. Judah Halevi does not therefore subscribe to the Maimonidean conception of prophecy which attempts to approximate it to the natural phenomena of the acquisition of knowledge. Judah Halevi maintains the wholly supernatural character of prophecy and the objective reality of the prophetic visions. What these visions actually were he does not attempt to say. The messengers or angels who appeared to the prophets may have been specially created, he says, from the fine elementary bodies, or they may have been the spirits of the spheres or abstract Intelligences of which the philosophers spoke. Halevi maintains a wholesome restraint and abstains from dogmatism as to the precise nature of these theophanies, but he has no doubt of their objective reality, since all the prophets testify to having seen them. We apply the same test, he says, to the phenomena appearing to our senses. We test the objective reality of such appearances by the testimony of the generality of mankind. Prophetic visions, similarly, are tested by their appearance to all members of the prophetic guild.

Nor does Halevi find it necessary to find human reasons for the ritual and ceremonial laws of the Pentateuch. The sacrifices are not objectionable to him, nor inconsistent with the nature of God. It is presumptuous to say that because we do not understand the significance of sacrifices as determining spiritual health, they must be given a symbolic meaning or rejected altogether. For neither do we know what determines the physical health of plant and animal, and why a certain proportion of elementary mixture constitutes health and a slight deviation therefrom disease and even death. Israel is superior to other nations, Palestine to other countries and Hebrew to all other languages. Prophecy is inseparable from Palestine and Israel alone had prophets. No philosopher ever achieved prophetic inspiration.

Judah Halevi passes in review all the principal doctrines of the philosophy current in his day and subjects them to a rigorous and unsympathetic criticism. Some of these theories, he shows, are arbitrary and without any evidence, while others are clearly untenable as they do not account for the facts. He is particularly opposed to the philosophic doctrine of immortality, that it is due to the intellectual nature of the soul and is dependent upon the knowledge which the soul possesses. The philosophic requirement for immortality, Halevi objects, is either too small or too great, according to the meaning one attaches to the word knowledge.

CRESCAS AND MAIMONIDES

Despite the criticisms of Halevi, the philosophical or Aristotelian point of view gained ground among the Jews in Spain and Ibn Daud, Maimonides and Gersonides made it fashionable and authoritative. Maimonides created a school of Judaism which had many followers and dominated the thought of the learned in the following centuries. To be sure, it was not alone in the field and it met with violent opposition. Most of this, however, came from those who were not familiar with philosophic speculation, and the opposition was based on purely dogmatic grounds. The traditional interpretation of the Bible and the authority of the Talmud were appealed to against the new-fangled ideas which came from non-Jewish sources.

In Hasdai Crescas, however, we have a new champion of traditional Judaism, a philosophical defender of the unadulterated faith against the rationalism and intellectualism of the Maimonidean school. Like Judah Halevi, and with more rigour of logic and argument, he undertook to undermine the views of the philosophers by refuting the 25 propositions (or the more important among them) which Maimonides laid down as the basis of his proof of the existence, unity and incorporeality of God. He showed that the physics and the metaphysics of Aristotle are not to be relied upon, hence a fresh start must be made to establish a system of Judaism. This Crescas undertakes to do in his *Light of the Lord* (or Adonai). Some of his arguments are not more convincing than those he attacks, but he feels safer in that he is closer to the traditional understanding of Scripture and there is no doubt that his interpretation of Judaism is truer to its spirit, since he does not force alien conceptions upon the Bible. At one point he admits that logic and reason are inconclusive, as one may find arguments *pro* and *contra,* and has recourse to Scripture: "Hear, O Israel, the Lord our God, the Lord is One." In respect to the doctrine of attributes there is no doubt that Maimonides departs from traditional and Rabbinic Judaism in denying all positive attributes to God and reducing Him to the Unknowable of Herbert Spencer. Such depersonalization of God is scarcely compatible with a detailed revelation, a special Providence, the institution of prayer, fasting and repentance, not to speak of sacrifices, which indeed Maimonides was consistent enough to reject. Crescas, therefore, admits positive attributes of God, without teaching anthropomorphism. For God, he says, is infinite and a necessary existent, whereas His creatures are finite and possible existents.

Inasmuch as Crescas is opposed to the use of alien philosophies in the interpretation of Judaism, he analyzes the Jewish religion from within and discusses its essential dogmas. To be sure Maimonides did the same thing, nay, he was the first to enumerate the fundamental dogmas of Judaism. But he did this in his commentary on the Mishnah and not in his systematic philosophical work, the *Guide of the Perplexed.* To Crescas's mind the dogmas and beliefs are the essential part of a constructive philosophy of Judaism. Accordingly he criticizes the list of 13 dogmas established by Maimonides on the ground that they are either too many or too few according to the idea one attaches to the word dogma. Crescas distinguishes between fundamental doctrines and true beliefs. The former are those without which Judaism could not exist, the latter are essential indeed and disbelief in them constitutes heresy, but Judaism could exist without them.

The 13 articles of Maimonides's creed are: (1) Existence of God; (2) Unity; (3) Incorporeality; (4) Eternity; (5) God alone should be worshipped; (6) Prophecy; (7) Superiority of Moses; (8) Revelation; (9) Immutability of the Torah; (10) God's omniscience; (11) Reward and punishment; (12) Belief in the coming of the Messiah; (13) Resurrection. Crescas, as we have seen, has two lists. The fundamental dogmas are the following: (1) God's knowledge of existing things; (2) Providence; (3) God's omnipotence; (4) Prophecy; (5) Freedom of the will; (6) The purpose of the Torah is to inspire man with the love and fear of God. In addition to these six fundamental doctrines, there are true beliefs which are eight in number: (1) Creation; (2) Immortality; (3) Reward and punishment; (4) Resurrection; (5) Eternity of the Torah; (6) Superiority of Moses; (7) The Urim and Tummim as a source of knowledge of the future for the priest; (8) Belief in the Messiah.

Immortality and Providence.—In reference to immortality and Providence there is a clear division of opinion between the philosophers (neo-Platonists and Aristotelians) and the Anti-rationalists. The former, like Maimonides and Gersonides, make both of these privileges dependent upon intellectual knowledge. The immaterial as such is immortal and the human soul achieves its complete immateriality as an actual entity through contemplation and thought, hence the human reason or the rational soul is immortal, and the degree of immortality is dependent upon the character and extent of theoretical knowledge. The Anti-rationalists, like Halevi and Crescas, reject this notion on logical grounds and, with a truer understanding of the spirit of Judaism, lay stress on the love of God and the observance of the Biblical and the Rabbinic commandments as the sole requisite and condition of immortality.

The problem of Providence was one of great difficulty both on theoretical grounds and by reason of its apparent conflict with experience. In order to make special Providence theoretically possible, God must know every individual as such and reward and punish him according to his deeds. But it is difficult to see how, on the Aristotelian theory of matter and form and the concept of God and of theoretical knowledge, it is possible for an immaterial

being to know the individual person or to take cognizance of particular acts which as particulars must be material. Moreover, experience shows that many good men suffer and many bad men are prosperous. The theoretical difficulty did not trouble Maimonides, since he maintains that everything is possible for the transcendent God though it may seem to us contrary to reason. Gersonides, as we have seen, was not so easily satisfied, and limited God's direct knowledge to universals, the particulars being indirectly involved as contained in the universals. But the practical difficulty could not be so easily disposed of. The main solution of the Aristotelians was that not all human beings are equally under the special care of the Divine being. All depends upon the nearness of man to God, which is brought about by theoretical study. The more learned and philosophical a person is the nearer he is to God and the more he enjoys the Divine care. Observance of the Jewish laws and ceremonies are necessary as a step in the acquisition of true knowledge. An immoral man who follows after the desires of his appetite can never become a truly learned man. And the majority of ordinary persons who are mediocre in theory as well as in practice, not to speak of the wicked, are simply left to their fate as determined by nature and are no more taken special notice of than the beasts of the field. Nature provides for them in a general way in accordance with general laws.

The Anti-rationalist Crescas is opposed to this intellectualistic doctrine. God does know particulars, hence there is no theoretical difficulty. But reward and punishment are not determined by a person's intellectual status, but by his obedience and disobedience to God's will and command. Real reward and punishment are given in the next world, nevertheless the apparent anomalies in the fortunes of men in this world, where the good man suffers and the bad man flourishes, can be explained in various ways. Evil is sometimes a good in disguise; the suffering man may not really be so good as he seems; one sometimes inherits good and evil from one's parents; the individual is sometimes involved in the destiny of the majority, and so on. All inequalities, however, will be adjusted in the future world.

In addition to the more general doctrines discussed so far, many of the Jewish philosophers exercised their systematizing activities upon the more specific dogmas of the Jewish religion and upon the interpretation of Scripture. An examination of the laws in the Pentateuch showed that some of the rules of action, like those which have to do with social life, are recognized by human society universally, while others are peculiar to the Jewish law. Accordingly they were divided into two classes, called rational and revealed respectively. Some of the Jewish thinkers treat also of the eschatological doctrines of Judaism, among which are the messianic period, the dogma of resurrection, the nature of reward and punishment after death, the meaning of paradise and hell, the future world, and so on. Rationalism plays a small part in these discussions, which are mainly based upon Biblical and Talmudic statements and the traditions connected with them.

NO MODERN MOVEMENT

The philosophic movement among the Jews in the middle ages began to decline in the 15th century, partly by reason of the rise of the mystic lore, known as the Cabala, and partly by reason of the decline of philosophical studies among the Arabs, where the reign of toleration was succeeded by persecution and forced conversions. In Christian countries the status of the Jews was even worse and hence not favourable to science and philosophy. Joseph Albo (1380–1444) is the last one of the mediaeval Jews who summed up in popular form the entire philosophy of the preceding centuries, and though there are no original contributions to Jewish thought in his *Ikkarim* (Dogmas, lit. Roots), nevertheless by reason of his orthodox position and the popular style of his discussions, filled as they are with Biblical and Talmudic quotations, Albo was read by many who feared to approach Maimonides' *Guide of the Perplexed.* There were sporadic individuals in the following centuries who wrote on philosophic questions and related them to Bible and Talmud, or who interpreted the Bible in philosophic fashion, and clung to the scholastic method and its authority Aristotle, long after Bacon and Descartes and Leibniz introduced a new method and point of view. But the philosophical movement as such had spent its force, and it was not again resumed. Spinoza belongs to the general history of philosophy rather than to the history of Jewish philosophy. Mendelssohn was an isolated philosopher and had no successors. Other individual thinkers may be mentioned who in modern times endeavoured to lay a general philosophical basis for Judaism: Nahman Krochmal (1785–1840), Samuel Hirsch (1815–1889), both under the influence of Hegelianism, which the latter used for the defence of the Reform movement in Jewry, Asher Ginzberg (Ahad Haam) (1856–1927), the philosopher of Zionism, Hermann Cohen (1842–1918), the neo-Kantian and founder of the Marburg school. It is extremely doubtful whether in the present status of Jewry, divided and dispersed as it is, and the extreme individualism of the modern Jew, a philosophy of Judaism is possible which will appeal to more than a very small minority. Such a philosophy, if it were possible, would have to reckon with the points of view and theories of modern science and the methods and results of the Higher Criticism of the Bible. The mediaeval Jewish philosophy is of historical interest only, though as such it ought to be studied more than it is; critical editions should be brought out of the classical treatises, and the manuscript material of less important works should be made accessible to the student.

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JEWS. The word *Jew* is derived through the Latin *Judaeus* and the Greek Ἰουδαῖος from the Hebrew יְהוּדִי (Yehūdhī), a gentilic adjective, occurring only in the later parts of the Old Testament and signifying a descendant of יְהוּדָה (Yehūdhāh, Judah, Judas), the fourth son of Jacob, whose tribe, together with that of his half-brother Benjamin, constituted the kingdom of Judah, as opposed to that of the remaining tribes (Israel). The name came to mean the followers of Judaism, including in-born and proselytes, the racial signification diminishing as the religious increased.

Apart from this proper use the word occurs in certain phrases through popular corruption, *e.g.,* Jew's harp, which has nothing to do with "Jew," but is possibly connected with the French *Jeu, i.e.,* "toy harp." The verb "to Jew," in the sense of "to cheat" (*e.g.,* on p. 439 *The Concise Oxford Dictionary,* adapted by H. W. and F. G. Fowler, Oxford, 1926) is an instance of class hatred and may be paralleled by other derogatory examples, *e.g.,* "Jesuit" (on the same page), "to Welsh" (p. 1,013), etc. *See* also under separate headings, notably JUDAISM, JEWISH PHILOSOPHY, ZIONISM, ANTI-SEMITISM, etc. (H. M. J. L.)

Racial History.—The racial composition of the Jews has given rise to considerable controversy. Most observers profess to see in the Jewish type one of the most persistent varieties of the human race, others, including Ripley and Boas, believe that they take on the physical traits of the people among whom they live. Recent observations, which, however, by no means include Jews from all over the world, tend to show that in the majority of cases the Jews tend to have rather a round head, and show to an unusual degree the same amount of variation. They also tend to preserve

other characters, the most noticeable being the form of the nose. There is a resemblance between Jews and Armenians, and though the Armenoid type predominates there are other features in their composition. Weissenberg suggests that there was within historic times a mixture, not in Palestine but in the Caucasus, between the Armenoid and a blond type, and that there are two types of Jews—the Semitic, dark with a fine nose, and Armenoid, with a coarser nose and an appearance of blondness. (X.)

EARLIEST TIMES TO THE MEDIAEVAL

1. **Early History.**—For the first two periods the history of the Jews is mainly that of Palestine. It begins among those peoples occupying the area between the Nile on the one side and the Tigris and the Euphrates on the other. Surrounded by ancient seats of culture in Egypt and Babylonia, by the deserts of Arabia, and by the highlands of Asia Minor, Palestine, with Syria on the north, was the high road of civilization, trade and warlike enterprise, and the meeting-place of religions. Its small principalities were dominated by the great powers, whose weakness or acquiescence alone enabled them to rise above dependence or vassalage. The land was traversed by old-established trade routes and possessed important harbours on the Gulf of 'Akaba and on the Mediterranean coast, the latter exposing it to the influence of the Levant. It was "the physical centre of those movements of history from which the world has grown." The portion of this district abutting upon the Mediterranean may be divided into two main parts: Syria (from the Taurus to Hermon) and Palestine (southward to the desert bordering upon Egypt). The latter is about 150 mi. from north to south (the proverbial "Dan to Beersheba"), with a breadth varying from 25 to 80 mi., *i.e.*, about 6,040 sq.mi. This excludes the land east of the Jordan. (*See* further, PALESTINE.)

Already, in the 15th century B.C., Palestine was inhabited by a settled people whose language, thought and religion were not radically different several centuries later. Petty princes ruled as vassals of Egypt which, after expelling the Hyksos from its borders, had entered upon a series of conquests as far as the Euphrates. Some centuries previously, however, Babylonia had held sway to the west, and the Akkadian script and language were now used, not merely in the diplomatic correspondence between Egypt and Asia, but also among the Palestinian princes themselves. Canaan (Palestine and the south Phoenician coast land) and Amor (Lebanon district and beyond) were under the constant supervision of Egypt, and Egyptian officials journeyed round to collect tribute, to attend to complaints, and to assure themselves of the allegiance of the vassals. The Amarna tablets and those found at Taannek (bibl. Taanach) and at Boghaz-keui (*see* HITTITES) combine with archaeological evidence (Lachish, Gezer, Megiddo, Beth-shan, etc.) to reflect advanced conditions of life and culture, the chronological limits of which cannot be determined. This, the "Amarna age," with regular maritime intercourse between the Aegean settlements, Phoenicia and the Delta, and with lines of caravans connecting Babylonia, North Syria, Arabia and Egypt, presents a vivid picture of life and activity, in the centre of which lies Palestine, with here and there Egyptian colonies and traces of Egyptian cults.

The "Amarna age" affords the first starting point for any estimate of Palestine and the history of Israel. The records reveal a state of anarchy in Palestine for which the weakness of Egypt and the downward pressure of North Syrian peoples were responsible. Subdivided into a number of little local principalities, Palestine was suffering both from internal intrigues and from the designs of the northern powers. It is now that we find the restless Habiru, a name which is commonly identified with that of the "Hebrews." For such information as we possess, reference must be made to the articles ABRAHAM, AMORITES, CANAANITES, PHILISTINES. Unfortunately the external evidence fails just when it would be most welcome. There comes a time when the fate of Palestine was no longer controlled by the great powers, and the curtain rises upon the historical traditions of the Old Testament.

2. **Biblical History.**—For the rest of the first period the Old Testament forms the main source. It contains, in fact, the history itself in two forms: (*a*) from the creation of man to the fall of Judah (Genesis–2 Kings), which is supplemented and continued further to (*b*) the foundation of Judaism in the 5th century B.C. (Chronicles–Ezra–Nehemiah). In the light of contemporary monuments, archaeological evidence, the progress of scientific knowledge and the recognized methods of modern historical criticism, the account of the origin of mankind and of the history of the Jews in the Old Testament can no longer be implicitly accepted. Written by an oriental people and clothed in an oriental dress, the books of the Old Testament do not contain "objective" records, but history written for specific purposes. The purpose of many of the Biblical books, particularly the Pentateuch and the historical works, is not to collect facts but to use selected facts to drive home moral, religious and spiritual truths. The history is a compilation, as may be illustrated from a comparison of Chronicles with Samuel–Kings, and frequently depicts the past in the light of the present. (*See* CHRONICLES.)

Scholars are now almost unanimously agreed that the internal features are best explained by the literary hypothesis associated with the work of Graf, Kuenen and Wellhausen. According to this, the historical traditions are mainly due to two characteristic though very complicated recensions, one under the influence of the teaching of Deuteronomy (Joshua to Kings), the other, of a more priestly character (akin to Leviticus), of somewhat later date (Genesis to Joshua, with traces in Judges to Kings). (*See* G. F. Moore, *Ency. Bibl.*, "Historical literature.") There are innumerable questions relating to the nature, limits and dates of these two recensions, of the incorporated sources, and of other sources (whether early or late) of independent origin; and here there is naturally room for much divergence of opinion. Older material (often of composite origin) has been used, not so much for the purpose of providing historical information, as with the object of showing the religious significance of past history; and the series Joshua–Kings is actually included among the "prophets" in the Jewish canon. (*See* further BIBLE: *Old Testament.*)

3. **Traditions of Origin.**—At the age when, as we have reason to suppose, the Old Testament historical writings were assuming their present form, it was possible to divide the immediately preceding centuries into three distinct periods: (*a*) That of the two rival kingdoms: Israel (Ephraim or Samaria) in the northern half of Palestine, and Judah in the south. Then (*b*) the former lost its independence towards the close of the 8th century B.C., when a number of its inhabitants were carried away; and the latter shared the fate of exile at the beginning of the 6th century, but succeeded in making a fresh reconstruction some 50 or 60 years later. Finally (*c*), in the "post-exilic" period, religion and life were reorganized under the influence of a new spirit; relations with Samaria were broken off, and Judaism took its definite character, perhaps about the middle or close of the 5th century. The term "Jew" means properly "man of Judah," *i.e.*, of that small district which, with Jerusalem as its capital, became the centre of post-exilic Judaism. The favourite name "Israel," with all its religious and national associations, is somewhat ambiguous in an historical sketch, since, although it is used as opposed to Judah (*a*), it came to designate the true nucleus of the worshippers of the national god, Yahweh, as opposed to the Samaritans, the later inhabitants of Israelite territory (*c*). A more general term is "Hebrew." (*See* HEBREW LANGUAGE, HEBREW RELIGION.)

The traditions which prevailed among the Israelites concerning their origin belong to a time not when Judah and Israel were "brother" or rival kingdoms, but when they formed one body and Judah was among the "sons" of Israel (or Jacob), the son of Isaac and grandson of Abraham. The names of the "sons," or rather tribes, vary in origin and, probably, also in age; and where they represent fixed territorial limits, the districts so described were in some cases certainly peopled by groups of non-Israelite ancestry. But as tribal names they invited explanation, and of the many characteristic traditions which were doubtless current, a number have been preserved, though not in any very early dress. Close relationship was recognized with the Aramaeans, with Edom, Moab and Ammon. Esau (Edom) is the "brother" of Jacob, Moab and Ammon are sons of Lot, Abraham's nephew. Abraham himself, it was traditionally narrated, came from Harran (Carrhae), primarily from Ur, of the Chaldees, and Jacob re-enters from Gilead

in the north-east, with his Aramaean wives and concubines and their families (Benjamin excepted). It is on this occasion that Jacob's name is changed to Israel. Such traditions of migration and kinship are in themselves not incredible; but the detailed accounts of the ancestors Abraham, Isaac and Jacob, as given in Genesis, are inherently doubtful as regards both the internal conditions, which the (late) chronological scheme ascribes to the first half of the 2nd millennium B.C., and the general circumstances of the life of these strangers in a foreign land.

The story of the settlement of the national and tribal ancestors in Palestine is interrupted by an account of the southward movement of Jacob (or Israel) and his sons into a district under the immediate influence of the kings of Egypt. After an interval of uncertain duration we find in Exodus (*q.v.*) a numerous people subjected to rigorous oppression. No longer "sons" of Jacob or Israel, whole tribes were led out by Moses and Aaron; and, after a series of incidents extending over 40 years, the "children of Israel" invaded the land in which their ancestors had lived. The traditions embodied in the books Exodus–Joshua are considerably later than the ostensible date of the events themselves. For the details of their conflict *see* EXODUS, (THE). The story of the "exodus" is that of the religious birth of "Israel," joined by covenant with the national god, Yahweh (*see* JEHOVAH; TETRAGRAMMATON), whose aid in times of peril and need proved his supremacy. In Moses (*q.v.*) was seen the founder of Israel's religion and laws; in Aaron (*q.v.*) the prototype of the Israelite priesthood. Yahweh had admittedly been the God of Israel's ancestors, but his name was only now made known (Exod. iii. 13 *sqq.*, vi. 2 *seq.*), and this conception of a new era in Yahweh's relations with the people is associated with the family of Moses and with small groups from the south of Palestine who reappear in religious movements in later history (*see* KENITES; RECHABITES). Amid a great variety of motives the prominence of Kadesh in south Palestine is to be recognized; but it is uncertain what clans or tribes were at Kadesh, and it is possible that traditions, originally confined to those with whom the new conception of Yahweh is connected, were subsequently adopted by others who came to regard themselves as the worshippers of the only true Yahweh. Two quite distinct views can be distinguished. The one associates itself with the settlement of the ancestors of the Hebrews and has an ethnic character. The other, part of the religious history of "Israel," is essentially bound up with the religious genius of the people, and is partly connected with clans from the south of Palestine whose influence reappears later.

4. **The Monarchy of Israel.**—The book of Joshua continues the fortunes of the "children of Israel" and describes a successful occupation of Palestine by the united tribes, in striking contrast to other records of the partial successes of individual groups (Judges i.). It is, however, based upon the account of victories by the Ephraimite Joshua over confederations of petty kings to the south and north of central Palestine, apparently the traditions of Ephraim describing from its own standpoint the conquest of Palestine. The book of Judges represents a period of unrest after the settlement of the people. External oppressions (Moab, Ammon, Philistines, etc.) and internal rivalries rent the Israelites; and the religious philosophy of a later (Deuteronomic) age represents the period as one of alternate apostasy from and of penitent return to the Yahweh of the "exodus," and their deliverance by "judges." The best narratives relate to Israel and Gilead; Judah scarcely appears, and in an old poetical account of a great fight of the united tribes against a northern adversary lies outside the writer's horizon or interest (Judges v., *see* DEBORAH). Stories of successful warfare and of temporary leaders (*see* ABIMELECH; EHUD; GIDEON; JEPHTHAH) form an introduction to the institution of the Israelite monarchy, an epoch of supreme importance in biblical history.

The heroic figure who stands at the head is Saul ("asked"), and there are conflicting accounts of his rise. (*See* SAMUEL, BOOKS OF.) The Philistines (*q.v.*) newly settled in the land, held the people in subjection; and their defeat is ascribed by the later account to the godly prophet-judge, Samuel, and by the earlier to Saul. The first of a series of annals of the kings of Israel ascribes to Saul conquests over the surrounding peoples to an extent which implies that the district of Judah formed part of his kingdom (1 Sam. xiv. 47 *seq.*). His might is also attested by the fine elegy (2 Sam. i. 17 *sqq.*) over the death of two great Israelite heroes, Saul and Jonathan, knit together by mutual love, inseparable in life and death, whose overthrow by the Philistines on the plain of Jezreel was a national misfortune. The court was removed across the Jordan to Mahanaim, where Saul's son, Ishbaal (Ish-bosheth), thanks to his general, Abner, recovered some of the lost prestige, and reigned two years over Israel and Gilead (2 Sam. ii. 8–10; contrast the figure in v.11). But at this point the scanty annals are suspended and the history of the age is given in more popular sources. Israelite national history has come down to us through Judaean hands, with the result that much of it has been coloured by late Judaean feeling, and the Judaean account of the beginning of the monarchy.

5. **David and Solomon.**—Certain traditions of Judah and Jerusalem appears to have looked back upon a movement from the south, traces of which underlie the present account of the "exodus." The land was full of "sons of Anak," giants who had terrified the scouts sent from Kadesh. Caleb alone had distinguished himself by his fearlessness, and the (semi-Edomite) clan Caleb drove them out from Hebron in south Judah (Josh. xv. 14 *sqq.*; *cf.* also xi. 21 *seq.*). David and his followers are found in the south of Hebron, and as they advanced northwards into a hostile district they encountered wondrous heroes between Gath and Jerusalem (2 Sam. xxi. 15 *sqq.*; xxiii. 8 *sqq.*). (*See* PHILISTINES.) After strenuous fighting the district was cleared, and Jerusalem, taken by the sword, became the capital. Tradition saw in David the head of a lengthy line of kings, the founder of the Judaean monarchy, the psalmist and the priest-king who inaugurated religious institutions now recognized to be of a distinctly later character. As a result of this backward projection of later conceptions the recovery of the true historical nucleus is difficult. The rise of Jerusalem, the centre of post-exilic Judaism, demanded explanation. Israelite tradition had ascribed the conquest of Jerusalem, Hebron and other cities of Judah to the Ephraimite Joshua; Judaean tradition, on the other hand, relates the capture of the sacred city from a hostile people (2 Sam. v.). The famous city, within easy reach of the southern desert and central Palestine (to Hebron and to Samaria the distances are about 18 and 35 m. respectively), had entered into Palestinian history in the "Amarna" age and had an old religious history (*see* HEBREW RELIGION). But Judaean tradition dated the sanctity of Jerusalem from the installation of the Ark (*q.v.*), a sacred movable object, the symbol of the presence of Yahweh. It is associated with the half-nomad clans in the south of Palestine, or with the wanderings of David and his own priest, Abiathar (1 Ki. ii. 26). It is ultimately placed within the newly captured city. But canonical tradition associates it with the invasion of all the tribes of Israel from beyond the Jordan.

Other narratives describe the life of the young David at the court of the first king of the northern kingdom. The scenes cover the district which he took with the sword, and the brave Saul is represented in an unfavourable light. One must allow for the popular tendency to idealize great figures, and for the Judaean origin of the compilation. To David is ascribed the sovereignty over a united people. But the stages in his progress are not clear. After being the popular favourite of Israel in the little district of Benjamin, he was driven away by the jealousy and animosity of Saul. Gradually strengthening his position by alliance with Judaean clans, he became king at Hebron at the time when Israel suffered defeat in the north. His subsequent advance to the kingship over Judah and Israel at Jerusalem is represented as due to the weak condition of Israel, and the compliance of Saul's general, Abner; partly, also, to the long-expressed wish of the Israelites that their old hero should reign over them. Saul had been chosen by Yahweh to free his people from the Philistines; he had been rejected for his sins, and had suffered continuously from this enemy; Israel at his death was left in the unhappy state in which he had found it; it was the Judaean David, the faithful servant of Yahweh, who was now chosen to deliver Israel, and to the last the people gratefully remembered their debt. David accomplished the conquests of Saul, but on a grander scale; "Saul hath slain his

thousands and David his tens of thousands" is the popular couplet comparing the relative merits of the rival dynasts. A series of campaigns against Edom, Moab, Ammon and the Aramaean states, friendly relations with Hiram of Tyre, and the recognition of his sovereignty by the king of Hamath on the Orontes, combine to portray a monarchy which was the ideal. (*See* further, DAVID; SAMUEL; SAUL.)

David, the warrior, was followed by his son Solomon, as "peaceful" as his name signifies, famous for his wealth, wisdom and piety, above all for the magnificent Temple which he built at Jerusalem. Phoenician artificers were enlisted for the purpose, and with Phoenician sailors successful trading-journeys were regularly undertaken. Commercial intercourse with Asia Minor, Arabia, Tarshish (in Spain), and Ophir (*q.v.*) filled his coffers, and his realm extended from the Euphrates to the border of Egypt. Tradition depicts him as a worthy successor to his father, and represents a state of luxury and riches impressive to all who were familiar with the great oriental courts. (*See* SOLOMON.) Judah and Israel dwelt at ease, or held the superior position of military officials, while the earlier inhabitants of the land were put to forced labour. But another side of the picture shows the domestic intrigues which darkened the last days of David. The accession of Solomon had not been without bloodshed, and Judah, together with David's old general, Joab, and his faithful priest, Abiathar, were opposed to the son of a woman who had been the wife of a Hittite warrior. The era of the Temple of Jerusalem starts with a new *régime,* another captain of the army and another priest — Zadok of Jerusalem. Moreover, the employment of Judaeans and Israelites for Solomon's palatial buildings, and the heavy taxation for the upkeep of a court which was the wonder of the world, caused grave discontent. External relations, too, were unsatisfactory. The Edomites, who had been almost extirpated by David in the valley of Salt, south of the Dead sea, were now strong enough to seek revenge; and the powerful kingdom of Damascus, whose foundation is dated to this period, began to threaten Israel on the north and north-east. These troubles, we learn, had affected all Solomon's reign, and even Hiram, the Phoenician, appears to have acquired a portion of Galilee. In the approaching disruption writers saw the punishment for the king's apostasy, and they condemn the sanctuaries in Jerusalem which he erected to the gods of his heathen wives. Nevertheless, these places of cult remained some 300 years until almost the close of the monarchy, when their destruction is attributed to Josiah (Sec. 11). At Solomon's death the opportunity was seized to request from his son, Rehoboam, a more generous treatment. The reply is memorable: "My little finger is thicker than my father's loins; my father chastised you with whips, but I will chastise you with scorpions." These words were calculated to inflame a people whom history proves to have been haughty and high-spirited, and the great Israel renounced its union with the small district of Judah. Jeroboam (*q.v.*), once one of Solomon's officers, became king over the north, and the history of the divided monarchy begins (about 937 B.C.) with the Israelite power on both sides of the Jordan and with Judah extending southwards from a point a few miles north of Jerusalem.

6. **The Rival Kingdoms.**—The history of the two kingdoms is contained in Kings and the later and relatively less trustworthy Chronicles, which deals with Judah alone. In the former a separate history of the northern kingdom has been curiously combined with Judaean history by means of synchronisms (*see* BIBLE: *Old Testament Chronology;* KINGS, BOOKS OF). Moreover, the Judaean compiler finds in Israel's troubles the punishment for its schismatic idolatry; nor does he spare Judah, but judges its kings by a standard which agrees with the standpoint of Deuteronomy and is scarcely earlier than the end of the 7th century B.C. He looks back upon the time when each kingdom laid the foundation of its subsequent fortunes. Judah enjoys an unbroken dynasty, which survived the most serious crises, a temple which grew in splendour and wealth under royal patronage, and a legitimate priesthood which owed its origin to Zadok, the successful rival of David's priest, Abiathar. Israel, on the other hand, signed its death-warrant by the institution of calf-cult, a cult which, however, was scarcely recognized as contrary to the worship of Yahweh before the denunciations of Hosea (*see* CALF, GOLDEN). Judah had natural connections with Edom and southern Palestine; Israel was more closely associated with Gilead and the Aramaeans of the north. That Israel was the stronger may be suggested by the acquiescence of Judah in the new situation. A diversion was caused by Shishak's invasion (*c.* 930), but of this reappearance of Egypt after nearly three centuries of inactivity little is preserved in biblical history. Only the Temple records recall the spoilation of the sanctuary of Jerusalem, and traditions of Jeroboam I. show that Shishak's prominence was well known (*cf.* 2 Chron. xii. 8). Although both kingdoms suffered, common misfortune did not throw them together. On the contrary, the statement that there was continual warfare is supplemented in Chronicles by the story of a victory over Israel by Abijah, the son of Rehoboam.

Jeroboam's son, Nadab, perished in a conspiracy whilst besieging the Philistine city of Gibbethon, and Baasha of (north) Israel seized the throne. Incessant war prevailed between him and Abijah's successor, Asa. The newly arisen state of Baasha was in league with Damascus, which had once been hostile to Solomon (1 Ki. xi. 24 *seq.*). Upon whom Asa could rely is not stated. Baasha seized Ramah about 5 m. N. of Jerusalem, and the existence of Judah was threatened. Asa utilized the treasure of the Temple and palace to induce the Syrians to break off their relations with Baasha. These sent troops to harry north Israel, and Baasha was compelled to retire. Asa, it would seem, was too weak to achieve the remarkable victory ascribed to him in 2 Chron. xiv. Baasha's short-lived dynasty resembles that of his predecessors. His son, Elah, after a reign of two years (like Ishbaal and Nadab), was slain in a drunken carousal by his captain, Zimri. Meanwhile, the Israelite army was again besieging the Philistines at Gibbethon, and the recurrence of these conflicts points to a critical situation in a district in which Judah itself (although ignored by the writers) must have been vitally concerned. The army preferred their general, Omri, and, marching upon Zimri at Tirzah, burnt the palace over his head. A fresh rival immediately appeared, the otherwise unknown Tibni. Israel was divided into two camps, until, on the death of Tibni, Omri became sole king (*c.* 887 B.C.). The scanty details of these important events stand in contrast to the comparatively full accounts of earlier Philistine wars and internal conflicts in narratives which, in point of fact, probably date from this or a later age.

7. **The Dynasty of Omri.**—Omri (*q.v.*), the founder of one of the greatest dynasties of Israel, was contemporary with the revival of Tyre under the priest-king, Ethbaal, whose daughter was married to Omri's son, Ahab. Omri's most notable recorded achievement was the subjugation of Moab (*q.v.*). Moreover, Judah (now under Jehoshaphat) was bound intimately to Israel; and traditions of intermarriage, and of co-operation in commerce and war, imply what was practically a united Palestine. Alliance with Phoenicia gave the impulse to extended intercourse; trading expeditions were undertaken from the Gulf of 'Akaba, and Ahab built himself a palace decorated with ivory. The cult of the Baal of Tyre followed Jezebel to the royal city, Samaria, and even found its way into Jerusalem. This, the natural result of matrimonial and political alliance, already met with under Solomon, receives the usual denunciation. The conflict between Yahweh and Baal and the defeat of the latter are the characteristic notes of the religious history of the period, the records of which are now more abundant.

Although little is preserved of Omri's history, the fact that the northern kingdom long continued to be called by the Assyrians after his name is a significant indication of his reputation. Assyria was now making itself strongly felt in the west. Assur-nasir-pal II had exacted tribute from north Syria (*c.* 876 B.C.), and his successor, Shalmaneser III., in the course of a series of expeditions, succeeded in gaining the greater part of that land. Irhuleni of Hamath and Adad-idri (the biblical Ben-hadad) of Damascus, formed a coalition with the kings of Cilicia, Phoenicia, Ammon, the Arabs of the Syrian desert and "Ahabbu Sirlai." In the last we recognize the Israelite Ahab whose contribution of 10,000 men and 2,000 chariots perhaps included levies from Judah and Moab (*cf.* for the number 1 Ki. x. 26). In 853 the

allies at least maintained themselves at the battle of Karkar. Other indecisive battles were fought later, but the precise constitution of the coalition is not recorded. In 842–841 Shalmaneser records a campaign against Hazael, the new king of Damascus; no coalition is mentioned, although a battle was fought at Sanir (Hermon, Deut. iii. 9), and the cities of Hauran to the south of Damascus were spoiled. Tribute was received from Tyre and Sidon; and Jehu, the new king of Israel, sent gifts of gold, silver, etc. The "Black Obelisk" (now in the British Museum), which records the submission of the petty kings, gives an interesting representation of the humble Israelite emissaries, with their long, fringed robes and strongly marked physiognomy (*see* DRESS). Yet another expedition in 837 would seem to show that Damascus was neither crushed nor helpless, but thenceforth, for a number of years, Assyria was fully occupied elsewhere and the west was left to itself.

Biblical tradition associates the changes in the thrones of Israel and Damascus with the work of the prophets Elijah and Elisha, but without a reference to Assyria. Ahab, it seems, had aroused popular resentment by encroaching upon the rights of the people to their landed possessions; had it not been for Jezebel, the tragedy of Naboth would not have occurred. The worship of the Tyrian Baal roused a small circle of zealots, and again the Phoenician marriage was the cause of the evil. Elijah of Gilead inspired the revolt which culminated in the accession of Jehu, the son of one Jehoshaphat (or, otherwise, of Nimshi). The work which Elijah began was completed by Elisha, who supported Jehu and the new dynasty. The royal families of Israel and Judah perished in a massacre. While the extirpation of the cult of Baal was furthered in Israel by Jonadab the Rechabite, it was the "people of the land" who undertook a similar reform in Judah. Jehu (*q.v.*) became king, as the champion of the purer worship of Yahweh. The descendants of the detested Phoenician marriage were rooted out, and unless the close intercourse between Israel and Judah had been suddenly broken, it would be supposed that the new king at least laid claim to the south. Here, however, Athaliah, daughter of Jezebel, destroyed the Judaean court. Only the babe, Jehoash, was preserved, and six years later, the priests slew the queen, overthrew the cult of Baal, and crowned the young child.

8. **Damascus, Israel and Judah.**—Hazael of Damascus, Jehu of Israel, and Elisha the prophet, are the three men of the new age linked together, as though commissioned for like ends (*see* 1 Ki. xix. 15–17). Elisha had sent to anoint Jehu as king, and, while on intimate terms with Bar-hadad (Ben-hadad) of Damascus, recognized Hazael as its future ruler. But after the accession of Jehu the situation changed. "In those days Yahweh began to cut short" (or, amending the text, "to be angry with") "Israel." This brief notice heralds Hazael's attack upon Israelite territory east of the Jordan (2 Ki. x. 32). The cause of the attack is obscure. Certain traditions, it is true, indicate that Israel had been at war with the Aramaeans from before 853 to 841, and that Hazael was attacking Gilead at the time when Jehu revolted; but in the midst of these are other traditions of the close and friendly relations between Israel and Damascus. (On the problems of the Elijah–Elisha period, see *Camb. Anc. Hist.*, iii. 364 *sqq.*) The southern kingdom suffered little in the disastrous wars between Damascus and Israel. Hazael indeed advanced upon Gath, and Jerusalem was only saved by a timely bribe. There were internal troubles, and Jehoash perished in a conspiracy. His son, Amaziah, had some difficulty in gaining the kingdom, and showed conspicuous leniency in sparing the children of his father's murderers. Israel, on the other hand, was almost annihilated by the Syrians. These seized Gilead, crossed over into Palestine, and occupied the land. Jehu's son, Jehoahaz, saw his army made "like the dust in threshing," and the desperate condition of the country recalls the straits in the time of Saul (1 Sam. xiii. 6, 7, 19–22), and the days before the great overthrow of the northern enemy as described in the Song of Deborah (Judges v. 6–8). The atrocities committed by Damascus and its Ammonite allies upon Gilead were not forgotten (Amos i. 3, 13), and they illustrate a remarkable interview between Elisha and Hazael (2 Ki. viii. 12). Several of the situations can be more vividly realized from the stories of Syrian wars ascribed to the time of Omri's dynasty, but more probably relating to the dynasty of Jehu. Under Joash, son of Jehoahaz, the tide turned. Elisha was apparently the champion, and posterity told of his exploits when Samaria was visited with the sword. Thrice Joash smote the Syrians—in accordance with the last words of the dying prophet—and Aphek in the Sharon plain, famous in history for Israel's disasters, now witnessed three victories. The enemy under Hazael's son, Ben-hadad, was driven out and Joash regained the territory which his father had lost (2 Ki. xiii. 25); it may reasonably be supposed that a treaty was concluded (*cf.* the anonymous 1 Ki. xx. 34). But the peace does not seem to have been popular. The story of the last scene in Elisha's life ascribes to Joash an easily contented disposition which hindered him from completing his successes. Syria had not been crushed, and the failure to utilize the opportunity was an act of impolitic leniency for which Israel was bound to suffer (2 Ki. xiii. 19). Elisha's indignation can be illustrated by the denunciation passed upon an anonymous king by the prophetic party on a similar occasion (1 Ki. xx. 35–43).

At this stage it is necessary to notice the fresh invasion of Syria by Hadad (Adad)-nirari, who besieged Mari, king of Damascus, and exacted a heavy tribute (*c.* 802 B.C.). A diversion of this kind would explain the Israelite victories; the subsequent withdrawal of Assyria would afford the occasion for Damascus to retaliate. Men in Israel who remembered the wars between Assyria and Damascus, and the recuperative power of the Aramaeans, would perceive the danger of the lenient policy of Joash. Hadad-nirari claims tribute from Tyre, Sidon and Beth-Omri (Israel), also from Edom and Palaštu (Philistia). There are no signs of an extensive coalition as in the days of Shalmaneser; Ammon is probably included under Damascus; the position of Moab—which had freed itself from Jehoram of Israel—can hardly be calculated. But the absence of Judah is surprising. Both Jehoash (of Judah) and his son, Amaziah, left a great name; and the latter was comparable only to David (2 Ki. xiv. 3). He defeated Edom in the Valley of Salt, and it is conceivable that Amaziah's kingdom extended over both Edom and Philistia. A vaunting challenge to Joash (of Israel) gave rise to one of the two fables that are preserved in the Old Testament (for the other *see* Judges ix. 8 *seq.*). It was followed by a battle at Beth-shemesh; the scene would suggest that Philistia also was involved. The result was the rout of Judah, the capture of Amaziah, the destruction of the northern wall of Jerusalem, the sacking of the temple and palace and the removal of hostages to Samaria (2 Ki. xiv. 12 *sqq.*). Only a few words are preserved—taken apparently from an Israelite source—but the details, when carefully weighed, are extremely significant. This disaster was scarcely the outcome of a challenge to a trial of strength; it was rather the sequel to a period of smouldering jealousy and hostility, and, according to one chronological scheme, 27 years passed before Judah had another king (Uzziah).

9. **Jeroboam and Uzziah.**—The defeat of Syria by Joash (of Israel) was not final. The decisive victories were gained by Jeroboam II. He saved Israel from being blotted out, and "the children of Israel dwelt in their tents as of old" (2 Ki. xiii. 5, xiv. 26 *seq.*). Syria must have resumed warfare with redoubled energy, and a state of affairs is presupposed which can be pictured with the help of narratives that deal with similar historical situations. In particular, the overthrow of Israel as foreshadowed in 1 Ki. xxii. implies an Aramaean invasion (*cf. vv.* 17, 25), after a treaty (xx. 34 *sqq.*), although this can scarcely be justified by the events which followed the death of Ahab, in whose time they are now placed. Under Jeroboam II. (*c.* 785) the borders of Israel were restored, and the disastrous Aramaean wars avenged. For a time the kingdom of Van (Urartu, Ararat) was the most important factor in the north, and the Hebrews may well have come into close touch with peoples who were the descendants of the Hittite, Mitannian and other non-Semitic stock of old. Moab was probably tributary; the position of Judah and Edom is involved with the chronological problems. According to the Ju-

daean annals the "people of Judah" set Azariah (Uzziah) upon his father's throne; and to his long reign of 52 years are ascribed conquests over Philistia and Edom, the fortification of Jerusalem and the reorganization of the army. The two great kings Uzziah and Jeroboam were contemporary, but upon the relations between them we have no information; yet had Amaziah suffered at the hands of Israel, and when, at the death of Jeroboam, Israel hastened to its end amid anarchy and dissension, it is unlikely that the southern kingdom was unmoved. All that can be recognized from the biblical records, however, is the period of internal prosperity which Israel and Judah enjoyed under Jeroboam and Uzziah (*qq.v.*) respectively.

The events which inaugurated the dynasty of Jehu, the terrible Aramaean wars, Yahweh's "arrow of victory," and at length the rise of Jeroboam, make the century (*c.* 850–750 B.C.) one of the most conspicuous epochs in Hebrew history. The traditions relating to it are, not improbably, older, relatively speaking, than those that tell of the original founding of the monarchy, centuries earlier. The descriptions of the older periods are, in their present form, at least, later than the Jehu dynasty, and this dynasty culminates in the rise of the great Hebrew prophets (Amos, Hosea, Isaiah, Micah, etc.). That these had predecessors in the stirring days before them is to be expected—for there is much in prophecy that makes it far from unique or necessarily elevated. But they strike so distinctive a note, their teaching is so fundamental, and its effects so evident, that the question arises whether the religious conditions they condemn are those as set forth in the literature referring to earlier periods. In fact, the modern historical and religious study of the Old Testament turns upon the interpretation of the great prophets, and the relation between them, on the one hand, and the Pentateuch and historical recensions (*see* sec. 2, p. 43) on the other. (*See* further HEBREW RELIGION, PROPHET, and the articles on the several prophets.)

10. **The Fall of the Israelite Monarchy.**—Israel's prosperity under Jeroboam II. proved her undoing. The disorders that hastened the end find analogy in the events of the more obscure period after the death of the earlier Jeroboam. Only the briefest details are given. Zechariah was slain after six months by Shallum ben Jabesh in Ibleam; but the usurper fell a month later to Menahem (*q.v.*), who only after much bloodshed established his position. Assyria again appeared upon the scene, under Tiglath-pileser III.; on his approach a coalition was soon formed which was overthrown in 738. Among those who paid tribute were Rasun (the biblical Rezin) of Damascus, Menahem of Samaria, the kings of Tyre, Byblos and Hamath and the queen of Aribi (the Syrian desert). Israel was once more in league with Damascus and Phoenicia, and the biblical records must be read in the light of political history. Judah was probably holding aloof. Its king, Uzziah, was a leper in his latter days, and his son and regent, Jotham, claims notice for a circumstantial reference to his subjugation of Ammon—the natural allies of Damascus—for three years (2 Chron. xxvii., *cf.* xxvi. 8). Scarcely had Assyria withdrawn before Menahem lost his life in a conspiracy, and Pekah, with the help of Gilead, made himself king. The new movement was evidently anti-Assyrian, and strenuous endeavours were made to present a united front. Judah was the centre of attack. Rasun and Pekah directed their blows from the north, Philistia threatened the west flank, and the Edomites, who drove out the Judaeans from Elath (on the Gulf of 'Akaba), were no doubt only taking their part in the concerted action. A more critical situation could scarcely be imagined. The throne of David was then occupied by a youth—Ahaz, the son of Jotham. In this crisis we meet with Isaiah (*q.v.*), perhaps the grandest of Hebrew prophets. The disorganized state of Egypt and the uncertain allegiance of the desert tribes left Judah without direct aid; on the other hand, opposition to Assyria among the conflicting interests of Palestine and Syria was rarely unanimous. Either in the natural course of events—to preserve the unity of his empire—or influenced by the rich presents of gold and silver with which Ahaz accompanied his appeal for help, Tiglathpileser intervened with campaigns against Philistia (734 B.C.) and Damascus (733–732). Israel was punished by the ravaging of the northern districts, and the king claims to have carried away the people of "the house of Omri." Pekah was slain, and one Hoshea (*q.v.*) was recognized as his successor. Assyrian officers were placed in the land and Judah thus gained its deliverance at the expense of Israel. But the proud Israelites did not remain submissive for long; Damascus had indeed fallen, but neither Philistia nor Edom had yet been crushed.

When Israel began to regain confidence, its policy halted between obedience to Assyria and reliance upon Egypt—though whether Mizraim (*q.v.*) refers to Egypt proper or includes some more easterly area is open to dispute. The situation is illustrated in the writings of Hosea (*q.v.*). Tiglath-pileser died in 727 and the slumbering revolt became general. Israel refused the usual tribute to its overlord, and definitely threw in its lot with "Egypt." In due course Samaria was besieged for three years by Shalmaneser V. The alliance with So (Seveh, Sibi) of "Egypt," upon whom hopes had been placed, proved futile, and the forebodings of keen-sighted prophets were justified. Although no evidence is at hand, it is probable that Ahaz of Judah rendered service to Assyria by keeping the allies in check; possible, also, that the former enemies of Jerusalem had now been induced to turn against Samaria. The actual capture of the Israelite capital is claimed by Sargon (722), who removed 27,290 of its inhabitants and 50 chariots. Other peoples were introduced, officers were placed in charge, and tribute re-imposed. Another revolt was planned in 720 in which the province of Samaria joined with Hamath and Damascus, with the Phoenician Arpad and Ṣimura, and with Gaza and "Egypt." Two battles, one at Karkar in the north, another at Rapiḥ (Raphia) on the border of Egypt, sufficed to quell the disturbance. The desert peoples who paid tribute on this occasion still continued restless, and in 715 Sargon removed men of Tamūd, Ibādid, Marsiman, Hayāpa (*cf.* the Midianite Ephah, Gen. xxv. 4), "the remote Arabs of the desert," and placed them in the land of Beth-Omri. Sargon's statement is significant for the later history of Samaria; but the biblical historians take no further interest in the fortunes of the northern kingdom, and see in Judah the sole survivor of the Israelite tribes (*see* 2 Ki. xvii. 7–23). Yet the situation in this neglected district must continue to provoke enquiry.

11. **Judah and Assyria.**—Amid these changes the history of Judah was intimately connected with the south Palestinian peoples. Ahaz had recognized the sovereignty of Assyria and visited Tiglathpileser at Damascus. The Temple-records describe the innovations he introduced on his return. Under his son, Hezekiah, there were fresh disturbances in the southern states, and anti-Assyrian intrigues began to take a more definite shape among the Philistine cities. Ashdod openly revolted and found support in Moab, Edom, Judah and "Egypt." This step may possibly be connected with the attempt of Marduk (Merodach)-baladan in south Babylonia to form a league against Assyria (*cf.* 2 Ki. xx. 12); at all events Ashdod fell after a three years' siege (710) and for a time there was peace. But with the death of Sargon in 705 there was another great outburst; practically the whole of Palestine and Syria was in arms, and Sennacherib's empire in the west was threatened. In both Judah and Philistia the anti-Assyrian party was not without opposition, and those who adhered or favoured adherence to the great power were justified by the result. The inevitable lack of cohesion among the petty States weakened the national cause. At Sennacherib's approach, Ashdod, Ammon, Moab and Edom submitted; Ekron, Ascalon, Lachish and Jerusalem held out strenuously. The southern allies (with "Egypt") were defeated at Eltekeh. Hezekiah was besieged and compelled to submit (700). The small kings who had remained faithful were rewarded by an extension of their territories, and Ashdod, Ekron and Gaza were enriched at Judah's expense. These events are related in Sennacherib's inscription; the biblical records preserve their own traditions (*see* further HEZEKIAH).

In the long reign of his son, Manasseh (*c.* 692), later writers saw the deathblow to the Judaean kingdom. Much is said of his wickedness, but few details have come down. The land was practically under the control of Assyria. Both Esar-Haddon

(681–669) and Assur-bani-pal (669–*c.* 626) number among their tributaries Tyre, Ammon, Moab, Edom, Ascalon, Gaza and Manasseh himself, and cuneiform dockets unearthed at Gezer suggest the presence of Assyrian garrisons there, and no doubt also elsewhere. The situation favoured the spread of foreign customs, and the condemnation passed upon Manasseh thus, perhaps, becomes more significant. It is possible that Manasseh merely assimilated the older Yahweh-worship to Assyrian form; politics and religion were inseparable, and the supremacy of Assyria weakened that of Yahweh.

If Judah was compelled to take part in the Assyrian campaigns against Egypt, Arabia (the Syrian desert) and Tyre, this would only be in accordance with a vassal's duty. But since tradition preserves some recollection of an offence for which Manasseh was taken to Babylon to explain his conduct (2 Chron. xxxiii.), also of the settling of foreign colonists in Samaria by Esar-Haddon (Ezra iv. 2), it is possible that Judah attempted to regain its liberty. According to Assur-bani-pal all the western lands were inflamed by the revolt of his brother, Shamash-shum-ukin. What part Judah took in the Transjordanic disturbances, in which Moab fought invading Arabian tribes on behalf of Assyria, is unknown. Manasseh's son, Amon, fell in a court intrigue and "the people of the land," after avenging the murder, set up in his place the infant Josiah (637). The circumstances imply a regency; but upon this the records are silent. The decay of Assyria doubtless awoke the national feeling of independence and an account is given of Josiah's religious reforms, based upon a source partly identical with that which describes the work of Jehoash (2 Kings xi. *seq.*). In an age when the oppression and corruption of the ruling classes had been such that those who cherished the old worship of Yahweh dared not confide in their most intimate companions (*cf.* Mi. vii. 5), no reforms were possible; but now the young Josiah, the popular choice, was upon the throne. A roll, it was said, had been found in the Temple; its contents terrified the priests and king, and it led to a solemn covenant before Yahweh to observe the provisions of the law-book which had been so opportunely recovered. The writer, as has been recognized since the days of Jerome, is describing the discovery of Deuteronomy (*q.v.*). It is, however, very doubtful whether it was the book in its present form; although the biblical writer believed that Josiah successfully put down the high places and centralized the religion. In any case Josiah's reforms were of no lasting effect, to judge from Jeremiah (xxv. 3–7, xxxvi. *seq.*) and Ezekiel (xvi., xxiii.). On the other hand Deuteronomy has a characteristic social-religious side; its humanity, philanthropy and charity are the distinctive features of its laws, and Josiah's reputation (Jer. xxii. 15 *seq.*) and the circumstances in which he was chosen king may suggest that he, like Jehoash (2 Ki. xi. 17; *cf.* xxiii.3), had entered into a reciprocal covenant with a people who, as Micah's writings would indicate, had suffered grievously.

12. **The Fall of the Judaean Monarchy.**—A new era was beginning in the history of the world (*see* PALESTINE: *History*). Assyria was rapidly decaying and Egypt, under Psammetichus (Psamtek) I. had recovered from the blows of Assurbani-pal, to which the Hebrew prophet, Nahum, refers (iii. 8–10). Chaldean prince, Nabopolassar, set himself up in Babylonia. It was, perhaps, after this that an inroad of the Scythians occurred (*c.* 626 B.C.); if it did not actually touch Judah, the advent of the people of the north appears to have caused great alarm (Jer. iv.–vi.: Zephaniah). Nineveh fell in 612, and Harran, whither the court had been removed, was taken in 610. Thus fell an empire which had dominated Palestine for two centuries, and whose history in the West went back for a millennium. On the exultation caused by the events (*see* NAHUM), Necho, son of Psammetichus, marched through Palestine to aid Assyria. Josiah interposed; possibly he had hopes of extending his kingdom (2 Chron. xxxv. 20 *seq.* is more reliable than 2 Ki. xxiii. 29 *seq.*). That he had authority over a much larger area than Judah alone is suggested by 2 Ki. xxiii. 19, and by the references to the border at Riblah, 45 m. south of Hamath (Ezek. vi. 14, xi. 10 *seq.*). He was slain at Megiddo, and Egypt, as in the long distant past, again held Palestine and Syria. The Judaeans made Jehoahaz (or Shallum) their king, but the Pharaoh banished him to Egypt three months later and appointed his brother, Jehoiakim.

Meanwhile, Nabopolassar recognized in Necho a dangerous rival, and sent his son Nebuchadrezzar, who overthrew the Egyptian forces at Carchemish (605). The battle was the turning-point of the age. The succession of the new Chaldean or Babylonian kingdom was assured, though the relations between Egypt and Judah were not broken off. Jehoiakim was inclined to rely upon Egypt. He died just as Nebuchadrezzar, after seeing his warnings disregarded, was preparing to lay siege to Jerusalem. His young son, Jehoiachin, surrendered after a three months' reign, with his mother and the court; they were taken away to Babylonia, together with a number of artisans (597). Jehoiakim's brother, Mattaniah, or Zedekiah, was set in his place under an oath of allegiance, which he broke, preferring Hophra, the new king of Egypt. A few years later the second siege took place. It began on the tenth day of the tenth month, Jan. 587. The looked-for intervention of Egypt was unavailing, although a temporary raising of the siege inspired wild hopes. Desertion, pestilence and famine added to the usual horrors of a siege, and at length on the ninth day of the fourth month, 586, a breach was made in the walls. Zedekiah fled towards the Jordan valley but was seized and taken to Nebuchadrezzar at Riblah. His sons were slain before his eyes, and he himself was blinded and carried off to Babylon after a reign of 11 years. The Babylonian Nebu-zaradan was sent to take vengeance upon the rebellious city, and on the seventh day of the fifth month 586 B.C. Jerusalem was destroyed. The Temple, palace and city buildings were burned, the walls broken down, the chief priest, Seraiah, and other leaders were put to death, and many people again carried off. The disaster became the great epoch-making event in Jewish history and literature.

Throughout these stormy years the prophet Jeremiah (*q.v.*) had realized that Judah's only hope lay in submission to Babylonia. Stigmatized as a traitor, scorned and imprisoned, he had not ceased to warn deaf ears, although Zedekiah himself was, perhaps, open to persuasion. Now the penalty had been paid, and the Babylonians, whose policy was less destructive than that of Assyria, contented themselves with appointing as governor a certain Gedaliah. The new centre was Mizpah, a commanding eminence and sanctuary, about 5 m. N.W. of Jerusalem; and here Gedaliah issued an appeal to the people to be loyal to Babylonia and to resume their former peaceful occupations. The land had not been devastated, and many gladly returned from their hiding-places in Moab, Edom and Ammon. But discontented survivors of the royal family under Ishmael intrigued with Baalis, king of Ammon. The plot resulted in the murder of Gedaliah and an unsuccessful attempt to carry off various princesses and officials who had been left in the governor's care. This new confusion and a natural fear of Babylonia's vengeance led many to feel that their only safety lay in flight to Egypt, and, although warned by Jeremiah that even there the sword would find them, they fled south and took refuge in Tahpanhes (Daphnae, *q.v.*), afterwards forming small settlements in other parts of Egypt. But the thread of the history is broken, and apart from an allusion to the favour shown to the captive Jehoiachin (with which the books of Jeremiah and Kings conclude), there is a gap in the records, and subsequent events are viewed from a new standpoint.

13. **Internal Conditions and the Exile.**—Many of the exiles accepted their lot and settled down in Babylonia (*cf.* Jer. xxix. 4–7); Jewish colonies, too, were being founded in Egypt. The agriculturists and herdsmen who had been left in Palestine formed, as always, the staple population, and it is impossible to imagine either Judah or Israel as denuded of its inhabitants. The peasants were left in peace to divide the land among them, and new conditions arose as they took over the ownerless estates. Here, as already in Israel, the fall of the monarchy involved a reversion to a pre-monarchical state, and it is impossible to sever too rigorously two sections of Hebrews who had so much in common. Indeed, kings of Judah might well have been tempted to restore the kingdom of their traditional founder, or Assyria might have been complaisant towards a faithful Judaean vassal. But Israel,

after the fall of Samaria, is ignored by the Judaean writers, and lies as a foreign land; although Judah itself had suffered from the intrusion of foreigners in the preceding centuries of war and turmoil, and strangers had settled in her midst, had formed part of the royal guard, or had served as janissaries.

Samaria had experienced several changes in its original population. Settlement upon new soil involved dependence upon its god, and a priest was sent to instruct the colonists in the fear of Yahweh. Thenceforth they continued the worship of the Israelite Yahweh along with their own native cults (2 Ki. xvii. 24–28, 33). Their descendants claimed participation in the privileges of the Judaeans (*cf.* Jer. xli. 5), and must have identified themselves with the old stock (Ezra iv. 2). Whatever recollection they preserved of their origin and of the circumstances of their entry would be retold from a new standpoint. To the prophets the religious position was lower in Judah than in the "sister" Samaria (Jer. iii. 11 *sqq.*, xxiii. 11 *sqq.*; Ezek. xvi. 51). The prevalence of heathen elements in Jerusalem, as detailed in the reforms of Josiah or in the writings of the prophets (*cf.* Ezek. viii.), would at least suggest that the destruction of the State was not entirely a disaster. The political disasters not only meant a shifting of population, they also brought into prominence the old popular and non-official religion, the character of which is not to be condemned off-hand. When there were sects like the Rechabites (Jer. xxxv.), when the Judaean fields could produce a Micah (*q.v.*), and when Israel had men who inherited the spirit of a Hosea, the nature of the underlying conditions can be more justly appreciated. The writings of the prophets were cherished, not only in the unfavourable atmosphere of courts (*see* Jer. xxxvi., 21 *sqq.*), but also in the circles of their followers (Isa. viii. 16). In the smaller sanctuaries the old-time beliefs were maintained, and the priests, often perhaps of the older native stock, were the recognized guardians of the religious cults. The stories of earlier days encircle places which are not regarded as illegitimate, and in the form in which the dim traditions of the past are now preserved they reveal an attempt to purify popular belief and thought. It may be, therefore, that Deuteronomy and the popular narratives J. and E. (in their present form), belong here. (*See* HEBREW RELIGION, sec. 11 *sqq.*)

14. **Restoration of Judah.**—The course of events from the middle of the 6th century B.C. to the close of the Persian period is extremely obscure, although much indirect evidence indicates that this age holds the key to the growth of written biblical history. It was an age of literary activity, which manifested itself, not in contemporary historical records—only a few of which have survived—but rather in the special treatment of previously existing sources (*see* EZRA and NEHEMIAH). In 561 B.C. the captive Judaean king, Jehoiachin, received special marks of favour from Nebuchadrezzar's son, Amil-marduk (2 Ki. xxv. 27 *sqq.*; Jer. lii. 31–34). A little later Tyre received as its king, Merbaal (555–552), who had been fetched from Babylonia. If Babylon was assured of the allegiance of its vassals further acts of clemency may well have followed. But the later recension of Judaean history—our only source—entirely ignores the elevation of Jehoiachin, and, passing over the exile, proceeds at once to the first years of Cyrus, who proclaims as his Divine mission the rebuilding of the Temple (538) (2 Chron. xxxvi.). The Judaean Sheshbazzar (a corruption of some Babylonian name) brought back the Temple vessels which Nebuchadrezzar had carried away and prepared to undertake the work at the expense of the royal purse. A large body of exiles is said to have returned to Jerusalem under Zerubbabel, who was of Davidic descent, and the priest Jeshua or Joshua, the grandson of the murdered Seraiah (Ezra i.–iii.; v. 13–vi. 5). When these refused the proffered help of the people of Samaria, men of the same faith as themselves (iv. 2), their troubles began, and the Samaritans retaliated by preventing the rebuilding.

The next historical notice is dated in the second year of Darius (520), when two prophets, Haggai and Zechariah (*qq.v.*) kindled the Judaeans to new efforts. Despite opposition, the work went steadily onwards, thanks to the favour of Darius, and the Temple was completed four years later, 516 B.C. (Ezra v. 2, vi. 13 *sqq.*). On the other hand, from the independent writings ascribed to these prophets, it appears that no considerable body of exiles could have returned—it is still an event of the future (Zech. ii. 7, vi. 15); little, if anything, had been done to the Temple (Hag. ii. 15); and Zerubbabel is the one to take in hand and complete the great undertaking (Zech. iv. 9). The prophets address themselves to men living in comfortable abodes with olive-fields and vineyards, suffering from bad seasons and agricultural depression, and, though the country is unsettled, there is no reference to any active opposition on the part of Samaritans. So far from drawing any lesson from the brilliant event in the reign of Cyrus, the prophets imply that Yahweh's wrath was still upon the unfortunate city, and that Persia was still the oppressor. Consequently, although small bodies of individuals no doubt came back to Judah from time to time, and some special mark of favour may have been shown by Cyrus, the opinion has gained ground since the early arguments of E. Schrader (*Studien und Kritiken,* 1867, pp. 460–504), that the compiler's representation of the history is less trustworthy than the independent evidence of the prophetical writings. His main object is to make the new Israel, the post-exilic community at Jerusalem, continuous, as a society, with the old Israel.

Unfortunately, the internal conditions in the 6th century B.C. can be only indirectly estimated, and the political position must remain for the present quite uncertain. In Zerubbabel the people beheld once more a ruler of the Davidic race. The new temple heralded a new future; the mournful fasts commemorative of Jerusalem's disasters would become feasts; Yahweh had left the Temple at the fall of Jerusalem, but had now returned to sanctify it with his presence; the city had purged its iniquity and was fit once more to become the central sanctuary. So Haggai sees in Zerubbabel the representative of the ideal kingdom, the trusted and highly favoured minister who was the signet-ring upon Yahweh's hand (contrast Hag. ii. 23 with Jer. xxii. 24). Zechariah, in his turn, proclaims the overthrow of all difficulties in the path of the new king, who shall rule in glory supported by the priest (Zech. vi.). What political aspirations were revived, what other writers were inspired by these momentous events are questions of inference. Again there is a gap in the history. (For the view that there was an important movement of semi-Edomite clans to north Judah after the fall of Jerusalem, see *Camb. Anc. Hist.*, vi. ch. vii.; *see* also KINGS, FIRST AND SECOND BOOK OF.)

15. **Nehemiah.**—The history passes abruptly from the time of Zerubbabel to the reign of Artaxerxes I. (but A. II. according to Torrey). The enthusiastic hopes have melted away, the Davidic scion has disappeared and Jerusalem has been—as it would seem—the victim of another disaster. The country is under Persian officials, the nobles and priests form the local government, and the ground is being prepared for the erection of a hierocracy. It is the work of rebuilding and reorganization, of social and of religious reforms, which we encounter in the last pages of biblical history, and in the records of Ezra and Nehemiah we stand in Jerusalem in the very centre of epoch-making events. Nehemiah, the cup-bearer of Artaxerxes at Susa, distressed at the news of the desolation of Jerusalem, obtained permission from the king to rebuild the ruins. Provided with an escort and with the right to obtain supplies of wood for the buildings, he returned to the city of his fathers' sepulchres (the allusion may suggest his royal ancestry). He aroused the people to the necessity of fortifying and repopulating the city. Sanballat of Horon, Tobiah the Ammonite, and Gashmu the Arabian (? Edomite) unceasingly opposed him. Tobiah and his son, Johanan, were related by marriage to Judaean secular and priestly families, and active intrigues resulted, in which nobles and prophets took their part. It was insinuated that Nehemiah had his prophets to proclaim that Judah had again its own king, and that he was intending to rebel against Persia! Nehemiah naturally gives us his version; the earlier enthusiasm of Haggai and Zechariah for Zerubbabel would illustrate the feelings of Nehemiah's partisans. But Tobiah and Johanan themselves were worshippers of Yahweh (as their names show), and consequently, with prophets taking different sides and with the Samaritan claims summarily repudiated (Neh. ii. 20; *cf.* Ezra iv.

3), it is difficult to gather all the facts.

Nevertheless the undaunted Judaean pressed on unmoved by the threatening letters which were sent around, and succeeded in completing the walls within 52 days. Nehemiah also appears as governor of the small district of Judah and Benjamin. Famine, the avarice of the rich, and the necessity of providing tribute had brought the humbler classes to the lowest straits. Faced with old social abuses, he vehemently contrasted the harshness of the nobles with the generosity of the exiles, who would redeem their poor countrymen from slavery. He himself had always refrained from exacting the usual provision which other governors had claimed; indeed, he had readily entertained over 150 officials and dependants at his table, apart from casual refugees (Neh. v.). We hear something of a 12 years' governorship and of a second visit; but the evidence does not enable us to determine the sequence (xiii. 6). Neh. v. is placed in the middle of the building of the walls in 52 days; the other reforms during the second visit are closely connected with the dedication of the walls, and with the events which immediately follow his first arrival, when he had come to rebuild the city. Nehemiah also remedies religious abuses. He found the busy agriculturists and traders (some from Tyre) pursuing their usual labours on the Sabbath, now more strictly observed, and he pointed to the disasters which had resulted in the past from such profanation (Neh. xiii. 18; *cf.* Jer. xvii. 20 *sqq.*; Ezek. xx. 13–24; Isa. lvi. 2, 6; lviii. 13).

Moreover, the maintenance of the Temple servants called for supervision; the customary allowances had not been paid to the Levites, who had come to Jerusalem after the smaller shrines had been put down, and they had forsaken the city. His last acts were the most significant. Jews had married women of Ashdod, Ammon and Moab, and the impetuous governor indignantly adjured them to desist from the historic cause of national sin. Even members of the priestly families had intermarried with Tobiah and Sanballat; the former had a chamber in the Temple, the daughter of the latter was the wife of a son of Joiada, the son of the high priest, Eliashib. Tobiah was cast out, the offending priest expelled and a general purging followed, in which the foreign elements were removed. With this Nehemiah brings the account of his reforms to a conclusion, and the words "Remember me, O my God, for good" (xiii. 31) have a meaning. According to Josephus (*Ant.* xi. 7, 2), a certain Manasseh, the brother of Jaddua and grandson of Joiada, refused to divorce his wife, the daughter of Sanballat. For this he was driven out, and, taking refuge with the Samaritans, founded a rival temple and priesthood upon Mt. Gerizim, to which repaired other priests and Levites who had been guilty of mixed marriages. There is little doubt that Josephus refers to the same events; but he places the schism and the foundation of the new Temple in the time of Alexander the Great. At all events, there is now a complete rupture with Samaria, and thus, in the concluding chapter of the last of the historical books of the Old Testament, Judah maintains its claim to the heritage of Israel and rejects the right of the Samaritans to the title.

16. **Ezra.**—In this separation of the Judaeans from religious and social intercourse with their neighbours, the work of Ezra (*q.v.*) requires notice. The story of this scribe (now combined with the memoirs of Nehemiah) crystallizes the new movement inaugurated after a return of exiles from Babylonia. The age can also be illustrated from Isa. lvi.–lxvi. and Malachi (*q.v.*). There was a poor and weak Jerusalem, its Temple stood in need of renovation, its temple-service was mean, its priests unworthy of their office. On the one side was the poverty of the poor; on the other the pride of the governors. There were two religious parties: one exclusive, the other more cosmopolitan and syncretising, extended a freer welcome to strangers, and tolerated the popular and superstitious cults of the day (Isa. lxv. *seq.*). But the former won and, realizing that the only hope of maintaining a pure worship of Yahweh lay in a forcible isolation from foreign influence, it took measures to ensure the religious independence of their assembly. It is related that Ezra, the scribe and priest, returned to Jerusalem with priests and Levites, lay exiles, and a store of vessels for the Temple. He was commissioned to enquire into the religious condition of the land and to disseminate the teaching of the Law to which he had devoted himself (Ezra vii.). On his arrival the people were gathered together, and he read "the book of the Law of Moses" daily for seven days (Neh. viii.). They entered into an agreement to obey its teaching, undertaking in particular to avoid marriages with foreigners (x. 28 *sqq.*). An account is given of this reform (Ezra ix. *seq.*), and Ezra's horror at the intermarriages, which threatened to destroy the distinctive character of the community, sufficiently indicates the attitude of the stricter party. The true seed of Israel separated themselves from all foreigners (not, however, without some opposition) and formed an exclusively religious body or "congregation." Dreams of political freedom gave place to hopes of religious independence, and "Israel" became a church, the foundation of which it sought in the desert of Sinai a thousand years before. (*See* SAMARITANS; EZRA AND NEHEMIAH, BOOKS OF; NEHEMIAH.)

17. **Post-exilic Judaism.**—With Nehemiah and Ezra we enter upon the era of normative Judaism. Judah was a religious community whose representative was the high priest of Jerusalem. Instead of sacerdotal kings, there were royal priests, anointed with oil, arrayed with kingly insignia, claiming the usual royal dues in addition to the customary rights of the priests. With his priests and Levites, and with the chiefs and nobles of the Jewish families, the high priest directs this small State, and his death marks an epoch as truly as did that of the monarchs in the past. This hierarchical government, which can find no foundation in the Hebrew monarchy, is the forerunner of the Sanhedrin (*see* SYNEDRIUM); it is an institution which, however inaugurated, set its stamp upon the narratives which have survived. Laws were recast in accordance with the requirements of the time, with the result that by the side of usages evidently of very great antiquity, details now appear which were previously unknown or wholly unsuitable.

The post-exilic priestly spirit represents a tendency which is not to be found in the "Deuteronomic" book of Kings, but is conspicuous in the later, and to some extent parallel, book of Chronicles (*q.v.*). The "priestly" traditions of the Creation and of the patriarchs are in marked contrast to the earlier narratives, and appear in a further developed form in the still later book of Jubilees (*q.v.*) or "Little Genesis," where they are used to demonstrate the pre-Mosaic antiquity of the priestly or Levitical institutions. There is also an unmistakable development in the laws; and the priestly legislation, though ahead of both Ezekiel and Deuteronomy, not to mention still earlier usage, not only continues to undergo continual internal modification, but finds a further distinct development in the way of definition and interpretation, outside the Old Testament—in the Talmud (*q.v.*). Though one may often be repelled by the post-exilic priestly literature, their lack of spontaneity and their ritualism, it must be recognized that they placed Monotheism upon a firm basis. "It was a necessity that Judaism should incrust itself in this manner; without those hard and ossified forms the preservation of its essential elements would have proved impossible. At a time when all nationalities, and at the same time all bonds of religion and national customs, were beginning to be broken up in the seeming cosmos and real chaos of the Graeco-Roman empire, the Jews stood out like a rock in the midst of the ocean. When the natural conditions of independent nationality all failed them, they nevertheless artificially maintained it with an energy truly marvellous, and thereby preserved for themselves, and at the same time for the whole world, an eternal good." (Wellhausen.)

Yet the whole experience of subsequent history, through the heroic age of the Maccabees (*q.v.*) and onwards, proves that the minuteness of ritual procedure could not cramp the heart. The work represented in Nehemiah and Ezra, and effected by the supporters of an exclusive Judaism, certainly won the day, and it left its impress upon the historical traditions. But Yahwism, like Islam, had its sects and tendencies, and the opponents to the stricter ritualism always had followers. Whatever the predominant party might think of foreign marriages, the tradition of the half-Moabite origin of David serves, in the beautiful idyll of Ruth (*q.v.*), to emphasize the debt which Judah and Jerusalem

owed to one of its neighbours. Again, although some desired a self-contained community opposed to the heathen neighbours of Jerusalem, the story of Jonah (*q.v.*) implicitly contends against the attempt of Judaism to close its doors. The conflicting tendencies were incompatible, but Judaism retained the incompatibilities within its limits, and the two tendencies, prophetical and priestly, continue, the former finding its further development in the rise of Christianity.

See the bibliography to BIBLE, *Old Testament;* Kittel, *Geschichte des Volkes Israels;* and *Camb. Anc. History,* ii. ch. xiv.; iii. ch. xvii–xx., and vi ch. vii with their bibliographies; A. Lods, *The Prophets and the Rise of Judaism* (1937); W. O. E. Oesterley and T. H. Robinson, *A History of Israel,* 2 vols. (1932). (S. A. C.; X.)

Hebraism and Hellenism.—The Jews came into contact with Greek culture when they were fully conscious of their own. They had been moulded by suffering: they had already achieved a history. They could look back to a kingdom which, for several centuries, had stood happily and honourably, which had fallen heroically and which had reared a race whose religion and patriotism neither misfortune could kill nor prosperity corrupt. Their memories of the past were vivid, enshrining traditions of divine messages and teachings of great prophets. This spiritual heritage fortified them in captivity to preserve their identity and to live with unquenchable hope for the day of return. They had, in process of time, achieved their desire and they had consolidated their state anew. Ezra had rescued the Torah and his institutions had schooled the Jews to meet alike the onslaught of enemies and the influence of foreign cultures, without loss of individuality. Therefore, the work of the past was now accomplished: present and future were assured. Judaism was safe in the custody of the Jew. At this juncture he was confronted with Hellenism. Alexander swept into Asia with ease: he planted Greek seeds on an Oriental soil and his tree flourished. The kingdom of Bactria which he founded was an outpost of Greek civilization: his settlers, artists and craftsmen, introduced elements which never disappeared entirely. Indian statuary has preserved traces of the models which these Greeks in Bactria showed to their Indian pupils and apprentices. The reasons for Alexander's swift success, for the absence of difficulties and for the results he achieved need not be discussed here. The contrasts between the conditions he encountered in Asia and those which prevailed in Palestine will readily suggest themselves. But if it be accurate to hold that his work further East so largely decayed through the indifference, inertia and lack of homogeneity of the populations over which he imposed his sway, no similar verdict can apply to Palestine. Here none of these qualities can be held responsible. The advent of Alexander mattered little to the Jews because the Jew had already made up his mind what his destiny was to be and what his mission demanded of him.

Compared with Rome, Greece has touched the Jew but slightly. To this day the Jew sits down to a Passover celebration in which many details of Roman table etiquette survive. From Whitechapel to Cochin, from New York to Cairo, Jews, poor and rich alike, unconsciously reproduce on Passover night the habits of the *triclinium* and dine as Horace dined at the feasts of Maecenas. No other people, no cultural force, has left so deep an imprint on the Jew. Neither Egypt, Persia, Greece, nor the Renaissance penetrated Jewish culture as deeply as did Rome, the power, moreover, that destroyed the Temple and finally broke up the Jewish State. The influence of the Greeks on the Jews was postponed until long after the Greeks had lived. When mediaeval Jews set themselves to translate Aristotle and transmit his philosophy to Europe, the two cultures may be said to have met. But it was Aristotle the master, not Alexander the disciple, who brought about the meeting. Two causes may be held responsible for this. It may be that the premature death of Alexander prevented the fulfilment of his plans, which his successors had not the breadth of vision to complete, or it may be that the Jewish mind was essentially practical and temperamentally incapable of reacting to Athenian culture: the Torah and Plato's *Republic* are by some regarded as representing different and incongruent expressions of life. It may be alleged that the loss of one individual, however influential, is powerless to stem a cultural flood, nevertheless it would seem that in this case the death of Alexander is the more correct answer. Jew and Greek did in fact meet. Μηδὲν ἄγαν is as Jewish as it is Greek in spirit. There are books in the Old Testament canon as well as in the Apocrypha which reflect Greek thought. Job is a Hebrew *Prometheus Vinctus,* Esther is composed on the stylistic model of a Euripidean drama and the parallels between Canticles and Theocritus, though often exaggerated, are not to be overlooked. Philo strove to make Jewish literature known to the Greeks while, at last, Paul, an offshoot of Judaism, combined Jewish-Christian teaching with Hellenic method and expression. During four centuries the Jews were under Greek influence because from the time of Alexander until the destruction of Jerusalem, Greek culture prevailed in Palestine, irrespective of the nationality of the governor of the province.

Alexander the Great.—Josephus gives an account of a friendly visit of Alexander to Jerusalem: the historicity of this incident has been challenged but whether the meeting with the High Priest be historically true in the letter or not, it is certainly true that between Alexander and the Jews cordial relations existed. There is no reason to doubt either that they were given privileges in his army by which they were enabled to observe their religion (already in 419 B.C. Darius II. issued orders enabling his Jewish soldiers at Elephantine to observe the Passover and abstain from leaven [*see* pp. 60 *seq.* of A. Cowley's *Aramaic papyri of the Fifth Century B.C.,* Oxf., 1923]), or that a quarter was assigned to them in his newly founded city in Egypt. In his honour, Jews adopted his name as a *shēm qādhōsh, i.e.,* a Jewish as opposed to a Gentile name; and this indicates the esteem in which Alexander was regarded by the Jews. It is a noteworthy fact of history that great conquerors, Alexander, Caesar and Napoleon, have always treated the Jews well: they recognized their religious function and sought to give it freedom to develop, for their own advantage as well as for that of the Jews. On the other hand, lesser men, endowed with narrower outlooks, have failed to recognize the Jew and have sought to crush him. In their desire to impose an artificial uniformity, they "broke down the boundaries of peoples and put down the inhabitants" (Isa. x. 13). But such Procrustean methods are contrary to nature, and tyranny, whether towards Jews or towards any others, has never secured permanent results. The same policy of religious unification has characterized subsequent dynasties, from the Assyrians to the Romanoffs, and the same fate has overtaken them. The Jew has survived their disappearance.

The Diadochi.—No sooner was Alexander dead (323 B.C.) than his successors, the *Diadochi,* struggling for his possessions and having broken up his empire, endeavoured to carry out his schemes of Hellenization. But they lacked his foresight. On the whole the Ptolemies realized that culture must be diffused by kindness, while the Seleucids believed in compulsion. Yet Palestine suffered at the hands of the former within three years of Alexander's death. In 320 Ptolemy invaded the country from Egypt and captured Jerusalem on a Sabbath. Palestine was lost to Antigonus in 315 but re-won in 312 at Gaza. Constant warfare ensued between the houses of Seleucus and Ptolemy until, in 198, Antiochus the Great (III., 222–187) defeated Scopas, the general of Ptolemy V., at Panium in north Palestine, and the country definitely passed to the Seleucids. Between the death of Alexander and this period, two notable events must be recorded. On the Seleucid side there was the establishment of the Seleucidean era (*see* CHRONOLOGY: *Jewish*) while in Egypt the Pentateuch, and subsequently the rest of the Bible, was translated into Greek. (*See* SEPTUAGINT.) This was the first known version of the Scriptures. During this time the *Diaspora* or dispersion of the Jews was spreading. The Jews abroad seem to have enjoyed a peaceful existence, so far as the relatively meagre and uneventful information implies. Thus the *Prologue* to the Greek translation of the *Wisdom of Sirach* (*Ecclesiasticus*), as well as the book itself, affords every indication of quiet and prosperity. Apamea was a centre of Phrygian Jewry and the Jews seem to have taken a prominent part in its trade.

Antiochus Epiphanes.—Palestine was involved in the struggle between Egypt and Syria. The orthodox Jews preferred the tolerant rule of the Ptolemies: they wished to abstain from politics and develop their religion and culture in isolation. But there was another class, which looked to the Seleucids and favoured nationalism. These two streams of thought have both previously and subsequently been paralleled in Jewish history. Solomon, Ahab and Herod all wished to make the Jews a great nation politically at the expense of religion: such schemes have never won success. The mission of the Jew is cast on other lines. When Antiochus IV. (Epiphanes, 175–164) succeeded his brother, the opportunity of the nationalists was at hand. They desired to see a strong Jewish nation which would be an integral part of a great Hellenic empire and command respect, not in consequence of the heritage of the Torah, but by reason of the adoption of Greek institutions. They looked to Antiochus, who made the error of assuming them to represent the majority of the Jews. Antiochus was a strange character: as depicted by the historians he presents, in his belief in his own inspiration, in his assumption of artistic gifts, in his self-persuaded mission to impose his national culture by force, in his whimsical impulsiveness and his egoism, a striking parallel to the typical modern dictator.

On his accession Antiochus appointed a new high priest, Jesus, the brother of Onias, who changed his name to Jason and proceeded to turn Jerusalem into a Greek city. He built a gymnasium, introduced the Greek cap, popularized Greek customs and endeavoured to suppress everything Jewish. The young priests and nobles flocked to the *Palaestra:* as they had to appear nude—an act in itself shocking to the Jewish mind—the evidence of their Judaism became visible. They adopted surgical means to obliterate the mark of the circumcision and this treacherous device has ever since become proverbial as the worst form of apostasy. The Jews of Jerusalem were counted as citizens of Antioch, in order to degrade their capital. The High Priest himself paid for a sacrifice to Heracles at Tyre and by every means in his power sought at once to crush Judaism and ingratiate himself with Antiochus. But a rival, Menelaus, brother of Simon, the treasurer of the Temple, offered to raise more tribute for Antiochus, and Jason was superseded. Riots, fighting and massacres ensued. Antiochus, ordered by Rome to quit Egypt, came to Jerusalem and pillaged the Temple (168). He razed the walls and planted a garrison of Greeks and apostate Jews in the city. Measures were taken to enforce his policy of unification. Judaism was an eccentricity and needed ruthless and systematic elimination. The Jerusalem Temple was devoted to Zeus Olympius, that at Garizim to Zeus Xenius. The Jewish religion was definitely interdicted and that of Athens was to be imposed by force. Swine's blood was offered on the altar on *Kislev* 25; ten days after the "Abomination of desolation" (Dan. xi., 31: xii., 11: Matt. xxiv., 15: Mark xiii., 14); an image had been erected there. Harlots were brought to the Temple. The Torah was burnt. Every Jewish rite was proscribed.

Varieties of Greek Culture.—Two circumstances are noteworthy at this juncture. First, though an Athenian was deputed to be the new guide to the Jews, it was not true Hellenism that he brought to their notice. In the *Diaspora,* the Jews grew acquainted with genuine Athenian culture: in Palestine they saw but the dregs, the debased provincialism which lacked the pure spirit of Hellas. The travelling Jew could visit the Stoa: the Alexandrine Jew could study in Greek schools. But in the homeland all that came from Greece was brought by the soldier, the trader, the slave dealer or the brothel-keeper. It was not against the teachings of Plato but against Antioch and the groves of Daphne[1] that loyal Jews rose in revolt. Secondly it would seem that the cities were more easily won by Antiochus than was the countryside. The perversion of the Temple, accompanied by the treason of the High Priest and many of his subordinates, may largely account for this. Jerusalem and Garizim followed the State religion also because, to gain obedience for the royal decrees, force was at hand, which was absent elsewhere.

[1]"Four miles west (of Antioch) lay the paradise of Daphne . . . the beauty and lax morals of which were celebrated all over the western world. . . Antioch shared in both these titles to fame. Its amenities awoke both the enthusiasm and the scorn of many writers of antiquity. . . . The mass of the population seems to have been only superficially Hellenic." D. G. Hogarth in *Enc. Brit.* ed. xi., vol. ii., pp. 130–31.

Rise of the Maccabees.—Resistance came soon. At Modein, a small town north-west of Jerusalem, when the officer of Antiochus raised a heathen altar and invited the people to sacrifice on it so as to demonstrate their acceptance of the new cult, Mattathias, an aged priest of the order of Jehoiarib, slew both the officer and a Jew who stepped forward to comply with the royal order.

In order to strengthen their position and gain adherents, the loyal Jews fled to the mountains. This is undoubtedly alluded to in Mark. xiii., 14, and Matt. xxiv., 15 ("When ye see the abomination of desolation . . . let them that are in Judaea flee unto the mountains"), where a possible Roman desecration of the Temple or Temple-site analogous to that by Antiochus, is contemplated. (*See* C. G. Montefiore, *Synoptic Gospels,* Lond., 1927, vol. i., p. 300: vol. ii., p. 311.) Whether Mattathias himself led the band is uncertain. The leader very soon was Judas, his third son, who, with his four brothers, collected the scattered Jews and prepared for defence. The brothers are known by two names, (1) Hasmoneans, Ἀσμωναῖος (Jos. *Ant.* xii., § 1, etc.) or חַשְׁמוֹנַאי (*Middoth* I., 6) from Hasmonai, the grandfather of Mattathias and (2) Maccabees. This name was strictly applied to Judas only. The etymology is doubtful. The suggestion is that the initials of מי כמוך באלים ("who is like unto Thee among the Gods, O Lord," Exod. xv., 11) which was said to have been emblazoned on Judas's banner, cannot stand because Maccabee is spelled מקבי not מכבי. The derivation from √נקב, *i.e.,* "hammerer" (*cf.* Charles Martel) is unlikely, if only because the root means "to pierce" and not "to hammer." Curtiss suggests √כבה as the origin, while others favour מחבא, "He who hides himself" (*sc.* in the mountains) in defiance of the Hebrew orthography. The most plausible solution is that offered by F. Luzzatto, *i.e.,* βιαιόμαχος or μάχη βίαιος. H. Hirschfeld, in *Jew. Quart. Rev.,* new series, vol. xviii., No. 1., July, 1927, p. 57, rejects Perles's hypothesis (*loc. cit. ib.*) that מקבי is correct and favours מכבי which he derives from √כאב expressing "a family tragedy coinciding with the birth of the future hero . . . or anxiety about the political state of the country." The name Benjamin=Benoni would offer a parallel.[1]

The Campaigns of Judas.—Antiochus's generals, Seron, from Syria, and Apollonius, from Samaria, failed to overcome Judas, who defeated them by sudden night attacks, winning the battle of Beth Horon. At this time the Parthians were revolting against the Seleucids, Mithridates I. (170–138) was making himself independent, and Antiochus was seriously embarrassed. He determined to deal with the Parthians in person but he ordered Lysias, his Viceroy in Syria, to suppress the Jews. Lysias sent 47,000 men, infantry and cavalry, under Nicanor, Gorgias and Ptolemy. Judas defeated Nicanor at Emmaus and Gorgias's army fled. Fresh Syrian forces, under Timotheus and Bacchides, were despatched from the south. Either Judas routed them at Beth Zur, by Hebron, or else they retired in consequence of the death of Antiochus. In any case, Judas gained his end. The road to Jerusalem lay open to him, though the Greek garrison still held out and could not be dislodged. But the Temple was free. It was cleansed and rededicated on 25 *Kislev,* three years to a day from the time when it had been defiled.

Sabbath Observance.—Scholars are generally agreed that the book of Daniel was probably composed during the Maccabean struggle: its purpose was to encourage the faithful to endure martyrdom. At the same time Mattathias succeeded in obtaining the adoption of a new and important principle. Hitherto the Jews had refused in all circumstances to fight on the Sabbath and the enemy had both noted this rule and profited thereby. Thus Antiochus had entered Jerusalem on the Sabbath and under Mattathias some of the earliest defenders had been slain without resistance on the sacred day. It was now ordained that Jews should defend themselves on the Sabbath if attacked. It is possible that on this account the Maccabees became unpopular with

[1]A new theory was advanced by Prof. A. A. Bevan at the Cambridge Theological Society in December 1928.

the *Ḥasīdhīm* or pious party. But if this step had not been taken, the Jews would have been annihilated in a short time. The fact that the Maccabees are scarcely ever mentioned in the Talmud and that they were disliked by the Pharisees is to be accounted for with greater likelihood, by their assumption of royal power in combination with the High Priesthood and by their subsequent aims, which were nationalist rather than religious.

Judas in Power.—After securing the Temple, Judas proceeded to consolidate his position: he united the Jews and dealt firmly with the apostates. But he knew that victory was not yet secure. Antiochus, previous to his death, obstinately refused to regard Judas as the Jewish representative and when he sent Menelaus, the renegade High Priest, to "encourage" the Jews (*2* Macc. xi., *32*), no reference to Judas was made. In 163 B.C. Lysias defeated Judas at Beth Zachariah but Judas recovered himself, mainly because a pretender arose in Antioch and Lysias desired peace. Judas now became the recognized Jewish leader and Menelaus was slain. In 162 Demetrius, now supreme in Syria, made Jakim or Alkimus, the chief of the Hellenizing Jews, High Priest. As he was a Cohen (*q.v.*) the *Ḥasīdhīm,* or pious party, acquiesced in his appointment. But at the outset he slew 60 of them and this determined Judas to fight for political independence. It is often stated that the Jewish Messianic expectations were exclusively nationalist. But in no case did the *Ḥasīdhīm* fight against their overlord unless religion was threatened and religious freedom was at stake. Alkimus could maintain himself only by the aid of the army of Bacchides. He retired before Judas to Antioch and induced Nicanor to come to his aid. Nicanor and Judas at first became friends but warfare soon broke out. In 161, on "Nicanor's Day" (13 *Adar*), long observed by the Jews as a joyful anniversary, the Syrian general was defeated and killed. Judas then made a treaty with Rome, buying immediate security at the price of future disaster. Judas repeated the error which had led, in similar circumstances before, to the downfall of the kingdom of Judah. Foreign alliances were nothing but entanglements. Rome, like Assyria and Babylonia, would have intervened spontaneously if a tributary or rival extended unduly; an alliance with the world power against Syria was unnecessary, and an alliance was inevitably the first step towards loss of independence. In "peace and quietude" would have been success, but to refrain is harder than to act. Finally Judas was killed at Elasa (1 Macc. ix., 18) and Bacchides placed garrisons in Judaea.

The Maccabean Brothers.—Judas was succeeded by his brother Jonathan, who, after two years, was recognized by Bacchides. In 153 Jonathan was called upon to decide between the offers of Demetrius, king of Syria, and his rival, Alexander Balas, who claimed to be a son of Antiochus Epiphanes. Each desired to win Jonathan to his side. Alexander offered the High Priesthood and Jonathan, who realized that Demetrius was not to be trusted, threw in his lot with Alexander. On Tabernacles 152 B.C. Jonathan became High Priest. In 150 Alexander defeated Demetrius and became king of Syria. In 147 Demetrius II., son of Demetrius, attacked Alexander. Jonathan destroyed the army of the governor of Coele-Syria, who had turned against Alexander. Meanwhile the Syrian garrisons, excepting those in Akra and Beth Zur, had been withdrawn from Judaea. After the death of Balas, Jonathan attacked Akra but made peace with Demetrius II., receiving the addition of three Samaritan districts in return for abandoning Beth Zur. Later he assisted Demetrius II. to quell an insurrection at Antioch. In 145 B.C. Trypho, an officer of Alexander Balas, made Alexander's son king (Antiochus VI.). This gave Jonathan the opportunity of taking Beth Zur, Jaffa, Gaza and Askelon, of fortifying the Temple and of blocking up the citadel. In spite of Jonathan's friendship with Trypho, the latter seized him at Ptolemais and afterwards treacherously slew him. Jonathan was succeeded by his brother Simon, who beat off Trypho's army. Trypho next killed Antiochus VI. and made himself king. Simon sided with Demetrius, in return for an amnesty and immunity from taxation and tribute. In 142 Simon secured independence and the people began to date their documents from "the first year of Simon, High Priest, commander and leader of the Jews." The Temple was now safe because on 23 *Iyyar* 142 B.C., Simon gained possession of the citadel and demolished it. Simon was murdered at Dok, near Jericho, in 135 by Ptolemy, his son-in-law, the governor of Jericho. During his rule prosperity had increased and his death was a great disaster. With him perished two of his sons, Mattathias and Judas: he was succeeded by his surviving son, John Hyrcanus (135–105). The death of Simon marked the end of the generation of Hasmonean liberators; all five brothers had died by violence, but they had been successful. When they rose in revolt their religion had been proscribed; Judaism, apparently, was doomed, and Judaea was secure in the grip of a despotic foreign power. In the short period of 26 years (168–142 B.C.E.) the Maccabees, beginning as a band of desperate guerrillas, had secured tolerance for their religion; they had fought to a successful conclusion what is believed to be the first war for the freedom of conscience, and they had won their political independence against an overwhelming might. The success of these five brothers was due to three factors: the brilliant military and diplomatic skill and courage of the brothers; the civil wars and anarchy in Syria; and the intrigues and moral support of the encroaching Roman state.

John Hyrcanus.—In the meanwhile Mithridates II of Parthia had defeated and captured Demetrius II in 139. Antiochus VII (Sidetes 138–129), the brother of Demetrius, fought Trypho, who was beaten. As a result Antiochus VII sent an army into Judaea, demanding tribute from Simon. After the death of the latter, Hyrcanus continued the resistance. He was besieged in Jerusalem but, in 132, made peace with Antiochus VII. They became allies and Hyrcanus furnished a contingent for the army of Antiochus. When Antiochus VII died, Hyrcanus increased his power. He forced the Idumeans to accept Judaism and he destroyed the Samaritan Temple on Garizim. During Hyrcanus's rule Judaea prospered and in the *Diaspora, e.g.,* in Egypt and Cyprus, the condition of the Jews was good. Hyrcanus quarrelled with the Pharisees (*q.v.*), who objected to the combination of the High Priesthood with temporal power, and joined their opponents, the Sadducees (*q.v.*). He died in 105, and was succeeded by his eldest son, Judas Aristobulus, who conquered Ituraea and planted Judaism there by force. Judas was succeeded by another son of Hyrcanus, Alexander Jannaeus (103–78), whose continued support of the Sadducees rendered him disliked. Alexander intrigued with Cleopatra of Egypt and with Ptolemy. His reign was full of warfare, rebellion and bloodshed. On his deathbed he directed his wife Alexandra (76–69) whom he had destined for the succession, to reverse his policy and make peace with the Pharisees. As a result, her elder son, Hyrcanus, became High Priest. The Pharisees, whom Alexander's massacres had driven to flight, returned. The queen was supported by Simon ben Shaṭaḥ and Judah ben Ṭabbai, whose famous mottoes, inculcating care and impartiality in the judicial office, are preserved in *Aboth* i., 8, 9. (*See* Singer, *Authorized Daily Prayer Book,* London, p. 135, all eds.) When Alexandra died in 69 B.C., Aristobulus disputed the succession of Hyrcanus, his brother. War ensued, in which Hyrcanus besieged Aristobulus in Jerusalem, having, on the advice of his Idumean councillor, Antipater, enlisted the help of Aretas (Ḥárith) the king of the Nabataean Arabs.

Intervention of Rome.—In 66 B.C. Pompey had defeated Mithridates VI of Pontus and his son-in-law Tigranes. Learning of the war in Judaea he sent in 65 B.C. M. Aemilius Scaurus, Sulla's stepson, to intervene and to him both Hyrcanus and Aristobulus appealed. The latter won by bribery. Aretas retired and Aristobulus appeared to have triumphed. But Scaurus's superior was at hand. Pompey reached Damascus and immediately deputations followed him there. Aristobulus and Hyrcanus, the latter exploited by Antipater, sent their delegations and one more came from the Jewish nation, begging for the abolition of the kingship and the restoration of the sacerdotal theocracy. Pompey made Hyrcanus High Priest and so Antipater secured power. Warfare broke out between the adherents of the two brothers: the Roman legions participated. Pompey captured Jerusalem and a terrible massacre ensued, the priests being slain at the altar. Over 12,000 Jews perished.

Roman Rule.—Rome now became the ruler. Aristobulus, his daughters and his sons, Alexander and Antigonus, were taken by Pompey to grace his triumph, but on the journey Alexander escaped and raised a revolt in Judaea. In this the Pharisees took no part: no religious issue was at stake. Aulus Gabinius, the proconsul, crushed the revolt. Hyrcanus was appointed guardian of the Temple and the country was split up into five districts governed by synods. Alexander and Aristobulus continued their raids. Antipater supported Gabinius and in return could do as he liked. In 54 B.C. M. Crassus, who succeeded Gabinius, plundered the Temple. He was defeated and slain by the Parthians in the next year. Cassius opposed the Parthian invasion of Syria and Antipater, whose policy was to stand well with Rome whatever happened, aided him. In 51 B.C. Taricheae was captured and 30,000 Jews, who had espoused the Parthian cause, were sold as

slaves. When Julius Caesar made himself master of Rome, he released Aristobulus and sent him, with two legions, to Judaea, in 49. But Pompey's emissaries contrived to poison him on the journey and Pompey beheaded his son Alexander at Antioch. In 48 B.C. Pompey himself was defeated and slain, whereupon Antipater joined Caesar's party. Hyrcanus was confirmed as High Priest and Antipater made procurator of Judaea. Caesar conferred privileges on the Jews and Suetonius (*Caesar* 84) mentions that his death was lamented by them especially.

Herod the Great.—At this point one of the most remarkable figures in the history of Judaea becomes prominent. This was Herod, one of Antipater's sons, who, at the early age of 25, was appointed prefect of Galilee, his brother Phasael being prefect of Jerusalem. After Caesar's departure, one Hezekiah attacked the Syrians. Josephus, whose source was Nicolaus of Damascus, depicts Hezekiah as a brigand. But Nicolaus was a client of Herod and it is not unlikely that his estimate was biased and that Hezekiah was fighting for patriotic motives. Herod seized and executed him and a number of his followers. For this he earned the gratitude of Sextus Caesar, the governor of Syria, and the detestation of the Jews. He was summoned to appear before the Ṣanhedrin but he came to his trial with an armed bodyguard, overawing his judges with the exception of Shammai (see *Aboth*, i., 10–15. Singer *op. cit.*, p. 185), who warned his colleagues of the future. Sextus promoted Herod, who raised an army to attack Hyrcanus, but at Antipater's request he desisted. In 43 B.C. Antipater was poisoned. Confusion arose in Judaea. Herod repulsed a raid by Antigonus, the son of Aristobulus.

After the defeat of Cassius at Philippi (42 B.C.) Antony became master of Asia. Deputations approached him in Bithynia, one from the Jews accusing Herod and Phasael of usurping the power of Hyrcanus. But the last-named was aware of the power of Antipater, Antony's friend and of his sons. These became virtually kings of the Jews. Step by step the Hasmonean dynasty was giving place to the Idumean Antipater. In 40 B.C. the Parthians, with Antigonus, invaded Syria. They captured Hyrcanus and Phasael, but Herod escaped to Rome. Hyrcanus was carried away to Parthia and mutilated so as to make him unfit for the High Priesthood. Antigonus took his uncle's place, and Herod was recognized as ruler by the Roman senate. Herod returned and captured Jerusalem with Roman aid. Antigonus was beheaded. Herod strove to conciliate the Jews. He married the grandniece of Hyrcanus, not only because he loved her passionately, but because he hoped to gain favour by allying himself with the Hasmoneans. When, in a fit of insane jealousy, he had her put to death, he was plunged into uncontrollable remorse. Her image haunted him all his life. He rebuilt the Temple with great magnificence and at enormous cost. He encouraged the Pharisees and he conformed to Judaism. Religion was free so long as politics were eschewed. Abtalion's words of caution (*see* Singer, *loc. cit.*) evidently apply aptly to the conditions of the day. During this period the *Diaspora* increased and converts multiplied. Saints such as Hillel were among the notable teachers of the people. For the influence of these men, A. Büchler's *Types of Jewish-Palestinian Piety*, from 70 B.C.E. to 70 C.E. (1922) may be consulted. Herod preserved peace in his dominions until his death in 4 B.C.

Herod's Successors.—Herod divided his kingdom by will into tetrarchies, to which he appointed his sons, Archelaus, the elder son of his Samaritan wife Malthace, being named king and Antipas, her second son, tetrarch of Galilee and Peraea. Philip, a son by another wife, was given the north-east. Archelaus was about to set off to Rome, that he might be confirmed in his title by Augustus. But a revolt broke out in consequence of the execution, by Herod, shortly before his death, of Judah and Mattathias, two rabbis who endeavoured to remove the Roman eagles which they regarded as emblems of idolatry. Archelaus was asked to punish their murderers. On his refusal riots broke out. Fighting between the Jews and the Romans and massacre took place. Deputations reached Augustus putting forward rival claims and also the desire of the nation to get rid of the Herodians. In the end Augustus reaffirmed Herod's will, counselling Archelaus to deal gently with his people. He did not, however, follow this advice. He removed the High Priest and he violated the law of the levirate marriage. (*See* Deut. xxv., 5–10; but his brother had left issue and so [verse 5] the marriage should not have taken place.) His treatment of his subjects was so tyrannical that a joint deputation of Jews and Samaritans accused him to Augustus, who summoned him to Rome and then banished him to Gaul.

The Procurators.—With this removal of their king at their own request the Jews obtained their desire but forfeited their political independence. Now the last trace of national liberty was gone: the power passed to the Roman procurators. The error of the Maccabees in invoking Roman aid had reached its logical consequence. No longer—save for a brief interval—was Judaea governed by a Jew. If the procurators had been capable and honest, no great harm would have intervened. Roman provincial government was uneven. Very seldom were the two requisites combined in one administrator and the harm done by the bad holders of the office was far greater than good predecessors or followers could counteract. At the outset trouble arose when the first procurator, Coponius, who was accompanied by P. Sulpicius Quirinius, the legate of Syria, endeavoured to take a census (A.D. 6–7) according to Roman methods, which conflicted with those of the Jews. If this is the census to which Luke (ii., 1) refers, the birth of Jesus would have to be dated in that year, but this is too late. (The difficulty is discussed by Montefiore, *op. cit.* 11., 376.) The people submitted to the census but this and similar incidents led to the formation of the Zealots. This party, which was formed by Judas of Galilee and a Pharisee called Saduq, ultimately brought about the disaster of A.D. 70. As a whole the Pharisees were ready to wait and bear with patience attacks on their religion which were not too outrageous, but the Zealots were ever eager for warfare. The Zealots made headway in Galilee, then ruled by Herod Antipas. His policy was to conciliate the Jews, by observing Judaism and to stand well with Tiberius, in whose honour he founded the city of Tiberias. Herod, who had married the daughter of Aretas (Ḥárith), the Arabian king, divorced her in order to marry Herodias, the wife of his half-brother. The first consequence was trouble with the Arabs. In A.D. 36 disaster overtook his forces and Tiberius, his patron, died before help could be sent. The second consequence was his denunciation by John the Baptist (Mark vi., 14–29), whom he executed at the request of Herodias. But Antipas himself suffered through following the counsel of Herodias. He petitioned Caligula for the title of king but his presumption was resented. He was banished and (apparently) slain in A.D. 39.

Pontius Pilate, under whom Jesus was crucified, was procurator from A.D. 26 to 36. He outraged Jewish feelings in all ways and the picture of him in the Gospels hardly bears out his character, in view of his acts. Not only Josephus but also Philo record the way in which he goaded the people to revolt. As soon as he arrived he broke the existing compromise under which only standards which did not bear the imperial image were brought to Jerusalem, since the images were held to be idols, as the emperors were deified. The Jews petitioned Pilate to remove the standards. He refused and when they importuned him for six days he threatened them with death, yielding only when they were ready to accept martyrdom. He next used Temple money for an aqueduct and proceeded to other forms of annoyance.

Caligula's succession in A.D. 37 was welcomed by the Jews. One of his friends was Agrippa, the grandson of Herod I. and the Jews hoped to win Caligula's favour through Agrippa's presence at court. But trouble arose when Caligula laid claim to divinity and the Jews, alone of his subjects, were unwilling, out of religious motives, to acknowledge his godhead. Thereupon the Alexandrians attacked the Jews, set up the images of the emperor in the synagogues, sacked the Jewish quarter, insulted Jewish ladies and scourged the Jewish elders. Through Agrippa's influence, the governor was degraded, but ill-feeling between the Jews and their fellow-citizens continued. In A.D. 40 each side sent embassies to plead their cause, Philo acting as the Jewish spokesman. Philo's account of the embassy sheds an extremely interesting light on the restless, irresponsible character of the emperor. By chance an imperial rescript, containing the decision

of Claudius, Caligula's successor, has been discovered. This interesting document, with others of equal importance, has been edited and translated by H. J. Bell (*Jews and Christians in Egypt,* Lond., Brit. Mus., 1924). It is interesting to observe that no definite charge is urged against the Jews. The emperor reprimands the Alexandrians for their intolerance. He blames the Jews for sending a separate embassy "as though they lived in two cities, a thing unheard of" (*μηδὲ ὥσπερ ἐν δυσὶ πόλεσι κατοικοῦντας δύο πρέσβεις ἐκπέμπειν τοῦ λοιποῦ, ὃ μὴ πρότερόν ποτε ἐπράχθη*), warns them not to strive in gymnasiarchic or cosmetic games (*μηδὲ ἐπισπαίρειν γυμνασιαρχικοῖς ἢ κοσμητικοῖς ἀγῶσιν*) and not to introduce or invite Jews who sail down to Alexandria from Syria or Egypt. These are not very heinous crimes and the accusers of the Jews must have been hard pressed if they could discover no graver accusations. While the embassy was still awaiting Caligula's decision, the emperor commanded his statue to be erected in the Temple but at Agrippa's intercession, he cancelled the order. In A.D. 41 Caligula was assassinated.

Claudius, who succeeded Caligula, made Agrippa king over all the districts that his grandfather had ruled. Once more the Jews had their own king, a popular monarch, who followed the Pharisees and was a strict Jew. He is mentioned in Acts (xxv., 13, etc.). He died in A.D. 44 and the rule of the procurators was restored. Under Cuspius Fadus, the robber gangs were put down for the time. Theudas, who claimed to be a prophet, was followed by a number of people who looked for him to cleave the Jordan. He was captured and beheaded. After Fadus came Tiberius Alexander, an apostate Jew from Egypt, a nephew of Philo. During his administration Helena, the queen of Adiabene, embraced Judaism and purchased corn to relieve a famine in Judaea. The next procurator, Ventidius Cumanus (48–52) provoked the Jews to riot. A massacre took place in the Temple and bloodshed occurred between Samaritans and Galileans. Cumanus was ultimately banished by the emperor and replaced by Felix (52–60), under whom the revolutionary movement grew to greater dimensions.

The country was once more full of robbers, the High Priest was murdered in the Temple. False prophets appeared. Felix tried in vain to restore order. He was recalled by Nero. The succeeding procurators (Porcius Festus, 60–62: Albinus, 62–64: Gessius Florus, 64–66) did no better. Sacrilege and exaction, misunderstanding and ill-will grew worse and more frequent. The Jews, roused to fury, massacred a body of Roman soldiers, while the citizens of Caesarea slaughtered all the Jews in their town. Various Jewish forces were warring against each other and finally Vespasian was sent by Nero to crush the rebellion. He advanced from his winter quarters in Antioch early in 67. He was joined by Titus: the Roman armies entered Galilee. The historian Josephus was at the head of a Jewish army. He has been misjudged because, convinced of the hopelessness of a struggle with Rome, he urged his co-religionists to sue for peace. But it is in the highest degree unjust to call him a traitor or a coward. His army was confronted by that of Vespasian and fled. After the fall of the fortress, Jotapata, Josephus gave himself up. The Roman forces swept the country.

While Jerusalem was invested, Johanan ben Zaccai had himself conveyed out of the city and, coming to the Roman general, craved a boon. He asked to be allowed to establish a school at Jabneh. His request was granted and this seemingly trivial concession saved Judaism. Johanan saw that Judaism could survive the Temple, that its future lay in the school and that the Bible was the Jews' portable fatherland. On the 10th of *Ab* in the year 70, amid circumstances of unparalleled horror, Jerusalem fell. The Temple was burnt and the Jewish State was no more.

Judaea Capta.—From 70 to 135 the only hope lay in the "vineyard" of Jabneh. The Sicarii and Zealots held out until, one by one, their fortresses were reduced. In Egypt and Cyrene they continued their fruitless but heroic efforts. The Egyptian temple of Onias, which had existed for 243 years, was first closed and then destroyed. Under Vespasian and Titus the Jews of Rome enjoyed freedom of conscience and political rights. Domitian inaugurated a persecution which Nerva ended. In Trajan's reign the Jews of Cyrene revolted but were subdued. Finally, in 132, Hadrian's proscription of Judaism roused the last remnants of Palestinian Jewry to die for their faith. A bitter struggle ensued. Bar-Kochba was acclaimed as Messiah by the great Rabbi Aqiba, though some of Aqiba's colleagues, *e.g.,* Johanan ben Torta, repudiated Bar-Kochba's pretensions. For three years the hopeless conflict raged, the Jews fought with the energy of despair, but in 135 the end came. Jerusalem and then Bethar fell. The holy city was thenceforth prohibited to the Jews, though the Christians, who had taken no share in the war, were allowed to come and go there freely. Many scholars date the breach between Judaism and Christianity (*see* JUDAISM) to this event.

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(H. M. J. L.; X.)

Rabbinical Learning in the East.—The ruthless suppression of the rising of Bar-Kochba had decimated the population of Judaea. The centre of Jewish life in Palestine moved in consequence northwards, to Galilee. Serious political aspirations were now at an end. Henceforth, the dominant position in the national life came to be occupied more and more by spiritual and intellectual leaders, the rabbis of this period being known as *Tannaim.* Pharisaism, in its finest sense, became an increasingly strong force in daily life. Political leadership was taken over by the presidents of the sanhedrin, or patriarchs, who ultimately obtained formal recognition from the Roman authorities, and enjoyed additional consideration among the people in virtue of their descent from Hillel (*q.v.*), and hence by tradition from David. The office, which had become firmly established by Gamaliel II. of Jamnia (Jabneh) after the destruction of Jerusalem, reached its zenith in his grandson, Judah I. (135–217), known as "Rabbi" *par excellence.* He is remembered for having codified the oral law by the redaction of the Mishnah, the basis of all the vast rabbinical literature of later times.

The intellectual activity of the latter half of the second century seems to have been somewhat artificial. Owing to the ravages caused by constant wars and revolts, as well as by adverse economic conditions, the importance of Palestine was declining. The great centre of Jewish population lay already outside the country, particularly in Mesopotamia, where the "exile" had continued throughout the days of the second temple. Babylonian students had been accustomed to come to Palestine and sit at the feet of its renowned teachers. By the time of the death of Judah I. the younger settlement had become intellectually self-supporting. Abba Arika (*q.v.*), commonly known as *Rab* or "Master," who had been a pupil of the great Palestinian patriarch, set up at Sura a famous school of rabbinical learning which retained its prominence until the 11th century. His younger contemporary, Samuel (famous for his momentous maxim that "the law of the state is Law"), presided at Nehardea over an academy which long rivalled the other. During its temporary suspension owing to the sack of the city by Odenathus (Zenobia's husband) in 259, there arose in the neighbourhood the school of Pompedita. These three academies co-operated with the dwindling schools in Palestine in maintaining the traditions of Jewish learning, the teachers now being called *Amoraim.* The discussions which went on in them, centred in the text of the Mishnah (especially at the semi-annual *Kallah* assemblage), were ultimately redacted as the *Gemara,* the whole body together forming the Talmud. The foundations of the less important compilation made in the decaying academies of Palestine were laid by Rabbi Johanan of Tiberias (died *c.* 279); but it survives in a fragmentary state, and probably was never finished. Palestinian, too, was the Midrash—a vast compilation of homiletics, ethics, legend, and folk-lore in the form of a commentary on the Bible. The fuller Talmud of Babylon, which exercised a pre-

ponderating influence upon Jewish life in later times, reached its final form at the close of the 6th century. It was far from being merely a code of religious practice. It was a whole literature, comprising law and theology, science, folklore, and every other conceivable branch of intellectual activity, somewhat amorphously grouped about the text of the Mishnah. It was this which remained, after the Bible, the principal guide to life and object of study, and which gave Judaism unity, cohesion and resilience in the difficult period which lay before it.

Palestine ceased to be the "centre" of Jewish life about the year 400 because of economic decline, exploitatory taxation, and because of the religious, civil and political disabilities imposed by the new orientalized and Christianized Roman empire. Babylon consequently arose as the acknowledged spiritual centre for all Jews because it lay outside the area of Christian anti-Jewish legislation and because it offered greater economic and political opportunities.

The Muslim Conquest.—The rise of the Muslims under Mohammed was an improvement over the anarchy of the declining Neo-Persian state. Mohammed set out originally to win the support of the Jews in Arabia for his syncretistic faith through his teachings of ethical monotheism, his borrowings from Jewish traditional lore, his introduction of the dietary laws, his requirement of turning toward Jerusalem in prayer (*kiblah*), and through his adoption of formal prayers and of special fasts similar to Jewish models. When the Jews rejected him he proceeded to destroy them or drive them out of Arabia. His successors, however, finally formulated a series of provisions which determined the status of all tolerated infidels, including the Jews. This was the pact of Omar (7th to 9th centuries) which reduced all infidels throughout the expanding Moslem world to a position of second-class citizenship. Its provisions, however, were frequently honoured more in the breach than in the observance. The Caliphs, once their original missionary zeal abated, showed themselves willing to accord an almost boundless toleration in return for a slender poll tax. By this time the political connection of the Jews with Palestine had almost ceased, though the country remained the focus of their prayers and hopes, and the patriarchate had been finally abolished by Theodosius II on the death of Gamaliel VI without male heirs (425). In Mesopotamia, however, intellectual activity continued with renewed vigour after the downfall of Zoroastrian intolerance. The secular dignity of Prince of the Captivity, or Exilarch (*q.v.*), which had existed from remote antiquity, was revived with renewed magnificence. Spiritual authority, however, resided in the Gaon (*q.v.*), the head of the Academy, who continued to expound and develop the principles of the Talmud with an authority which was extended by the conquests of the Crescent. The widening of intellectual horizons which the Muslim influence ultimately brought about was typified in the Gaon Seadiah (*q.v.*) (892–942), who first exemplified the fruitful combination of Helleno-Arabic and Jewish culture. Jewish philology and philosophy both start with him, being necessitated by the threatening Karaite schism, for the check of which his labours were principally responsible. This double organization, under Gaon and Exilarch, continued until the 11th century, by which time the Jewries of the occident were strong enough to stand by themselves.

The Diaspora in the West.—Already, before the destruction of Jerusalem, the Diaspora had been a familiar phenomenon in Europe. The prisoners captured in innumerable wars and distributed through the empire as slaves had been followed (if not preceded) by merchants and traders. Latin writers from the period of Augustus onwards show the extent to which Jewish practices were spread throughout the civilized world of their day. Paul found them in Greece and Italy, and the infant church consistently advanced where the synagogue had blazed out the way. By the beginning of the 4th century, settlements were to be found as far afield as Spain and the Rhineland. Indeed, it is probable that, before the Roman empire had begun to decay, Jews were present in all of its greater cities. By the constitution of Caracalla (212), they had been admitted to the privileges as well as the burdens of Roman citizenship and henceforward they occupied a position which was privileged by comparison with that of members of other dissenting religions.

With the Christianization of the empire, however, their condition was altered. It is true that they were comprised in the toleration accorded by the edict of Milan, but their status was immediately and radically changed. The differentiatory policy of the church was adopted almost in its entirety by the state. From an *insignissima religio, certe licita,* Judaism became the *secta nefaria* or *sacrilegi coetus* which figures in the edicts of the first Christian emperors. The policy of the church was far from being merely persecutory. Its intention was rather to prevent the inroads of Judaism by keeping its adherents from positions of authority and restricting social intercourse with them. At the same time, it regarded their preservation (if in ignominy) as evidence for the truth of Christianity, and frowned upon the use of force to bring them into the path of conformity. The papacy, true to the tradition set by Gregory the Great, figured down to modern times alternately as the protector of the Jews from violence and the repressor of their "insolence," departing from this standard most frequently on the side of leniency; and Rome was almost the only city of Europe to preserve its Jewish community undisturbed from remote antiquity down to the present day. The secular rulers, however, did not show the same discrimination; and in the Byzantine empire in particular (especially from Justinian, who was the first emperor to interfere with their religious institutions) discrimination degenerated rapidly into oppression. The embodiment of the new principles in the *Codex Theodosianus* ultimately permeated the whole of western law with the idea of Jewish inferiority.

Renascence of Jewish Culture.—With the barbarian invasions a momentary improvement had come about in the position of the Jews. The new rulers displayed at first that tolerance which arises from indifference, while those who adopted the Arian form of Christianity were sympathetically inclined towards the adherents of a stricter monotheism. Later, however, a reaction followed. In the 7th century there was a simultaneous wave of forced conversion throughout Europe from Constantinople to Toledo, reaching its height under the Visigoths in Spain, where the practice of Judaism was for a time utterly proscribed. It was the Arab invasion which brought salvation. The ancient communities in northern Africa, especially at Cairo and Kairouan, which had waned under Byzantine intolerance, awakened to a new life. In Spain there came about a remarkable revival. The Jew knew no restriction upon his activities. His linguistic or financial abilities won him high place in the administration. Under the aegis of Hasdai ibn Shaprut (*c.* 915–970) and Samuel haNagid (993–1055) there was a remarkable renascence, in which the old traditions of the schools of Palestine and Mesopotamia, the manifold interests of the Moors, and the rediscovered sciences of ancient Greece were marvellously blended. Jewish poetry came to a new life, based on Arabic models, with Judah Halevi (1086–1141) and Solomon ibn Gabirol (*c.*1021–*c.*1070). Moses Maimonides (1135–1204) represents in his many-sided activities, as physician, Talmudist, codifier, and philosopher, the Spanish school at its best. This tradition was proof against the intolerance introduced by the fanatical Almoravides and Almohades in the 12th century; for, partly from reasons of policy and partly imitatively, the earlier Moorish toleration was adopted by the growing Christian kingdoms.

Meanwhile, under the favourable rule of the Carolingians important Jewish settlements had come into being in northern France and the Rhineland. Cultural life inevitably followed. But the tendencies of northern Jewry were sterner than those of Spain and centred in the interpretation and development of Talmudic law rather than in humanism or philosophy. The first great name is that of Gershom, "the light of the exile," who published about the year 1000 the famous ordinance which forbade among western Jews the polygamy long since abandoned in practice. Solomon ben Isaac of Troyes ("Rashi") (1040–1105) summed up the tendency, his writings preserving for after-generations the old traditions of rabbinic scholarship. An extensive body of Tosaphists, or "supplementers," whose activities extended to almost every township of northeastern France, carried on his work. But these were only varying faces of an intellectual activity which knew no boundary of country. A remarkably comprehensive educational system, insisted upon as a religious duty, resulted in a general distribution of culture unequalled in any other section of the population. The speculative tendency everywhere found its outlet in a vast mystical literature, afterwards grouped about the Zohar. The 13th century renascence was forwarded in no small measure by the translations from the Arabic made by, or with the help of, Jewish scholars—sometimes under the sedulous patronage of monarchs like Alfonso the Wise of Castille and Robert of Anjou. In Immanuel of Rome (1270–1330), Dante's parodist if not his friend, Hebrew poetry became infused with something of the careless spirit of Italian verse, in which he was equally proficient. The Jewish physician or astronomer, living under the highest patronage, was fully as characteristic a figure as the merchant or financier.

The Jews of Europe of the 11th century onwards were economically far removed from their ancestors in Palestine and Mesopotamia. The original settlers had included agriculturalists and the calling lingered on in many places, particularly in the

south, to a late date. But the peaceful immigrant into a country already inhabited cannot easily settle on the land, and the growth of the feudal system, from which the Jew was naturally excluded as a stranger, tended to accentuate his divorce from the soil. Accordingly, there was an inevitable tendency for him to specialize in commerce, for which his acumen and ubiquity gave him especial qualifications. In the dark ages the commerce of western Europe was largely in his hand, in particular the slave-trade, and in the Carolingian cartularies Jew and merchant are used as almost interchangeable terms. With the growth of a mercantile class, however, they became excluded from commerce, particularly in northern Europe. Hence they were forced to employ their capital in the only way left open to them, by lending it at interest. The attitude of the church in endeavouring to suppress "usury" naturally tended to concentrate the profession more and more in the hands of those to whom the canonical prohibitions did not apply. Ultimately, all other professions were closed to them by law in the greater part of Europe, though in Spain and Sicily they remained to some extent addicted to handicrafts and agriculture. The high probabilities of violence or expropriation naturally resulted in forcing up the rates of interest, though in point of fact the Jews charged no more than other usurers. Yet the advantage accrued rather to the Crown, which did not scruple to avail itself to the utmost limit of its rights of taxation. The floating wealth of the country was soaked up by the Jews, who were periodically made to disgorge into the exchequer. The holy Roman emperors in particular, as heirs to Vespasian, claimed exclusive proprietary rights, and their claims were imitated by other rulers. As *servi camerae regis,* those of any particular place or country could be pledged, alienated, or even expelled without compunction.

The Christian Reaction.—The third and fourth Lateran councils (1179–1215), roused to suspicion through the Albigensian movement, marked the growth of the reaction against the Jew. Besides renewing the old restrictions forbidding Gentiles to enter into Jewish service or to be otherwise subordinated, they ordered the infidels to be distinguished by a special badge and forbade the faithful so much as to lodge amongst them, thus laying the foundation of the infamous Ghetto (*q.v.*) system. These regulations were not everywhere immediately or consistently enforced, but they remained a part of the ecclesiastical panoply, to come again into prominence in the 15th century, in the wake of the Hussite wars and the preaching of John of Capistrano, and in the 16th, as a consequence of the reformation. The counter-offensive against heresy found its expression also in conversionist sermons at which attendance was enforced; in the censorship or confiscation of Hebrew books; and in compulsory religious disputations, the most important of which were those of Paris before Louis IX. in 1240 and of Tortosa under the patronage of the anti-pope Benedict XIII. in 1413–14. The inevitable result of all this was to make the popular prejudice still stronger.

The last country of western Europe to be settled by the Jews had been England, whither they penetrated in the wake of the Norman Conquest (in the Scandinavian countries, they never figured to any appreciable extent). This marked the culmination of the western sweep which had been going on since the beginning of the Christian era, and had made the Jews into an essentially European people. The backward swing of the pendulum began almost immediately. With the First Crusade (1096), there took place in the Rhineland the first of the long series of massacres which made the middle ages one long martyrdom for the Jews and ultimately had the effect of driving them back again towards the east. These were henceforth renewed on every conceivable pretext in almost every country of Europe. To reinforce racial and religious prejudice, the infamous ritual murder (*q.v.*) accusation became common from the 12th century, and the even more fantastic charge of the desecration of the Host was formulated at the beginning of the 13th century after the recognition of the doctrine of transubstantiation. Meanwhile, the growth of the financial activities of the Lombards and Cahorsins rendered the Jew less necessary in the field which he had previously tended to monopolize, and drove him into the meaner calling of pawnbroking.

The logical outcome of the changed condition of affairs was, in current opinion, to drive the infidel away altogether. This had previously happened in isolated cities or regions, but the first country to rid itself of the Jews entirely was England, whence they were expelled by Edward I. in 1290. This was followed a few years later by the more deadly expulsion of the far more important communities of France (1306), which a couple of partial recalls (1315 ff. and 1350–94) utterly failed to make good. From Germany, by reason of its special political conditions, there was no general expulsion. It figures instead as the classical land of Jewish martyrdom, where banishment was employed only locally and sporadically to complete the work of the long series of massacres. These reached their climax, though not their close, at the period of the black death, when the absurd charge of poisoning the wells became current. Some of the refugees crossed the Alps into Italy, where, owing to the tolerant example of the Holy See, conditions were better. But the vast majority turned their steps towards Poland, where their settlement was especially encouraged by Casimir the Great (1333–70). This was the origin of the vast nuclei of Jews in the old Russian empire, who still retain the German dialect which their ancestors brought with them from the West and imposed upon the indigenous communities which they found on their arrival.

In Spain the condition of the Jews, even under the Christian rulers, compared very favourably with that of their brethren in northern Europe. However, with the passage of time and the growth of national and religious feeling, their situation deteriorated. In 1391, and again in 1411, a wild wave of massacre swept through the Peninsula. Following the example of their fathers in Gothic times, many Jews (less stout-hearted than their brethren elsewhere) sought refuge in baptism. To cope with the problem of these so-called Marranos, who remained true at heart to their old faith, the Inquisition was introduced (1478). But the presence in the country of Jews true to their religion seemed a constant encouragement for their converted brethren to relapse. Accordingly, four months after the capture of Granada (which did away with all need for further conciliating the religious minority), Ferdinand and Isabella issued the edict of expulsion which put an end to the settlement of the Jews in Spain after so many centuries (March 31, 1492). This included the more distant possessions of the crown of Aragon—Sicily and Sardinia—in spite of the fact that the problem of the crypto-Jew was unknown in them. It was in vain that Isaac Abrabanel (1437–1508), the last of the long line of Jewish scholar-statesmen in the Peninsula, begged for reconsideration. The edict was imitated in Portugal[1] (1496) and in Navarre (1498) after a very brief interval. Almost simultaneously, the last remnant of the ancient French communities was banished from Provence. An expulsion from the kingdom of Naples (1510 and, more completely, 1548) and from the duchy of Milan (1597) followed the Spanish occupation.

The whole of western Europe was now closed to the Jews, except parts of northern Italy and a few regions of Germany, together with the exiguous papal possessions in France. The Marranos, indeed, continued a surreptitious existence in the Peninsula, handing on their traditions in secret from generation to generation at the risk of their lives. It was their descendants, fleeing from the fires of the Inquisition, who founded the modern communities in France, Holland, England, and even America. Of the earlier refugees the vast majority made their way, with indescribable difficulty, to the Muslim countries of the Mediterranean littoral. With them they brought their native Spanish tongue, which is spoken by their descendants to the present day. The greatest haven of refuge was Turkey, where the newcomers were sedulously encouraged by the Sultans and treated with a favour which reached its climax in the meteoric career of Joseph Nasi, duke of Naxos (d. 1579) (*q.v.*). The greatest masses of the Jewish people were thus to be found once more in the East, in the Polish and Turkish empires. The second westerly movement, which has continued to our own days, may be said to begin

[1]For the importance of the Portuguese Jews *see* PORTUGAL: *History.*

with the deadly Chmielnicki massacres of 1648–49 in the former country. The few communities suffered to remain in western Europe were meanwhile subjected at last to all the restrictions which earlier ages had usually allowed to remain an ideal; so that, in a sense, the Jewish dark ages may be said to begin with the Renaissance. (C. R.; X.)

Culture and Community in the Mediaeval Jewish World.—Mediaeval Jewry as an alien minority was not in a position to make any notable contribution to the culture of its environment. Yet it did much, if only by its mere existence, to encourage unitarian religious movements, to stimulate independent thought, to set an example of spiritual courage and to compel tolerance for minority groups. In the Mesopotamian valley, during the first millennium of the common era, it furthered translations of Greek classics, encouraged the rise of the *Mutazila* philosophy, transmitted oriental folk tales, and helped to introduce Arabic numerals. In Christian Europe after the 11th century it rendered aid in the translation of philosophic and scientific works; made significant contributions in the fields of mathematics and medicine, astronomy and cartography. Through the philosophic writings of Ibn Gabirol and Maimonides it had some influence on mediaeval scholastic thought.

The waning of the Moslem threat in Spain in the 13th century, the growing Christianization of Europe, and the simultaneous rise of a powerful papacy furthered a Christian reaction which drove the Jew into a spiritual if not a physical ghetto. The Jews of Spain and Italy, to be sure, never divorced themselves from mediaeval secular culture; but the Jews of the orient, and of central and eastern Europe were shut off from its influence.

In the troubled centuries of bigotry and misunderstanding the Jew found shelter in his "ghetto." There his separate communal life was legally recognized by the corporate mediaeval state. The Jewish community attempted to function as an elective representative democracy; in practice it tended to be plutocratic, aristocratic and clerical. The governing body was a small council, but its decisions were frequently subject to review by the rabbi who was the local judge. The council was aided by committees in assessing and collecting taxes and in administering the charities, the schools and the synagogues. The usual complement of paid officials included the rabbi, the cantor, the beadles and the ritual slaughterer. Large communities or groups of communities also appointed or employed a liaison officer (*shtadlan*) to work with the non-Jewish authorities. Communal life concerned itself, in the main, with internal problems of organization, and raising of taxes for the Gentile state and for the Jewish community, the preservation of its institutions of social welfare, and the administration of the Jewish courts which always exercised civil jurisdiction. Criminal jurisdiction was rarely tolerated by the state.

All these activities necessitated a great deal of legislation and in this the autonomous Jewish community was granted the widest latitude. Ordinances were enacted by the Jews governing every phase of life: business, synagogue attendance, social morals, policing of the ghetto, prescriptions for dress, and a detailed regimentation of ghetto amusements (dancing, masking and theatre, card-playing, and feasting).

The schools and philanthropies were highly important aspects of mediaeval Jewish life. Elementary education was compulsory, but was limited to religious instruction. Secular disciplines were acquired privately at the hands of tutors. There was little incentive to pursue the sciences—with the exception of medicine—because of the exclusion of the Jew from the world about him. Gifted students were encouraged to continue their religious studies at rabbinical academies where the career of rabbi often led to fame, if not to fortune. Because rabbinic law was statute in the ghetto, a very impressive corpus of Hebrew legal literature grew up in the course of centuries, embracing codes, commentaries and legal responsa. In addition, Hebrew literature was rich in works of science, folk tales, cabala, travel and history. Hundreds of Jewish works in Arabic, written and read before the spread of printing, now lie buried and forgotten in the manuscript rooms of the world's great libraries.

The education of women was of a perfunctory type, but they did learn to read, and with the development of printing there appeared a Judaeo-German vernacular literature primarily intended for them, but increasingly read by men ignorant of Hebrew. The Judaeo-German literature included works of an ethical-religious and also of a secular nature.

The philanthropic or social welfare work of the community included the school system, the synagogues, the hospice, old-age pensions for impoverished members of the middle class, and a ticket system of relief for migrants. Many of the charities were administered by semi-autonomous *hebrot* or confraternities working under communal supervision. There were societies for dowering brides, burying the dead, redeeming captives and the imprisoned, supporting schools, clothing the poor, and sending aid to Palestine.

The characteristics common to the mediaeval Jewish community were: self-imposed discipline, the consideration of all religious, philanthropic, educational and self-defense problems as common concerns, and a strong sense of solidarity fortified by a uniform way of life.

The compensations offered by a completely integrated communal life in the ghetto were not sufficient to maintain the morale of a Jewry that found itself almost completely expelled from western and central Europe by the 16th century, and ravaged during the peasant revolts in Poland in the 17th century. Reacting in a fashion typical of Jewry for over 1,600 years, the Jew looked for relief to Messianic pretenders. In 1665, Sabbatai Sebi, a Smyrna Jew, proclaimed himself the long awaited Messiah and was enthusiastically acclaimed by Jews everywhere until unmasked as an impostor the following year. A century later, under the leadership of Israel Baal Shem Tob, The Good Master of the Name (d. 1760), half of the Jews in eastern Europe flocked to the new mystical and ethical sect of Pietists or *Ḥasīdhīm*. The forces which produced a false Messiah like Sabbatai Sebi and a great spiritual and ethical movement like Hasidism have a great deal in common. In both instances, the submerged Jewish masses were seeking "escape." In a political sense they yearned for physical leadership and security; spiritually they had a craving for an inner freedom which expressed itself in a protest against the intellectualism of the rabbis. The great contribution of the *Ḥasīdhīm* was their stress on the ethical aspects of Judaism, on religious consecration and on the joy of living. They opposed formalism in religion, decried asceticism, and manifested a keen interest in man himself, particularly the common man. Messianic redemption and ethico-religious rebirth were thus for many Jews a form of emancipation from suffering. The Jews of central and western Europe, more directly influenced by the secular and liberalistic society in which they lived, sought emancipation, not at the hands of God, but at the hands of man. That emancipation came first in Sept. 1791.

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MODERN PERIOD

THE AGE OF LIBERALISM, 1791–1919

Period of Emancipation.—A new world dawned for Jewry with the French Revolution. The fall of the Bastille marked the beginning of the end of the Jewish "dark ages," which may be said to have extended from 311 to 1789. During the mediaeval period many Jewish disabilities had piled up in the Christian and Moslem lands. The Jew could not become a citizen or hold any official office, could not practise many of the professions or join a

craft or merchant guild. He was frequently compelled to live in a ghetto, to wear a special badge, and was subject to onerous taxation. Not infrequently was he compelled to pay a humiliating travel toll for himself (*Leibzoll*) as well as for his cattle. A rounded education and a decent standard of living were beyond the reach of most Jews. These disabilities—with considerable variation—were current in practically all Christian lands; similar legal incapacities affected the Jew in Moslem lands and were incorporated in the rather fluid body of law known as the pact of Omar. The first outright emancipation of a large body of European Jews occurred on Sept. 28, 1791, when the national assembly enfranchised French Jewry. This was the beginning of the liberalistic era, which reached its climax in the treaty of Versailles in 1919.

The emancipation of the Jews in France was itself the result of a spirit of liberalism and rationalism that had its roots deep in the Renaissance and the middle ages. Ever since the 16th century there had been a growth of tolerance among the thinkers and rulers of Europe, a tolerance which was to culminate ultimately in the emancipation of the European Jew. The Wars of Religion which ended with the treaty of Westphalia (1648) established the right of tolerance for Catholics and Protestants; the next step was tolerance for the Jew. The growing national states, looking back to Roman and classical ideals, emphasized their own sovereignty, including the right to control the destiny of their Jewish subjects independent of church traditions. The mercantilistic and capitalistic state was willing to tolerate Jews if they could create wealth and if they could become "useful" citizens. These utilitarian motivations were supported by philosophic, rational and humanitarian considerations. The teaching of natural rights and natural religion made a place for the Jews, who were now looked upon as fellow human beings. The 16th century Dutch welcomed them in their struggle against the Spanish empire; Cromwell wanted them to further English trade in the Spanish Main and to clip the wings of the rising Dutch state; Roger Williams and John Locke sincerely believed in religious liberty and encouraged the settlement of Jews in the British-American colonies, and, early in the 18th century, in 1714, John Toland, the Irish philosopher, pleaded for a wide toleration of the oppressed Jews.

The 18th century saw the marshalling of the forces of liberalism. The French encyclopaedists led the way. Voltaire disliked the Jews, but his teachings made for freedom. Montesquieu and Rousseau pointed out abuses to which the Jews were subject, and Mirabeau and Abbé Grégoire asked for freedom for the Jews. The work of the French liberals found a sympathetic echo in Lessing's *Nathan the Wise*. The model of this great plea for tolerance, Moses Mendelssohn, greatly influenced the Prussian bureaucrat, Christian Wilhelm von Dohm, who in 1781 published his essay "On the Civil Improvement of the Jews." The first real effect of this new teaching was felt in the distant English colonies in America, where through the Declaration of Independence (1776) and the Constitution (1789) all rights and privileges were given to Jewish inhabitants. The Bill of Rights of the American constitution influenced the French to emancipate their Jews in 1791.

Napoleon—whether it was his will or not—became the testamentary legatee of the French Revolution. Wherever he went, he spread the teachings of French liberalism. Jewish equality was imposed in practically every land which he conquered. There was a breath of freedom, at least for a few years, for the Jewries of Holland, Switzerland, western Germany and Italy. But Napoleon himself entertained little sympathy for Jews. He called an Assembly of Notables in 1806 and a confirmatory Sanhedrin in 1807 in order to compel the Jews within his empire to assimilate themselves as speedily as possible into the new French civilization. He imposed a centralized consistorial type of Church government upon the Jews, through which he completely subordinated the Jewish synagogue to himself in much the same way as he had done with the Catholics and the Protestants.

Through the "Infamous Decree" of 1808, he "froze" the Jewish settlements in the German *départements* and exercised a dictatorial supervision over every important financial transaction into which those Jews entered.

The fall of the First Empire ushered in a period of reaction broken only by the liberal revolutions of 1830 and 1848. Most of the Napoleonic gains were lost, except in Holland. But the spirit of liberalism was on the march, and gradually throughout the century the Jews of central and western Europe were given equality. The new Belgium gave the Jews all rights in 1830; Austria and Hungary gave them political freedom in 1867 and legal recognition to the Jewish religion by 1896; the Italians, in spite of papal opposition, completed their legislation in favour of Jewry in 1870, and even Germany, which had partially emancipated many of its Jews through the Prussian decree of March 11, 1812, completed the task, as an empire, in 1871. Three years later, 1874, the Swiss, after diplomatic encounters with the French and the United States, gave up their opposition to Jewish political equality. In the Scandinavian lands, Denmark granted equality in 1849 and Norway in 1851. In Sweden, no Jew even in 1943 could sit on the council of state because it is the governing body of the State Lutheran Church, but in every other way the Jews have enjoyed full equality since 1870. The Spanish state, which had expelled its Jews in 1492, never laid down a clear-cut policy toward readmission or emancipation. Jews have been tolerated in the country since 1876, but in 1943 it was questionable whether Spanish Jewry enjoyed any political rights. Greece emancipated its Jews in the middle of the 19th century, and the Turkish revolution of 1908 brought a semblance of political freedom to the Jewish masses in the Turkish lands.

The attainment of political equality in England was a slow process. As early as 1753 a bill was introduced to bring about the naturalization and emancipation of foreign-born English Jews, many of whom were cultured and wealthy. But public opinion was not prepared for this assault on traditional prejudice, and on Dec. 20 of that same year, the "Jew bill" had to be repealed. It was not until 1830, after the repeal of the Test act and the emancipation of the Catholics, that the Jews again tackled the problem of equality. Even with the aid of the historian Macaulay, Robert Grant, and a host of other liberals, they still made progress only slowly. Francis Goldsmid, a Jew, was called to the bar in 1833, and by 1855 all municipal offices were open to Jews. Finally, after a hard struggle, Baron Lionel de Rothschild took his seat in the house of commons in 1858, omitting in the oath he took the words "on the true faith of a Christian." In 1871 Jews were admitted as scholars and fellows to the universities; in 1885 Lord Nathaniel de Rothschild took his seat in the house of lords, and in 1890 all offices were open to Jews except that of king of England.

The central and western European lands had practically all granted equality of rights to their Jewish inhabitants by 1870, but the Jew in these lands formed only a minority of world Jewry. The masses of Jews lived in eastern Europe, in Russia, Poland and Rumania, amidst veritable mediaeval conditions. Russia, bitterly anti-Jewish, inherited the largest Jewry in the world when, in the years 1772–95, she shared in the partition of the old Polish republic. These Jews were "frozen" in the eastern provinces of the empire into a Pale of Settlement, and here they remained from 1791 until World War I.

The attitude of the Russian rulers toward the Jews in this huge ghetto from the time of Catherine the Great (d. 1796) to Nicholas II (d. 1918) was marked by curious inconsistencies: by occasional periods of sympathy and by the grossest brutality. In their moments of liberalism, various Russian rulers attempted to put the economic life of the Russian Jew on a sound basis by settling him on the soil and by establishing elementary schools to "civilize" him and to encourage his entrance into Slavic cultural life. Various commissions were appointed throughout the 19th century to study and to make recommendations to solve the problem of these millions of declassed people, but the recommendations of the liberal commissions were never accepted. Occasionally the same rulers who made gestures of liberalism to the Jews with one hand brutally repulsed them with the other. They were driven out of the villages in the border lands, herded

into the ghettos created within the larger ghetto of the Pale, deprived frequently of the chance for a higher education, and conscripted into the army though denied the privileges of advancement and the rights of citizenship. Ritual murder charges abounded, and the horror of outright pogroms or state-tolerated-and-organized killings and massacres began to terrify the Jewish masses in the '70s and '80s of the 19th century. There was a short interlude of liberalism under the emancipator Czar Alexander II. In the period from 1855 to 1865, Jewish craftsmen, college graduates, and wealthy merchants were permitted to settle in Russia proper.

But the assassination of Alexander II in 1881 ushered in a period of reaction that continued with but slight alleviation until 1917. The Romanoffs, beginning with Alexander III (1881–1894), cultivated an older Russian policy that was to have fateful consequences for all of European Jewry: the policy of the scapegoat. The Russian landed magnates and bureaucrats ever since the early 19th century had refused to solve the social problems of the underprivileged peasant masses in a constructive fashion. The emancipation of the serfs only gave them the right to starve. To avoid a repetition of the Jacqueries which were not unknown in that land, the very magnates who had brutalized and exploited the serfs and peasants encouraged the belief that the Jews were the cause of all of Russia's troubles. If the Jews could only be kept away from the peasants whom they "exploited," if the peasants would only recognize in the Jew the real religious and economic enemy, then they would be so busy hating and killing Jews that they would not have time to think of their own troubles or to demand redress from the despotic Russian state. It was this state and its czars that organized and even financed massacres of the Jews as late as the beginning of the 20th century, during the reign of Nicholas II. Here was the classical diversion and scapegoat manoeuvre which was to be emphasized so effectively in the '30s of the 20th century by Adolf Hitler.

The pogroms killed Jews but did not stop the social revolutionary fervour of the Russians. The defeat of Russia in World War I brought the Revolution, and under the liberal government of Prince Lvov, the Jews of Russia were emancipated for the first time, on April 2, 1917. The Bolsheviks, who came to power in November of that year, made no changes in that respect.

Poland, which for the larger part of the 19th century enjoyed a sort of shadowy political existence in the larger Russian empire, did nothing for its Jews. Ever since the Four-Year Parliament of 1788–91, when the Jewish problem was first seriously debated, the forces of anarchy and bigotry, procrastination and rabid nationalism had made an equitable solution difficult. The Jews fought and died in the Polish Revolution of 1831, only to be ignored in the brief moments of Polish triumph. When in 1919 the new Polish republic was created, minority rights for the Jews were forced upon Poland against the protests of its political leaders. The Allied Powers at Versailles were determined to guarantee a large measure of political, cultural and social freedom to the various minorities incorporated in practically all of the states in southern and eastern Europe. In the Poland of 1919, for instance, almost half of the population were of minority stock, among them White Russians, Ukrainians, Ruthenians, Germans, Jews, etc. The means adopted for this purpose by the Allied Powers were the minority protective clauses. The clauses stipulated that the various religious and ethnic minorities were to be granted religious liberty, all rights of citizenship, the privilege of their own language, and the right to their own school systems. The Jews were specifically excused from appearing in court on the Sabbath and no elections were to be held on that day; they were also guaranteed a proportionate share of public funds for their own schools. The vigorous protests made by the Poles against the adoption of these minority rights—some of which prevailed even under the tyrannical czars—proved the necessity for their enactment.

Rumania, too, was asked to subscribe to these minority right provisions. Rumanian history had been a repetition of that of Russia, if not worse. The story of the Rumanian Jews in the Turkish provinces of Moldavia and Wallachia in the 19th century was a story of cruel, brutal mistreatment. To stop this international scandal the Congress of Berlin insisted on the emancipation of Rumanian Jewry. This stipulation was laid down in the famous article 44. Rumania assented and then blandly followed a procedure which enabled her to circumvent the spirit of that clause. She declared that Jews were "aliens" who would have to be naturalized individually by act of parliament; in the entire period from 1878 to 1919 only a few thousand Jews were naturalized, out of a Jewish population that was never less than 200,000. In the 50 years before World War I, Jewish disabilities, as reflected in petty oppression and limitations in educational and economic opportunities, were at their worst in this country. In view of such a history, it was imperative that the rights of the Jewish minority be protected. This the minority rights guaranteed by the League of Nations were expected to do. All in all, a dozen or more states and free cities declared their willingness to observe these and similar rights with respect to their minorities. This was in 1919 and 1920. The struggle that had begun in 1791 was finally over. The liberalistic age had reached its climax. Now, practically for the first time since the 4th century, the Jews all over the world were enfranchised and free—on paper.

Attempts by Jews to Expedite Emancipation.—The process of acquiring political and economic rights, and to a certain degree, social recognition, was a long one. As we have seen, it first began in 1791, and did not end until 1919. During this long century of liberalism, many Jews who appreciated the values of western education thought it necessary to do what lay in their own power to expedite the emancipatory process. As they conceived it, there was a double obligation: the obligation of the Jew to emancipate himself spiritually, culturally and aesthetically, and the obligation of the non-Jew to receive the Jew and to accord him, at the very least, political equality. One of the first Jews to begin the drive for the entrance of the Jew into western culture was Moses Mendelssohn (1729–1786).

Mendelssohn was the first Jewish modern educator and emancipator. By translating the Pentateuch into German he encouraged his generation to divorce itself from the Judaeo-German vernacular. Through the simple and rational commentary to the Bible which he sponsored (the *Biur*), he taught his generation to think rationally Through his philosophic writings the Jew was again encouraged to view his religion from the perspective of contemporary philosophy. He strove to modernize the Jew and to make him acceptable to his non-Jewish fellow men, although he was always scrupulously orthodox in religious practice. His disciples carried on his heritage of a cautious assimilation of western cultural values in their Hebrew periodical *Ha-Me'assef* (*The Gleaner*).

In the next generation, Leopold Zunz (1794–1886), striving to achieve the same ends which had motivated Mendelssohn, proceeded from a different viewpoint. It was his belief that if the Jew could evidence to the world the worth and grandeur of his culture, a new respect for the Jew would be engendered that would make for the acceptance of the Jew into the family of nations. He insisted, however, that this evaluation of Israel's past should be made in a rigidly scientific spirit, and thus he gave birth to the *Wissenschaft des Judentums,* the "science of Judaism." As a result of his influence, of his writings, and of the "school" that he inspired, the entire past of the Jews in all its cultural phases was opened to the scholarly world. Hundreds of popular and scientific Jewish periodicals were established; schools for higher Jewish learning were set up; chairs for the Science of Judaism were created in the world's universities; Jewish museums were founded; and great publishing societies were formed to popularize Jewish knowledge in the Zunzian spirit.

The desire to find a place in the sun of world culture, and to enjoy the advantages of political, economic, and social equality also stirred up individuals among the east European masses. Some of these men had served their cultural apprenticeship under Moses Mendelssohn. They attempted to introduce the *Aufklärung,* the Enlightenment, into the Russian empire. They became the Enlighteners, the *Maskilim,* finding authority for their name, if not their activity, in the verse from Daniel (XII:3): "And

they that be wise shall shine as the brightness of the firmament." The medium they employed was not Yiddish, the vernacular of the masses, not Russian, the language of the overlords, but the classical Hebrew of the Bible. This drive for enlightenment in eastern Europe, however, met with vigorous objections from rabbinical and lay leaders. It was their contention that after Jews achieved a secular education and learned to appreciate its benefits, they would be willing to surrender their Judaism, if the enjoyment of this culture were made conditional to their acceptance of Christianity. The demand—whether voiced or not—of the Jewish religious leaders was that the Russian government first emancipate its Jews; then cultural assimilation would be safe. This the government refused to do, and the Jewish masses consequently turned a deaf ear to the pleas of the *Maskilim. Haskalah,* the Enlightenment, never penetrated deeply into the consciousness of the Jewish masses, for it furthered the assimilation of the despised culture of the Russian oppressors, and its use of Hebrew as a medium limited its usefulness. Yet it was this very creation of a modern Hebrew literature that served as a valuable instrument of the Jewish nationalistic or Zionistic movement that made itself felt in Russia in the '70s. *Haskalah,* which was basically assimilationist, did an about face and became particularistic, Jewishly nationalistic, and placed itself at the service of the Zionist movement after the pogroms of the '80s. The desire for the acquisition of modern rights and culture moved thousands, but the hope of many of these people lay in the enjoyment of these rights in a free and restored Palestine.

Assimilation and Environment.—Whenever the "mediaeval" Jew came into contact with the world of culture without, whether it was in 1791 in France or 1917 in Russia, he was faced with the problem of establishing a balance between his Judaism and the outside world. To what extent should he assimilate? Many Jews during the struggle for emancipation thought to solve their problems by outright conversion. It was this attitude that brought about the conversion of many individuals who were to become distinguished in the 19th century: Karl Marx, the socialist; Friedrich Stahl, one of the founders of German political conservatism; Heinrich Heine, the poet; and Benjamin Disraeli, the English statesman. Religious conviction, not careerism, may have induced the conversion of men like Neander (né Mendel), the church historian, but there never was a Jewish mass conversionist movement, although the newly revived Christian missionary movement led by Lewis Way devoted its energies to this end.

Many Jews in the early 19th century, however, eager to become an integral part of their environment, leaned toward Christianity, which they identified with patriotism and culture. It was the desire to prevent the secession of these cultured Jews that prompted German-Jewish laymen like Israel Jacobson (1768–1828) to initiate the Reform movement in Judaism. The Reform leaders were vigorously opposed to the religious assimilation of Jewry, but they were equally certain that Jewry could not survive if it did not tone down the traditional character of its religious services, and introduce decorum, the vernacular, and contemporary musical standards. A later generation, led by Holdheim, Geiger and others in Germany, introduced the far more important principle that only the moral law was binding on the Jews, and that ceremonial and ritual institutions must change in accordance with the needs of the time. This movement that broke with the past and attempted to save Judaism from complete assimilation and disappearance, failed to become dominant in Germany and in Europe, because it had the misfortune to rise during the reactionary Metternich age. Its break with the past was too abrupt and it excised too much of the strong emotional appeal of the orthodox service. The *coup de grâce* for reform as a mass movement was given in 1823 when the Prussian state closed its conventicles and forbade the slightest deviation from the orthodox service.

Those Jews who were convinced of the necessity of an adjustment between the rigid ghetto pattern of the 18th century and the demands of western culture, but were also of the belief that the Reformers had gone too far, established the Conservative and the Neo-Orthodox movements. The Conservative Jews held to the authority of rabbinic law, at least formally; in actuality, they compromised with it by ignoring it or reinterpreting it where it conflicted with the demands of every-day life. The Conservatives, led by Zecharias Frankel (1801–75), took over all the externals of decorum and the use of the German vernacular introduced by the Reformers; by improving their services without modifying the liturgy itself, they cut the ground from under the feet of the Reformers. They applied themselves wholeheartedly to secular education, and became an integral part of the movement of the "science of Judaism." Even the extreme orthodox dared not oppose the inroads of modernism if they intended to hold the younger generation. Under the aegis of Rabbi Samson Raphael Hirsch (1808–88) they surrendered themselves to modern education but attempted, at the same time, to observe the precepts of orthodoxy in every detail. Practically all Jews, in America and Europe, made a successful transition, spiritually and culturally, from the ghetto to the modern world. The world offered them political and economic and cultural opportunity; it was to their advantage to accept.

Anti-Semitism: The Minority Gentile Reaction to Jewish Assimilation.—As the Jew was confronted by manifold problems in adjusting to a new and better world, so the Gentile, too, was confronted by a serious problem in adjusting to the new Jew. For at least 1,500 years, practically every instrumentality of church and state had been employed to vilify the Jew and to undermine his position in society. Contempt for him, or at best pity, was traditional in all circles; hatred was frequent. The Gentile who had been taught to disregard or despise the Jew as an inferior now found the Jew at his side as an equal, as an economic rival, or as a professional peer. It was an emotional wrench for the average non-Jew to adjust himself to the new Jew, yet the great mass of non-Jews made this adjustment successfully. If they had not, Jews everywhere would be suffering disabilities. The fact that they have made it is a triumph of the democratic state and of modern Christianity. There was a small minority who would not reconcile themselves to the changed status of the Jew: it was this irreconcilable minority that created the modern movement of anti-Semitism.

Actually, anti-Semitism is a continuance of a historic dislike or hatred of the Jew. Politically, the anti-Semite, mediaeval in outlook, believes that only a Gentile can be a citizen; economically and professionally, he resents the rivalry of the successful Jew; religiously, he distrusts the descendants of those who, he believes, crucified the Christ; and psychologically he looks askance at Jewish particularism. The Jews, he believes, are different, because some Jews look "Semitic," because they refuse to intermarry, and because they are practically the only non-Christian religious group on the European and American continents. The anti-Semite, however, purports also to be a child of the modern age. He insists upon his rational approach, upon his objectivity. He cannot admit to any type of prejudice. He is not opposed to the "Jew." He is opposed to the "Semite" and on "scientific" grounds. The Jew, he insists, has no capacity for participation in modern culture; on the contrary, he is a menace to it because of his inherent "racial" traits. Anti-Semitism purports to be motivated by biological facts and cultural dictates. It declares that inasmuch as the Jew can only contaminate the world, he must be isolated or eradicated. Anti-Semitism is, therefore, dedicated to the destruction of the Jew. In this respect it is the very converse of the mediaeval religiously-prompted dislike of the Jew. The ambition of the mediaeval Church, it was said, was not to burn but to convert the Jew. The Church yearned to receive him; the modern anti-Semite yearns to annihilate him.

Because anti-Semitism is a pseudo-scientific movement, it has an appeal for certain types of intellectuals. It is dangerous because it manifests itself in the organization of political parties determined to acquire power and to settle the "Jewish problem" by violence. Unscrupulous political leaders and demagogues have encouraged anti-Semitism in order to acquire a political following in a hurry by an appeal to a traditional latent prejudice.

This explains the anti-Semitic line followed by demagogues in Europe and America from 1875 to the present day.

Anti-Semitism has been recognized and adopted by clever politicians and certain industrialists as a convenient tool to further political and economic reaction. In Hohenzollern Germany, it served to divert the people from the social demands of the rising labouring classes; in France, in the Dreyfus case, it was an instrument used by the royalists and the clericals in the attempt to overthrow the Third Republic; in Russia and Rumania, through legal disabilities and outright massacres, it served to deflect the masses of the population from the task of creating a truly democratic state and of solving their own social, economic and political difficulties. (*See* also ANTI-SEMITISM.)

Zionism: The Reaction to Anti-Semitism.—Anti-Semitism, as a formal movement, has been the reaction of non-Jews to Jewish emancipation. The organized Jewish reaction to anti-Semitism has taken the form of Zionism, the most vigorous and successful movement in Jewish life today. Toward the close of the 19th century, many Jews, especially cultured Europeans, who sincerely believed that they had completely identified themselves with their environment, were shocked by the recrudescence in modern guise of this ancient hatred of the Jew. They became convinced that if anti-Semitism could rise as a "scientific" and "intellectual" movement, and in France, the very source of Jewish freedom, then assimilation for the Jew was indeed hopeless. Yet these very people had been influenced by the very political nationalism which in part had served to reject them. It was only natural, then, that they should seek a nationalistic interpretation of Jewish destiny.

These western and central European Jews who founded the Zionist movement found no mass following in their own countries, but among the Jews of eastern Europe, in Russia, Poland and Rumania, where Jews had been "Zionists" for centuries. Every page of Jewish liturgy and the vast rabbinical literature vibrated with love for the Holy Land, and the Bible inspired them with the Messianic ideals of a better life and a more just society. They refused to identify themselves with the Pan-Slavism of their Russian oppressors or to assimilate the cultural ideas of the other east European states: in these orthodox Christian lands this could be done only in terms of religious conversion, and they refused to pay this price for a questionable security. Under the influence of the Russian pogroms, they followed enthusiastically the call for a Zionist congress which met at Basel in 1897 under the leadership of a Viennese journalist, Theodor Herzl (1860–1904). It was at this congress that the Basel program was formulated: "Zionism aims at establishing for the Jewish people a politically and legally assured home in Palestine." Herzl and some of his immediate followers had conceived of their problem as a political one: they were interested primarily in a political state for Jews, and if Palestine, the preferable location, was not available, then some other area, like British East Africa, might do. But the east-European masses were Palestinian nationalists, true Zionists. They insisted that Palestine alone was to be the Jewish homeland and carried this point.

The rise of the nationalistic Young Turks in 1908, who refused even to consider a surrender of a moiety of their sovereign rights in Palestine in the form of a Zionist charter, impelled the Zionists to implement an energetic colonization program in Palestine even without charter guarantees. But after years of such colonization, Turkey was still unsympathetic. It was not until 1917 that the first real gesture was made to provide for the creation of a sovereign Jewish state in Palestine. On Nov. 2 of that year Arthur James Balfour, secretary of state for foreign affairs of Great Britain, formally declared that "His Majesty's government view with favour the establishment in Palestine of a national home for the Jewish people, and will use their best endeavours to facilitate the achievement of this object, it being clearly understood that nothing shall be done which may prejudice the civil and religious rights of existing non-Jewish communities in Palestine, or the rights and political status enjoyed by Jews in any other country." Three years later, in April 1920, the Supreme Council of the Allies at San Remo included this declaration in the mandate for Palestine which was to be assigned to Great Britain by the League of Nations.

Yet, in spite of the Balfour declaration and the mandate, the evolution of a Jewish state in Palestine was marked by many problems. There were internal Jewish conflicts: the struggle between a socialist and capitalistic economy; the demands of orthodoxy and the indifference of secularistic Jewish nationalists; the struggle between Jewish political liberals and rabid chauvinists. Nevertheless, within the ambit of the authority accorded to them by the Jewish community regulations, the Jews managed to effect a satisfactory *modus vivendi.*

The problem of Arab-Jewish relations is a far more serious one. The strong nationalism of the Jews in Palestine evoked a corresponding nationalism among the Arab inhabitants. The Palestinian Arab nationalism, in turn, was furthered by politically ambitious Arab townsfolk, by the wealthy Arab landed class who feared the growing power and the liberal social program of the Jews, by British authorities in Palestine and London who did not approve of the domination of the Jew in Palestine, and by nazi and fascist propagandists who hoped thereby to tear Palestine away from the British sphere of influence. The Arabs maintain that Palestine is theirs by virtue of occupancy and numerical superiority; the Jews assert their right to the country based on historic tradition and ties, on their desperate need for a land of their own, and on the record of what they have already done and what they expect to do for the country itself. And the British, in the Balfour declaration, and, apparently, in the MacMahon letters (1915), made commitments to both sides. The struggle between Jews and Arabs was epitomized in the Jewish demands for the right to free migration into the country, and the freedom to purchase land in an open market. The Arabs and the British denied both. In order to emphasize their opposition to Jewish objectives, the Arabs in the period from 1920 to 1937 created many riots in the cities and in the farm settlements and took a considerable toll of Jewish lives. The embittered Jews defended themselves vigorously and successfully, but were convinced that these riots could not have taken place without the connivance of the local British authorities. To bring peace to the embattled land the British appointed a series of commissions beginning with the Shaw commission in 1929 and ending with the London conferences and the White Paper of May 17, 1939.

The general tendency of these commissions, conferences and White Papers, which reflected British colonial and foreign office policy, was to scrap the Balfour declaration. This was already evident in June 1922—before the mandate was even ratified—when Winston Churchill issued the White Paper which in essence killed the hope for a sovereign Jewish Palestine state. The (Peel) Royal Commission of Inquiry in 1937 suggested the partition of Palestine among Jews, Arabs and English. This proposal was recalled by the British in 1938, and in May 1939, at London, the government of Neville Chamberlain proposed "freezing" Jewish settlement in Palestine by limiting immigration and by circumscribing land purchases. This was the status of the Palestinian Jewish situation when World War II broke out in Sept. 1939.

Palestine has played an unusual role in modern Jewish life. In the period prior to 1917, the hope and the vision of Palestine served to buoy up the spirits of millions of Jews in eastern Europe, though America was a more secure haven. After World War I, as conditions for the Jews of eastern Europe were becoming increasingly difficult, Palestine was almost the only land which would admit settlers, after the Johnson-Lodge Immigration Bill of 1924 had radically limited the number of Jewish immigrants to America, and the Hoover executive order, a result of the depression which began in 1929, practically closed the doors of America. Palestine became a real land of promise, especially with the rise of the Hitlerian rule over Germany and Austria. Altogether, 331,223 Jews entered Palestine from Dec. 9, 1917 to the end of 1940, although almost 28,000 emigrated from Palestine in the years from 1922 to 1931. In Palestine the Jew found it possible and necessary to engage in every type of work and industry. His vocational distribution was, therefore, completely

"normal." Thousands went onto the soil, drained the swamps, cleared the rocks, and did much to make of Palestine a truly productive, if not attractive, land. There were about 500,000 Jews in the country in 1943, of whom more than 75,000 were farmers, settled in some 263 agricultural settlements which they themselves established. The all-Jewish town of Tel Aviv had a population of more than 150,000 in 1943. In Feb. 1942, there were more than 1,800 Jewish industries in the country, employing 45,000 workers, and producing $56,000,000 worth of goods annually.

Social experimentation and democratic idealism have motivated the Zionists in all avenues of life. The land is purchased by the Jewish National fund for the Jewish people and is never alienated. Various types of co-operatives, for buying, selling, building and farming, were established; the General Labor Federation of Jewish Workers, the *Histadrut,* provided housing, hospitals, libraries, banks, crèches, and various other social services for its members. More than 500 modern and scientifically conducted Jewish primary and secondary schools were found in the country; higher education was centred in the Hebrew university in Jerusalem. Its extensive library, the finest and largest in the near east, had in 1943 more than 400,000 volumes. The entire Jewish educational budget for Palestine in 1941–42 amounted to about $3,000,000. The University Hadassah hospital had the finest medical equipment in the near east. The creative life of the Jewish community is reflected in the hundreds of original works in literature, art and science, published annually in Hebrew, the language used by Jews throughout the country. The best of the literature of other languages is translated into Hebrew likewise. The Palestinian Jews are unquestionably the most progressive, liberal and, from a western point of view, the most advanced people in Asia. And the influence of this small group of Jews on world Jewry has been profound. Though they constitute but 3% of all Jewry, they have inspired a renascence of the Hebrew language throughout the world, stimulated Jewish studies, intensified Jewish loyalties, and have imparted to many Jews a dignity, a sense of self-realization, and an inner security that prior to this time they did not possess.

The Cultural Impact of Western Civilization on the Jew.—A comparison of the intellectual and cultural status of the average Jew prior to 1791 with that of the 20th century Jew would demonstrate that his progress has been exceptional. It is no exaggeration to state that the Jew of the 18th century was at least 100 or 200 years behind his contemporaries, in secular education, literary taste, in science, in the arts, and in the social amenities of the western European world. By 1943 the Jew had become completely modernized. There is no field of art, science, literature or music into which he has not entered and made a positive contribution. There is no democratic land in which he has not held high and responsible office. If the Nobel prizes may serve as a criterion of cultural achievement, then the 15 Jewish Nobel prize winners and 7 others of partially Jewish parentage are striking evidence of the capacity of the Jew to thrive intellectually in the modern world. Ehrlich and Wassermann in medicine; Willstätter and Fritz Haber in chemistry; Luigi Luzzatti, Disraeli, Lord Reading and Leon Blum in politics; Meyerbeer, Halévy, Mendelssohn, Rubinstein, Mahler and Arnold Schönberg in music, are but a few of the men who made distinguished contributions.

In the economic field the social stratification in Jewish life was not so profoundly modified by capitalism as was the life of other groups. Unlike the vast mass of non-Jews, the middle class had been the dominant class in Jewry for more than a thousand years. The tendency of contemporary capitalism has been to strengthen this large middle class further and to bring into sharp relief the two extremes: the few wealthy capitalists and the emerging Jewish proletariat. The Jewish middle class in Europe and in the Americas concentrated in white collar jobs, in the professions, and in the manufacture and sale of consumers goods, especially of garments and furnishings. In almost every country there were a few wealthy capitalists, outstanding not only for their wealth but also for their lavish philanthropy. Distinguished among them were the English and French Rothschilds, Baron Maurice de Hirsch who endowed the Jewish Colonization association (ICA), the Schiffs, the Warburgs, the Rosenwalds, Nathan Straus and the Guggenheims. All these men gave millions for both Jewish and Gentile philanthropies. Julius Rosenwald alone helped establish over 5,300 Negro schools in the United States. In the U.S. the burden of important Jewish institutions was largely borne by men of wealth. In 1941–42, 80% of all contributions were made by 10% of the givers; 54% of the contributions came from 2% of the givers.

It was, of course, the same system that made possible the large fortunes which brought to birth the Jewish proletariat. Large numbers of Jews were artisans in the Moslem lands, in the east European areas and in the United States. Through the teachings of socialism these European and American workers became a class-conscious group, united into proletarian friendly societies and into special Yiddish-speaking trade unions. In nearly all lands where Jews settled there were individual Jews active in socialistic and trade-union movements: Karl Marx, Ferdinand Lassalle, and Eduard Bernstein in Germany, Trotsky, Kamenev and Zinoviev in Russia, the Adlers in Austria; Samuel Gompers, one of the founders of the American Federation of Labor, and Sidney Hillman of the Amalgamated Clothing Workers were striking instances in the United States.

One of the characteristics of this age of the development of the factory system was the right of free movement. This right was vital in a period of an expanding and changing economy when millions of skilled and unskilled labourers were required for the exploitation of new continents. There were mass migrations of Jews and non-Jews through the 19th century, first from central and then from eastern Europe as facilities of transportation made travel easier for the restless masses. As a matter of fact, this westward movement of Jewry from central and eastern Europe had already begun in the 17th century as a result of the Thirty Years' War and of the massacres during the Cossack and peasant revolts. Jews then fled to western Europe: not only to find a refuge, but also to take advantage of the new economy on the North Atlantic littoral which had been stimulated by colonial growth abroad and mercantilistic protectionism at home. The Jews of central and eastern Europe who continued this westward movement in the 19th and 20th centuries were impelled by a desire to escape from the legal and social disabilities in the Germanic lands and from outright pogroms in the Russian, Polish and Rumanian areas. In 1879 there were only 250,000 Jews in the United States; it was an outlying colony of Jewish life. In 1937 there were about 5,000,000 Jews and the United States was well on the way toward becoming the centre of world Jewish life. Jewish communities had sprung up in Canada (160,000) and in South America, particularly in the Argentine (300,000) and in Brazil (50,000). In general the centre of density of Jewish population consistently moved westward. By the time World War I broke out in 1914, Jewish communities with established traditions of service and responsibility to world Jewry had already been established in the Americas.

World War I and the Jew, 1914–19.—World War I affected the Jews primarily in the eastern European zones. Hundreds of thousands of Jews were uprooted from their homes by the Russian overlords and shipped back to the lines in the most brutal fashion. Their emancipation, along with the Russian masses in 1917, did not immediately ameliorate their position. The attempt of the soviets to maintain themselves in power and the effort of the Russian counter-revolutionaries, the Poles and the Ukrainians, supported by the Allies, to drive them out, turned western Russia into a bloody battlefield in the civil wars of 1918–20. The Jews of the Ukraine were butchered by the thousands by invading troops and local guerrillas. The soviets finally gained the upper hand but declassed the majority of the Jews because of their bourgeois economic activities. The desperate economic plight of these declassed unfortunates was alleviated only by the large scale philanthropy of the American Jewish Joint Distribution committee and similar organizations in England and other lands. In 1924 the U.S.S.R. began to work with the American

Agro-Joint to settle the declassed Jews on the land, and the government made an earnest and successful effort to help them become artisans and industrial workers. Thousands were also taken into the various state services.

In 1943 there was no economic discrimination in Russia. Nor were political disabilities against Jews tolerated. A vigorous effort was made to crush anti-Semitism by outlawing it. No concessions, however, were given to Jews in the field of religion: religious services were grudgingly tolerated but any attempt to impart group instruction to the Jewish youth under 18 years of age was vigorously punished as a counter-revolutionary act. Individual instruction by parents was cancelled out by the widespread propaganda against religion in every public institution. As a consequence of these activities, Judaism, as a religion, had no future in Russia because it could not reach its youth. But the U.S.S.R. authorities permitted a wide latitude in cultural affairs as long as social indoctrination remained in their hands. Jews were allowed their own Yiddish vernacular, their own schools, courts, theatres, although the general tendency on the part of Jews was toward acceptance and assimilation of the nationalistic Russian culture. In accordance with established Stalinesque policies they were permitted and encouraged to have their own agricultural colonies in the Ukraine, Crimea, and finally in the Jewish Autonomous region (Biro-Bidjan) on the Amur. Biro-Bidjan, established in 1928, was not a conspicuous success as a Jewish state. The Jewish masses preferred to remain in Russia proper.

THE AGE OF REACTION, BEGINNING 1920

Post-war Reaction in Eastern Europe, 1920–39.—The social status, the political, economic and religious rights of the Jews in Russia were of the same quality as those of all other citizens in the soviet federation. This was not true in the neighbour states of Poland and Rumania. The Committee of Jewish Delegations at the Peace Conference, which petitioned the Allied Powers at Paris in 1919, believed, mistakenly, that they had adequately protected the Jews and all other minorities through the establishment of minority rights. Within a few years, however, these rights proved altogether ephemeral. The League of Nations procedure for guaranteeing these rights did not work. With very few exceptions the countries which subscribed to them set out to cancel or to circumvent them. There were no effective sanctions. The war had engendered a fierce spirit of chauvinism which was heightened by the creation of large armies, customs barriers, economic autarchy, and a consciously developed policy of nationalizing all minorities even when these were on a superior cultural plane. Ruthless Polonization and Rumanization was the order of the day. The huge taxation inspired by this nationalistic program aroused the ire of the peasants and the industrial proletariat. This was only partially relieved by throwing the burden of taxation on the urban shopkeepers, a large number of whom were Jews. The Polish peasants and workers were miserable, for the closing of German and Russian markets was a severe blow to the Polish economy. The obvious remedy was to initiate widespread political, economic and social reforms. This the reactionary forces that now seized control refused or failed to do. There was another way.

There were about 3,000,000 Jews in the land, most of them, it is true, in desperate economic plights, but some of them did manage to exist as artisans, petty traders and shopkeepers. The state believed that if these Jews could be compelled to migrate they would make room economically for the hungry peasants. To stimulate this migration the Polish government and all rightist parties engaged in a tacit conspiracy to make the life of the Jew so unpleasant that he would be compelled to migrate. This was in reality a policy of anti-Semitism, although the Polish government, and the Rumanian, too, were very careful not to issue laws disabling Jews as such. The chief medium of discrimination encouraged by the state was the economic boycott. Jews were kept out of the civil services, the co-operatives, and the government monopolies; they were discriminated against in the licensing of traders and craftsmen, refused bank loans, limited in the practice of law and medicine, and in many instances driven out of the universities. The anti-Semitism of the authorities served a manifold purpose: above all, it diverted the attention of the oppressed Polish masses from their own distress and the ineptitude of the government. Anti-Semitism, apparently, was good politics, for it cut the ground from under the feet of the oppositional political parties such as the National Democrats (Endeks) and National Radicals (Naras) who were outspokenly anti-Semitic; it satisfied the traditional current of anti-Semitism and, apparently, placated the growing colossus on the west, anti-Semitic Hitlerite Germany, which had come to power in 1933. The result of the state's attitude was that the status of the Jew constantly worsened in Poland: riots broke out, millions of dollars of damage was done, and hundreds of Jews were wounded and killed. This was the situation when the Germans invaded the land in 1939.

The Post-war Reaction in Central Europe, 1920–39.—During the period of the long armistice, 1919–39, the Germans had changed radically. World War I had left them crushed; they had lost millions in men and money; their economic and political position was bad; their morale was low; their pride was wounded. In this crisis in the life of a great people there arose Adolf Hitler with an economically and socially appealing political platform and a promise of work, glory and a scapegoat. The Jew, together with the social democrats, the liberals, and other "traitors," Hitler maintained, was responsible for the downfall of Germany. This appeal of anti-Semitism was supported by many of the Junkers, the militarists, the old diplomatic corps, some of the industrialists, the struggling "little man," and the phrenetic fringe. The ultimate purpose of many in these groups was actually to destroy the Weimar Republic. This task would be made easier if the Republic could be equated with "Jewishness" which meant, of course, political and social liberalism and a consequent justice to the Jew. Hitler, after 13 years of brilliant, persistent effort, finally became chancellor of Germany (Jan. 1933) and immediately set out to implement his program which included the destruction of what was probably the most distinguished Jewry in Europe. Although less than 1% of the total population, they stood out as a group noted for their interest in and contributions to German culture. They were—so they believed—completely integrated into the civilization and life of the land: about 27% of all Jewish marriages in Germany were inter-marriages with non-Jews. Those Jews, however, who did remain in the fold, frequently evidenced an unusual appreciation of Jewish cultural and spiritual values.

In a series of laws, confiscations and pogroms extending from 1933 to 1938, Hitler succeeded in destroying German Jewry—which according to him, included thousands of German Christians of Jewish origin. By the Nuremberg Laws of 1935 Jews lost their citizenship completely and were forbidden to intermarry with other Germans. As a result of the pogrom of Nov. 10–11, 1938, practically every synagogue in Germany was destroyed, thousands of Jews were imprisoned in concentration camps, and the major part of German-Jewish wealth was confiscated by a huge punitive fine. By the time the war broke out in 1939, Jews were no longer citizens, could attend no public schools, engage in practically no business or profession, own no land, associate with no non-Jew, frequent no park, library or museum, and were ordered to live in ghettos. By 1941 boys over 12 were conscripted into munition factories, all use of the telephone and public transportation systems was forbidden, and all Jews over six years of age were required to wear the yellow badge. This was the fate of the 1% of Germans who had given Germany 29% of its Nobel laureates.

The nazis became convinced, after a few propaganda successes, that anti-Semitism could serve as an entering wedge into every country of Europe and the Americas. This was important in their scheme of world penetration and conquest. A residual spark of anti-Semitism existed in all Christian and Moslem lands, they believed, and would make those countries amenable to nazi advances. Vast sums were spent for this purpose in practically every country in the world, with considerable success. By Sept.

1938, Mussolini in fascist Italy had issued an anti-Jewish law modelled on German anti-Semitic racial legislation; the conquest and incorporation of Austria in 1938, and of Bohemia-Moravia in 1939, brought about the subjection of their Jewries. Hungary, with a background of anti-Semitism and of a *numerus clausus* in the professions, enacted its first anti-Semitic statute on the Hitlerian model in 1938; Rumania climaxed her anti-Semitism in Dec. 1937, by the appointment of the demagogue Goga, as premier. In the short period of a month Goga sponsored a series of nazi anti-Semitic laws which threatened the complete ruin of Rumanian Jewry. He was speedily deposed by King Carol, but, nevertheless, by Nov. 1939, over one-third of Rumanian Jewry were disenfranchised. This meant that, as aliens, they were not permitted to work.

Sources of Help and Methods of Alleviation of Distress, 1920–39.—What forces were at work stemming this post-war reaction? The League of Nations did succeed, if only by virtue of its existence, in preventing wide-spread bloody excesses against minorities. Enlightened public opinion, particularly in England and the United States, was a strong factor for several years in restraining the brutalities of anti-Semitic rowdies in several European lands.

Those forces, however, which might have been expected to rise to the support of the oppressed minorities in the Europe between the wars failed to do so. The student bodies of central and eastern Europe, following old traditions, refused to line up with the liberals. With rare exceptions they were a prime source of reaction and violence. The liberal political parties had been crushed or suppressed. In Germany, the socialists, who might have joined forces with other liberals, were seized with a paralysis which prevented any effective resistance to the nazis; their strength was wasted in struggle with the communists. The protests of the churches, when they were made, were feeble and ineffective; certain individual churchmen and prelates were outright anti-Semites.

The methods of self-help employed by the Jews themselves served in a small degree to ameliorate their position. Some solved their problems by committing suicide; the majority hoped for emigration. In response to the crying need of the European refugees, President Franklin D. Roosevelt finally revoked an executive order of President Hoover which admitted only a fraction of permissible immigrants; qualified persons from abroad were now admitted according to quota. From 1931 to 1941, 580,207 immigrant aliens were admitted to the United States; of these, 161,262 were Jews. Inasmuch as about 4,000,000 Jews were continuously suffering under reactionary European governments at this time, this small number of emigrants into the United States over a period of 11 years did little to alleviate their miserable condition. Many Jews believed that if Palestine could be opened to immigration, the situation might be relieved. In this belief, the Jews and the Polish government were in agreement, but the British authorities, for reasons of economics and for considerations of Arab strategy, refused to permit unlimited migration of Jews to the mandated state.

If the Jews were to improve their position in the Europe of the long armistice, it had to be done largely through their own efforts and in the land in which they lived, and not through immigration. The refusal of the national socialists, from 1933 on, to promulgate a charter defining even minimal Jewish rights made any cultural or economic program in Germany futile. Little but the relief of physical needs could be contributed by foreign Jews.

When disabilities were decreed in southern and eastern Europe, however, trade schools were set up, Jews were urged to make a vocational shift where this was thought to be helpful, a vast network of Jewish *kassas,* or loan banks, was established to provide credit for petty businessmen, and a system of hospitals, clinics and summer camps for adults and children was supported. Much of this activity was financed by the American Jewish Joint Distribution committee.

The distress of the Jew, both economic and political, was in a large measure inherent in the national and international economic-political situation. Many Jews, therefore, attempted to help themselves through joining political parties dedicated to social improvement. In some lands, particularly in Poland, many Jews supported the socialist parties; some individuals, particularly among the disillusioned and embittered, but still idealistic youth, were sympathetic to communism. The mass of Jews all through Europe, who still enjoyed the franchise, supported the bourgeois, liberal and democratic parties. This helped but little, for when the revolution came in 1933, it came not from the international "left," but from the anti-Semitic "right" which was dedicated to the destruction of Jewry.

Cultural Productivity in the Jewish Field, 1920–39.—The general reactionary trend in European politics since 1920, and the rapid deterioration of civil and political rights after 1933, did not, as one might expect, bring about an immediate deterioration in Jewish cultural productivity. Religious, cultural and social organizations pursued their activities vigorously and on a high plane. In England, a relatively small Jewry, primarily through the Soncino Press, issued a translation of "Midrash Rabbah," the Cabbalistic "Zohar," the Pentateuchal commentaries of Rashi, and an almost complete translation of the Babylonian Talmud. German Jewry, in spite of serious handicaps after 1933, continued, until prevented, to publish two historical magazines, and maintained great theological schools, publication societies, and academies for research. The encyclopedic *Jüdisches Lexikon* (5 vols.) had already appeared in 1930; the *Encyclopaedia Judaica* reached the tenth volume in 1934 before it was forced to discontinue publication for economic and political reasons. Prague, in Czechoslovakia, was a centre of Jewish belles-lettres. Historical research in this small Jewry was encouraged through *Jahrbücher* and periodicals. Jewry in Poland, in spite of its poverty, maintained a vigorous intellectual life. In 1934, for instance, it supported 175 Yiddish magazines, and published 565 books of Jewish content in the Hebrew, Yiddish, Polish and German languages. It had a network of Yiddish and Hebrew schools, making more intense Jewish training available to thousands. Small Lithuania, with 165,000 Jews in 1939, was the home of the YIVO (Yiddish Scientific institute) which, using Yiddish as a *lingua franca,* published an excellent magazine, *Jivo Bleter,* and several other publications in history, pedagogy, economics and philology, all conceived and executed in the scientific spirit. (The central offices of this institute were, in 1943, in New York.) An indication of the cultural activity of even a small land may be judged from the fact that Bulgaria, in 1939, with a population of only 50,000 Jews, had more than 80 Jewish cultural and philanthropic oranizations.

World War II and the Jews.—During World War I, Jews suffered particularly because they were concentrated in Poland and west Russia where the tide of battle rolled back and forth. In World War II the situation of Jewry in the mass settlements of eastern Europe was even worse, for the national socialists set out deliberately to destroy large numbers of Polish and Russian-Jewish civilians. If but a fraction of the atrocities reported were accurate, then many thousands of defenseless Jewish non-combatants, men, women and children, were butchered after Sept. 1939.

The influence of World War II was felt most strongly by Jews in those European lands which had come under German domination. The pattern laid down by the Germans was carried out with a fatal consistency in all lands conquered or controlled by them. This included all European states with the exception of Sweden, Portugal, Switzerland and Turkey. Finland attempted with considerable success to maintain equality for her Jews; Spain, of her own initiative, deprived her 3,000 Jews of many of their civil, political and religious rights. In the conquered lands, from France to Poland, practically all Jews lost their political and civil rights; their property and businesses were confiscated, and their children, in most lands, were driven out of the elementary and higher schools. They lost the right to freedom of movement and in some lands were even deprived of almost all cultural and recreational opportunities and social relations. Quite a number sought to ameliorate their lot by converting to Chris-

tianity, particularly in Slovakia, Croatia, Hungary and Italy. The lot of the Jew was particularly bad in Germany, Austria, Bohemia and Moravia, which were under direct German control, and in Slovakia, Rumania and Croatia where anti-Semitic leadership was particularly virulent and violent. In those lands where the Gentile population was largely anti-German, the situation of the Jew was made more tolerable by the sympathy and help of their crushed fellow-citizens. This was particularly true of France, Holland, Belgium, Denmark, Norway, Bohemia, Greece, Serbia and even of Italy. In order to effect a solution of the Jewish problem in line with their theories, the nazis carried out a series of expulsions and deportations of Jews, mostly of original east European stock, from nearly all European states.

Men, frequently separated from their wives, and mothers from children, were sent by the thousands to Poland and western Russia. There they were put into concentration camps, or huge reservations, or sent into the swamps, or out on the roads, into labour gangs. Large numbers of them perished under the inhuman conditions under which they laboured. While every other large Jewish centre was being embroiled in war, American Jewry was gradually assuming a position of leadership in world Jewry.

THE JEWS IN THE UNITED STATES

The rise of the United States after World War II to unquestioned world leadership was expected to have its profound repercussion on the status of American Jewry. Jews of other lands would look to it for guidance, help and leadership. This was a remarkable change, in view of the meteoric emergence of this group in the history of the Jew.

The Spanish Period, 1654–1830.—The first Jewish community was established in 1654 in New Amsterdam (New York) by refugees from Brazil; they were Jews who followed the Spanish-Jewish rite (Sephardic) and many actually had stemmed from the Iberian peninsula. They soon settled in the other big towns of the Atlantic coast, engaging for the most part in mercantile pursuits. Under the leadership of a vigorous personality like the butcher Asser Levy, the Jewish settlers of New Amsterdam were admitted to the burghership in 1657. In the next century, some of these Spanish Jews became great shippers. One of them was Aaron Lopez, who, with his associates, was also very active in the whale and sperm oil trade. Gershom Mendes Seixas, the outstanding rabbi of this group in the Revolutionary period, was an ardent patriot distinguished for his devotion to the American cause. He was also a trustee of Columbia college. Seixas, after the capture of New York by the British, became the *Hazan* of Philadelphia Jewry when they established their first congregation, Mikvé Israel. Among the leaders of this congregation were Haym Solomon, the broker to the office of finance, and the Gratz brothers, eminent merchants, shippers and army purveyors. The Declaration of Independence and the American Constitution (1789), following the pattern laid down by the Naturalization Act of 1740, included the American Jews in their grant of equality. Minor disabilities were later wiped out in Maryland in 1825, North Carolina in 1868, and in New Hampshire in 1876. By 1830 there were about 10,000 Jews in the U.S. under the spiritual leadership of the Spanish Jews, though most of the rank and file were of Germanic origin.

The German Period, 1830–81.—The Gratz brothers, like Haym Solomon, were of Polish-German or Ashkenazic stock. It was not, however, until the Metternich age (1815–48) that the German Jews, despairing of opportunities at home, began to migrate to America in large numbers. Some of these German-Jewish immigrants of the ante-bellum period were men of culture—August Belmont, the Brandeis', Dr. Abraham Jacobi, and other '48ers. Among them was Isaac Mayer Wise, a Bohemian rabbi who came in 1846 and became the organizer of American Reform Judaism. By far the majority of these immigrants were petty businessmen and peddlers without much schooling. By the time the Civil War broke out, a number had become successful merchants and garment manufacturers. A few, like the Speyers and Seligmans were bankers. In 1858, the conversion and removal by force of six-year-old Edgar Mortara in Italy by the papal authorities, aroused American Jewry as it did European Jewry, to create civic defense organizations. In Europe, in 1860, this resulted in the creation of the *Alliance Israélite Universelle;* in the United States, in the establishment of the Board of Delegates of American Israelites (1859). One of its tasks, as the Civil War broke out, was to secure Jewish chaplains for the troops: acts of congress heretofore had provided only for ministers "of a Christian denomination." During the war between the states the Jewish bankers of the north helped open the German market to American bonds; thousands of Jews served in the armies on both sides; there were also about nine general officers in the north; and former United States Senator Judah P. Benjamin was a leading figure in the Confederate cabinet.

After the Civil War, Jews continued their activity as merchandisers of consumers' goods. As garment manufacturers they helped to democratize America through factory-made clothes, available to all people at a reasonable price. Thousands of Jews now began to go west and became pioneer merchants. There are towns and hamlets named after Jews all the way from Frankstown in Pennsylvania to Roseville in California and Marcus in the state of Washington. The second and third generation of German Jews now entered the professions and politics. New wealth engendered envy and social prejudice: Judge Hilton ordered Joseph Seligman, who, it is said, had been offered the portfolio of the treasury by Grant, out of the Grand Union hotel in Saratoga. This was in 1877. Two years later the Corbins tried to keep the Jews out of the new resort of Manhattan Beach and Coney Island. In the meantime, Isaac M. Wise, rabbi of Albany, N.Y., and Cincinnati, O., had succeeded in organizing the more liberal synagogues in the United States into a Union of American Hebrew Congregations. This was in 1873. Two years later he established in Cincinnati the Hebrew Union college, the oldest rabbinical seminary in the country. In 1889, Wise founded the Central Conference of American Rabbis, and after his death, his disciples set up a National Department of Synagogue and School Extension, and national federations of brotherhoods, sisterhoods and youth. The significance of these organizations does not lie merely in their national scope and in their program of religious and educational work, but in the fact that they welded large segments of Jews together and laid down the organizational structure that was later followed by the Conservative and Orthodox Jews of the land. Unlike that in Europe, the Reform movement in America was successful, not only because it was the first Jewish religious group to organize on a national scale, but because its liberalism was complemented by the liberal political and social institutions of America.

By 1871, the complete emancipation of German Jewry stopped emigration from Central Europe, but approximately at the same time there began an ever-increasing flow of immigration of Jews fleeing from the economic and political distress of eastern Europe. This migration began to assume mass proportions by 1881 as a result of the Russian massacres.

The East European Period, 1881–1924.—The Sephardic Jews ceased to migrate to the United States after 1800, but they actually dominated American Jewry spiritually at least until 1830. The German Jews, who began to come in larger numbers by that time, held undisputed sway over the cultural and administrational destinies of American Jewry until 1918 when the East Europeans, through the calling of the first American Jewish congress, successfully demonstrated their right to their own interpretation of Jewish leadership. These east-European Jews, who flocked to these shores as early as 1870, had already sent over 2,500,000 settlers by the time the Johnson-Lodge Bill of 1924 finally put a stop to their immigration. These new immigrants were by no means a homogeneous group. Yet they had much in common: they came with their families intending to stay, and were filled with a passionate desire for freedom. Unlike the German Jews, the bulk of these immigrants who remained in New York were craftsmen, not business men, although many of their children went into the professions. Many of them were intense Jews, devoted to Hebrew and Yiddish culture, orthodox in their practice, and fervently Zionistic. Those who were influenced by the Euro-

pean forces of political liberalism threw themselves wholeheartedly into the labour movement and into reform and socialistic politics.

The Emerging Type of American Jew, 1924.—In relation to America the Jew became a devoted and frequently a self-sacrificing citizen from the day he landed; in relation to his fellow-Jews he was a "Spaniard" (a *Sephardi*), a "German" or a "Russian." With the stoppage of migration, the Jews found themselves in an American Jewish melting pot out of which was coming an American type Jew who was distinguished from his fellow-citizens only in religion, by his strong sense of kinship for Jews abroad, and by his determination to help them attain the political, economic and cultural opportunities and security which are imperative for the maintenance of their lives and their culture. The number of Jews who were annually assimilated completely into the larger Christian-American melting pot reached considerable proportions: it was probable that 5% of all marriages—outside of the area of mass settlement—were intermarriages. The percentage in the metropolitan areas was probably smaller, but was by 1943 slowly increasing.

The American Jew took an active interest in every phase of American life ever since colonial days. He fought in all of its wars and was active in politics ever since he had the franchise. Among the men who distinguished themselves were Governors Herbert H. Lehman of New York and Henry Horner of Illinois; Supreme Court Justices Cardozo, Brandeis and Frankfurter; the cabinet ministers Oscar Straus and Henry Morgenthau, Jr., and the sage counsellor of two wars: Bernard M. Baruch. In the scientific field there were the physicians Abraham Jacobi, Jacob Da Silva Solis Cohen and Carl Koller; the chemist, Landsteiner, and the physicists Michelson and Einstein. Distinguished for their work in medical education and research were the two Flexner brothers, Abraham and Simon. Among the better known musicians, conductors, composers and virtuosi were Leopold Damrosch, Koussevitzky, Gabrilowitsch, Heifetz, Elman, Menuhin, Vladimir Horowitz, Ernest Bloch, Irving Berlin and George Gershwin. The philanthropies of the wealthy Jews were exemplified in the benefactions which furthered American culture, such as the John Simon Guggenheim Memorial Foundation scholarships. Nathan Straus was distinguished for his work in bringing about the pasteurization of milk and the consequent decrease in infant mortality.

In his economic life, the Jew on the whole followed traditional patterns. He was still very active in merchandising and in garment manufacturing, although there was hardly any form of economic life in which he was altogether absent. The motion picture industry was largely his creation. He was active in the professions, particularly of law and medicine, because they are "free" and competitive. The field of Jewish economic activity was still restricted. Whether as a manual labourer, or as a white-collar worker, or as an executive, it was difficult for him to secure an entry into heavy industry, transportation, mining, public banking, insurance and public utilities. To a marked degree he experienced economic discrimination in the labour market. This discrimination was part of an existing anti-Semitic sentiment that was most vigorous in the social world, less obvious in the economic field, and even less expressive in the political sphere. The first real vigorous expression of anti-Semitism, modelled on European patterns, occurred in the United States in the period from 1920 to 1924. A wave of reaction followed on World War I, encouraged largely by czaristic Russian émigrés, German rightists and some English Tories. These reactionaries were inspired by a fear of German and Russian liberalism and radicalism. The thesis developed by these people was that the Jews were engaged in an international conspiracy to rule and ruin the world. To support their claim the anti-Semites produced a shabby forgery and plagiarism of an older, anti-Napoleonic (III) work which they circulated as *The Protocols of the Elders of Zion.* This post-war anti-Semitism was encouraged mightily in the United States by Henry Ford, the industrialist. In his *Dearborn Independent,* and in separate pamphlets, he preached to millions of the sinister character of the Jew. The agitation was supplemented in large areas by the revived Ku Klux Klan. The extent to which this "racial" prejudice extended was indicated by the fact that in 1922 President Lowell of Harvard University proposed what amounted to a *numerus clausus* for Jewish students at the institution. By 1927, with the public apology of Henry Ford for his anti-Semitic accusations, the wave of prejudice died down; the country, in the meantime, had entered into an economic boom.

Six years later, with the coming to power of Hitler, and in the midst of an economic depression, this social disease took on a new lease on life. Demagogues sprang up everywhere. Some of them, like Coughlin, Pelley and Winrod, followed the anti-Semitic line, trying to get political power and appealing to the latent prejudices of the people in a period of economic distress. The activity of these men was supplemented by the propagandizing efforts of the nazi government which sought to create a fifth column movement in the United States. When the American authorities finally realized that all forms of anti-Semitism impaired national unity and served as an instrument to aid the anti-American axis, they arrested many of the anti-Semitic agitators and imprisoned them. Some of them were exposed as nazi agents (1941–42).

The Jews have always had to struggle to defend their civil and political liberties. Ever since the creation of the Board of Delegates of American Israelites in 1859, the Jews set up civic and protective agencies for this purpose. This older board was succeeded in 1878 by the Board of Delegates of Civil and Religious Rights which was aided in its work by the B'nai B'rith, a Jewish lodge with branches all over the world. In 1943 there were four such agencies: the American Jewish Committee (1906), which reflects primarily the point of view of the wealthier and more conservative groups; the American Jewish Congress (1922), which is the spokesman of the Zionist organization and the metropolitan middle classes and the proponent of a more democratic American-Jewish life; the B'nai B'rith (1843), which speaks for middle class Jewry in the non-metropolitan areas; and the Jewish Labor Committee (1934), which represents organized Jewish labour. Under strong pressure from American Jewry, these organizations formed a General Jewish Council in 1938 for the purpose of bringing unity into their work, and in 1943 they united to create the American Jewish conference.

American Jewry, modelling itself after the structure of the social environment in which it has grown up, is highly organized. If every branch of every lodge were to be included, there would be at least 25,000 individual clubs, societies, groups and synagogues in the United States. Jews are united for purposes of recreation, for hospital and health benefits, for immigrant aid, and for the furtherance of Jewish culture and Jewish education. Extremely numerous are the social and mutual benefit organizations. In all probability the Jews of the United States spend at least $100,000,000 a year to maintain these various agencies. Not all of them are devoted solely to Jewish needs; some hospitals, for instance, give more free service to non-Jews than to Jews.

The chief problem of American Jewry is the maintenance of its religious and cultural heritage, and it is this challenge that the Reform, Conservative and Orthodox movements were attempting to meet in 1943. The Reformers were the theological liberals. In the centre were the Conservatives. Under the leadership of Solomon Schechter (d. 1915) and through the agency of the Jewish Theological Seminary of America, they became one of the most important forces in the religious life of the United States. Out of this group, though still associated with it, came the theologically radical Jewish Reconstructionist movement, a historical-romantic group led by Mordecai M. Kaplan, which stressed Jewish civilization and love of Palestine. Over to the right, the Orthodox Jews furthered their cause through the Hebrew Theological college of Chicago and the Rabbi Isaac Elchanan Theological seminary in New York. Associated with this latter seminary was the only Jewish institution in the United States giving a B.A. degree: Yeshiva college. All told there were 3,728 synagogues in the United States (1937).

There were about 2,200 Jewish religious and cultural schools in 1940, most of which were supplementary week-day and Sunday schools. Only about 2.5% of the children in Jewish schools went

to all-day parochial schools. It is questionable, however, if more than 75% of the Jewish children ever receive a Jewish education, and many of these only for a few months. The cultural life of the Jewish community was furthered in practically every organization, no matter what its ostensible purpose was. It is questionable if there was a single Jewish society in the country that had not some type of cultural program. The craving of the east-European immigrant for learning and knowledge manifested itself in this way. The Jewish Chautauqua society, sponsored by the National Federation of Temple Brotherhoods, brought a knowledge of Judaism to the universities, and the Hillel Foundations of the B'nai B'rith worked with the Jewish students on university campuses. All three major religious groups and many of the national organizations had their youth societies. The scientific aspects of Jewish historic research were furthered by the several learned journals, the *Jewish Quarterly Review,* the *Hebrew Union College Annual, Jewish Social Studies* and the *Journal of Jewish Bibliography,* among others. The American Jewish Historical society, the American Academy for Jewish Research, and other learned societies issue occasional publications. The work of popularizing Jewish culture was carried on by the Jewish Publication Society of America, which issued more than 200 different books totalling more than 2,000,000 copies. Its most important work was its translation of the Old Testament.

After almost three centuries of life in the United States, during which it was at best an outpost of world Jewry, the American Jewish community, through the accident of history, was thrust into a position of leadership. It was in 1943 a vigorous, culturally alert, and progressive group, profoundly conscious of its spiritual obligations and its historical traditions.

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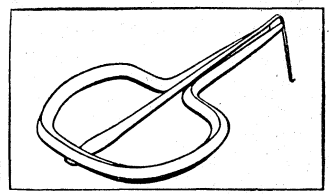
JEWSBURY, GERALDINE ENDSOR (1812–1880), an English writer of fiction, daughter of Thomas Jewsbury, a Manchester merchant, was born in 1812 at Measham, Derbyshire. Her first novel, *Zoe: the History of Two Lives,* was published in 1845, and was followed by *The Half Sisters* (1848), *Marian Withers* (1851), and others. For many years she was a frequent contributor to the *Athenaeum* and other journals and magazines. Carlyle described her, after their first meeting in 1841, as "one of the most interesting young women I have seen for years; clear delicate sense and courage looking out of her small sylph-like figure." From this time till Mrs. Carlyle's death in 1866, Geraldine Jewsbury was the most intimate of her friends. The selections from Geraldine Jewsbury's letters to Jane Welsh Carlyle (1892, ed. Mrs. Alexander Ireland) cover a quarter of a century. In 1854 Miss Jewsbury removed from Manchester to London to be near her friend. To her Carlyle turned for sympathy when his wife died; and at his request she wrote down some "biographical anecdotes" of Mrs. Carlyle's childhood and early married life. Carlyle's comment was that "few or none of these narratives are correct in details, but there is a certain mythical truth in all or most of them"; and he added, "the Geraldine accounts of her (Mrs. Carlyle's) childhood are substantially correct." He accepted them as the groundwork for his own essay on "Jane Welsh Carlyle," with which they were therefore incorporated by Froude when editing Carlyle's *Reminiscences.* For Miss Jewsbury's influence on Froude's biography of Carlyle *see* CARLYLE, THOMAS. She died in London on Sept. 23, 1880.

JEW'S EARS, the popular name of a fungus, known botanically as *Auricularia auricula-Judae* (class Basidiomycetes), so called from its shape, which somewhat resembles a human ear. It is very thin, flexible, flesh-coloured to dark brown, and one to three inches broad. It is found on dead branches of various kinds of trees. The same or a closely related species is used in the far east as a source of food. The natives cultivate the fungus by watering wood in which the mycelium is growing.

JEW'S HARP or **JEW'S TRUMP,** a small musical instrument of percussion, known for centuries all over Europe. "Jew's trump" is the older name. Attempts have been made to derive "Jew's" from "jaws" or Fr. *jeu,* but, though there is no apparent reason for associating the instrument with the Jews, it is possible that "Jew's" is the original form. The instrument consists of a slender tongue of steel riveted at one end to the base of a pear-shaped steel frame; the other end of the tongue being left free so that it can be set in vibration by the player, while firmly pressing the branches of the frame against his teeth. At the beginning of the 19th century Heinrich Scheibler, in Germany, achieved astonishing effects by employing a number of Jew's harps combined in one instrument which he called an Aura. Another German virtuoso, Eulenstein, of Württemberg, created a sensation in London in 1827 by playing on no fewer than 16 of the instruments.



BY COURTESY OF THE METROPOLITAN MUSEUM OF ART

JEW'S HARP: FOUND IN ALL PARTS OF THE WORLD UNDER VARIOUS NAMES

JEX-BLAKE, SOPHIA (1840–1912), British physician, was born Jan. 21, 1840, at Hastings, Sussex. She studied at Queen's College for Women, London, where she became mathematical tutor. In 1865 she went to America to study education under Dr. Lucy Sewell, but three years later, she was recalled to England by the death of her father. In 1869 after some difficulty she was admitted to classes in medicine at Edinburgh and in 1871 to hospitals. Following an unsuccessful attempt to compel the university authorities to grant her a degree, she returned to London in 1874 and was largely instrumental in establishing the London School of Medicine for Women and in gaining in 1876 the opening of the medical profession to women. In 1877 she obtained the M.D. of Berne and became a licentiate of the College of Physicians, Dublin. In 1878 she began practice in Edinburgh, where in 1886 she established the Edinburgh School of Medicine for Women. She retired in 1899 and died at Rotherfield, Sussex, Jan. 7, 1912. Her written works include *Medical Women* (1872) and *American Schools and Colleges* (1886).

See M. Todd, *Life of Sophia Jex-Blake* (1918).

JEZEBEL, daughter of Ethbaal "king of the Sidonians" and priest of Astarte, became the wife of Ahab, king of Israel. She was a woman of virile character, and offended Israelite political and religious feeling, the former by introducing those autocratic theories of monarchy so common in the east, the latter by her attempt to supersede the worship of Yahweh by that of the Tyrian Ba'al, Melkart. The first tendency is illustrated by the story of Naboth (I Kings xxi.), the second by her persecution of the prophets of Yahweh (I Kings xviii. 4–13). In both directions the national feeling found expression in the prophet Elijah, whose challenge to the authority of Ba'al on Mount Carmel resulted in the destruction of the Tyrian prophets (I Kings xx. 20–46), while his curse on Ahab and Jezebel was fulfilled in the massacre of the house of Ahab by Jehu (*q.v.*). Jezebel's name is often used in modern English as a synonym for an abandoned woman.

JEZREEL, an ancient city of Palestine, in the tribe of Issachar, and capital of the Northern Kingdom under Ahab: mod. *Zer'in,* a stone village on a spur of Mt. Gilboa. The name is also applied to the Eastern part of the great plain Esdraelon.

Jezreel was the scene of the battle between Saul and the Philistines, when Saul was slain. Ishbosheth had it for some time, and it was the residence of Ahab and Jezebel. Close by, on the eastern side, was the vineyard of Naboth. It was called Esdraelon in the book of Judith; to the Crusaders it was *Parvum Gerinum.*

The modern village stands at a height of 500 feet. The remains

of rock-hewn presses and a few scattered sarcophagi proclaim the antiquity of the site, but the ruins that were once there have disappeared. The foundation mentioned in 1 Sam. xxix, 1 is, perhaps, *'Ain Maiyiteh,* about 1 mi. to the northeast. A second Jezreel, in the hill-country of Judah, in the neighbourhood of Hebron, is indicated by Joshua xv, 56. (E. Ro.)

JHABUA, a state of Central India, in the Malwa agency. Area, 1,265 sq.mi. Pop. (1941) 178,327. More than half the inhabitants belong to the aboriginal Bhils. The chief, whose title is raja, is a Rajput of the Rathor clan, descended from a branch of the Jodhpur family, and has a salute of 11 guns.

The town of JHABUA (pop. [1931] 3,354) stands on the bank of a lake, and is surrounded by a mud wall. A dispensary and a guest-house were constructed to commemorate Queen Victoria's Diamond Jubilee in 1897.

JHALAWAR, an Indian state in the Rajputana agency, pop. (1941) 122,299; area 824 sq.mi. The ruling family of Jhalawar belongs to the Jhala clan of Rajputs, and their ancestors were petty chiefs of Halwad in Kathiawar. Early in the 18th century, a cadet of the house, Madhu Singh, found favour with the maharaja of Kotah, and received from him an important post, which became hereditary. On the death of one of the Kotah rajas (1771), the country was left to the charge of Zalim Singh, a descendant of Madhu Singh. From that time Zalim Singh was the real ruler of Kotah. In 1838 it was resolved, with the consent of the chief of Kotah, to dismember the state, and to create the new principality of Jhalawar as a separate provision for the descendants of Zalim Singh. A later Zalim Singh, who had succeeded in 1875 was deposed in 1896, "on account of persistent misgovernment and proved unfitness for the powers of a ruling chief." He went to live at Benares, on a pension of £2,000; and the administration was placed in the hands of the British resident. After much consideration, the government resolved in 1897 to break up the state, restoring the greater part to Kotah, but forming the two districts of Shahabad and the Chaumahla into a new state, which came into existence in 1899, and of which Kunwar Bhawani Singh, a descendant of the original Zalim Singh, was appointed chief. Maharaj Rana Harish Chandra (b. Sept. 27, 1921) became ruler on Sept. 2, 1943.

The chief town is PATAN, or JHALRAPATAN (pop. 1941, 6,059), founded close to an old site by Zalim Singh in 1796, by the side of an artificial lake. It is the centre of trade, the chief exports of the state being oilseeds and cotton. The palace is at the cantonment 4 mi. north. The ancient site near the town was occupied by the city of Chandrawati, said to have been destroyed in the time of Aurangzeb. The finest feature of its remains is the temple of Sitaleswar Mahadeva (*c.* 600).

JHANG, a town and district of British India, in the Punjab. The town, which forms one municipality with the newer and now more important quarter of Maghiana, is about 3 mi. from the right bank of the river Chenab. Pop. (1941) 50,051. Maghiana has manufactures of leather, soap and metal ware.

The DISTRICT OF JHANG extends along both sides of the Chenab, including its confluences with the Jhelum and the Ravi. Area, 3,415 sq.mi. Pop. (1941) 821,631. The district which was formerly for the most part a wilderness, has been entirely transformed by the introduction since 1892 of irrigation from the Lower Chenab and Lower Jhelum canals. The principal industries are the ginning, pressing and weaving of cotton.

Jhang contains the ruins of Shorkot, identified by some with one of the towns taken by Alexander. In modern times the history of Jhang centres in the famous clan of Sials, who exercised an extensive sway over a large tract between Shahpur and Multan, with little dependence on the imperial court at Delhi, until they finally fell before the all-absorbing power of Ranjit Singh. In 1847, after the establishment of the British agency at Lahore, the district came under the charge of the British government; and in 1848 Ismail Khan, the Sial leader, rendered important services against the rebel chiefs. During the Mutiny of 1857 the Sial leader again proved his loyalty by serving in person on the British side.

JHANSI, a city, the headquarters of a district and a division of the United Provinces in British India. The city is the centre of what used to be the Indian Midland railway system, now absorbed in the G.I.P. railway. Pop. (1941) of city and cantonment, 103,254. Formerly the capital of a Mahratta principality, which lapsed to the British in 1853, it was during the Mutiny the scene of disaffection and massacre. It was then made over to Gwalior, but has been taken back in exchange for other territory. Even when the city was within Gwalior, the civil headquarters and the cantonment were at Jhansi Naoabad, under its walls. Jhansi is the principal centre for the agricultural trade of the district, but its manufactures are small.

The DISTRICT OF JHANSI was enlarged in 1891 by the incorporation of the former district of Lalitpur, which extends farther into the hill country, almost entirely surrounded by Indian states. Combined area, 3,606 sq.mi. Pop. (1941) 773,002. The district forms a portion of the hill country of Bundelkhand, sloping down from the outliers of the Vindhyan range on the south to the tributaries of the Jumna on the north. The extreme south is composed of parallel rows of long and narrow-ridged hills. Through the intervening valleys the rivers flow down impetuously over ledges of granite or quartz. North of the hilly region, there is a considerable expanse of black cotton soil. The district is intersected or bounded by three principal rivers—the Pahuj, Betwa and Dhasan. Its principal crops are millet, cotton, oilseeds, pulses, wheat, gram and barley. The destructive *kans* grass has proved as great a pest here as elsewhere in Bundelkhand.

Jhansi is especially exposed to blights, droughts, epidemics, and famine.

The Jhansi Division is composed of the four districts of Jhansi, Jalaun, Hamirpur and Banda. Area 10,553 sq.mi. and pop. (1941) 2,553,492. Nothing is known with certainty as to the history of this tract before the period of Chandel rule, about the 11th century. To that epoch must be referred the artificial reservoirs and ruined fortresses of the hilly region; though the division is not lacking in far more ancient monuments such as the famous Gupta temple at Deogarh. The Chandels were succeeded by their servants the Khangars, who built the fort of Karar, lying just outside the British border. About the 14th century the Bundelas poured down upon the plains, and gradually spread themselves over the whole region which now bears their name. The Mohammedan governors were frequently making irruptions into the Bundela country; and in 1732 Chhatar Sal, the Bundela chieftain, called in the aid of the Mahrattas, who were rewarded by the bequest of one-third of his dominions. Their general founded the city of Jhansi, and peopled it with inhabitants from Orchha state. In 1806 British protection was promised to the Mahratta chief, and in 1817 the peshwa ceded to the East India company all his rights over Bundelkhand. In 1853 the raja died childless, and his territories lapsed to the British. The widow of the raja considered herself aggrieved because she was not allowed to adopt an heir, and because the slaughter of cattle was permitted in the Jhansi territory; and when the Mutiny broke out in 1857, she put herself at the head of the rebels, and died bravely in battle.

JHELUM or **JEHLAM,** a town and district of British India, in the Punjab. The town is situated on the right bank of the river Jhelum, here crossed by a bridge of the North-Western railway, 103 mi. N. of Lahore. Pop. (1941) 26,349. It is a modern town with river and railway trade (principally in timber from Kashmir), boatbuilding and cantonments.

The DISTRICT OF JHELUM stretches from the river Jhelum almost to the Indus. Area 2,774 sq.mi. Pop. (1941) 629,658. Salt is quarried at the Mayo mine in the Salt range. There are two coal mines from which the North-Western railway obtains part of its supply of coal. The chief centre of the salt trade is Pind Dadan Khan (pop. 9,919). The river Jhelum is navigable throughout the district. The backbone of the district is formed by the Salt range, a treble line of parallel hills running in three long forks from east to west throughout its whole breadth. The range rises in bold precipices, broken by gorges, clothed with brushwood and traversed by streams which are at first pure, but soon become impregnated with the saline matter over which they pass. Between the line of hills lies a picturesque tableland, in which the beautiful little lake of Kallar Kahar nestles among

the minor ridges. North of the Salt Range, the country extends upwards in an elevated plateau, diversified by countless ravines and fissures, until it loses itself in tangled masses of Rawalpindi mountains.

The history of the district dates back to the semi-mythical period of the *Mahābhārata.* Hindu tradition represents the Salt Range as the refuge of the five Pandava brethren during the period of their exile, and every salient point in its scenery is connected with some legend of the national heroes. Modern research has fixed the site of the conflict between Alexander and Porus as within Jhelum district, although the exact point at which Alexander effected the passage of the Jhelum (or Hydaspes) is disputed. After this event, we have little information with regard to the condition of the district until the Mohammedan conquest. During the flourishing period of the Mogul dynasty, the Ghakkar chieftains were prosperous and loyal vassals of the house of Babur; but after the collapse of the Delhi Empire Jhelum fell, like its neighbours, under the sway of the Sikhs. In 1849 the district passed, with the rest of the Sikh territories, into the hands of the British. The population is a martial one and during the World War 38·7% of the males of military age were mobilized.

JHELUM (*Hydaspes* of the Greeks), a river of northern India. It is the most westerly of the "five rivers" of the Punjab. It rises in the north-east of the Kashmir state, flows through the city of Srinagar and the Wular lake, issues through the Pir Panjal range by the narrow pass of Baramula, and enters British territory in the Jhelum district. Thence it flows through the plains of the Punjab, forming the boundary between the Jech Doab and the Sind Sagar Doab, and joins the Chenab at Timmu after a course of 450 miles. The surplus water of the Jhelum is largely utilized for irrigation. The Triple Canals Project, completed in 1917, which includes the Upper Jhelum, Upper Chenab, Upper Bari Doab canals, provides 433 m. of main canals and distributaries. Practically the whole of the land between the Jhelum and the old bed of the Beas has been brought under cultivation. A large colony in the Shahpur district of the Punjab, with Sargodha as capital, has been formed on land brought under cultivation with water from the Lower Jhelum canal. Large areas are used by the Army Remount Depot.

JHERING, RUDOLF VON (1818–1892), German jurist, was born on Aug. 22, 1818, at Aurich in East Friesland, where his father practised as a lawyer. He entered the University of Heidelberg in 1836, and visited successively Göttingen and Berlin. He lectured at various universities, and in 1868 went to be professor of Roman law at Vienna, where he had an extraordinary success, and was given a title of nobility in 1872. In the same year he went back to Göttingen. He had already established a leading position among civilians with his *Geist des römischen Rechts* (1852–65), and from now till his death on Sept. 17, 1892, he was as predominant as Savigny had been in the first half of the century. Of his many works perhaps the best known are *Der Kampf um's Recht* (1872) and *Der Zweck im Recht,* and the *Jurisprudenz des täglichen Lebens* (Eng. trans. 1904). His great works, the *Geist* and *Rechtsgeschichte,* were left unfinished as works of that scope might well be.

Jhering's work is in a sense a development of the "historical" jurisprudence of Savigny, and yet contributed to the breakdown of the theory at the end of the century. The basis of Savigny's theory is a rigid individualism; the purpose of law in this theory is to allow the fullest measure of freedom to the individual will consistent with equal freedom for others. Jhering's view is a social utilitarianism and his view is definitely teleological. For him law does not flow peacefully and inevitably; it is changed, deliberately and by conflict. "Whereas the philosophical jurist considered that the principles of justice and right are discovered *a priori* . . . and the historical jurist taught that the principles of justice are found by experience. . . . Jhering held that means of serving human ends are discovered by experience and fashioned consciously into laws" (Roscoe Pound in 24 *Harvard Law Review*). Of his theories of Roman law the most important are his discovery of the dualism (religious and political) in the Roman system, and his view that remedies are prior to rights, which are deductions from existing remedies. Pushing this process further back, Jhering came to the social interests promoted by the remedies, and thence directly to his main position.

Among others of his works, all of them characteristic of the author and sparkling with wit, may be mentioned the following: *Beiträge zur Lehre von Besitz,* first published in the *Jahrbücher für die Dogmatik des heutigen römischen und deutschen Privatrechts,* and then separately; *Der Besitzwille,* and an article entitled "Besitz" in the *Handwörterbuch der Staatswissenschaften* (1891), which aroused at the time much controversy, particularly on account of the opposition manifested to Savigny's conception of the subject; *Scherz und Ernst in der Jurisprudenz* (1885); *Das Schuldmoment im römischen Privat-recht* (1867); *Das Trinkgeld* (1882); and among the papers he left behind him his *Vorgeschichte der Indoeuropäer,* a fragment which has been published by v. Ehrenberg (1894).

See M. de Jonge, *Rudolf v. Jhering* (1888); A. Merkel, *Rudolf von Jhering* (1893).

JIB-BOOM: *see* RIGGING.

JIBUTI (DJIBOUTI), the chief port and capital of French Somaliland, in 11° 35′ N., 43° 10′ E. Jibuti is situated at the entrance to and on the southern shore of the Gulf of Tajura about 150 m. S.W. of Aden. The town is built on a horseshoe-shaped peninsula partly consisting of mud flats, which are spanned by causeways. In spite of the warm climate, the European quarter, built of stone, has a prosperous appearance with its white houses and laurel avenues. It is the terminal station of the railway to Ethiopia. The water supply, drawn from Ambuli, about 4 mi. distant, is slightly brackish. The harbour is land-locked and capacious. Ocean steamers, which are able to enter it at all states of wind and tide, stand about one mi. out. Adjoining the mainland is the native town, consisting mostly of roughly made wooden houses with well-thatched roofs. In it is held a large market, chiefly for the disposal of livestock such as camels, cattle, etc. The port is a regular calling-place and also a coaling station for the steamers of the French Messageries Maritimes, and there is a local service to Aden. Trade is confined to coaling passing ships and to goods for Ethiopia via Harar. Coffee is sorted for export here. The inhabitants are of many races—Somali, Danakil, Gallas, Armenians, Jews, Arabs, Indians, in addition to Greeks, Italians, French and other Europeans. The population (1939) about 20,000: Europeans, 1,700 (1,100 French).

Jibuti was founded by the French in 1888 in consequence of its superiority to Obok both in respect of harbour accommodation and in nearness to Harar. It was the seat of the governor of the colony after May 1896. (P. W. I.)

JIČIN, a town in north-eastern Bohemia on the river Cidlina. Situated in the middle of a large fertile plain it has always exercised an influence in Czech history since its establishment as a town by Wenceslas II. in 1302. Much of its past prosperity and many of its beautiful buildings, *e.g.,* the castle and the church after the model of the pilgrims' church of Santiago de Compostela in Spain, it owes to the interest of Wallenstein who owned it in the 17th century and made it the capital of the Duchy of Friedland. Its later development was that of a typical market centre with small associated industries, *e.g.,* agricultural machinery, tanneries and brickyards. Pop. (1930), mostly Czech, 11,034. Jičin was occupied by Germany in 1939.

JIDDA, on the Arabian coast of the Red sea 21° 28′ N., 39° 10′ E., chief seaport of Hejaz and principal landing place for pilgrims to Mecca, about 46 mi. away: it contains about 40,000 permanent inhabitants of numerous different stocks—Arab, Persian, Indian, Negro, etc.,—and is surrounded by a wall dotted at intervals with bastions and pierced by 3 gates (Bāb al-Madīna on N., Bāb Mecca on E., and Bāb al-Sharīf, usually called Bāb al-Yemen, on S.). The main *sūq* (bazaar) runs N. and S. for about ¾ the length of the town, and an important secondary *sūq* runs up from the customs gate across the main bazaar to the Mecca gate; this is partly roofed over with corrugated iron. Much of the W. part of Jidda has been built on land reclaimed from the sea and, the subsoil water being briny or brackish, the town depends for its drinking water largely on sea water condensed by

two plants capable together of producing 200 tons a day. Two wells supply fresh water partly through a rehabilitated Turkish aqueduct and partly through pipe lines. The N. quarter is most favoured for residential purposes and here reside the diplomatic representatives of various countries—Great Britain, France, Italy, Netherlands, U.S.A., U.S.S.R., Turkey, Egypt, 'Iraq, Afghanistan and Iran. The European and U.S. firms include an oil company, a mining company, one British, one British-Dutch and three Saudi Arabian shipping export-import houses. Gasoline and diesel oil storage tanks are owned by the government and the mining company. The latter has a pier with cranes for handling up to 15 tons. Motor trucks of 10-ton capacity operate between Jidda and Medina, Jidda and Riyadh; and 5-ton trucks run from Riyadh to Jubail and al-Qatif besides the oil port of Ras al-Tannura and the oil town of Dhahran. The houses are mostly built of coral rock with much picturesque woodwork. The chief public buildings are the customhouse, the municipal offices, the condensers, the government offices and, outside the N. gate, the barracks and aeroplane hangar. The tomb of Eve, formerly a favourite pilgrim resort especially for women, was demolished by the Wahhabi government in 1927.

Jidda has a governor (qā'im-maqām) at the head of the general administration and a municipal committee under a president for purely domestic administration. The old site of the town appears to have been at Ras al-Aswad about 12 mi. S. and the present location of Jidda does not date back more than 300 years. The original settlement is attributed to Persian merchants during the caliphate of 'Uthman, but its commercial importance dates from the 15th century when it was apparently a trade centre between India and Egypt; the general introduction of steamers rapidly deprived Jidda of its position as an emporium though this loss was made good by its increasing importance as a pilgrim port. Jidda successfully resisted the Wahhabi attacks of the early 19th century and remained in the Ottoman empire till June 1916, when the Turks surrendered to a British naval bombardment and the town became part of the new Hejaz kingdom. During World War I it was important as the political centre of the Hejaz operations. From Nov. 1924 to Dec. 1925 it was besieged by the Wahhabis and on Dec. 23 it surrendered to Ibn-Sa'ud after the abdication and withdrawal of King 'Ali. Later its prosperity rapidly increased and in 1927 there was a record overseas pilgrimage of 130,000 as against a pre-World War I average of 70,000 to 80,000. The depression of the 1930s caused a decrease to an average of about 20,000. By 1939 the number had risen again to 65,000 and in Dec. 1941, despite World War II, 80,000 made the pilgrimage to Mecca. Its imports in ordinary times probably exceed £5,000,000 p.a. Exports (mainly hides and *samn*) are small and the adverse balance is met from the cash proceeds of the annual pilgrimage. (H. St. J. B. P.; P. K. H.)

JIG is a device used for accurately locating a piece of work for machining. When a casting or forging has to be machined to shape and size it must be held firmly in the lathe, or the drilling, boring, planing, milling or other machine, a chuck, vice or bolts and clamps being used for the purpose. Careful setting is necessary, which sometimes takes a considerable time. In mass production, or even in dealing with a moderate number of pieces, this setting can be reduced considerably by providing a jig or a fixture which is constructed with means for accurately locating the article by certain surfaces, and of then clamping it with total absence of slip. A fixture holds without exercising any other function, while a jig holds and also has means for guiding the tool exactly to position, a necessity in most drilling, reaming and boring. The guide or guides take the form of top or side plates, with holes of suitable size to receive the tools as they pass down on to the work, and usually the holes are filled each with a hardened steel bush of long wearing qualities.

Jigs may be of plate or open type, or of box type. The former are simple and suited to many of the flatter objects, or those which need drilling on a top face, from which the jig plate can be set by its ledges embracing the sides. A box jig surrounds the casting or forging, and locates by several spots, while a hinged cover is often fitted rapidly to release the piece and to put a fresh one in. Sometimes the location is effected by means of a part already machined instead of from a rough untooled portion, either a flat, or a cylindrical, or a bored hole. Fig. 1 shows this feature in regard to a familiar motor car detail, the swivel-axle, the box jig taking the turned part through a hole at the back, and locating the main holes by a long mandrel passed through. Then the two holes are drilled with the bushes for guides. Many jigs

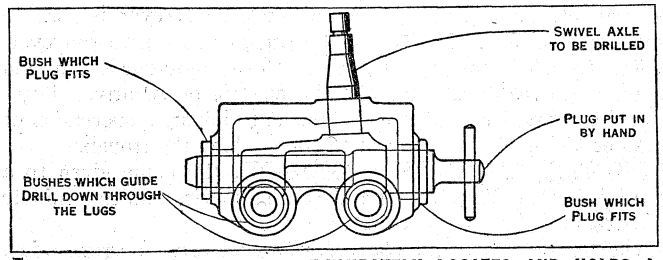


FIG. 1.—DRILLING JIG WHICH ACCURATELY LOCATES AND HOLDS A SWIVEL AXLE

are built to turn over on to various faces so as to drill holes from each side, or may swivel on trunnions for a similar reason. With a conveyor system running past the machines, as in car factories, the jigs are mounted on wheels.

Fixtures are used in the lathe, planer, shaper, slotter, miller, grinder, gear-cutter, also on broaching machines, and frequently for use in assembling mechanisms quickly. The clamping arrangements have to be devised for quickness, and in some cases automatic clamps are fitted which loosen and tighten at the correct periods.

Other jigs which are not concerned with cutting processes include those for holding articles in correct position for soldering or brazing, and the moulds which hold connecting-rods and bearings while being run up with white metal. Forms vary according to the shape of the work, but an angle-plate shape, seen in fig. 2, is suitable to clamp a half-bearing against the upright face, while a half-mandrel of appropriate radius is bolted also, leaving a space for the white metal to run into, so forming a new bearing surface.

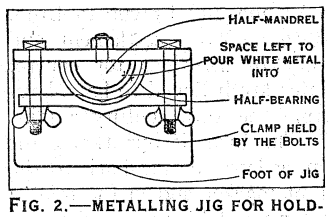


FIG. 2.—METALLING JIG FOR HOLDING A HALF-BEARING AND HALF-MANDREL OR CORE

Jig refers also to a reciprocating movement, such as that of a jig-saw which operates similarly to a fret-saw, and is designed either for wood or metal, in the latter case being much used for cutting dies. A jigging screen also possesses the to and fro action necessary to keep material in motion while being separated or sifted. The jig for concentrating minerals consists of a series of boxes with a shaft running above and having eccentrics that impart the jigging motion. A water supply is provided. Diamonds and other precious stones are recovered in this kind of jig. (F. H.)

JIG, a brisk lively dance, the quick and irregular steps of which have varied at different times and in the various countries in which it has been danced (*see* DANCE). The music of the "jig," or such as is written in its rhythm, is in various times and has been used frequently to finish a suite, *e.g.*, by Bach and Handel. The word has usually been derived from or connected with Fr. *gigue,* Ital. *giga,* Ger. *Geige,* a fiddle. The idea of jumping, jerking movement has given rise to many applications of "jig" and its derivative "jigger" to mechanical and other devices, such as the machine used for separating the heavier metal-bearing portions from the lighter parts in ore-dressing. The word "jigger," a corruption of the West Indian *chigoe,* is also used as the name of a species of flea, the *Sarcopsylla penetrans,* which burrows and lays its eggs in the human foot, generally under the toe nails, and causes great swelling and irritation (*see* FLEA).

JIGGER, a hoist or winch of moderate power, which can be arranged in any fashion, on a floor, wall, pillar or in any confined situation, to perform lifting and hauling. The hydraulic jigger has a cylinder, ram and pulleys to operate the hoisting rope, and the latter may be led off in any desired direction. For general use,

e.g. in unloading ships, the hydraulic jigger is mounted on a low frame with trolley wheels. On some electric cranes an electric jigger runs up and down the underside of the jib, and is employed for light lifting, but more usually to assist the main hoisting hook by being attached to some part of the suspended load. In a bridge-erecting crane the jigger hoist is used to bring the various girders and other structural members into exact position for final attachment. In mining, a jigger or shaker conveyor is used to transport coal from the face to the tubs, or as a gate conveyor. A long trough is built up in sections to the required length, and mounted on rollers at intervals. An electric or air-driven jigger engine is coupled up to the trough so as to impart a succession of jerks or kicks, causing the coal to travel along the trough.

JIGGER, CHIGGER or **CHIGOE,** the name given to a small flea of the West Indies and South America and to a minute scarlet mite of southern U.S.A.

The female of the flea (*Sarcopsylla penetrans*) burrows when gravid into the skin of man. Here she swells to the size of a pea and remains embedded in the skin until the eggs hatch. Tobacco juice is sometimes used to destroy the insect. An allied species (*S. gallinacea*) attacks the eyelids of poultry and may in young birds even cause death. The effect of the bite is allayed by salt water. (*See* ENTOMOLOGY; FLEA; PARASITOLOGY.)

JIHĀD (*Arabic,* lit. striving, effort), the religious duty inculcated in the Qur'ān (II., 214–215; viii., 39–42; ix., 5–6, 29) on the followers of Muḥammad to wage war upon those who do not accept the doctrines of Islam. (*See* ISLAMIC INSTITUTIONS.)

Modern Muslim apologists maintain that Jihād in the Qur'ān does not mean the waging of war, and explain it in terms of the spiritual life.

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JIHLAVA (German, *Iglau*), an old town of Moravia, in the upper valley of the Jihlava, a tributary of the Morava, at the junction of routes from Prague to Vienna and Prague to Brno. This critical strategic position led to an early settlement and contributed to an interesting history of struggles for control of the site. Silver mines in the vicinity are believed to have been worked in the ninth century. During the 13th century a mint and mining office were established. The town is remarkable for the collection of municipal and mining laws, dating back to the 14th century. Jihlava is an important market and in the middle ages held the largest fairs between Linz and Pilsen, a prosperity evident from its fine monuments and churches. Trade is in the commodities of the district, timber and cereals, and in the products of its industries, also closely allied to its physical surroundings, *e.g.*, linen and woollen goods, shoes, tobacco, beer, pottery and glass. Pop. (1930) 31,031, about 50% German.

JIMÉNEZ (or XIMÉNEZ) DE CISNEROS, FRANCISCO (1436–1517), Spanish cardinal and statesman, born at Torrelaguna (Castile). He studied at Alcalá de Henares and at Salamanca, took holy orders and in 1459 went to Rome. On his return to Spain (1465), he claimed (1473) the archpriestship of Uzeda (Toledo) in virtue of an "expective" letter from the pope. Carrillo, archbishop of Toledo, opposed him, and threw him into prison, restoring him to his benefice in 1480 only. This Jiménez changed almost at once for a chaplaincy at Sigüenza under Cardinal Mendoza, bishop of Sigüenza, who shortly appointed him vicar-general of his diocese. Abruptly resolving to become a monk, Jiménez threw up all his benefices and entered the Franciscan monastery of San Juan de los Reyes, recently founded by Ferdinand and Isabella at Toledo. He added voluntary austerities to the ordinary severities of the noviciate. He slept on the bare ground, wore a hair-shirt, doubled his fasts, and scourged himself, with much fervour. His private life was continuously and rigorously ascetic, even at the acme of his greatness. In 1492, at Mendoza's recommendation and against his will, he became Isabella's confessor. The post was politically important, for Isabella submitted to the judgment of her father-confessor not only her private affairs but also matters of State. Appointed in 1494 provincial of the order of St. Francis, Jiménez reduced the laxity of the Conventual to the strictness of the Observantine Franciscans; he met with intense opposition, but his stern inflexibility, backed by the influence of the queen, subdued every obstacle. At the death of Cardinal Mendoza (1495) Jiménez was nominated to his diocese of Toledo, the richest and most powerful in Spain, second perhaps to no other dignity of the Roman Church save the papacy. With the primacy of Spain was associated the lofty dignity of high chancellor of Castile, but though Jiménez was forced to live in a style befitting his rank, the outward pomp only concealed his private asceticism. In 1499 Jiménez accompanied the court to Granada, where he joined the mild and pious archbishop of Talavera in his efforts to convert the Moors. But Jiménez's coercive methods provoked open revolt, which was quelled with difficulty.

Upon Isabella's death on Nov. 24, 1504, Ferdinand resigned in favour of Joanna and her husband, the archduke Philip. The latter died suddenly in 1506, Joanna's intellect gave way completely, their son Charles was still a child and Ferdinand was at Naples. In this crisis, the nobles of Castile entrusted affairs to Jiménez, and on Ferdinand's return in 1507, he was made cardinal and grand inquisitor-general for Castile and Leon. At his own expense he fitted out expeditions (1505 and 1509) against the Moorish city of Oran; his religious zeal, supported by the prospect of the political gain that would accrue to Spain from the possession of such a station inspiring him. Oran was captured in a day, and leaving the army to make fresh conquests, Jiménez returned to his diocese, where he sought to recover from the regent the expenses of the expedition. Ferdinand died in 1516, leaving Jiménez as regent: Charles, then a youth of 16 in the Netherlands, appointed Adrian, dean of Louvain, as his choice. Jiménez admitted Adrian to a nominal equality and, in violation of the laws, acceded to Charles's desire to be proclaimed king. His position was rendered peculiarly difficult by the haughty turbulent Castilian nobility and the jealous intriguing councillors of Charles; he ruled, notwithstanding, in a firm and even autocratic manner. In 1517, Charles landed in the Asturias; Jiménez, who had hastened to meet him, fell ill on the way and received a cold note from his king thanking him for his services and dismissing him to his diocese. He died—some say without seeing the letter—at Roa on Nov. 8, 1517.

Jiménez was a bold and determined statesman. Sternly and inflexibly, with a confidence at times overbearing, he carried through what he had decided to be right, with as little regard for the convenience of others as for his own. In the midst of a corrupt clergy his morals were irreproachable. Liberal to all, he endowed very many benevolent institutions in his diocese. His whole time was devoted either to the State or to religion; his only recreation was in theological or scholastic discussion. In 1500 he founded the university of Alcalá de Henares, within whose walls at one time 7,000 students met. In 1836 the university was removed to Madrid, and the magnificent buildings were left vacant. He revived the Mozarabic liturgy, and endowed a chapel at Toledo, in which it was to be used. His most famous literary service was the printing at Alcalá (Lat. *Complutum*) of the Complutensian Polyglott, the first edition of the Scriptures in the original text. He was aided in this work by López de Stuñiga, Fernando Núñez, Vergara, Nebrija, the Cretan Ducas and by three Jewish converts. The work was begun in 1502, the New Testament finished in Jan. 1514 and the whole in April 1517. The text occupies five volumes and a sixth contains a Hebrew lexicon, etc. The second edition (1572), the *Biblia Regia* or *Filipina,* was revised by Arias Montano and reprinted by the Antwerp firm of Plantin at the expense of Philip II.

The work by A. Gomez de Castro, *De Rebus Gestis a Francisco Ximenio* (1650, Alcalá), has provided material for biographies of Jiménez—Spanish by Robles (1604), and Quintanilla (1653); French by Baudier (1635), Fléchier (1693), Marsollier (1694), and Richard (1705); German by Hefele (1844; Eng. trans. by Canon Dalton, 1860), by Havemann (1848); English by Barrett (1813). *See* also Prescott, *Ferdinand and Isabella, Revue des Deux Mondes* (May 1841) and *Mém. de l'Acad. d. hist. de Madrid,* vol. iv.

JIMÉNEZ DE QUESADA, GONZALO (*c.* 1500–1579), Spanish conqueror of New Granada (Colombia), was born about

the year 1500, probably in Granada, Spain, where he was carefully trained for the law. In 1535 he accompanied Pedro Fernández de Lugo, *adelantado* of Santa Marta (northern Colombia), as auditor and *justicia mayor* of his colony; and in the following year, although he had had no military experience, Lugo chose him to command an expedition to the headwaters of the Magdalena. For 150 leagues Quesada forced his way through almost insuperable obstacles along the Magdalena, to its junction with the Opón at La Tora. Here he sent the ships, which followed him up the river, back to Santa Marta with the sick, and set out with 200 picked soldiers and about 60 horses to scale the cordillera. In Jan. 1537, he found himself on the great central plain of Colombia, inhabited by a race called Chibchas, who had attained a high state of aboriginal culture. The ruler of the country, the zipa of Bogotá, fled at the approach of the Spaniards and Quesada occupied his capital. From this strategic point the country was explored and subdued. On Aug. 6, 1538, a new capital, called Santa Fé de Bogotá, was founded near the site of the old one, and toward the end of the year Quesada was preparing to start for the coast, when two more conquerors suddenly appeared—Sebastián Benalcázar from Quito and Nicolás Federman from Venezuela. Quesada successfully maintained the priority of his rights, and on July 8, 1539, sailed from Cartagena for Spain to urge his claims to the government of the lands he had conquered, but his efforts were of no avail. The next ten years Quesada spent in France, Italy and Spain, engaged mainly in literary pursuits. In 1550, Philip awarded him the titles of marshal of New Granada and alderman of Bogotá, and a salary, but no jurisdiction. On his return to New Granada he became at once the most influential person in the colony, protecting the colonists from the severity of officials, and restraining the impetuosity of the *comenderos*. In 1569 he set out with 500 men on a quest for the fabulous El Dorado which carried him into the trackless swamps of the Orinoco, whence he returned after nearly two years' wanderings, with only 25 of his original company. Retiring to La Suesca, his country house, he turned to literature and composed *Los Ratos de Suesca,* and a series of *Sermones.* Early in 1579 he moved to Mariquita, where he died on Feb. 16, of leprosy. In 1598 his remains were removed to the cathedral in Bogotá. Quesada ranks with Cortés as one of the very few conquerors who combined intellectual discipline with physical prowess. He was religious and naturally humane.

Quesada is supposed to have been the author of several works, none of which have been preserved to us. Besides *Los Ratos de Suesca* and the *Sermones,* already mentioned, there are attributed to him *Apuntamientos y noticias sobre la historia de Paulo Giovio* (1568–69?); *Anales del Emperador Carlos V.; Las diferencias de la guerra de los dos mundos;* and, questionably, with *Epitome de la conquista del Nuevo Reino de Granada.*

No critical treatment of the life of Quesada has yet appeared in English, though R. B. Cunninghame-Graham, *The Conquest of New Granada* (Boston, 1922), and C. R. Markham, *The Conquest of New Granada* (1912), give interesting accounts of his career. In Spanish, *see* F. M. Groot, *Historia eclesiástica y civil de Nueva Granada* (2nd ed., Bogotá, 1889); Joaquín Acosta, *Compendio histórico del descubrimiento y colonización de la Nueva Granada en el siglo décimosexto* (2nd ed., Bogotá, 1901); Soledad Acosta de Samper, *Biografías de hombres ilustres o notables* (Bogotá, 1883). (W. B. P.)

JIND, an Indian State, within the Punjab, one of the Cis-Sutlej states, under British influence since 1809. The territory consists of three isolated tracts, amid British districts. Total area, 1,299 sq.mi. Pop. (1941) 361,812. Estimated gross revenue £210,000. The chief, whose title is Maharaja, is a Sikh of the Sidhu Jat clan and of the Phulkian family. The principality was founded in 1763, and recognized by the Mogul emperor in 1768. The dynasty has been conspicuously loyal to the British, especially during troubled times, and it has received accessions of territory. In 1857 the chief of Jind was actually the first man, European or Indian, who took the field against the mutineers; and his contingent collected supplies in advance for the British marching upon Delhi, besides rendering excellent service during the siege. The State troops served again with distinction in 1914–18 in East Africa and the State contributed liberally to the war. Jind, the former capital, has a station on the S. Punjab railway. Pop. (1941) 14,909. The present capital and residence of the chief since the year 1827 has been Sangrur; the population in 1931 was 13,901.

JINGO, a legendary empress of Japan, wife of Chūai, the 14th mikado (191–200). On her husband's death she assumed the government, and fitted out an army for the invasion of Korea (*see* JAPAN: *History*). She returned to Japan completely victorious after three years' absence. Subsequently her son Ojen Tenno, afterwards 15th mikado, was born, and later was canonized as Hachiman, god of war. The empress Jingo ruled over Japan till 270. She is still worshipped. The derivation of the English oath, "By Jingo," is doubtful. The identification with the name of Gingulph or Gengulphus, a Burgundian saint, was a joke on the part of R. H. Barham, author of the *Ingoldsby Legends.* Some explain the word as a corruption of Jainko, the Basque name for God. It has also been derived from the Persian *jang* (war), St. Jingo being the equivalent of the Latin god of war, Mars; and is even explained as a corruption of "Jesus, Son of God," Je-n-go.

The political use of the word as indicating an aggressive patriotism originated in 1877, during the weeks of national excitement preluding the despatch of the British Mediterranean squadron to Gallipoli, which frustrated the Russian designs on Constantinople. A bellicose music-hall song, with the refrain "We don't want to fight, but, by Jingo, if we do," etc., was produced in London by a singer known as "the Great MacDermott," and instantly became very popular. Thus the war-party came to be called Jingoes, and Jingoism has ever since been the term applied to those who advocate a national policy of arrogance and pugnacity.

JINN, the name of a class of spirits (*genii*) in Arabian mythology. They are the offspring of fire, but in their form and the propagation of their kind they resemble human beings. They are ruled by a race of kings named "Sulayman," one of whom is considered to have built the pyramids. Their central home is the mountain Kāf, and they manifest themselves to men under both animal and mortal form and become invisible at will. There are good and evil jinn, and these in each case reach the extremes of beauty and ugliness.

JIREČEK, JOSEF (1825–1888), Czech scholar, was born at Vysoké Mýto in Bohemia on Oct. 9, 1825. He entered the Prague bureau of education in 1850, and became minister of the department in the Hohenwart cabinet in 1871. His efforts to secure equal educational privileges for the Slav nationalities in the Austrian dominions brought him into disfavour with the German element. He became a member of the Bohemian Landtag in 1878, and of the Austrian Reichsrat in 1879. In 1875 he was elected president of the royal Bohemian academy of sciences. He died in Prague on Nov. 25, 1888. He published in Czech an anthology of Czech literature (3 vols., 1858–61), a biographical dictionary of Czech writers (2 vols., 1875–76), a Czech hymnology, editions of Blahoslaw's Czech grammar and of some Czech classics, and of the works of his father-in-law PAVEL JOSEF SAFAŘIK (1795–1861).

His brother HERMENEGILD JIREČEK, Ritter von Samakow (1827–1909), Bohemian jurisconsult, born at Vysoké Mýto on April 13, 1827, was also an official in the education department. He died in Hohenmauth on Dec. 29, 1909. Among his important works on Slavonic law were *Codex juris bohemici* (11 parts, 1867–92), and a *Collection of Slav Folk-Law* (Czech, 1880), *Slav Law in Bohemia and Moravia down to the 14th Century* (Czech, 3 vols., 1863–73).

JIREČEK, KONSTANTIN JOSEF (1854–1918), archaeologist and historian, son of Josef, died in Vienna on Jan. 10, 1918. The bulk of Konstantin's writings deal with the history and literature of the southern Slavs. They include a *History of the Bulgars* (Czech and German, 1876), *The Principality of Bulgaria* (1891), *Travels in Bulgaria* (Czech, 1888), etc.

JIVARAN, an independent linguistic stock of South American Indians, so called from the best known tribe, the Jivaros. The Jivaran tribes live in eastern Ecuador and the adjacent

portions of Peru in the area comprising the basins of the Santiago, Morona and upper Pastaza rivers. Rivet has enumerated the large number of tribes belonging to this group. The Jivaros proper live on the upper Pastaza, and may be taken as representatives of the stock. They are a warlike and numerous tribe, widely known from their practice of preparing the shrunken human heads, called "tsantsas," often seen in museum collections. The head, taken from an enemy, is carefully skinned, sewed up the back and then shrunk and dried by an elaborate process accompanied by much ceremony. The finished "tsantsa" is about the size of the head of a small monkey, and preserves strikingly the human expression. The Jivaros are to be carefully distinguished from the Jeberos living in their immediate vicinity, a tribe of the Mainan (*q.v.*) stock with whom they have often been confounded.

See P. Rivet, *Les Indiens Jivaros* (*L'Anthropologie,* vol. xvii., pp. 333—vol. xix., pp. 235–260); R. Karsten, *Blood-revenge, war and victory feasts among the Jivaro Indians of eastern Ecuador* (Bull. 79, Bureau of American Ethnology).

JIZAKH, a town of Asiatic Russia in the Uzbek S.S.R., on the Transcaspian railway, 71 mi. N.E. of Samarkand. Pop. (1939) 17,500. It was formerly a fortress of Bukhara and was captured by the Russians in 1866.

JOAB, in the Bible, the son of Zeruiah, David's sister (1 Chron. ii. 16). His brothers were Asahel and Abishai. All three were renowned warriors and played a prominent part in David's history. Abishai on one occasion saved the king's life from a Philistine giant (2 Sam. xxi. 17), and Joab as warrior and statesman was directly responsible for much of David's success. Joab won his spurs, according to one account, by capturing Jerusalem (1 Chron. xi. 4–9); with Abishai and Ittai of Gath he led a small army against the Israelites who had rebelled under Absalom (2 Sam. xviii. 2); and he superintended the campaign against Ammon and Edom (2 Sam xi. 1, xii. 26; 1 Kings xi. 15). He showed his sturdy character by urging the king, after the death of Absalom, to place his duty to his people before his grief for the loss of his favourite son (2 Sam. xix. 1–8), and by protesting against David's proposal to number the people, an innovation which may have been regarded as an infringement of their liberties (2 Sam. xxiv., 1 Chron. xxi. 6).

JOACHIM I. (1484–1535), surnamed Nestor, elector of Brandenburg, elder son of John Cicero, elector of Brandenburg, was born on Feb. 21, 1484. He became elector in January 1499, and married Elizabeth, daughter of John, king of Denmark. By stern and cruel measures he succeeded in restoring some degree of order in Brandenburg. He improved the administration of justice, aided the development of commerce, and befriended the towns. In the imperial election of 1519, Joachim voted for Charles. But relations between the emperor and the elector were not friendly, and Joachim was frequently in communication with Charles's enemies. Joachim was a pugnacious adherent of Catholic orthodoxy. He urged upon the emperor the enforcement of the Edict of Worms, and at several diets was prominent among the enemies of the Reformers. His wife adopted the reformed faith, and in 1528 fled for safety to Saxony. Joachim, who was a patron of learning, established the university of Frankfort-on-the-Oder in 1506. He died at Stendal on July 11, 1535.

See T. von Buttlar, *Der Kampf Joachims I. von Brandenburg gegen den Adel* (1889); L. Zscharnack, *Das Werk Luthers in Brandenburg von Joachim I. bis zum grossen Kurfürsten* (1917).

JOACHIM II. (1505–1571), surnamed Hector, elector of Brandenburg, the elder son of Joachim I., elector of Brandenburg, was born on Jan. 13, 1505. He became elector of Brandenburg on his father's death in July 1535, and undertook the government of the old and middle marks, while the new mark passed to his brother John. He was twice married, his second wife being Hedwig, daughter of Sigismund, King of Poland. Joachim made repeated attempts to make peace between the Protestants and the emperor Charles V. at Frankfort in 1539, and elsewhere. In 1542 he led the German forces on an unsuccessful campaign against the Turks. With Maurice, elector of Saxony, he persuaded Philip, landgrave of Hesse, to surrender to Charles after the imperial victory at Mühlberg in April 1547, and pledged his word (which Charles failed to honour) that the landgrave would be pardoned. He supported the *Interim,* which was issued from Augsburg in May 1548, and took part in the negotiations for the Treaty of Passau (1552), and the religious peace of Augsburg (1555). In domestic politics he consolidated the power of his house by treaties with neighbouring princes, and secularized the bishoprics of Brandenburg, Havelberg and Lebus. In 1539 he allowed free entrance to the reformed teaching in the electorate. He took the communion himself in both kinds, and established a new ecclesiastical organization in Brandenburg, but retained much of the ceremonial of the Church of Rome. His position was not unlike that of Henry VIII. in England, and may be partly explained by a desire to replenish his impoverished exchequer with the wealth of the Church. By his lavish expenditure on public buildings he piled up a great accumulation of debt, which was partly discharged by the estates of the land in return for important concessions. He secured the archbishopric of Magdeburg and the bishopric of Halberstadt for his son Frederick in 1551; on Frederick's death in 1552, the sees passed to his brother Sigismund. Joachim died at Köpenick on Jan. 3, 1571, and was succeeded by his son, John George.

See Steinmüller, *Einführung der Reformation in die Kurmark Brandenburg durch Joachim II.* (1903).

JOACHIM, JOSEPH (1831–1907), Hungarian violinist and composer, was born at Kittsee, near Pressburg, on June 28, 1831, the son of Jewish parents. His family moved to Budapest when he was two years old, and he studied there under Serwaczynski, who brought him out at a concert when he was only eight years old, and then under the elder Hellmesberger and Joseph Böhm in Vienna. In 1843 he went to Leipzig to enter the newly founded conservatorium. Mendelssohn, after testing his musical powers, pronounced that the regular training of a music school was not needed, but recommended that he should receive a thorough general education in music from Ferdinand David and Moritz Hauptmann.

In 1844 he visited England, and made his first appearance at Drury Lane theatre, where his playing of Ernst's fantasia on *Otello* made a great sensation; he also played Beethoven's concerto at a Philharmonic concert conducted by Mendelssohn. In 1847–49 and 1852 he revisited London, and he appeared regularly at the famous Monday and Saturday popular concerts from 1859 onwards. On Liszt's invitation he accepted (1850) the post of *Konzertmeister* at Weimar, but his sympathies were with the older school of Schumann, and he was probably glad to leave Weimar for Hanover, where, in 1853, he became *Konzertmeister* to the king. In 1869 Joachim was appointed head of the newly founded *königliche Hochschule für Musik* in Berlin. The famous Joachim Quartet was started in the *Sing-Akadamie* in the following year. The original members of the quartet were Joachim, Ernst Schiever, Heinrich de Ahna and Wilhelm Müller. Of Joachim's later life, continually occupied with public performances, there is little to say except that he remained, even in a period which saw the rise of numerous violinists of the finest technique, the acknowledged master of all. He died on Aug. 15, 1907.

Joachim interpreted Bach, Mozart, Beethoven and Brahms with a degree of insight that has never been surpassed, and thereby established a standard of performance by which all subsequent players have been judged. His absolute freedom from tricks or mannerisms, his dignified bearing and his unselfish character won the respect of all, though his devotion to the highest ideals, combined with a certain austerity and massivity of style, brought against him an accusation of coldness from admirers of a more effusive temperament. His biographer (1898), Andreas Moser, expressed his essential characteristic in the words: "He plays the violin, not for its own sake, but in the service of an ideal."

Joachim's compositions are distinguished also by a certain austerity of character; but they are full of beauty of a grave and dignified kind. His "Hungarian" concerto for the violin, the Romance in B flat for violin and the variations for violin and orchestra are among his finest things. But he is remembered, not as a composer, but as a great musician and a great interpreter.

See A. Moser, *Joseph Joachim, ein Lebensbild* (1898; enl. ed., 2 vols.,

1907–10; Eng. trans., 1901). Moser also published (1908) Joachim's correspondence with Brahms, and with himself (3 vols., 1911–13; Eng. trans. by N. Bickley, 1914).

JOACHIM OF FLORIS (*c.* 1145–1202), Italian mystic theologian, was born at Celico, near Cosenza, in Calabria. He was brought up at the court of Duke Roger of Apulia. At an early age he went to visit the holy places. After seeing his comrades decimated by the plague at Constantinople he resolved to change his mode of life, and, on his return to Italy, after a rigorous pilgrimage and a period of ascetic retreat, became a monk in the Cistercian abbey of Casamari. In August 1177 he was abbot of the monastery of Corazzo, near Martirano. In 1183 he went to the court of Pope Lucius III. at Veroli, and in 1185 visited Urban III. Later he retired to Pietralata, and founded with some companions under a rule of his own creation the abbey of San Giovanni in Fiore, on Monte Nero, in the *massif* of La Sila. Innocent III., on Jan. 21, 1204, approved the "ordo Florensis" and the "institutio" which its founder had bestowed upon it. Joachim died in 1202, probably on March 20.

The authenticated works of Joachim are: the *Concordia novi et veteris Testamenti* (first printed at Venice in 1519), the *Expositio in Apocalypsin* (Venice, 1527), the *Psalterium decem chordarum* (Venice, 1527), together with some "libelli" against the Jews or the adversaries of the Christian faith. It is very probable that these "libelli" are the writings entitled *Concordia Evangeliorum Contra Judaeos, De articulis fidei, Confessio fidei* and *De unitate Trinitatis*. The last is perhaps the work which was condemned by the Lateran council in 1215 as containing an erroneous criticism of the Trinitarian theory of Peter Lombard.

It is impossible to enumerate here all the works attributed to Joachim. Some served their avowed object with great success, being powerful instruments in the anti-papal polemic and sustaining the revolted Franciscans in their hope of an approaching triumph. Among the most widely circulated were the commentaries on Jeremiah, Isaiah and Ezekiel, the *Vaticinia pontificum* and the *De oneribus ecclesiae*. Of his authentic works the doctrinal essential is very simple. Joachim divides the history of humanity, past, present and future, into three periods, which, in his *Expositio in Apocalypsin* (bk. i. ch. 5), he defines as the age of the Law, or of the Father; the age of the Gospel, or of the Son; and the age of the Spirit, which will bring the ages to an end. The third is the age of contemplation, the monastic age *par excellence*, the age of a monachism wholly directed towards ecstasy, more Oriental than Benedictine. Joachim does not conceal his sympathies with the ideal of Basilian monachism. In his opinion—which is, in form at least, perfectly orthodox—the church of Peter will be, not abolished, but purified; actually, the hierarchy effaces itself in the third age before the order of the monks, the *viri spirituales*. The entire world will become a vast monastery in that day, which will be the resting-season, the sabbath of humanity.

The Joachimite ideas soon spread into Italy and France, and especially after a division had been produced in the Franciscan order. The rigorists, who soon became known as "Spirituals," represented St. Francis as the initiator of Joachim's third age. (*See* FRANCISCANS.) In 1260 a council held at Arles condemned Joachim's writings and his supporters, who were very numerous in that region. The Joachimite ideas were equally persistent among the Spirituals, and acquired new strength with the publication of the commentary on the Apocalypse. This book, probably published after the death of its author and probably interpolated by his disciples, contains, besides Joachimite principles, an affirmation of the elect character of the Franciscan order, as well as extremely violent attacks on the papacy.

The Joachimite literature is extremely vast. From the 14th century to the middle of the 16th, Ubertin of Casale (in his *Arbor Vitae crucifixae*), Bartholomew of Pisa (author of the *Liber Conformitatum*), the Calabrian hermit Telesphorus, John of La Rochetaillade, Seraphin of Fermo, Johannes Annius of Viterbo, Coelius Pannonius, and a host of other writers, repeated or complicated *ad infinitum* the exegesis of Abbot Joachim. A treatise entitled *De ultima aetate ecclesiae*, which appeared in 1356, has been attributed to Wycliffe, but is undoubtedly from the pen of an anonymous Joachimite Franciscan. The heterodox movements in Italy in the 13th and 14th centuries, such as those of the Segarellists, Dolcinists, and Fraticelli of every description, were penetrated with Joachimism; while such independent spirits as Roger Bacon, Arnaldus de Villa Nova and Bernard Délicieux often comforted themselves with the thought of the era of justice and peace promised by Joachim. Dante held Joachim in great reverence, and has placed him in Paradise (*Par.*, xii. 140–141).

See *Acta Sanctorum, Boll.* (May), vii. 94–112; W. Preger in *Abhandl. der kgl. Akad. der Wissenschaften*, hist. sect., vol. xii., pt. 3 (Munich, 1874); idem, *Gesch. d. deutschen Mystik im Mittelalter*, vol. i. (Leipzig, 1874); E. Renan, "Joachim de Flore et l'Évangile éternel" in *Nouvelles études d'histoire religieuse* (Paris, 1884); F. Tocco, *L'Eresia nel medio evo* (Florence, 1884); H. Denifle, "Das Evangelium aeternum und die Commission zu Anagni" in *Archiv für Literatur- und Kirchengesch. des Mittelalters*, vol. i.; Paul Fournier, "Joachim de Flore, ses doctrines, son influence" in *Revue des questions historiques*, t. i. (1900); H. C. Lea, *History of the Inquisition of the Middle Ages*, vol. iii. ch. i. (London, 1888); F. Ehrle's article "Joachim" in Wetzer and Welte's *Kirchenlexikon*. On Joachimism *see* E. Gebhardt, "Recherches nouvelles sur l'histoire du Joachimisme" in *Revue historique*, vol. xxxi. (1886); H. Haupt, "Zur Gesch. des Joachimismus" in *Briegers Zeitschrift für Kirchengesch.*, vol. vii. (1885). *See* also the relevant articles in the *Catholic Encyclopaedia*.

JOAN, a mythical female pope (*fl.* 855), between Leo IV (847–855) and Benedict III (855–858). One account has it that she was born in England, another in Germany of English parents. After an education at Cologne, she fell in love with a Benedictine monk and fled with him to Athens disguised as a man. On his death she went to Rome under the alias of Joannes Anglicus (John of England) and entered the priesthood, eventually receiving a cardinal's hat. According to the fable, she was elected pope under the title of John VIII and died in childbirth during a papal procession.

A French Dominican, Steven of Bourbon (d. *c.* 1261), gives the legend in his *Seven Gifts of the Holy Spirit*. He is believed to have derived it from an earlier writer. More than a hundred authors between the 13th and 17th centuries gave circulation to the myth. Its explosion was first seriously undertaken by David Blondel, a French Calvinist, in his *Éclaircissement de la question si une femme a été assise au siège papal de Rome* (1647); and *De Joanna Papissa* (1657). The refutation was completed by Johann Dollinger in his *Papstfabeln des Mittelalters* (1863; Eng. trans. 1872).

JOANES (or JUANES), **VICENTE:** *see* MACIP, VICENTE JUAN.

JOANNA THE MAD, "LA LOCA" (1479–1555), queen of Castile and mother of the emperor Charles V., daughter of the Catholic rulers, Ferdinand and Isabella, was born at Toledo on Nov. 6, 1479. She married (1496) the archduke Philip, son of the German king, Maximilian I., and by the death of her brother John, of her eldest sister Isabella, queen of Portugal, and of the latter's infant son Miguél, became heiress of the Spanish kingdoms. Soon after 1502, her reason began to give way. She mourned extravagantly for her absent husband, whom at length she joined in Flanders: there her passionate jealousy, although justified by Philip's conduct, led to deplorable scenes. His death (1506) completely unhinged her mind; she remained nominally queen, but perforce took no part in the business of State, and died after a miserable existence at Tordesillas on April 11, 1555.

See R. Villa, *La Reina doña Juana la Loca* (1892); Rösler, *Johanna die Wahnsinnige* (1890); Prescott, *Hist. of Ferdinand and Isabella* (1854); H. Tighe, *A Queen of Unrest* (1907).

JOANNA I. (*c.* 1327–1382), queen of Naples, was the daughter of Charles, duke of Calabria (d. 1328), and became sovereign of Naples in succession to her grandfather King Robert in 1343. Her first husband, Andrew, son of Charles Robert, king of Hungary, was assassinated (1345) at Aversa, possibly with his wife's connivance, and at once Joanna married Louis, son of Philip, prince of Taranto. King Louis of Hungary then came to Naples to avenge his brother's death, and the queen took refuge in Provence—which came under her rule at the same time as Naples—purchasing pardon from Pope Clement VI. by selling to him the town of Avignon, then part of her dominions. Having

returned to Naples in 1352 after the departure of Louis, Joanna lost her second husband in 1362, and married James, king of Majorca (d. 1375), and later Otto of Brunswick, prince of Taranto. The queen had no sons, and as both her daughters were dead she made Louis I. duke of Anjou, brother of Charles V. of France, her heir. Charles, duke of Durazzo, who regarded himself as the future king of Naples, then seized the city. Joanna was captured and was put to death at Aversa on May 22, 1382. The queen sought the society of the poets and scholars of her time, including Petrarch and Boccaccio.

See Crivelli, *Della prima e della seconda Giovanna, regine di Napoli* (1832); G. Battaglia, *Giovanna I., regina di Napoli* (1835); W. St. C. Baddeley, *Queen Joanna I. of Naples* (1893); Scarpetta, *Giovanna I. di Napoli* (1903); and Francesca M. Steele, *The Beautiful Queen Joanna I. of Naples* (1910).

JOANNA II. (1371–1435), queen of Naples, was descended from Charles II. of Anjou through his son John of Durazzo. She had been married to William, son of Leopold III. of Austria, and at the death of her brother King Ladislaus in 1414 she succeeded to the Neapolitan crown. Although now a widow of forty-five, she chose as her lover Pandolfo Alopo, a youth of twenty-six, whom she made seneschal of the kingdom. He and the constable Muzio Attendolo Sforza completely dominated her, and the barons determined to provide her with a husband who would break her favourites and yet not make himself king. The choice fell (1415) on James of Bourbon. James at once declared himself king, had Alopo killed and Sforza imprisoned, and kept his wife in a state of semi-confinement; this led to a counter-agitation on the part of the barons, who forced James to liberate Sforza, renounce his kingship, and eventually to quit the country. The queen now sent Sforza to re-establish her authority in Rome, whence the Neapolitans had been expelled after the death of Ladislaus; Sforza entered the city and obliged the *condottiere* Braccio da Montone, who was defending it in the pope's name, to depart (1416).

But when Oddo Colonna was elected pope as Martin V., he allied himself with Joanna, who promised to give up Rome, while Sforza returned to Naples. The queen was, however, completely dominated by her new lover Giovanni (Sergianni) Caracciolo. Sforza then favoured the pretensions of Louis III. of Anjou to Naples as Joanna's successor. Joanna refused to adopt Louis as her heir, and appealed to Alfonso of Aragon, promising to make him her heir. War broke out between Joanna and the Aragonese on one side and Louis and Sforza, supported by the pope, on the other. After much fighting by land and sea, Alfonso entered Naples, and in 1422 peace was made. But dissensions broke out between the Aragonese and Catalans and the Neapolitans, and Alfonso had Caracciolo arrested; whereupon Joanna, fearing for her own safety, invoked the aid of Sforza, who with difficulty carried her off to Aversa. There she was joined by Louis whom she now adopted as her successor. Sforza was accidentally drowned, but when Alfonso returned to Spain, leaving only a small force in Naples, the Angevins with the help of a Genoese fleet recaptured the city. For a few years there was peace in the kingdom, but in 1432 Caracciolo, having quarrelled with the queen, was seized and murdered by his enemies. Internal disorders broke out, and Gian Antonio Orsini, prince of Taranto, led a revolt against Joanna in Apulia; Louis of Anjou died while conducting a campaign against the rebels (1434), and Joanna herself died on Feb. 11, 1435, after having appointed his brother René her successor.

AUTHORITIES.—A. von Platen, *Storia del reame di Napoli dal 1414 al 1423* (1864); C. Cipolla, *Storia, della signoria Italiana* (1881), where the original authorities are quoted. *See* also Faraglia, *Storia della regina Giovanna II. d'Angio* (1904).

JOAN OF ARC, SAINT (1412–1431), French patriot. Joan of Arc was known in the country-side of Domrémy as Jeannette, with the surname of Arc or Romée. She is alluded to in contemporary documents as Jeanne, commonly called The Maid. She was born on Jan. 6, 1412, at Domrémy on the Meuse in a house in the shadow of the church. Her father was Jacques d'Arc, a native of Ceffonds in Champagne, and her mother Isabelle de Vouthon, called "la Romée," either because she had made a pilgrimage to Rome, or, more probably, from a family name. Both husband and wife were of farming stock, and devout Catholics. Jacques owned horses and cattle; he was the doyen of the village, and was its spokesman in a law-suit. He may be regarded, in fact, as the headman of Domrémy, a kind of mayor. With others he rented the Château de l'Ile, its gardens, and pasturage. Hardly anything is known of Joan's childhood; from her mother she learnt her prayers and the lives of the Saints, and she played till she was 12 or 13 with the other village children. The boys of Domrémy, who were French in their sympathies, were at frequent odds with the boys of the Burgundian village, on the other side of the Meuse. Saint Remy, patron saint of the cathedral of Reims, was also that of the church at Domrémy. Joan, who was baptized by the *curé* Minet, was a pious child, and often went with her companions to bear wreaths of flowers to Notre Dame de Bermont. She had heard, without believing, the story of the fairies who haunted the spring among the bushes. She was almost certainly ignorant of Merlin's prophecy that a maid should come from the Bois Chenu to do great deeds.

Joan helped her parents in tillage, tended the animals, and was skilled with her needle and in other feminine arts. She was pious, and often went to church when the other girls were dancing. She was in her 13th year when, in her father's garden, she heard for the first time a voice from God. Thereupon she vowed to remain a virgin and to lead a godly life. During the next five years she heard the voices two or three times a week. Among them she distinguished those of Saint Catherine and Saint Margaret, who appeared to her, in the guise of queens, wearing rich and precious crowns. Sometimes their coming was heralded by Saint Michael. With these visions Joan became still more serious, and more given to prayer. The troubles of Domrémy between 1419 and 1428 made her early acquainted with the horrors of war. Her voices commanded her to go to France, and to raise the siege of Orleans, which had been begun in Oct. 1428.

We do not know the exact moment at which Joan decided to obey her voices, and to go to France. The captain of the fortified town nearest to Domrémy on the French side was Robert de Baudricourt, commandant at Vaucouleurs, four leagues away. Joan approached him for the first time in May 1428, accompanied by a relative on her mother's side, one Durand Laxart ou Lassois. She was in her 16th year. At this time an army was being raised in England for the conquest of the Dauphin's territory south of the Loire. The journey was made without the knowledge of her family, for when Joan had spoken of going into France, her father had said that he would rather drown her with his own hands. She told the Dauphin's commandant that she was sent by Our Lord, and asked him to write to the Dauphin saying that, by the will of God, she was to lead him to his crowning. Baudricourt attached no importance to the visit, and sent her back to her parents. At home Joan talked more and more of her great mission. In July 1428, the governor of Champagne, Antoine de Vergy, undertook to subdue the country round Vaucouleurs for the English. The people of Domrémy retreated with their cattle to Neufchâteau where Joan spent a fortnight with a woman called La Rousse, who kept an inn. This is the origin of the false Burgundian legend that she was a light woman, liking the company of men-at-arms and horses. Some time after, she was summoned for breach of promise of marriage, before the magistrates of Toul, by a young man who had sought her hand. On the return of the family to Domrémy, they found the village burned to the ground, and Joan had to attend the church of Greux. Towards the end of October, she learned that Orleans was besieged by the English, who had garrisoned the towns along the Loire.

To break the resistance on the Loire by taking Orleans was indeed a hazardous undertaking. The English made careful preparations, and amassed a large quantity of military material for the siege. Salisbury had assembled a force of about 2,500, to which were joined spearmen and archers under Bedford. The English army may have numbered about 10,000 men, in addition to the Burgundian forces, which were soon withdrawn. Orleans was strongly fortified, and possessed two hundred and fifty cannon of various calibres. To invest the town the English had surrounded it with about a dozen bastions, which were then called

bastilles. The siege began on Oct. 12, and on the 24th Salisbury was mortally wounded by a bullet as he was about to reconnoitre the town from one of the windows of the Tourelles. The citizens of Orleans were commanded by Dunois, the Bastard of Orleans and by the famous La Hire. The fighting amounted to no more than skirmishing, and French reinforcements continued to enter the beleaguered town. Although the situation was not so critical as it has been represented, the news of the siege aroused great emotion throughout France. When it reached Domrémy, Joan decided to set out. About Jan. 12, 1429, she left the village to go to her cousins, the Lassois of Petit Burey. She soon reached Vaucouleurs, and stayed there three weeks, seeking to convince the incredulous captain, Robert de Baudricourt, of her mission. She met there a bold young squire, Jean de Metz, in whom she confided. Her idea was that the country should save itself rather than wait for the help of the Scots, and the arrival of little Margaret, the daughter of James of Scotland, who was to marry Louis, the son of the Dauphin.

When she realized that Robert de Baudricourt would do nothing to bring her to the Dauphin, she borrowed clothes from Jean de Metz, and set out for France. The duke of Lorraine having sent her a safe-conduct as far as Nancy, she went first to him. She begged him to allow his son-in-law Réné to escort her to France, promising to pray for the duke's better health. Joan and her companions returned to Vaucouleurs, where Baudricourt, who had just learned of the disaster of Vouvray, was less unwilling to let the Maid try her fortune. He authorized her departure for Chinon, and Jean de Metz and Bertrand de Poulengy advanced money for the journey. The people of Vaucouleurs bought her a horse, and Joan exchanged her suit of red cloth for a page's dress. Baudricourt gave her a sword saying: "Go, and let come what may." Travelling by night the little band evaded English and Burgundian marauders. They passed through Saint Urbain, Auxerre, Gien and Fierboys, near Chinon, to which soldiers made pilgrimages to invoke Saint Catherine. From there, Joan wrote to the Dauphin, asking for permission to go to Chinon to give him information which she alone possessed. The Council met to discuss whether he should hear her or not. Louis de Bourbon, the count of Vendôme, brought her into the presence of the king, who kept back in the midst of his knights. Joan came forward with meekness and simplicity, and said to him, "Most noble Dauphin, I have come from God to help you and your Kingdom." The Dauphin took her aside, and talked with her for more than two hours. According to her confessor, Pasquerel, the Maid said to him, "*Je te dis de la part de Messire que tu es le vrai héritier de France et fils du roi*" (I am God's messenger, sent to tell you that you are the king's son, and the true heir to France). This was doubtless the sign which Joan would never explain. Lodged in the tower of Coudray, Joan was burning to be at work, but the king was unwilling to make use of her until she had been examined by an assembly of learned theologians. She was sent therefore to Poitiers, the seat of the chief university and of the courts of justice. She lived in the household of Jean Rabuteau, the advocate-general, and was examined by a commission presided over by Friar Séguin, professor of theology. She assured them that she would raise the siege and have the king crowned, and dictated a letter commanding the English to depart. The Poitiers commission made enquiry at Domrémy. Nothing but what was honest and true was reported of Joan, and in April they pronounced in her favour. Joan was accordingly sent to Tours to take up arms. She lodged with the lady in waiting upon the Dauphin's mother-in-law, the Queen of Sicily. In this city, famous for its armourers, she put on "white armour." She had brought to her from the church of Saint Catherine de Fierboys a sword on which were five crosses, doubtless an *ex voto* which she had seen in its place behind the altar. At the wish of the Dauphin she appointed a suite, including a confessor, Jean Pasquerel, a squire, Jean d'Aulon and two pages. Like other company commanders, she carried a banner; on it she had painted the King of heaven holding an orb, with the motto "Jesus Maria."

The French army for the relief of Orleans numbered about four thousand men. This force left Tours for Blois, and, on April 28, escorted by a procession of priests, arrived before Orleans along the left bank of the Loire, accompanied by a convoy of cattle and several boats. They were met by Dunois. The Loire was crossed with a favourable wind. On the night of April 28, Joan entered Orleans, bringing hope to the beleaguered citizens. She was taken to the church of the Holy Cross, and then to the house of Jacques Boucher, treasurer to the duke of Orleans. On April 30 Joan summoned the English to be gone. Next day she sent them a further proclamation. On May 5, the Maid and her companions stormed the "bastille" of the Augustines, and on the 7th, they captured the Tourelles, which commanded the head of the bridge. Joan herself planted the first scaling-ladder, and was wounded in the shoulder by an arrow. Orleans was saved. On May 8 was held the first thanksgiving procession, the origin of the great festival of Orleans. Within a week the French captured Jargeau, where the earl of Suffolk was taken prisoner, and Beaugency. Sir John Fastolf was defeated at Patay. Joan entered Orleans in triumph, followed the king to Gien, and prevailed upon him to march on Reims. She reached Troyes on July 10th and Reims on the 14th. Two days later the king was crowned. Beside him stood the Maid, a banner in her hand. "Gentle King," she said, kneeling before him, "now is fulfilled the will of God that I should raise the siege of Orleans, and lead you to the city of Reims to receive the holy coronation, to show that you are indeed the king, and the rightful lord of the realm of France." It was agreed to advance on Paris on July 18. Bedford was aware of the plan, and had informed the English council. Charles, however, wasted time over negotiations with the envoys of the duke of Burgundy, whom Joan had commanded to make peace with France, and she did not leave Reims till July 21. Instead of marching on Compiègne, which was preparing to receive him, the king turned back towards the Loire. The Maid wished to continue the march on Paris, whence Bedford had withdrawn his army. Between Aug. 18 and 22 the king and the Maid received the submission of Compiègne, Senlis and Beauvais, from which they expelled the bishop Pierre Cauchon.

Regnault de Chartres, archbishop of Reims and chancellor of the kingdom, supported the policy of detaching the English from the Burgundians. On Aug. 23 Joan left the king at Compiègne, and arrived at Saint Denis on the 26th. On the 28th an armistice was signed between France and Burgundy. On Tuesday, Sept. 8, Joan, at the head of the royal forces, made an assault on the *porte Saint Honoré* at Paris. It failed. Joan was wounded in the thigh by an arrow, but they had to drag her from the field by force. Since the king of France had disbanded his army, she had now to rejoin the court and remain there practically inactive. In Oct. 1429, however, she took part in the capture of Saint Pierre le Moustier. At La Charité, which was held by Perrinet Gressart for the duke of Burgundy, she suffered a reverse. In recognition of what she had done for France she was ennobled on Dec. 29, 1429, and her village was exempted from taxation.

The truce with Burgundy, which was to last till Easter, was drawing to a close. Philip the Good had moreover succeeded in persuading Bedford to promise him Champagne in return for allowing recruitment by the English among his subjects. As a counter stroke to the coronation of Charles VII., the English were preparing to bring to France the young King Henry VI. The Anglo-Burgundian allies made a great effort to ensure the safety of Paris by repossessing themselves of the neighbouring towns. Compiègne was their first objective.

Joan, who followed these plans attentively, decided to bring help to her "good friends" of Compiègne. Leaving Sully-sur-Loire where she had been in the care of la Trémouille, she set out, with a few companions but no official instructions. She passed from Melun to Lagny and Senlis and, after a brisk series of skirmishes, arrived at Compiègne, which she entered without resistance on May 23. The town was commanded by Captain Guillaume de Flavy. The Burgundian camp was at Margny opposite the bridgehead; the forces of the veteran Burgundian, Jean de Luxembourg were at Clairoix, and the English, under Montgomery, at Venette. Towards five o'clock in the afternoon, Joan, Poton the Burgundian, and some other captains with four or five hundred men

made a sortie over the bridge against the Burgundian camp. Their men fell to looting, and were driven back into the town. Flavy had the draw-bridge raised in order to secure their retreat. Joan, who had charged the enemy in an attempt to save her comrades, was left outside, and was taken prisoner, together with her brothers and Jean d'Aulon. Her captor was an archer in the service of the Bastard of Wandomme. She was taken to the Burgundian camp, and interviewed by Philip the Good, while the Bastard was ordered to surrender his prisoner to his chief, Jean de Luxembourg.

Bedford realized the importance of destroying the influence of the Maid on the people by whom she was regarded as a saint; he hoped in this way to discredit the king, whom she had awakened from his lethargy. The English did not wish summarily to execute her, as they could have done, but to defame her by condemnation in a spiritual court. Both the university of Paris, which was strongly Burgundian, and the vicar-general of the inquisition wrote as early as May 26 to the duke of Burgundy to ask that Joan should be surrendered to the ecclesiastical court. The English had from the outset announced their intention of burning her alive if they could get hold of her; but members of the university and French lawyers took the first practical steps to send her on her way to the stake. A letter from Regnault de Chartres, archbishop of Reims, to the people of the city, who loved the Maid, shows that no grief was felt in the king's council over her capture; on the contrary, the bishop of Embrun was alone in exhorting Charles to make every effort to recover her. The king did, in fact, nothing at all. On July 14 Pierre Cauchon, bishop of Beauvais, who had been driven from his bishopric by French soldiers, appeared at Jean de Luxembourg's camp before Compiègne; he was an ambitious man who hoped to obtain the vacant see of Rouen, and whose sole desire was to serve his masters. He asked to be allowed to judge the prisoner, and maintained that Henry VI. had the right to redeem any prisoner of war for an indemnity of ten thousand *livres*.

Joan was taken first to Beaulieu, then to Beaurevoir to the castle of the Luxembourgs. She thought of nothing but the people of Compiègne, and after a long consultation with her "voices" made an attempt to go to their assistance by jumping from the tower. She injured herself, but not seriously. She was then taken to Arras, in Burgundian territory. Jean de Luxembourg decided to sell her to the English, and she was moved to Crotoy. On Nov. 21 the university of Paris accused Cauchon of lack of zeal, and urged that, for the glory of God, Joan should be tried in Paris. The English then decided to take her to Rouen, their military centre in France. She was imprisoned in a tower of the castle of Philip Augustus, chained in a dark cell, under the guard of John Gray and William Talbot, in the charge of the earl of Warwick.

On Jan. 3, 1431, Joan was handed over to Cauchon, who was to be her judge. The English, having bought her, declared that they would seize her again, if she was not convicted for her many crimes, and of high treason against God. The authentic records of the trial have been preserved; they are among the most pathetic documents in history, and are the best source of information as to Joan herself. The original, which still bears the remains of Pierre Cauchon's seal, is now preserved in the library of the *Chambre des Députés*. The tribunal, skilfully selected by Cauchon, consisted of ten members of the university of Paris, strong Burgundians and intolerant theologians, 22 canons of Rouen who were all completely in the hands of the English government owing to the vacancy in the see, and some monks of different orders, minor friars or Dominicans. A judge who declared the procedure irregular was imprisoned, and a certain number of others withdrew from the case.

The interrogatory began on Feb. 21. There were no sittings between February 24 and 27. This was probably due to Joan's illness. On March 12 the vice-inquisitor appeared, accompanied by a Dominican friar; on the 15th Joan was asked if she would submit to the judgment of the Church. The judgment was to be based on a list of twelve points. They included the opinion of her judges as to the worthlessness of her visions, and her different accounts of the sign given to the king; they denied her the gift of prophecy, censured her masculine dress, her disobedience to her parents, her attempt to escape, and the sinful pride which had led her to believe that she would go to Paradise, and that she was responsible only to God and not to the Church which the judges represented. The last offence was that which chiefly incensed the theologians, and led to her condemnation. On April 18 Cauchon visited her in her cell to try the effect of mild exhortation. Delegates were sent to Paris with the 12 points. On May 2 Cauchon pronounced a public admonition against her in the hall of the castle, and Joan appealed to be sent before the pope. On May 9 she was taken to the torture chamber, but in spite of the opinion of several advisers the Maid was spared the torture. Joan was by this time worn out by the length and severity of the examination. On May 23 she was taken to the cemetery of Saint-Ouen and had read to her the sentence which condemned her to be burned unless she submitted. Without clearly understanding its terms, she signed an abjuration, of which the text has been lost, and was taken back to her prison amidst the noisy protests of the English. She was condemned to imprisonment for life. "We will recapture her," said Warwick in a rage. A woman's gown was brought to her, and she was asked to put it on. She remained in prison between May 24 and 27, and it was rumoured that she had resumed masculine dress. Cauchon came to see for himself; the prisoner, he found, had relapsed. The judges then decided that she must be delivered to the secular arm, and she was ordered to appear on May 30 in the Old Market Square of Rouen.

These facts are known to us only by means of a non-official report, annexed to the minute of condemnation. They bear, however, the stamp of probability, and it is certain that Joan regretted her momentary and easily understood weakness in the tumult of the cemetery of Saint-Ouen, with the thought of the stake before her. She received communion in her prison, and was once more dressed as a woman before being taken to the stake prepared in the Old Market Square. She listened patiently to the sermon of Nicolas Midy, and Cauchon read the sentence, delivering her over to the secular arm. Joan asked the priests present to say each a mass for her soul, and was then handed over to the bailiff of Rouen. An English soldier gave her a cross made of two pieces of wood, but she asked Massieu to bring her the cross from the neighbouring church. She kissed it while she was being chained to the stake, and as the smoke went up, she was heard to call in a loud voice: "Jesus." Her ashes were thrown into the Seine from the bridge of Rouen.

The account of the trial of Joan of Arc was published far and wide. Five authentic copies still exist today. This monument of an iniquitous deed, a masterpiece of composition and procedure, drawn up in Latin by Thomas de Courcelles, a rising light of the university, bore fruit. Joan's condemnation by the Church appeared to be in order. The English Government could send to the chancellories of Europe a copy of the sentence, together with an account of the whole matter which placed the king of France in a most unfavourable light. The report of the trial became a useful weapon. Pierre Cauchon did not obtain the see of Rouen, which he had administered both spiritually and temporarily. The Holy See appointed him in 1432 bishop of Lisieux with the customary papal commendation. At the Congress of Arras he maintained the right of Henry VI. to the crown of France. He narrowly escaped being taken prisoner when the French retook Paris in 1436, and paid several visits to England, where he assisted in making terms of peace between the two countries. He died in 1442, rich and honoured, and was buried in the magnificent Chapel of the Virgin at Lisieux, which he had rebuilt and decorated at his own expense.

It was not until after Normandy had been conquered that Charles VII. made the slightest effort to wipe out the stain cast on his name by the sentence of 1431. In 1450 he instituted a preliminary enquiry, but nothing further was done until the arrival in France of Cardinal d' Estouteville, the legate of Pope Nicolas V. The first attempt was checkmated, owing to the English protesting to the Holy See. Charles VII.'s Government found a way out of the difficulty by giving place as petitioner to Joan's family. Her mother, Isabelle Romée, who was living in

retirement at Orleans with her two sons, Pierre and Jean du Lys, obtained from Calixtus III. permission to draw up the case. To this end the pope appointed Jean Jouvenel des Ursins, archbishop of Reims, Guillaume Chartier, bishop of Paris and Richard Olivier, bishop of Coutances, to act in concurrence with the grand inquisitor of France. It was admitted that the university of Paris had been led into error by the fraudulent drawing up of the 12 articles. All the blame for this was cast on the dead bishop of Beauvais. Enquiries were held at Domrémy, at Orleans, in Paris and at Rouen, and evidence was given by all the surviving witnesses of Joan's early days and of her gallant deeds (Dunois, Jean d'Aulon, the duke of Alençon, etc.). Their statements, though made long after the event, are extremely interesting. The grand inquisitor, Jean Bréhal, published a long memorandum establishing Joan's orthodoxy. On June 16, 1456, the judgment of 1431 was annulled.

No authentic portrait of Joan can be traced to-day, although contemporary drawings were in existence. At Arras, for instance, she saw in the hand of a Scotsman a painting in which she was shown kneeling and presenting a letter to the king. The little pen drawing by the clerk Fauquembergue on May 10, 1429, on a register of the *parlement* of Paris is simply a note which served him as a reference. The contemporary German tapestry which shows her mounted and in armour is of value only for the costume.

We know from contemporary testimony that Joan was handsome, well-built, with a bright and smiling face, and that she had dark hair cut short like a soldier's. She was courtesy itself, liked a good horse and a good sword and fine clothes. She was indifferent to pain and fatigue, and was always ready to run physical risks. Her heroic and charming figure was soon surrounded by legend.

The true Joan of Arc is not to be found in works of imagination, but in the authentic story of her life, first put together by Edmund Richer, head of the Faculty of Theology of Paris in the 17th century (a work for many years kept in manuscript at the Bibliothèque Nationale, Paris fr. 10,448, and published in 1911 by Ph. H. Dunand); then by Lenglet Du Fresnoy (1753), and finally by the learned Jules Quicherat (1841–49), who has put together the records of the two trials, and all the evidence relating to Joan. Since this publication, Germain Lefèvre-Pontalis has published the journal of Morosini, a Venetian merchant, and the German testimony of Eberhardt von Windecke. Noël Valois has published a document from the Vienna library regarding her mission (*Un nouveau témoignage sur Jeanne d'Arc,* 1907). Finally Father Denifle has searched the archives of the Vatican, and discovered several unknown documents regarding the judges of Joan of Arc (*Chartularium Universitatis Parisiensi IV.*).

Joan was beatified in Rome in 1909 and canonized by Benedict XV in 1920. The festival of Joan of Arc was kept annually on May 8, the anniversary of the procession commemorating the capture of the Tourelles, from 1435–1793. The local festival was re-established by Bonaparte in the year X and was declared a *fête nationale* in 1920. (P. C.; X.)

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JOÃO PESSOA (formerly PARAÍBA), a city and port of Brazil, capital of Paraíba state, on the right bank of the Paraíba do Norte river, 11 mi. above its mouth and 65 mi. N. of Recife. City pop. (1940) 73,234; município 95,386. João Pessoa is the starting-point of the Conde d'Eu railway, now a part of the Great Western of Brazil system. Its port is Cabedelo, with which it is connected by rail. The entrance to the Paraíba do Norte river being obstructed by a stone reef and sand bars, only vessels drawing less than 14 ft. can effect an entrance. The "Varadouro," as the lower part of the city is called, is built on the margin of the river and is devoted principally to commerce. Behind this is a low hill on whose northern slope and broad summit the upper city is built and a tramway line runs to the suburb of Trincheira. There are some good public buildings, including the parish church (*matriz*) of N.S. das Neves, the old Franciscan convent and church, the government palace, and the treasury. There are a normal school, a lyceum and a school for marine apprentices. Founded in 1585, the city has been successively known as Filipea, Frederickstadt and Paraíba. In 1930 the name was officially changed to João Pessoa.

JOASH or **JEHOASH,** the name of two kings in the Bible.

1. Son of Ahaziah (*see* JEHORAM, 2) and king of Judah. He obtained the throne by means of a revolt in which Athaliah (*q.v.*) perished, and his accession was marked by a solemn covenant, and by the overthrow of the temple of Baal and of its priest Mattan (-Baal). In this the priest Jehoiada took the leading part. 2 Chronicles adds several new details, including a tradition of a conflict between the king and priests after the death of Jehoiada (xxii. 11; xxiv. 3, 15 *sqq.*). The king perished in a conspiracy, the origin of which is not clear.

2. Son of Jehoahaz and king of Israel. Like his grandfather Jehu, he enjoyed the favour of the prophet Elisha, who promised him a triple defeat of the Aramaeans at Aphek (2 Kings xiii. 14 *sqq.* 22–25). The cities which had been taken from his father by Hazael, the father of Ben-hadad, were recovered and the relief gained by Israel prepared the way for its speedy extension of power. When challenged by Amaziah of Judah, Joash uttered the famous fable of the thistle and cedar, and a battle was fought at Beth-shemesh, in which Israel was completely successful.

JOB. The book of Job in the Bible is an acknowledged masterpiece, both as an expression of religious experience and as a work of poetic genius. Its theme is the struggle of a deeply religious soul with the doubts aroused by undeserved suffering.

Contents.—Job is a man of exemplary piety, but in heaven "the adversary" charges that he is pious because he is prosperous. To disprove this God permits the destruction of Job's property, his children and his health. Job's patient endurance under these afflictions at length gives way to bitter lamentation. His friends—Eliphaz, Bildad and Zophar—maintain that he is suffering for his sins, but this he indignantly denies. One after another they reason with him, and to each he replies in turn. A second and a third time they speak, advancing from gentle suggestions to specific accusations, while Job, vehemently asserting his innocence, is driven not only into anguished perplexity regarding God's ways but even to outright denial of His justice. Nevertheless from the cruel dogmatism of his friends he turns again and again to God, increasingly confident that the very One who seems so unjust will ultimately vindicate him. A young man named Elihu now enters the debate and eloquently but vainly enlarges upon what the friends have been saying. Finally in the majestic voice of a whirlwind the Almighty Himself replies to Job, reviewing the marvels of Creation until Job confesses that his denial of God's justice was due to ignorance. God then condemns the friends, declares that Job has spoken rightly of Him and restores the sufferer to wealth and happiness.

Literary Form and Relationships.—Two introductory chapters of prose narrative present the characters and bring the story to the point where Job's patience breaks down. The conclusion of the book, narrating the condemnation of the friends and the restoration of Job's fortunes, is also prose (xlii. 7–17).

Between these lies the main body of the work, including Job's first passionate complaint (ch. iii.), the three successive rounds of argument with his friends (iv.–xxxi.), the long harangue of Elihu (xxxii.–xxxvii.) and the divine speeches with Job's submission (xxxviii.–xlii. 6). All this is written in the form of poetic dialogue.

Commentators have sometimes compared the book of Job with the Greek philosophical dialogue. Job's problem is distinctly philosophical, but its treatment is poetic. The author was more closely related to the dramatists than to the philosophers of Greece. Parallels between Job and the *Prometheus Bound* of Aeschylus have often been pointed out. A comparative study of these products of Aryan and Semitic thought, and of such modern works as *Faust* or *Manfred,* is very instructive, though the Greek poet's theme was the jealous hostility of the gods to man's progress in civilization rather than the difficulty created for ethical theism by a righteous man's suffering.

In form as well as subject Job somewhat resembles a Greek tragedy. Many interpreters, both ancient and modern, have treated it as a drama. Others object that there is no action, yet "the varying attitude of Job's mind toward God exhibits dramatic action and tragic interest of the highest kind, though the movement is internal." The fact that we find no other drama in ancient Semitic literature is not conclusive. Greek influence, though improbable at the time when Job was written, was not impossible. All interpretations of the book as a drama include portions which modern critics do not accept as belonging to the original work; but if the book as a whole fitted naturally into the classical form of the drama, only the most compelling critical arguments could outweigh that fact. As a matter of fact, this is not the case. Not a little revision is necessary to make Job a Greek tragedy, and the result proves only that the book can be arranged as a drama, not that it was so intended.

Hebrew literature developed its own forms. Peculiarly Hebrew is the group of writings known as the Wisdom literature (*q.v.*). It deals with the lessons of practical experience. Religion is regarded as essentially a way of life. The value of rites and institutions is not considered, and if beliefs are discussed at all it is in relation to moral experience. The unique position and prerogatives of the Chosen People are not emphasized: only in the apocryphal books does this interest creep into the Wisdom literature.

For the antecedents of this type of writing we must look, not to the Greeks, but to the Egyptians and Babylonians. Long before the time of the Hebrew Wisdom literature the Egyptians had writings resembling them in form and spirit. None of these, however, have any noteworthy relationship to Job. Less material of this character has been found in Babylonian literature, yet there is one remarkable composition known to scholars as "the Babylonian Job." It is the poetic monologue of a pious king who, like Job, suffered grievous maladies until delivered by his god. Not only the situation but even the language reminds us of Job, but there is no dialogue nor any discussion of moral retribution. That the Hebrew writer was acquainted with this Babylonian poem is improbable. A few scholars believe that the book of Job is of Edomitic origin. The setting of the story, the personal names and the author's theology have been cited in support of this hypothesis. The folk-tale upon which the poem was doubtless based may have come from the Edomites. This would account for the setting and the names. We know too little about the Edomites to speak confidently of their theology, but the main problem of our book grows directly out of the historical situation of post-exilic Judaism.

Whatever may be said of the form and relationships of Job, there can be no difference of opinion regarding the sublimity of the style, the vividness and beauty of the figures, the keenness of the author's insight into human nature and the depth and earnestness of his thinking. His work has a universal quality and a note of reality which can be found only in the greatest literature.

Date, Integrity and Authorship.—"The tendency among recent scholars is to put the book of Job not earlier than the 5th century B.C. There are good reasons for putting it in the 4th century." Its place in the history of the problem of suffering among the Hebrews (*see* below) favors this date. There are also indications of literary dependence (*cf.* Job vii. 17 and Ps. viii. 4; Job iii. 3–12 and Jer. xx. 14–18). On the relation between Job and Is. xl. *seq.* scholars are not agreed. Ezekiel (xiv. 14, 20) mentions Job by name, but the reference may be merely to a hero of popular tradition.

Not all of the book was produced in the 4th century. The story may have circulated in both oral and written form considerably earlier. The opening and closing narratives of our book of Job were probably parts of such a composition, for they imply a conversation between Job and his friends quite different from the present dialogue. Apparently the poet has adapted the older book to his purpose by simply removing the middle portion and putting his own work in its place. There are also passages which must be later than the main body of the book. The speeches of Elihu "destroy the dramatic effect by introducing a lengthened break between Job's challenge and the answer of God." In style they differ from the rest of the book, while the arguments largely reproduce those of the friends. Furthermore there is no reference to Elihu anywhere else in the book. Most critics agree, therefore, that the whole section is a later addition. "The position taken by Elihu is almost that of a critic of the book"—perhaps this reveals the purpose for which he was created.

The lovely lyric on wisdom in ch. xxviii. is complete in itself and is out of place where it stands or anywhere else in the book. We may be grateful, however, to the editor, who, by interpolating it, preserved it for us. Less perfect, though interesting and impressive, are the descriptions of Behemoth and Leviathan in ch. xl. 15–xli. They destroy the force of the second divine speech, making it only a weaker copy of the first, and if they are joined to ch. xxxviii.–xxxix. as one speech, their inferiority to those chapters becomes all the more evident. Possibly they were added by a writer who supposed that something had been lost from the second speech, which is very brief without them, and therefore undertook to restore the missing material after the pattern of the preceding chapters. In the third round of the dialogue the speech of Bildad is short, and Zophar has none. Moreover in some of the passages attributed to Job he says precisely what his friends have been urging against him. Both difficulties are met by rearranging the text. The dislocation, if not accidental, may have been designed to represent Job as convinced by the orthodox arguments of his friends. Possibly the book has suffered still further interpolation and dislocation. Several scholars have undertaken to restore the original poem. Only continued study can determine how far their schemes are justified, but in general they assume an almost incredible amount of alteration by scribes and editors.

Of the author we know only what we can infer from his work. That he was a lover and a keen observer of nature is evident. He was also conversant with the conditions and problems of human life, in the desert and in the city, and had either travelled widely or listened attentively to the reports of travellers. What he heard and saw, moreover, entered into his soul; he thought and felt profoundly. And he had a divine gift of utterance. Beyond this we cannot safely go. Like many others whose work is immortal, he himself is forgotten.

History of the Problem.—So long as primitive man believed that the beings to whose anger he attributed his misfortunes were capricious and irresponsible, there was no problem of divine justice. Even when men worshipped an ethical deity, who dealt with them according to their deeds, they might explain undeserved calamities by the malignity of other gods or spirits. Only when they believed their god to be omnipotent was this impossible. The problem of divine justice therefore presupposes ethical monotheism.

The early Hebrew prophets and historians felt no problem, because they thought in terms of the nation, which had sinned. The problem of individual retribution emerges with Jeremiah. Unable to understand why his fidelity only brought persecution, while sinners were at ease, Jeremiah found strength to endure

in consecration to his task and communion with God. Many of the Psalms emphasize the oppression of the righteous by the wicked, though it is not clear whether individuals are meant or Israel and its enemies. The Psalmists complain of God's apparent indifference, but neither question nor defend His justice. Intermediate between national and individual retribution was the doctrine that men suffered for their fathers' sins. This seemed to explain undeserved suffering; but to meet the objection that it was unfair, Ezekiel unequivocally asserts exact individual retribution. Whether the book of Ezekiel belongs to the exile or a later period, this doctrine was an accepted tenet of post-exilic Judaism and as such underlies all the Wisdom literature. It sets the problem for the book of Job.

When experience did not verify the doctrine, most of the Jews found comfort in believing that undeserved affliction and happiness were temporary (Ps. xxxiv., xxxvii., lxxiii.). The prosperity of the wicked was explained as part of God's plan for their destruction (Ps. xcii.); no explanation was attempted for the suffering of the faithful. For the nation promises of renewed glory were made by Ezekiel and Isaiah xl. *seq.* The latter also had an explanation for Israel's afflictions: as the Servant of the Lord, Israel suffered that the Gentiles might be saved. But apparently this was not generally accepted. Ps. xxii., though dependent upon Is. xl. *seq.*, has not the doctrine of vicarious suffering, nor is the idea developed in any of the later books of the Old Testament.

The period following the exile was one of hope deferred. Haggai and Zechariah traced the people's misfortunes to failure to rebuild the temple; when this was done, they repeated the earlier promises. Scepticism was evidently rife when Malachi wrote, but again we have only promises without explanation. Habbakuk complains of Israel's oppression by a wicked nation, and the answer is that deliverance will come at the appointed time. Continued frustration forced the Jews to look beyond this life. In Ps. xlix. and lxxiii. the righteous sufferer takes refuge in a relationship with God which is apparently regarded as outlasting death. This conception is not found elsewhere in the Old Testament. More congenial to Judaism was the idea of resurrection, which played a prominent part in the apocalyptic hopes of the Greek and Roman periods. Only the beginnings of this development are found in the Old Testament (Is. xxvi. 19; Dan. xii. 2). In Daniel Israel is still the primary object of concern, though righteous and wicked within the nation are distinguished and the ideal of martyrdom is introduced. The book of Ecclesiastes shows that there were some who had no satisfying hope for the future. They could meet the problem only by resignation to the inevitable and unquestioning enjoyment of the good things in life, with a reasonable degree of piety and virtue.

While still largely attributing Israel's sufferings to the sins of the people and their fathers, a few books suggest another explanation. Zechariah represents "the Satan" as a supernatural enemy of God's servants. In the extra-canonical book of Enoch the nations are governed by angels who are responsible for wrongs done to Israel, and this may be the meaning of the "gods" of Ps. lxxxii. 1, 6 *seq.* (*cf.* lviii. 1, RV margin), the "high ones" of Is. xxiv. 21, and the "princes" of Dan. x. 13, 20; xii. 1. Doubtless all this reflects popular theology. In effect it is a reversion to primitive conceptions.

Purpose and Teaching.—The book of Job is a poem, not a treatise. "In the history of a soul, rather than the discussion of a problem, lies the supreme interest of the book" (Peake). But the author is interested in the problem. "No Hebrew writer is merely a poet or a thinker. He is always a teacher." Only the individual aspect of the problem is considered; like the other Wisdom writers, the poet is not concerned with the nation. According to the prologue Job's affliction was a test of his piety. That religion can be disinterested is the moral of the story (as, doubtless, of the original folk-tale). It is not, however, the theme of the book. Nor is the testing of the righteous the poet's own solution of his problem. The implication that what is inexplicable on earth is not so in heaven suits his purpose, but the function of the prologue in the present book is to show the reader in advance that the friends' explanation of Job's suffering was unfounded. The conception of "the Satan" (adversary), which is precisely that noted in Zechariah, was probably not taken literally by the poet. The dialogue revolves about the doctrine of retribution. Job's friends admitted that wicked men prospered but regarded such prosperity as short-lived. Adversity might lead to repentance, but one would not suffer if he had not sinned. "Job agreed that afflictions came directly from the hand of God, and also that God afflicted those whom He held guilty of sins. But his conscience denied the imputation of guilt, whether insinuated by his friends or implied in God's chastisement of him."

Modern scepticism, assuming God's goodness, questions His omnipotence. Job's God is the irresistible Power manifest in nature and destiny; what is doubtful is His justice. Having formerly believed that God was good to him, Job tries to reconcile God's past and present dealings with him. He can see no benevolence behind his affliction; therefore he concludes that what seemed kindness was but cruel deceit, designed to make his fall more crushing. It is a frightful thought, but he knows he is guiltless. Gradually his passionate sincerity leads him into a deeper spiritual experience. Faith reasserts itself: "he appeals from God to God, and beseeches God to pledge Himself that he shall receive justice from God (xvi. 19; xvii. 3)." The passage in which his growing assurance reaches its triumphant climax (xix. 25 *seq.*) seems to imply a vindication after death, but the text is uncertain. Once before (xiv. 13) the idea of a resurrection has appeared, only to be rejected. Whether Job here adopts it must remain an open question; in any case the hope of future recompense does not solve Job's problem. Some commentators find a solution in the speeches of Elihu, but these were not a part of the original book, and what Elihu really adds to the debate "is not his position but his arguments." Even in the divine reply to Job, where, if anywhere, we should expect to find the author's view of the problem, God only rebukes Job's presumption and shows him his ignorance. The epilogue provides his vindication, though it does not state that he has lived righteously but that he has spoken rightly of God.

Taking the book as a whole, we must admit that its meaning is not altogether clear. The many interpretations offered have just one point in common: certainly the doctrine of exact retribution in this life is definitely rejected and refuted. Both its incompatibility with the facts of life and its evil consequences are demonstrated. In the friends it produces a false interpretation of Job's misfortunes which makes them miserable comforters indeed. In Job himself it leads to a denial of God's justice and a feeling of estrangement from Him. Many believe that this negative teaching exhausts the author's purpose. It is quite enough to mark the book as one of the greatest products of Hebrew thought.

More than this, however, is involved in the poem. No explanation of the mystery is given because man is not in a position to understand the government of the universe. The poet does not tell us whether or not he believes that God cares for the individual, though he forcibly suggests that the universe does not exist for man alone. What he emphasizes is that God's ways are beyond all human comprehension. It is presumptuous to suppose that man is or ought to be able to explain them.

But if an explanation is impossible, it is also unnecessary. Job does not understand, but he sees God. Unfortunately the significance of his final confession is uncertain; it hinges on the meaning of xlii. 6, which in the present text is ambiguous, if not unintelligible. Whether it implies loving trust or mere submission we cannot tell. In either case Job has had a personal experience of the reality and majesty of God. Thus the poet shows how the heart may find peace, though neither tradition nor speculation can answer the questions of the intellect. The primary purpose of the book is therefore practical, including comfort for those who suffer undeservedly, emancipation from a dogma which puts an unnecessary strain upon their faith and hardens their friends against them, realization of the intellectual presumption of questioning God's justice, and satisfaction in immediate personal communion with Him.

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JOB ANALYSIS. This term, widely used since the World War, was applied by the personnel division of the American army to the analysis of occupational activities into their components, by means of which job specifications were drawn up showing exactly what a worker in each occupation was expected to do and be. On the basis of these specifications men were selected to fill positions such as those of chauffeur, gunsmith, etc. After the war the concept of job analysis was carried into industry, education and allied fields. Under the term "vocational analysis," investigators in vocational guidance have for some years analyzed vocational activities into their component parts so as to secure a basis on which a person can choose a vocation. A pioneer study of this nature, *The Machinist,* was made in 1910 by Frederick J. Allen for the Vocation Bureau of Boston, Massachusetts. Similar studies have followed in a number of other communities and for a number of other occupations. Again, the technique, if not the name, was used by the efficiency engineers of the early part of the 20th century. Taylor and others, in endeavouring to discover the unnecessary motions made by workers in industrial operations and in establishing standards of efficient performance, made analyses, dividing each job into units as minute as possible. The U.S. Employment Service, following its expansion under the Wagner-Peyser Act (1933), prepared job descriptions for many jobs which are used in selecting applicants.

Community Surveys.—Educators have used the term and the method in seeking to establish a scientific basis for organizing and teaching courses in vocational training. In 1914 the city of Richmond, Va., organized a survey of the community in order to discover its vocational opportunities and needs. Similar surveys followed in other cities, one of the most thorough being that of Cleveland. These surveys employed the method of job analysis, and their reports contain fairly detailed classification and descriptions of the operations involved in the various vocational activities in the communities. In addition to these surveys, analyses have been made in a more or less laboratory manner, having as their aim the dissection of vocational activities for the purpose of formulating methods of giving instruction.

Analyses by even more strict laboratory procedure have been carried out, chiefly by psychologists, in the effort to discover facts about learning which could be put to use in the training of apprentices. Bryan and Harter investigated telegraphing and discovered the rate at which learners could receive and send at various stages of their progress. W. F. Book made a similar study of typewriting. Wells and, later, Hoke investigated, among other things, the nature of the errors which a typist makes. On the basis of these facts a teacher of typewriting can direct a learner in the avoidance of errors and the more rapid acquisition of skill. Psychological analyses in the form of occupational ability patterns were developed by the University of Minnesota Employment Stabilization Research Institute (1931–35). These patterns, presented in the form of profiles, resulted from a statistical study of test scores made by groups of workers in various occupations.

Procedure.—Analysis should be made from a number of points of view. Especially is this necessary when made for the purpose of drawing up job specifications or qualifications that must be possessed by the worker. Economic questions should be answered, such as how much money may be earned, how the demand for workers fluctuates, etc. From the physical point of view the analysis should specify the movements that the worker makes, the weights to be lifted and the like. Physiological data should be gathered showing such things as preferable age, height, sensory acuity and also liability to accident or to occupational disease. The psychological phase of the analysis involves a statement of the mental processes involved in the work, the degree of intelligence required, amount and kind of education and temperamental requirements. From the sociological point of view, enquiry should be directed toward the class of workers engaged in the occupation, their nationality, family status, etc. Thus true analysis requires and results in a complete view of occupational activity.

Prominent Errors.—In carrying out such complex investigations some mistakes are made, such as those due to the temptation to rely on opinions obtained by questioning workers and their employers. This "questionnaire method" has received severe condemnation from scientists and should be used sparingly by investigators in the field of job analysis. In the first place, it yields chiefly opinions showing what some one thinks the work is like. Secondly, it usually states the components of the job in general, abstract words such as "accuracy," "quickness" and the like, which do not characterize any occupation in particular, being required in hundreds of different jobs.

Too great dependence on psychological tests is another error. There is a procedure whereby a number of psychological tests are chosen which seem to resemble the work being analyzed. Those tests in which the good workers excel and the poor workers fall short are considered to call forth the same mental activities as those required in the job and to constitute therefore the analyzed components of the work. As a matter of fact, such an assumption is not valid. The activities called forth by the tests are merely test-activities and nothing more.

Scientific Method.—In formulating a procedure which promises scientifically valid results, and will be applicable regardless of the ends for which an analysis may be made, the underlying requirement is that the procedure must conform to the rigid technique of scientific method. It must be unbiased and dominated only by the desire for the exact determination of conditions. Thorough analysis can be carried on only by trained scientists, though they must have the co-operation and assistance of experts in the occupational fields as well.

In conducting an analytic investigation the first task is to survey the entire vocational field in which the activity lies, to determine its relation to the social organization, then to divide it into its occupational sections. These are to be described in terms of their relations with each other and their relation to the whole field. Then each occupational section is described and divided into smaller units. This division may be made by mere observation, and the operations may at first be described in qualitative terms, but the descriptions should also be couched in quantitative terms.

Use of Measurements.—Measurement is an indispensable part of the process. The early quantitative analyses of F. W. Taylor were made with a stop-watch reading in fifths of a second. As the principle of measurement has become more widely extended, however, there has come a demand for measurements of greater precision, made with instruments used in the psychological laboratory for the measurement of intervals of time as small as one-thousandth of a second. For example, pictures have been made of the eye-movements made by proof-readers. The chronocinematographic method of F. B. and L. M. Gilbreth offers much promise for the exact measurement of motions and time intervals involved in work operations. Motion pictures of the worker at his work are taken, in which is placed a clock that measures time in thousandths of a second. The background in each picture is cross-sectioned into squares of predetermined size. By examining the exact position of the worker in each succeeding picture in relation to these squares and to the time-recorder, it is possible to determine how much he has moved and at what rate.

For developments in Great Britain *see* the article on FATIGUE IN INDUSTRY.

Some indication of the fundamental part which job analysis can play will be furnished by this list of ends which have motivated the various analyses that have been made: elimination of waste motions; determining standard day's tasks; wage setting; figuring accurate costs; arranging grades and routes of promotion; inventing trade tests; establishing a curriculum for vocational education; determining methods of teaching vocational activities; securing a

basis for choice of a vocation; securing job specifications for the selection of workers. *See* also INDUSTRIAL PSYCHOLOGY; INTELLIGENCE TESTS.

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JOBBER, an individual, firm or corporation engaged in wholesaling as a merchant middleman, *i.e.,* a middleman who buys merchandise outright and resells on his own account, usually to the retailer. Normally, the jobber performs all of the principal wholesale functions: (1) assembling, storing, and delivering merchandise stocks, (2) selling stocks through a regular sales force, (3) extending credit to customers, (4) providing retailers with advice and assistance in matters of stock turn, stock control, selling methods, and other aspects of retail store management, (5) assuming risks of price fluctuation, wastage, and deterioration. Hence the term "jobber" can seldom be distinguished from the term "wholesaler" upon the basis of functional differences. Originally, of course, the term "jobber" denoted a wholesale merchant middleman who specialized in buying and selling odd, isolated, or "job" lots, while the term "wholesaler" denoted a wholesale merchant middleman who specialized in buying and selling more or less complete offerings and who maintained continuous stocks. This distinction has almost completely disappeared in the marketing of manufactured consumers' goods. The jobber (or wholesaler) occupies a most significant place in the marketing of groceries, hardware, drugs, and dry goods. For years the bulk of such goods has passed through the hands of the jobber (or wholesaler) and hence these four staple lines of merchandise are often referred to as "jobbing lines." Census figures indicate that approximately one-half of all the consumers' goods manufactured in the United States is handled by jobbers (or wholesalers) while approximately 18% of all the industrial goods is also sold through the jobber (or wholesaler). (G. R. C.)

JOBBER (STOCK EXCHANGE). Every member or applicant for re-election, admission, or re-admission to the London Stock Exchange must declare to its committee whether he proposes to act as a broker, a dealer, or a clerk. No member or authorized clerk is allowed to carry on business in the double capacity of broker and dealer. A dealer may not deal for or with a non-member of the Stock Exchange: he cannot, that is to say, buy or sell for a client outside the Stock Exchange. Partnerships between brokers and dealers are prohibited. The Stock Exchange dealer is nearly always termed a jobber, but the Stock Exchange rules, from which the foregoing statements are extracted, hardly use the word jobber, familiar as it is through use during more than a century. Put simply, the London Stock Exchange rules forbid jobbers to deal with anyone except a broker, or an authorized clerk, a fellow-jobber, while a broker acts as an agent between members of the public and members of the Stock Exchange.

The Jobber a Principal.—While the broker acts as intermediary or agent, the jobber's status is that of a principal. He buys from one man the securities that he hopes to sell to another; or he sells in the expectation of being able to replace the stock or shares at a lower figure. He has to deal in the dark, for the broker who approaches him with business in those shares in which he, the jobber, specializes, does not say whether the order is to buy or to sell. This is the reason for the double prices always quoted in the Stock Exchange. The jobber, in making a price, thereby commits himself to buy at the lower or to sell at the higher of the two prices mentioned. He is not compelled to make a price. In times of panic, when sellers greatly preponderate, it might be financial suicide for a jobber to continue making prices in stocks that he could feel practically certain would be sold to him, though he himself had little chance of finding buyers. In booming markets, he hesitates to continue making prices in some shares of which there may be only a scanty supply, since the brokers, acting for the public, would insist upon buying if he made a price. In the case of a slump, the jobber might find himself with much more stock than he wanted; in a boom, he might be left in the position of having sold shares that he could not get back again.

The Jobber's Book.—Such being the possible conditions in a Stock Exchange slump or boom, it will be seen that the jobber makes a book, and that this book may lead either to profit or to loss. The prices that the jobber makes are regulated mainly by the public supply and demand. If the jobber finds himself being left with more shares than he sells, he lowers his price; if he keeps on selling shares in response to demand, he puts it up, hoping to induce people either to buy from him or to sell to him, as the case may be. He is running risks all the time, through the system of making a price and not knowing whether he will be called upon to take, or to supply, the stock. If, having sold £500 War Loan to a fellow-member, he could be certain that his next bargain would be the purchase of £500 of the same stock at a fraction below the price of his previous sale, all would be plain-sailing; but uncertainty waits upon every bargain that a jobber books. There may be a profit: the double price gives the jobber room in which to turn round. On the other hand, the transaction may easily end in loss to the jobber. He takes the rough with the smooth and hopes that the profits will outweigh losses. If they did not, there would soon be no jobbers; but in a market where prices are moving rapidly under the influence of substantial public orders to buy or sell, or both, the jobber stands to be "shot at," as the expressive phrase goes. He frequently has the unpleasant experience of finding that, at the end of a day's heavy business, all the profits that he has made on jobbing are swallowed by a loss on his book: he may have bought more, on balance, than he has sold and the price has moved down against him; or he may have sold, and been unable entirely to replace, shares that have risen in price at the end of the day.

The Jobber a Specialist.—Whereas the Stock Exchange broker receives orders in stocks and shares of every description, the jobber confines his book to a specialized market. If he deals in Coats, he will not touch Canadian Pacifics. The dealer in Shell Transports has nothing to do with British Celanese. Where there are partners in a firm of jobbers, some of them will probably act in various markets, but one man confines his attention to a particular class or set of securities. He studies the companies, knows the brokers who are likely to be buyers or sellers of his own special shares, and may keep a stock of these shares on his book for the brokers who, he hopes, will come and buy them from him on behalf of their clients. Experience gives him a sense of possible movements, rise or fall; though, in practice, even experience can prove a very misleading guide. As a principal, liable to make either loss or profit, the jobber is not tied down by any official scale of minimum remuneration. He makes what he can, competition serving to keep the "turns" within reasonable limits. The jobber's life involves more risks, more excitement, and more stagnation—according to the state of public interest in the jobber's market—than the life of a broker. The jobber has shorter hours than the broker, his expenses are on a more modest scale, and the drudgery is much less; but the fact that a census of London Stock Exchange members usually reveals about the same number acting in each class proves that the profits are divided more or less evenly between brokers and jobbers. (W. L.)

JOBST or JODOCUS (*c.* 1350–1411), margrave of Moravia, was a son of John Henry of Luxemburg, margrave of Moravia, and grandson of John, the blind king of Bohemia. He became margrave on his father's death in 1375, and was chosen German king on Oct. 1, 1410, in opposition to Sigismund, who had been elected a few days previously. He died on Jan. 17, 1411.

See J. Heidemann, *Die Mark Brandenburg unter Jobst von Mähren* (1881); J. Aschbach, *Geschichte Kaiser Sigmunds* (1838–45).

JOB'S TEARS, the popular name for *Coix lacryma-jobi,* a species of grass, of the tribe *Maydeae,* which also includes the maize (*see* GRASSES). The seeds, or properly fruits, are

contained singly in a stony involucre or bract, which does not open until the enclosed seed germinates. The young involucre surrounds the female flower and the stalk supporting the spike of male flowers, and when ripe has the appearance of bluish-white porcelain. Being shaped somewhat like a large drop of fluid, the form has suggested the name. The fruits are esculent and the involucres are used for making necklaces and other ornaments. The plant is a native of India, but is now widely spread throughout the tropical zone. It grows in marshy places; and is cultivated in China, the fruit having a supposed value as a diuretic and anti-phthisic. Forms of it are used as cereal foods in parts of eastern Asia and in the Philippines where it is called *adlay*.

JOCASTA: *see* OEDIPUS.

JOCKEY, a professional rider of race horses, now the current usage (*see* HORSE-RACING AND BREEDING). The word is by origin a diminutive of "Jock," the northern or Scots colloquial equivalent of the name "John." Also a term employed in sport and elsewhere, as "jockeying for position," *i.e.,* manoeuvring.

JODELLE, ÉTIENNE, seigneur de Limodin (1532–1573), French dramatist and poet, belonged to the Pléiade (*see* DAURAT) and proceeded to apply the principles of the reformers to dramatic composition. He aimed at creating a classical drama that should be in every respect different from the moralities and *soties* then occupying the French stage. His first play, *Cléopâtre captive,* was represented before the court at Reims in 1552. Jodelle took the title rôle, and the cast included his friends Remy Belleau and Jean de la Péruse. In honour of the play's success the friends organized a little fête at Arcueil when a goat garlanded with flowers was led in procession and presented to the author—a ceremony exaggerated by the enemies of the Ronsardists into a renewal of the pagan rites of the worship of Bacchus. Jodelle wrote two other plays, *Eugène* and *Didon se sacrifant.* He died in poverty in July 1573. His works are collected (1868) in the *Pléiade française* of Charles Marty-Laveaux.

JODHPUR or **MARWAR,** the largest Indian state in the Rajputana agency. Area, 36,120 sq.mi. Pop. (1941) 2,555,904. The general aspect of the country is that of a sandy plain, divided into two unequal parts by the river Luni, and dotted with picturesque conical hills, attaining in places an elevation of 3,000 ft. The river Luni rises in the sacred lake of Pushkar in Ajmere, and flows through Jodhpur in a south-westerly direction till it is finally lost in the marshy ground at the head of the Runn of Cutch. It is fed by numerous tributaries and occasionally overflows its banks, fine crops of wheat and barley being grown on the saturated soil. The famous salt-lake of Sambhar is situated on the borders of Jodhpur and Jaipur, and two smaller lakes of the same description lie within the limits of the state, from which large quantities of salt are extracted. Marble is mined in the north of the state and along the south-east border. Marwari traders are an enterprising class to be found throughout the length and breadth of India.

The principal crops are millets and pulses, but wheat and barley are largely produced in the fertile tract watered by the Lūni river. The manufactures comprise leather boxes and brass utensils; and turbans and scarfs and a description of embroidered silk knotted thread are specialities of the country.

The ruling house belongs to the Rathor clan of Rajputs, and claims descent from Rama. After the downfall of the Rathor dynasty of Kanauj in 1194, Sivaji, the grandson of Jai Chand, the last king of Kanauj, entered Marwar on a pilgrimage to Dwarka, and laid the foundation of the state, but it was not till the time of Rao Chanda, the tenth in succession from Sivaji, that Marwar was actually conquered. His grandson Jodha founded the city of Jodhpur, which he made his capital. In 1561 the country was invaded by Akbar, and the chief was forced to submit. Aurangzeb invaded Marwar in 1679, plundered Jodhpur, sacked all the large towns, and commanded the conversion of the Rathors to Mohammedanism. This cemented all the Rajput clans into a bond of union, and a triple alliance was formed by the three states of Jodhpur, Udaipur and Jaipur, to throw off the Mohammedan yoke. One of the conditions of this alliance was that the chiefs of Jodhpur and Jaipur should regain the privilege of marriage with the Udaipur family, which they had forfeited by contracting alliances with the Mogul emperors, on the understanding that the offspring of Udaipur princesses should succeed to the state in preference to all other children. The quarrels arising from this stipulation lasted through many generations, and led to the invitation of Mahratta help from the rival aspirants to power, and finally to the subjection of all the Rajput states to the Mahrattas. In 1818 Jodhpur was taken under British protection. In 1843, the chief having died without a son, and without having adopted an heir, the nobles and state officials were left to select a successor from the nearest of kin. Their choice fell upon Raja Takht Sinh, chief of Ahmednagar. This chief, who did good service during the Mutiny, died in 1873. Since 1896 there was a succession of minorities, during which Sir Pertab Singh of Idar carried on the government of the state as regent. The imperial service cavalry formed part of the reserve brigade during the Tirah campaign, and were on active service during World War I. The chief is a maharaja, and his salute is 17 guns.

The city of JODHPUR is 64 mi. by rail N.W. of Marwar junction, on the Rajputana railway. Pop. (1941) 126,842. It was built by Rao Jodha in 1459, and from that time has been the seat of government. It is surrounded by a strong wall nearly 6 m. in extent, with seven gates. The fort, which stands on an isolated rock, contains the maharaja's palace, a large and handsome building, completely covering the crest of the hill on which it stands, and overlooking the city, which lies several hundred feet below. The city contains palaces of the maharaja, and town residences of the *thakurs* or nobles, besides numerous fine temples and tanks. Building stone is plentiful and close at hand, and the architecture is solid and handsome. Five miles north of Jodhpur are the ruins of Mandor, the site of the ancient capital of the Parihar princes of Marwar, before its conquest by the Rathors.

The Jaswant college is affiliated to the B.A. standard of the Allahabad university. To the Hewson hospital a wing for eye diseases was added in 1898.

JOEL. The second of the "Minor Prophets" in the Old Testament.

Contents.—The book falls into two parts: (*a*) i. 2–ii. 17, (*b*) ii. 18–iii. 21. (*a*) The occasion of the prophecy is a plague of locusts. Addressing the people the prophet vividly describes the calamity which threatens complete destruction owing to repeated ravages of the locusts: even the Temple services cannot be maintained because all agricultural produce is destroyed. In this visitation of locusts the prophet sees signs of the approaching "Day of Yahweh" (i. 15): there is no hope save in repentance and prayer, so the prophet urges priests and people to penitence and intercession that the "destruction from the Almighty" may be stayed. He bases his exhortation on an appeal to the obvious facts (i. 16–18). In ii. 1–17 the call to repentance and prayer is repeated and emphasized by a fuller description of the locust plague. This second description is influenced by experience of the scourge already well-known; the stress is laid not upon the result of the visitation but upon the irresistible terror of the approaching hordes. The locusts of this future visitation are the "army" of Yahweh used by him as his agents in "the Day of Yahweh" to execute final judgment. It is not too late to avert destructive judgment by solemn fast and penitence: it must be sincere repentance —"rend your heart and not your garments."

(*b*) Between ii. 17 and 18 there is an interval, during which it is left to be understood that the call to repentance (ii. 12–17) had been obeyed. (The verbs in ii. 18 are in the past tense, so R.V., not future as A.V.) The second part of the book (ii. 17–iii. 21) opens with Yahweh's promise to remove the plague of locusts and restore fruitful seasons. In the new prosperity of the land the union of Yahweh and his people will be sealed anew, spiritual gifts will descend upon them so that *all* will be endowed with clearer perception of divine truth. Signs in heaven and earth announce "the Day of Yahweh." In the crisis there will be no terror for the Jews, they will be delivered and restored; judgment will overtake the nations doomed to destruction for their oppression of Yahweh's people. A digression in prose (iii. 4–8) follows in which special mention is made of the doom of Phoenicia and Philistia.

Then (iii. 9–17) the nations are summoned to prepare for war, not against the Jews but against Yahweh and his supernatural warriors, by whom they will be annihilated. In contrast to the fate of the nations, Yahweh will be a "refuge unto his people," who, by his intervention, are set free to enjoy the benefits he will send. Henceforth Judah and Jerusalem will be secure.

Interpretation.—There has been difference of opinion as to whether the description of devastation by the locusts is to be regarded as literal or allegorical. Is the visitation of locusts with which the book begins historical, or is it a figurative description of an event yet future? In the latter case: are the locusts real locusts (in the future) which supply the imagery of the prophet's message? The allegorical interpretation is found in the Fathers, and was held by Pusey, who considered the book to have been written before Amos. Hilgenfeld, accepting a late date, took the four swarms of locusts to represent Persian invasions. Merx has suggested that the locusts are neither real nor symbolic but ideal, and the rest of the book a late compilation from the prophets. A distinction between the two parts of the book is made by Duhm: according to his view i. 1–ii. 17 deals with a historical visitation of locusts, and ii. 18–iii. 21 is a long apocalyptic expansion from the Maccabaean age. Sellin modifies this view: he considers that Joel used an earlier poem dealing with a historical plague of locusts; this poem, from the 1st century after the Exile, was transformed by Joel into an apocalypse. This transformation was based upon an older tradition which pictured locusts as a kind of demonic army forming one of the eschatological plagues (Gressmann).

A literal interpretation of the locust swarms is generally held by modern authorities and there is a tendency to regard the apocalyptic characteristics as interpolations into the original work of Joel. An argument advanced against the literal interpretation is the description of the locusts as "the northerner" (ii. 20, *haṣephōnī*). Locusts as a rule enter Palestine from the south or south-east; thus it is considered that "the northerner" can only refer to an invading army from the north, *e.g.*, Assyrians, Scythians, Babylonians. But it is evident from the rest of the verse that "the northerner" must refer to locusts. The expression has no connection with the origin of the locusts; it is an epithet denoting the dread which Hebrew thought associated with the north, the region of the uncanny and mysterious. By a common usage the etymological sense of "the northerner" is discarded and the term has assumed a symbolical significance—any agent through which calamity came (Wade).

With the possible exception of iii. 4–8 it appears unnecessary to regard the book as other than the work of one author. At a time when real locusts had brought calamity upon the land Joel calls the inhabitants to repentance. He then turns from the present to the future and describes "The Day of Yahweh" in language suggested to him by experience of actual locusts. The locusts of ii. 1–17 are eschatological, they usher in "the Day of Yahweh." The people repent either in direct response to the prophet's call, or, possibly, in the ideal future to which the prophet looks, and obtain mercy from Yahweh. Thus, in the ideal future as Joel wished to see it, when "the Day of Yahweh" comes it will bring punishment to Israel's foes, to Israel relief and hope.

Date.—The absence of any statement which serves to indicate the precise occasion of the prophecy has caused the book of Joel to be assigned to dates ranging over a period from 835 B.C. to 360 B.C. Many allusions are furnished by the general background of the book, but these are such as lend themselves to explanation in the circumstances of different periods.

Credner in 1831 argued that the conditions implied by internal evidence gave sufficient justification for dating the prophecy in the early days of Joash, king of Judah, 837–801, during whose minority the government was in the hands of Jehoiada the priest (2 Kings xi. 4–21). A division of the book has been suggested by Vernes and Rothstein, assigning i. and ii. 1–27 to the time of Joash, ii. 28-32 and iii. to the post-exilic period. On account of linguistic and other affinities with Jeremiah, König has placed the date in the last years of Josiah. Each of these views is open to serious objection in its interpretation of the evidence and fails to give a satisfactory explanation of a number of passages.

A post-exilic date was first proposed by Vatke; this view is now generally accepted. (Driver, Gray, G. A. Smith, Wade, Merx, Marti, Nowack, Wellhausen.) The style and language of the book have characteristics similar to the earlier prophetic books; but there are late elements, such as the general apocalyptic conceptions, which mark Joel as the work of a post-exilic writer who was acquainted with and influenced by earlier literature. Though in iii. 1 the phrase "bring again the captivity of Judah . . ." may be rendered "retrieve the fortune of Judah . . .," the statement (iii. 2, 3) that the Jews have been dispersed among the nations has no adequate explanation in any event except the overthrow of Judah in 586 and its subsequent effect upon the fortunes of the people. It is therefore necessary to seek a period after the exile when there is an undivided nation which maintains the true worship of Yahweh in the Temple. A time when there is no king: the elders and priests are the leaders of the people, Judah has suffered at the hands of foreign nations; these are not Assyrians nor Babylonians but the people of Tyre, Sidon, Philistia and Greece. Conditions such as these are only satisfied at a period after the settlement of the restored community at Jerusalem; and, since the worship is associated with the Temple, it is implied that the second Temple is in existence. Thus Joel must be later than Haggai and Zechariah i.–viii. (Driver) and cannot be earlier than *c.* 520 B.C. (Wade). The reference to "the wall" in ii. 7, 9 seems to imply that the wall of Jerusalem has been rebuilt and presupposes that the book was written after Nehemiah (*c.* 445 B.C.). Omission of any mention of the Persians as oppressive foes is due to the leniency with which they usually treated the Jews. It was not until the reign of Artaxerxes Ochus (358–337) that Jewish subjects were ill-treated: a period subsequent to this is not supported by internal evidence.

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JOFFRE, JOSEPH JACQUES CÉSAIRE (1852–1931), French soldier, was born Jan. 12, 1852, at Rivesaltes, at the edge of the eastern Pyrénées. According to a tradition preserved in the family, his stock is Spanish and noble, and its proper name is Goffre. His great-grandfather fled from Spain for political reasons, came to France, gave his name the French spelling of Joffre, and became a merchant. The grandson of this first Joffre adopted the trade of a cooper. He had 11 children, one of them being the future victor of the Marne.

The studies of young Joffre at the École Polytechnique were interrupted by the Franco-German War and he took part in the defence of Paris in 1870. Afterwards he passed out from the Polytechnique into the engineers and worked on the fortification of Paris. In 1876 he was promoted captain. The loss of his wife so affected him, however, that he applied for a transfer to Indo-China, where he took part in the occupation of Formosa in 1885 and remained three years at Hanoi as chief of engineers. In 1888 he returned with Gen. Mensier to Paris. In 1889 he entered the railway regiment. In 1892 he was sent to Senegal to build a railway from Kayes to Bafoulabe. At the end of 1893, a column commanded by Col. Bonnier marched on Timbuktu via the Niger. Joffre, who was a major, was ordered to form a second column, which was also to march to Timbuktu by the left bank of the river. He left Segou on Dec. 27, to receive the news at Goundam at the end of January that Col. Bonnier had been murdered on the 15th. Nevertheless, he continued his march on Timbuktu undaunted, and entered the town on Feb. 12, 1894, after marching 813 kilometres. Some years later he went to Madagascar to form the base at Diego-Suarez. He was appointed general of brigade in 1900 and general of division in 1905. While commander of the 2nd Army Corps at Amiens he was called to the Conseil Supérieur de la Guerre in 1910. This council, re-established in 1872, consisted of the generals who in time of war would have the chief commands. Gen. Joffre was entrusted with the direction of the lines of communication.

Under the system then existing, the vice-president of the Higher Council became in time of war commander-in-chief of the armies in the field. But in time of peace he had very little authority over his future subordinates. He could not determine either promotion or commands. The real authority lay with the chief of general staff of the army. Gen. Michel, vice-president of the Higher Council, resigned in July 1911, and the minister of war, M. Messimy, decided to unite the functions of vice-president and those of chief-of-staff of the army in one person, so that in the eventuality of war the chief of the general staff would become commander-in-chief. Who was to exercise these united duties, which constituted a position of considerable power? M. Messimy thought of Gen. Pau, who refused on the ground that he had only 18 months' more service on the active list. Gen. Galliéni was due to pass into the reserve even sooner. M. Messimy's choice accordingly fell on Joffre, who was only 59 years old, and had therefore five years more on the active list.

For three years Joffre exercised complete authority over the army. He had laid his plan of campaign, known as Plan 17, before the Conseil Supérieur on April 18, 1913. Germany having declared war on France on Aug. 3, 1914, he took up the post of commander-in-chief on the 5th. From this day on, the history of his life for more than two years was that of the War itself. This silent general, jealous of his authority but undismayed by the most tragic events, had to bear on his broad shoulders a weight which only his coolness and energy enabled him to sustain. After having attempted in vain to throw himself on the flank of the advancing Germans, he was obliged to withdraw his left wing a considerable distance. He resumed the offensive on Sept. 6, and threw the Germans back to the Aisne in the memorable battle of the Marne. He attempted then to turn their right wing, a frustrated manoeuvre which ended with the rival fronts resting on the sea. The Germans first made the attempt to break the allied line on the Yser in Nov. 1914, and they failed. The French, in turn, tried vainly to break the German front in Champagne, in the Woevre, in Artois, and simultaneously in Artois and Champagne (Sept. 1915).

These checks, following on rash promises and high hopes, had alarmed public opinion. A campaign was conducted against the commander-in-chief, on the one hand by the friends of Gen. Galliéni, who accused general headquarters of having stolen the glory of the Marne; and on the other by the yet more powerful friends of Gen. Sarrail, whom Gen. Joffre had relieved of his command in July 1915. They reproached general headquarters for their blind confidence in 1914. They accused Joffre of rejecting all superior authority and organizing a regular government at Chantilly. So long as Millerand was minister for war he protected the commander-in-chief. But Millerand was replaced on Oct. 30, 1915, by Gen. Galliéni, Joffre had served under the latter at Madagascar, and Galliéni had suggested Joffre to Messimy in 1911 for the post of chief of general staff. But at the beginning of the War, Galliéni, although designated successor to Joffre, had been left as military governor of Paris instead of being called to general headquarters. Then came the battle of the Marne, followed by rivalry, if not between the two commanders, at least among their general staffs. On Dec. 3, 1915, however, Gen. Joffre received, instead of the simple command of the north and north-east, the supreme command of all the French armies, an appointment which put under his authority the Army of the Orient, commanded by none other than Gen. Sarrail. But trouble was not slow in arising. On Dec. 16 the minister for war demanded information on the state of the defences before Verdun. On the 18th he received a stiff reply from Gen. Joffre, who offered to resign. Galliéni answered on the 22nd that Joffre enjoyed the complete confidence of the Government. Nevertheless, two months later, on Feb. 21, 1916, the Germans attacked in front of Verdun, and the defences, which were incomplete, were forced in as far as the line of forts, to a depth of 8km. in four days. On March 7 Galliéni read to the council of ministers a memorandum pointing out the necessity of reforming the high command. His advice was not accepted; he was also ill; he therefore resigned, and was replaced on March 17 by General Rocques. The new minister was a personal friend of Gen. Joffre. Nevertheless, the campaign against him lasted throughout 1916. This was partly due to the apparently indecisive result of the great Allied battle on the Somme, and the personal quarrel between Sarrail and Joffre continued. Finally, Gen. Nivelle, commander of the 2nd Army operating before Verdun, having retaken the fort of Douaumont, appeared as a possible successor to Joffre.

A decree of Dec. 13, 1916, conferred on Joffre the title of technical adviser to the Government in matters concerning the direction of the War. He continued to hold the title of commander-in-chief of the French armies. Gen. Nivelle received the command of the north and north-east—that is to say, of the French front. The Army of the Orient again became independent of general headquarters.

What was this post of commander-in-chief and technical adviser? The Senate demanded an explanation. In a secret committee, which sat from Dec. 19–23, M. Briand, as prime minister, explained the decree of the 13th. The title of commander-in-chief was left to a man who had played an historic part and who deserved every consideration but it implied no authority either over Gen. Nivelle or Gen. Sarrail, who remained free to conduct operations as they wished. Joffre would be consulting member in the War committee, which was merely an organ of preparatory work, its decisions being submitted to the council of ministers. However, on Dec. 13, M. Briand had made changes in the cabinet, and had called Gen. Lyautey to the ministry for war in place of Gen. Galliéni. Lyautey arrived in Paris on the 24th. He considered the post of commander-in-chief and technical adviser granted to Gen. Joffre as incompatible with the authority of the minister for war. These two offices were suppressed, but in compensation Gen. Joffre was created Marshal of France on Dec. 26. In the spring of 1917 he made a journey to North America. The *Académie française* made him a member on Feb. 14, 1918. Gen. Joffre died Jan. 3, 1931. (H. Bi.)

See J. J. C. Joffre, *Opérations de la Colonne Joffre avant et après l'occupation de Timbouctou* (1895); *My March to Timbuktu . . .* with introduction by E. Dimnet (1915); 1914–15, *La Préparation de la guerre et la conduite des opérations* (1920). *See* also C. Dawbarn, *Joffre and his Army* (1916); Mermeix (Gabriel Terrail), *Fragments d'histoire, 1914–19 . . . (vol. i. Joffre: la première crise du commandement,* etc.) (1919); G. Hanotaux and J. G. A. Fabry, *Joffre* (1921); and the article on WORLD WAR I.

JOHANAN BEN ZAKKAI, Palestinian rabbi, contemporary of the Apostles. He was a disciple of Hillel (*q.v.*), and after the destruction of the Temple of Jerusalem by Titus was the main instrument in the preservation of the Jewish religion. During the last decades of the Temple Johanan was a member of the Sanhedrin and a skilled controversialist against the Sadducees. He is also reported to have been head of a great school in the capital. In the war with Rome he belonged to the peace party, and finding that the Zealots were resolved on carrying their revolt to its inevitable sequel, Johanan had himself conveyed out of Jerusalem in a coffin. In the Roman camp the rabbi was courteously received, and Vespasian permitted him to found a college at Jamnia (Jabneh), which became the centre of Jewish culture. It practically exercised the judicial functions of the Sanhedrin. (*See* JEWS: *Earliest Times to the Mediaeval.*) The Mishnah was the outcome of the work begun at Jamnia.

See Graetz, *History of the Jews* (Eng. trans.), vol. ii. ch. xiii; Weiss, *Dor dor ve-doreshav,* ii. 36; Bacher, *Die Agada der Tannaiten,* vol. i. ch. iii.

JOHANNESBURG, 26° 13′ S., 28° 56′ E.; altitude 5,740 feet. Distance by rail from Cape Town (via Kimberley), 957 mi.; from Port Elizabeth, 712 mi.; from East London, 665 mi.; from Durban, 482 mi.; from Delagoa Bay (via Pretoria), 394 miles. Johannesburg is the largest urban centre in South Africa. Pop. (1936), including suburbs, was 519,384, of which 257,671 were Europeans; 22,482 "coloured" (mixed); 229,122 natives and 10,109 Asiatics. On the Witwatersrand, as a whole, there were in 1936, 402,223 Europeans, and 614,967 non-Europeans.

The main part of the city lies immediately north of the central

part of the main gold reef. The streets run in straight lines east and west, or north and south. The principal business streets are Eloff street, Commissioner street, Market street, President street and Pritchard street. Here, and in the shorter streets intersecting them, are the hotels, shops, banks, mining offices, newspaper offices and clubs, the majority being well built buildings of stone or brick, though often roofed with galvanized iron. Toward the north is Joubert's park, with an art gallery.

To the north of the city rises a sharp ridge, which has become the favourite residential quarter. The houses of brick or local stone are often well designed, and placed among pleasant gardens. The Union observatory, 3 mi. N.E. of the city, is equipped with a 26½ in. telescope. Observatories are also maintained at Johannesburg by Yale and Leyden universities. On the far side of the ridge are the Zoological gardens, in a spacious, well laid out park. The suburbs of Jeppestown, Belgravia, Doornfontein, the Berea, Parktown and Yeoville, lie north and east of the city. Fordsburg lies to the west, and includes the gas, and electric light and power works. At Turffontein, 2 mi. to the south of the city, is a well-known race-course.

South, east and west lie the mines, with their tall chimneys, battery houses and native labourers' compounds. They extend along the veld for about 50 miles. Characteristic of this belt are the great mounds of white dust, the refuse of the crushing machines. On them vegetation will not grow, and they provide much of the material carried about during the dust storms, which are so well known in and around Johannesburg. The mines in the municipal area, nearly 82 sq.mi., are responsible for nearly half the total output of the Transvaal. Among the industries which have grown up in more recent times in the vicinity are flour milling, iron and steel founding, furniture making, food, drink and tobacco manufactures. Large meat chilling installations have been erected.

The climate is cool and bracing in the winter (*see* SOUTH AFRICA, UNION OF), though the sudden changes of temperature are apt to be trying to delicate people. The mortality rate in 1939 for white infants under one year was 50.36 per 1,000. The city has a large hospital; close to it is the South African Institute for Medical Research. There are many large schools and a normal college. The University of the Witwatersrand, which was founded in 1903 as the School of Mines and Technology, and received its charter in 1921, moved from its old buildings near the railway station into excellent new ones, situated on the ridge to the north in Milner's park, 80 ac. of which were granted by the city as a site for the university. Johannesburg is the seat of a bishopric (Anglican), and a new cathedral has been erected there. The cost of living is relatively higher than elsewhere in South Africa. The price of houses and clothing is high, but food is comparatively cheap. The fruit supply is among the best in the country, drawing the best fruit from Natal and the Cape area. There is a good service of electric trams and busses in the city and the suburbs, and the water supply and sewage scheme are satisfactory.

Johannesburg owes its existence to the discovery of gold in the local beds of conglomerate in 1886. It was named after Johannes Rissik, then surveyor-general of the Transvaal. The town was connected by railways with the Cape ports in 1892, and with Natal in 1895. The increased facility of transport caused a further development of mining activity. (*See* also TRANSVAAL: *History.*) After a period of military administration, and of government by a nominated town council, an election for a new council took place in Dec. 1903. In 1905 the town was divided into wards. On Sept. 5, 1928, it was created a city.

JOHANNISBERG, a village in the Prussian province of Hesse-Nassau, in the Rheingau, on the right bank of the Rhine, 6 m. E. of Rüdesheim by railway. Pop. (1933) 1,481. The Schloss crowns a hill overlooking the Rhine valley, and is surrounded by vineyards yielding the famous Johannisberger wine. Built in 1757–59 by the abbots of Fulda on the site of a Benedictine monastery founded in 1090, it was bestowed, in 1807, by Napoleon upon Marshal Kellermann. In 1814 it was given by Francis, emperor of Austria, to Prince Metternich.

JOHN, a masculine proper name common in all Christian countries (Heb. *Yōḥānān,* "Yahweh has been gracious," Lat. *Joannes,* Fr. *Jean,* Ger. *Johannes*); its popularity is due to its having been borne by the "Beloved Disciple" of Christ, St. John the Evangelist, and by the forerunner of Christ, St. John the Baptist.

JOHN, THE APOSTLE, in the Bible, was the son of Zebedee, a Galilean fisherman, and Salome. It is probable that he was born at Bethsaida, where along with his brother James he followed his father's occupation. The family appears to have been in easy circumstances; at least we find that Zebedee employed hired servants, and that Salome was among those women who contributed to the maintenance of Jesus (Mark i. 20, xv. 40, 41, xvi. 1). John's "call" to follow our Lord occurred simultaneously with that addressed to his brother, and shortly after that addressed to the brothers Andrew and Simon Peter (Mark i. 19, 20). John speedily took his place among the twelve apostles, sharing with James the title of Boanerges ("sons of thunder," perhaps strictly "sons of anger," *i.e.* men readily angered), and became a member of that inner circle to which, in addition to his brother, Peter alone belonged (Mark v. 37, ix. 2, xiv. 33). John appears throughout the synoptic record as a zealous, fiery Jew-Christian. It is he who indignantly complains to Jesus, "We saw one casting out devils in Thy name, and he followeth not us," and tells Him, "We forbade him" for that reason (Mark ix. 38); and who with his brother, when a Samaritan village will not receive Jesus, asks Him, "Wilt thou that we command fire to come down from heaven and consume them?" (Luke ix. 54). The Book of Acts confirms this tradition. After the departure of Jesus, John appears as present in Jerusalem with Peter and the other apostles (i. 13); is next to Peter the most prominent among those who bear testimony to the fact of the resurrection (iii. 12–26, iv. 13, 19–22); and is sent with Peter to Samaria, to confirm the newly converted Christians there (vii. 14, 25). St. Paul tells us similarly that when, on his second visit to Jerusalem, "James," the Lord's brother, "and Cephas and John, who were considered pillars, perceived the grace that was given unto me, they gave to me and Barnabas the right hand of fellowship, that we should go unto the heathen, and they unto the circumcision" (Gal. ii. 9). John thus belonged in 46–47 to the Jewish-Christian school; but we do not know whether to the stricter group of James or to the milder group of Peter (ibid. ii. 11–14).

The subsequent history of the apostle is obscure. Polycrates, bishop of Ephesus (in Euseb., *H. E.* iii. 31; v. 24), attests in 196 that John "who lay on the bosom of the Lord rests at Ephesus"; but previously in this very sentence he has declared that "Philip one of the twelve apostles rests in Hierapolis," although Eusebius (doubtless rightly) identifies this Philip not with the apostle but with the deacon-evangelist of Acts xxi. 8. Polycrates also declares that John was a priest wearing the πέταλον (gold plate) that distinguished the high-priestly mitre. Irenaeus in various passages of his works, 181–191, holds a similar tradition. He says that John lived up to the time of Trajan and published his gospel in Ephesus, and identifies the apostle with John the disciple of the Lord, who wrote the Apocalypse under Domitian, whom Irenaeus's teacher Polycarp had known personally and of whom Polycarp had much to tell. These traditions are accepted and enlarged by later authors, Tertullian adding that John was banished to Patmos after he had miraculously survived the punishment of immersion in burning oil. As it is evident that legend was busy with John as early as the time of Polycrates, the real worth of these traditions requires to be tested by examination of their ultimate source. This inquiry has been pressed upon scholars since the apostolic authorship of the Apocalypse or of the Fourth Gospel, or of both these works, has been disputed. (*See* JOHN, GOSPEL OF ST., and APOCALYPSE.)

The opponents of the tradition lay weight on the absence of positive evidence before the latter part of the 2nd century, especially in Papias and in the epistles of Ignatius and of Irenaeus's authority, Polycarp. They find it necessary to assume that Irenaeus mistook Polycarp; but this is not a difficult task, since already Eusebius (*c.* 310–313) is compelled to point out that Papias testifies to two Johns, the Apostle and a presbyter, and that Ire-

naeus is mistaken in identifying those two Johns, and in holding that Papias had seen John the Apostle (*H.E.* iii. 39, 5, 2). Irenaeus tells us, doubtless correctly, that Papias was "the companion of Polycarp": this fact alone would suffice, given his two mistakes concerning Papias, to make Irenaeus decide that Polycarp had seen John the Apostle. The chronicler George the Monk (Hamartolus) in the 9th century, and an epitome dating from the 7th or 8th century but probably based on the *Chronicle* of Philip of Side (*c.* 430), declare, on the authority of the second book of Papias, that John the Zebedean was killed by Jews (presumably in 60–70). Adolf Harnack, *Chron. d. altchr. Lit.* (1897, pp. 656–680), rejects the assertion; but a number of scholars accept it as correct.

(F. v. H.)

JOHN I., pope from 523 to 526, Tuscan by birth, was consecrated pope on the death of Hormisdas. Theodoric sent him to Constantinople on an embassy to Justin to secure toleration for the Arians. He was suspected of lukewarmness in his mission, and was imprisoned by Theodoric on his return. He died in prison on May 18; his feast-day is May 27.

JOHN II., pope from 533 to 535, also named Mercurius, succeeded Boniface II. At the instance of Justinian he adopted the proposition *unus de Trinitate passus est in carne* as a test of the orthodoxy of certain Scythian monks accused of Nestorian tendencies. He was succeeded by Agapetus I.

JOHN III., pope from 561 to 574, successor to Pelagius, was descended from a noble Roman family. He is said to have prevented an invasion of Italy by the recall of the deposed exarch Narses, but the Lombards continued their incursions.

JOHN IV., pope from 640 to 642, a Dalmatian by birth, succeeded Severinus after an interval of four months. He adhered to the repudiation of the Monothelite doctrine by Severinus, but endeavoured to explain away the connection of Honorius I. with the heresy. His successor was Theodorus I.

JOHN V., pope from 685 to 686, a Syrian by birth, was in 680 papal legate to the sixth ecumenical council at Constantinople. He succeeded Benedict II., and was followed by Conon.

JOHN VI., pope from 701 to 705, born in Greece, succeeded to the papal chair two months after the death of Sergius I. He assisted the exarch Theophylact, who had been sent into Italy by the emperor Justinian II., and prevented him from using violence against the Romans. John induced Gisulf, duke of Benevento, to withdraw from the territories of the empire.

JOHN VII., pope from 705 to 707, successor of John VI., was also of Greek nationality. He seems to have acceded to the request of the emperor Justinian II. that he should give his sanction to the decrees of the Quinisext or Trullan council of 692. He was succeeded by Sisinnius.

JOHN VIII., pope from 872 to 882, successor of Adrian II., was a Roman by birth. He defended the Roman State and the authority of the Holy See at Rome from the Saracens, and from the nascent feudalism which was represented outside by the dukes of Spoleto and the marquises of Tuscany and within by a party of Roman nobles. He agreed in 875 to bestow the imperial crown on Charles the Bald. About the time of the death of Charles he was compelled to come to terms with the Saracens, who were only prevented from entering Rome by the promise of an annual tribute. Carloman, the opponent of Charles's son Louis, then invaded northern Italy, and demanded the imperial crown.

John attempted to temporize, but Lambert, duke of Spoleto, a partisan of Carloman, whom sickness had recalled to Germany, entered Rome in 878 with an overwhelming force, and for 30 days virtually held John a prisoner in St. Peter's. Lambert, however, won no concession from the pope, who after his withdrawal went to France. There he presided at the council of Troyes, which excommunicated the supporters of Carloman—amongst others Adalbert of Tuscany, Lambert of Spoleto, and Formosus, bishop of Porto, who was afterwards elevated to the papal chair. In 879 John returned to Italy accompanied by Boso, duke of Provence, whom he adopted as his son. He was compelled to promise his sanction to the claims of Charles the Fat, who received from him the imperial crown in 881. In order to secure the aid of the Greek emperor against the Saracens, he had already agreed to sanction the restoration of Photius to the see of Constantinople, and had withdrawn his consent on finding that he gained nothing from the concession. Charles the Fat gave him also no effectual aid. According to the annalist of Fulda, he was murdered (Dec. 16, 882) by members of his household. His successor was Marinus.

JOHN IX., pope from 898 to 900, confirmed the judgment of his predecessor Theodore II. in granting Christian burial to Formosus, but at a council held at Ravenna decreed that the records of the synod which had condemned him should be burned. John supported Lambert in preference to Arnulf, and also induced the council to determine that henceforth the consecration of the popes should take place only in the presence of the imperial legates. The sudden death of Lambert shattered the hopes which this alliance seemed to promise. John died on April 6, 900, and was succeeded by Benedict IV.

JOHN X., pope from 914 to 928, was deacon at Bologna when he attracted the attention of Theodora, the wife of Theophylact, the most powerful noble in Rome, through whose influence he was elevated first to the see of Bologna, then to the archbishopric of Ravenna, and finally to the papal chair, as the successor of Lando. He allied himself with Theophylact and Alberic, marquis of Camerino, then governor of the duchy of Spoleto. In December 915 he granted the imperial crown to Berengar. He took the field in person against the Saracens, over whom he gained a great victory on the banks of the Garigliano. The defeat and death of Berengar through the combination of the Italian princes, again frustrated the hopes of a united Italy. John perished through the intrigues of Marozia, daughter of Theodora. His successor was Leo VI.

JOHN XI., pope from 931 to 935, son of Marozia and reputed son of Sergius III., was chosen to succeed Stephen VII. at the age of twenty-one. He was the mere exponent of the purposes of his mother, until her son Alberic in 933 overthrew their authority. The pope was a virtual prisoner in the Lateran, where he is said to have died in 935. He was succeeded by Leo VII.

JOHN XII., pope from 955 to 964, was the son of Alberic, whom he succeeded as patrician of Rome in 954, being then only sixteen. His original name was Octavian, but when he assumed the papal tiara as successor to Agapetus II., he adopted the apostolic name of John. In order to protect himself against the intrigues in Rome and the power of Berengar II. of Italy, he called to his aid Otto the Great of Germany, to whom he granted the imperial crown in 962. Even before Otto left Rome the pope had begun to conspire against the new emperor. His intrigues were discovered by Otto, who, after he had defeated and taken prisoner Berengar, returned to Rome and summoned a council which deposed John, who was in hiding in the mountains of Campania, and elected Leo VIII. in his stead. On Otto's departure John returned, and Leo fled. Otto prepared to support Leo, but before he reached the city John had died (May 14, 964) and Benedict V. had mounted the papal chair.

JOHN XIII., pope from 965 to 972, a member of a noble Roman family, and bishop of Narni, succeeded Leo VIII. His election was confirmed by the emperor Otto, and his submissive attitude towards the imperial power was so distasteful to the Romans that they expelled him from the city. Otto secured his return, upon which he took savage vengeance on his enemies. Shortly after holding a council with the emperor at Ravenna in 967, he gave the imperial crown to Otto II. at Rome in assurance of his succession to his father; and in 972 he also crowned Theophano as empress immediately before her marriage. He died on Sept. 5, 972, and was succeeded by Benedict VI.

JOHN XIV. (Pietro Canepanova), pope from 983 to 984, successor to Benedict VII., was born at Pavia. He was bishop of Pavia and imperial chancellor of Otto II. Otto died shortly after his election, when Boniface VII., on the strength of the popular feeling against the new pope, returned from Constantinople and placed John in prison, where he died (Aug. 20, 984) either by starvation or poison.

JOHN XV., pope from 985 to 996, generally recognized as the successor of Boniface VII., the pope John who was said to have

ruled for four months after John XIV., being now usually omitted. John XV. was the son of Leo, a Roman presbyter. His authority was hampered by Crescentius, patrician of Rome, but the presence of the empress Theophano in Rome from 989 to 991 restrained the ambition of Crescentius. He was succeeded by Gregory V.

JOHN XVI. (Philagathus of Rossano), pope or antipope from 997 to 998, was a Calabrian Greek by birth, and a favourite of the empress Theophano, from whom he had received the bishopric of Placentia. In 995 he was sent by Otto III. on an embassy to Constantinople to negotiate a marriage with a Greek princess. On his way back he either accidentally or at the special request of Crescentius visited Rome. A little before this Gregory V., at the end of 996, had been compelled to flee from the city; and Philagathus took the papal tiara from the hands of Crescentius. On Otto's arrival in Rome in the spring of 998 John fled. He was discovered and brought back to Rome, where he was blinded in prison.

JOHN XVII., whose original name was Sicco, succeeded Silvester II. as pope on June 13, 1003, and died on Dec. 7 of the same year.

JOHN XVIII. (a Roman named Phasianus), pope from 1003 to 1009, was the mere creature of the patrician John Crescentius. He abdicated and retired to a monastery, where he died shortly afterwards. His successor was Sergius IV.

JOHN XIX. (Romanus, count of Tusculum), pope from 1024 to 1033, succeeded his brother Benedict VIII. He took orders to enable him to ascend the papal chair, having previously been a consul and senator. He agreed, on the payment of a large bribe, to grant to the patriarch of Constantinople the title of an ecumenical bishop, but the general indignation compelled him almost immediately to withdraw from his agreement. On the death of the emperor Henry II. in 1024 he gave his support to Conrad II., who was crowned at St. Peter's in Easter of 1027. John died in 1033. His successor was his nephew Benedict IX., a boy of twelve.

JOHN XXI. (Pedro Giuliano-Rebulo), pope from Sept. 8, 1276 to May 20, 1277 (should be named John XX., but there is an error in the reckoning through the insertion of an antipope), a native of Lisbon, educated for the church, became archdeacon and then archbishop of Braga (1271–75). He ingratiated himself with Gregory X. at the council of Lyons (1274) and he was taken to Rome as cardinal-bishop of Frascati, and succeeded Gregory after an interregnum of twenty days. As pope he excommunicated Alphonso III. of Portugal for interfering with episcopal elections and sent legates to the Great Khan. He was killed (May 20, 1277) by the fall of the roof in the palace he had built at Viterbo. His successor was Nicholas III. JOHN XXI. has been identified since the 14th century, most probably correctly, with Petrus Hispanus, a celebrated Portuguese physician and philosopher, author of several medical works—notably the curious *Liber de oculo,* trans. into German and well edited by A. M. Berger (Munich, 1899), and of a popular textbook in logic, the *Summulae logicales.* John XXI. is often referred to as a magician by ignorant chroniclers.

See *Les Registres de Grégoire X. et Jean XXI.,* published by J. Guiraud and E. Cadier in *Bibliothèque des écoles françaises d'Athènes et de Rome* (Paris, 1898); R. Stapper, *Papst Johann XXI.* (Münster, 1898); J. T. Köhler, *Vollständige Nachricht von Papst Johann XXI.* (Göttingen, 1760).

JOHN XXII., pope from 1316 to 1334, was born at Cahors, France, in 1249. His original name was Jacques Duèse. After studying with the Dominicans at Cahors, he studied law at Montpellier, and law and medicine in Paris, and finally taught at Cahors and Toulouse. At Toulouse he became intimate with the bishop Louis, son of Charles II., king of Naples. In 1300 he was elevated to the episcopal see of Fréjus by Pope Boniface VIII. at the instance of the king of Naples, and in 1308 was made chancellor of Naples by Charles, retaining this office under Charles's successor, Robert of Anjou. In 1310 Pope Clement V. summoned Jacques to Avignon, and instructed him to advise upon the affair of the Templars and also upon the question of condemning the memory of Boniface VIII. Jacques decided on the legality of suppressing the order of the Templars, holding that the pope would be serving the best interests of the church by pronouncing its suppression; but he rejected the condemnation of Boniface as a sacrilegious affront to the church and a monstrous abuse of the lay power. On Dec. 23, 1312, Clement appointed him cardinal-bishop of Porto. Clement had died in April 1314, but the cardinals assembled at Carpentras were unable to agree as to his successor. The cardinals reassembled (June 28, 1316) at Lyons, and after deliberating for more than a month they elected Robert of Anjou's candidate, Jacques Duèse, who was crowned on Sept. 5. He arrived at Avignon in October, and remained there for the rest of his life.

For the restoration of the papacy to its old independence and for the execution of the vast enterprises which the papacy deemed useful for its prestige and for Christendom, considerable sums were required; and to raise the necessary money John burdened Christian Europe with new taxes and a complicated fiscal system. The essentially practical character of his administration has led many historians to tax him with avarice, but later research on the fiscal system of the papacy of the period, particularly the joint work of Samaran and Mollat, enables us very sensibly to modify the severe judgment passed on John by Gregorovius and others.

John's pontificate was continually disturbed by his conflict with Louis of Bavaria and by the theological revolt of the Spiritual Franciscans. In Oct. 1314 Louis of Bavaria and Frederick of Austria had each been elected German king by the divided electors. John affected to ignore the successes of Louis, and on Oct. 8, 1323, forbade his recognition as king of the Romans. After demanding a respite, Louis abruptly appealed at Nuremberg from the future sentence of the pope to a general council (Dec. 8, 1323). The conflict then assumed a grave doctrinal character. The doctrine of the rights of the lay monarchy sustained by Occam and John of Paris, by Marsilius of Padua, John of Jandun and Leopold of Bamberg, was affirmed by the jurists and theologians, penetrated into the parlements and the universities, and was combated by the upholders of papal absolutism, such as Alvaro Pelayo and Alonzo Trionfo. Excommunicated on March 21, 1324, Louis retorted by appealing for a second time to a general council, which was held on May 22, 1324, and accused John of being an enemy to the peace and the law, stigmatizing him as a heretic on the ground that he opposed the principle of evangelical poverty as professed by the strict Franciscans. On July 11, 1324, the pope laid under an interdict the places where Louis or his adherents resided, but this bull had no effect in Germany.

Louis penetrated into Italy and seized Rome on Jan. 7, 1328, with the help of the Roman Ghibellines led by Sciarra Colonna. Louis got himself crowned by the deputies of the Roman people; instituted proceedings for the deposition of John, whom the Roman people declared to have forfeited the pontificate (April 18, 1328); and finally caused a Minorite friar, Pietro Rainalducci da Corvara, to be elected pope under the name of Nicholas V. After Louis left Rome and Italy (1329) the antipope was abandoned by the Romans and handed over to John, who forced him to make a solemn submission with a halter round his neck (Aug. 15, 1330). Nicholas was condemned to perpetual imprisonment, and died in obscurity at Avignon; while the Roman people submitted to King Robert, who governed the church through his vicars. In 1317, in execution of a bull of Clement V., the royal vicariate in Italy had been conferred by John on Robert of Anjou, and this appointment was renewed in 1322 and 1324, with threats of excommunication against anyone who should seize the vicariate of Italy without the authorization of the pope.

John was accused of heretical opinions, of having preached that the souls of those who die in a state of grace do not enjoy the beatific vision until after the Last Judgment and the Resurrection. He appears to have retracted shortly before his death, which occurred on Dec. 4, 1334. On Jan. 29, 1336, Pope Benedict XII. pronounced a long judgment on this point of doctrine, a judgment which he declared had been included by John in a bull which death had prevented him from sealing.

John had kindled very keen animosity, not only among the upholders of the independence of the lay power, but also among

the upholders of absolute religious poverty, the exalted Franciscans. Clement V., at the council of Vienne, had attempted to bring back the Spirituals to the common rule by concessions; John, on the other hand, in the bull *Quorundam exigit* (April 13, 1317), adopted an uncompromising and absolute attitude, and by the bull *Gloriosam ecclesiam* (Jan. 23, 1318) condemned the protests which had been raised against the bull *Quorundam* by a group of 74 Spirituals and conveyed to Avignon by the monk Bernard Délicieux. Shortly afterwards four Spirituals were burned at Marseilles. These were immediately hailed as martyrs, and in the eyes of the exalted Franciscans at Naples and in Sicily and the south of France the pope was regarded as antichrist. In the bull *Sancta Romana et universa ecclesia* (Dec. 28, 1318) John definitively excommunicated them and condemned their principal book, the *Postil* (commentary) on the Apocalypse (Feb. 8, 1326). The bull *Quia nonnunquam* (March 26, 1322) defined the derogations from the rule punished by the pope, and the bull *Cum inter nonnullos* (Nov. 12, 1323) condemned the proposition which had been admitted at the general chapter of the Franciscans held at Perugia in 1322, according to which Christ and the Apostles were represented as possessing no property, either personal or common. The minister general, Michael of Cesena, though opposed to the exaggerations of the Spirituals, joined with them in protesting against the condemnation of the fundamental principle of evangelical poverty.

The pope, by the bull *Quia quorundam* (Nov. 10, 1324), cited Michael to appear at Avignon at the same time as Occam and Bonagratia. All three fled to the court of Louis of Bavaria (May 26, 1328), while the majority of the Franciscans made submission and elected a general entirely devoted to the pope. But the resistance, aided by Louis and merged as it now was in the cause sustained by Marsilius of Padua and John of Jandun, became daily bolder. Treatises on poverty appeared on every side; the party of Occam clamoured with increasing imperiousness for the condemnation of John by a general council; and the Spirituals, confounded in the persecution with the Beghards and with Fraticelli of every description, maintained themselves in the south of France in spite of the reign of terror instituted in that region by the Inquisition.

See M. Souchon, *Die Papstwahlen von Bonifaz VIII. bis Urban VI.* (Brunswick, 1888); Abbé Albe, *Autour de Jean XXII.* (Rome, 1904); K. Müller, *Der Kampf Ludwigs des Bayern mit der Curie* (Tübingen, 1879 *seq.*); W. Preger, "Mémoires sur la lutte entre Jean XXII. et Louis de Bavière" in *Abhandl. der bayr. Akad.*, hist. sec., xv., xvi., xvii.; S. Riezler, *Die litterar. Widersacher der Päpste zur Zeit Ludwigs des Baiers* (Leipzig, 1874); F. Ehrle, "Die Spiritualen" in *Archiv für Litteratur- und Kirchengeschichte des Mittelalters* (vols. i. and ii.); C. Samaran and G. Mollat, *La Fiscalité pontificale en France au xive siècle* (1905); A. Coulon and G. Mollat, *Lettres secrètes et curiales de Jean XXII. se rapportant à la France* (1899, *seq.*).

JOHN XXIII. (Baldassare Cossa), pope, or rather anti-pope from 1410 to 1415, born of a good Neapolitan family, was a corsair before entering the service of the church under the pontificate of Boniface IX. He won the cardinal's hat and the legation of Bologna. On June 29, 1408, he and seven of his colleagues broke away from Gregory XII., and together with six cardinals of the obedience of Avignon, who had in like manner separated from Benedict XIII., they agreed to aim at the assembling of a general council, setting aside the two rival pontiffs, an expedient which they considered would put an end to the great schism of the Western Church, but which resulted in the election of yet a third pope. This act was none the less decisive for Baldassare Cossa's future. Alexander V., the first pope elected at Pisa, was not perhaps, as has been maintained, merely a man of straw put forward by the ambitious cardinal of Bologna; but he reigned only ten months, and on his death (May 4, 1410), Baldassare Cossa succeeded him. He seems to have received the unanimous vote of all the 17 cardinals gathered together at Bologna (May 17). He took the name of John XXIII., and France, England, and part of Italy and Germany recognized him as head of the Catholic church.

The struggle in which he and Louis II. of Anjou engaged with Ladislaus of Durazzo, king of Sicily, and Gregory XII.'s chief protector in Italy, at first went in John's favour. After the brilliant victory of Roccasecca (May 19, 1411) he dragged the standards of Pope Gregory and King Ladislaus through the streets of Rome. But he eventually abandoned the cause of Louis of Anjou, and recognized Ladislaus, his former enemy, as king of Naples. Ladislaus did not fail to salute John XXIII. as pope, abandoning Gregory XII. (June 15, 1412). This was a fatal step: John XXIII. was trusting in a dishonest and insatiable prince. John convened a sparsely attended council in Rome which held only a few sittings, and on March 3, 1413, he adjourned it till December. On Dec. 9 he issued the bull convening the council of Constance, under pressure from Sigismund, king of the Romans. Meanwhile (June 8, 1413) Ladislaus had turned against John, had sacked Rome, and expelled him.

On Nov. 5, 1414, John opened the council of Constance, where, on Christmas Day, he received the homage of the head of the empire, but where it was soon evident that his position was untenable. He had to take a solemn oath to abdicate if his two rivals, Benedict XIII. and Gregory XII., would do the same. On the night of March 20–21, having donned the garments of a layman, with a cross-bow slung at his side, he escaped from Constance, and took refuge first in the castle of Schaffhausen, then in that of Laufenburg, then at Freiburg-im-Breisgau, and finally at Brisach, whence he hoped to reach Alsace, and doubtless ultimately Avignon, under the protection of an escort sent by the duke of Burgundy. The news of the pope's escape was received at Constance with an extraordinary outburst of rage, and led to the subversive decrees of the 4th and 5th sessions, which proclaimed the superiority of the council over the pope. Duke Frederick of Austria was compelled to surrender John, who was brought back to Freiburg. He was suspended from his functions as pope on May 14, 1415, and deposed on May 29.

However irregular this sentence may have been from the canonical point of view (for the accusers do not seem to have actually proved the crime of heresy, which was necessary, according to most scholars of the period, to justify the deposition of a sovereign pontiff), the condemned pope was not long in confirming it. Baldassare Cossa, now as humble and resigned as he had before been energetic and tenacious, on his transference to the castle of Rudolfzell admitted the wrong which he had done by his flight, refused to bring forward anything in his defence, acquiesced entirely in the judgment of the council which he declared to be infallible, and, finally, ratified *motu proprio* the sentence of deposition, declaring that he freely and willingly renounced any rights which he might still have in the papacy. This fact has subsequently been often quoted against those who have appealed to the events of 1415 to maintain that a council can depose a pope who is *scandalizator ecclesiae*.

Cossa was held prisoner for three years in Germany, but in the end bought his liberty (1418) from the count palatine. He then threw himself on the mercy of the legitimate pope. Martin V. appointed him cardinal-bishop of Tusculum, a dignity which Cossa only enjoyed for a few months. He died on Dec. 22, 1419, and all visitors to the Baptistery at Florence may admire, under its high baldacchino, the sombre figure sculptured by Donatello of the dethroned pontiff, who had at least the merit of bowing his head under his chastisement, and of contributing by his passive resignation to the extinction of the series of popes which sprang from the council of Pisa.

JOHN I. (925–976), surnamed Tzimisces, East Roman emperor, was born of a distinguished Cappadocian family. After helping his uncle Nicephorus Phocas (*see* NICEPHORUS) to obtain the throne and to restore the empire's eastern provinces he was deprived of his command by an intrigue, upon which he retaliated by conspiring with Nicephorus' wife Theophania to assassinate him (969). Having strengthened his position by concessions, John proceeded to justify his usurpation by the energy with which he repelled the foreign invaders. In a series of campaigns against the newly established Russian power (970–973) he drove the enemy out of Thrace, crossed Mt. Haemus and besieged the fortress of Dorystolon on the Danube. He broke the strength of the Russians so completely that they left him master of eastern Bulgaria. He further secured his northern

frontier by transplanting to Thrace some colonies of Paulicians whom he suspected of sympathising with their Saracen neighbours in the east. In 974 he turned against the Abbasid empire and easily recovered the inland parts of Syria and the middle reaches of the Euphrates. He died suddenly in 976 on his return from his second campaign against the Saracens.

See E. Gibbon, *The Decline and Fall of the Roman Empire,* vol. vi. (ed. Bury, 1896); G. Finlay, *History of Greece,* ii. 334–360 (ed. 1877); G. Schlumberger, *L'Épopée Byzantine,* i. 1–326 (1896).

JOHN II. (1088–1143), surnamed Comnenus and also Kalojoannes (John the Good), East Roman emperor, was the eldest son of the East Roman emperor Alexius, whom he succeeded in 1118. On account of his mild and just reign he has been called the Byzantine Marcus Aurelius. By the personal purity of his character he improved the manners of his age, but he displayed little vigour in internal administration or in extirpating the long-standing corruptions of the government. Nor did his various successes against the Hungarians, Servians and Seljuk Turks, whom he pressed hard in Asia Minor and proposed to expel from Jerusalem, add much to the stability of his empire. He was killed during a wild-boar hunt on Mt. Taurus, on April 8, 1143.

See E. Gibbon, *The Decline and Fall of the Roman Empire,* v. 228 *seq.* (ed. Bury, 1896); F. Chalandon, *Leo Comnenus II.* (1913).

JOHN III. (1193–1254), surnamed Vatatzes and also Ducas, East Roman emperor, earned for himself such distinction as a soldier that in 1222 he was chosen to succeed his father-in-law Theodore I. Lascaris at Nicaea. He reorganized the remnant of the East Roman empire, and by his administrative skill made it the strongest and richest principality in the Levant. Having secured his eastern frontier by an agreement with the Turks, he set himself to recover the European possessions of his predecessors. While his fleet harassed the Latins in the Aegean Sea and extended his realm to Rhodes, his army, reinforced by Frankish mercenaries, recovered the last Latin conquests in Asia Minor (1241). Though unsuccessful in a siege of Constantinople, which he undertook in concert with the Bulgarians (1236), he obtained supremacy over the despotats of Thessalonica and Epirus. The ultimate recovery of Constantinople by the Rhomaic emperors is chiefly due to his exertions.

See E. Gibbon, *The Decline and Fall of the Roman Empire,* vi. 431–462 (ed. Bury, 1896); G. Finlay, *History of Greece,* iii. 196–320 (ed. 1877); A. Meliarakes, Ἱστορία τοῦ Βασιλείου τῆς Νικαίας καὶ τοῦ Δεσποτάτου τῆς Ἠπείρου, pp. 155–421 (1898).

JOHN IV. (*c.* 1250–*c.* 1300), surnamed Lascaris, East Roman emperor, son of Theodore II. His father dying in 1258, Michael Palaeologus conspired shortly after to make himself regent, and in 1261 dethroned and blinded the boy monarch, and imprisoned him in a remote castle, where he died a long time after.

See E. Gibbon, *The Decline and Fall of the Roman Empire,* vi. 459–466 (ed. Bury, 1896); A. Meliarakes, Ἱστορία τοῦ Βασιλείου τῆς Νικαίας, κ. τ. λ. (1898), pp. 491–528; A. Gardner, *The Lascarids of Nicaea* (1912).

JOHN V. or **VI.** (1332–1391), surnamed Palaeologus, East Roman emperor, was the son of Andronicus III., whom he succeeded in 1341. At first he shared his sovereignty with his father's friend John Cantacuzene, and after a quarrel with the latter was practically superseded by him for a number of years (1347–1355). His reign was marked by the gradual dissolution of the imperial power through the rebellion of his son Andronicus and by the encroachments of the Ottomans, to whom in 1381 John acknowledged himself tributary, after a vain attempt to secure the help of the popes by submitting to the supremacy of the Roman Church.

See E. Gibbon, *The Decline and Fall of the Roman Empire,* vi. 495 *seq.*, vii. 38 *seq.* (ed. Bury, 1896); E. Pears, *The Destruction of the Greek Empire,* pp. 70–96 (1903).

JOHN VI. or **V.** (*c.* 1292–1383), surnamed Cantacuzene, East Roman emperor, was born at Constantinople. Connected with the house of Palaeologus on his mother's side, on the accession of Andronicus III. (1328) he was entrusted with the supreme administration of affairs. On Andronicus' death in 1341, Cantacuzene was left regent, and guardian of his nine year old son John Palaeologus. Being suspected by the empress and opposed by a powerful party at court, he rebelled, and got himself crowned emperor at Didymoteichos in Thrace, while John Palaeologus and his supporters maintained themselves at Constantinople. The civil war which ensued lasted six years, during which the rival parties called in the aid of the Serbians and Turks, and engaged mercenaries of every description. It was only by the aid of the Turks, with whom he made a disgraceful bargain, that Cantacuzene brought the war to a termination favourable to himself. In 1347 he entered Constantinople in triumph, and forced his opponents to an arrangement by which he became joint emperor with John Palaeologus and sole administrator during the minority of his colleague. During this period, the empire, already broken up and reduced to the narrowest limits, was assailed on every side. There were wars with the Genoese, who had a colony at Galata and had money transactions with the court; and with the Serbians, who were at that time establishing an extensive empire on the north-western frontiers; and there was a hazardous alliance with the Turks, who made their first permanent settlement in Europe, at Callipolis in Thrace, towards the end of the reign (1354). Cantacuzene was far too ready to invoke the aid of foreigners in his European quarrels; and as he had no money to pay them, this gave them a ready pretext for seizing upon a European town. Heavy taxation caused discontent, and a strong party had always favoured John Palaeologus, who entered Constantinople at the end of 1354. Cantacuzene retired to a monastery (where he assumed the name of Joasaph Christodulus) and occupied himself in literary labours. He died in the Peloponnese and was buried at Mysithra in Laconia. His *History* in four books deals with the years 1320–1356.

Cantacuzene was also the author of a commentary on the first five books of Aristotle's *Ethics,* and of several controversial theological treatises, one of which (*Against Mohammedanism*) is printed in Migne (*Patrologia Graeca,* cliv.). *History,* ed. pr. by J. Pontanus (1603); in Bonn, *Corpus scriptorum hist. Byz.,* by J. Schopen (1828–1832) and Migne, cliii., cliv. *See* also Val Parisot, *Cantacuzène, homme d'état et historien* (1845); E. Gibbon, *Decline and Fall,* ch. lxiii.; and C. Krumbacher, *Geschichte der byzantinischen Literatur* (1897); E. W. Brooks in *Cambridge Medieval History,* vol. iv.

JOHN VI. or **VII.** (1390–1448), surnamed Palaeologus, East Roman emperor, son of Manuel II., succeeded to the throne in 1425. To secure protection against the Turks he visited the pope and consented to the union of the Greek and Roman Churches, which was ratified at Florence in 1439. The union failed of its purpose; but by his prudent conduct towards the Ottomans John retained possession of Constantinople, and in 1432 withstood a siege by Sultan Murad I.

See TURKEY: *History;* and also E. Gibbon, *The Decline and Fall of the Roman Empire,* vi. 97–107 (ed. Bury, 1896); E. Pears, *The Destruction of the Greek Empire,* pp. 115–130 (1903).

JOHN II. (1397–1479), king of Aragon, son of Ferdinand I. and Eleanor of Albuquerque, born on June 29, 1397, was one of the most stirring and unscrupulous kings of the 15th century. He was in continual conflict from boyhood to old age. His efforts to deprive Charles, prince of Viana, his son by his first wife, Blanche of Navarre, of his constitutional right to act as lieutenant-general of Aragon led to a long conflict with the Aragonese, which only ended with the death (1461) of the prince, caused, it was thought, by poison given him by his stepmother, Joan Henriquez. The Catalans had espoused Charles's cause and called in a succession of pretenders, until they were reduced in 1472. John's war with the French king, Louis XI., leading to the cession of Roussillon to France, continued until his death (Jan. 20, 1479). He was succeeded by Ferdinand, his son by his second wife, and king of Castile by his marriage with Isabella.

See *Crónicas de los reyes de Castilla* (Bib. de Autores Esp., lxvi., lxvii.); G. Zurita, *Anales de Aragon* (Saragossa, 1610); W. H. Prescott, *History of the Reign of Ferdinand and Isabella* (1854); G. Desdérises du Dezert, *Don Carlos d'Aragón . . . Etude sur l'Espagne du Nord au XVe siècle* (Paris, 1889).

JOHN (1296–1346), king of Bohemia, was a son of the emperor Henry VII. by his wife Margaret, daughter of John I., duke of Brabant, and was a member of the family of Luxemburg. Born on Aug. 10, 1296, he became count of Luxemburg in 1309, and about the same time was offered the crown of Bohemia, which, after the death of Wenceslas III., the last Premyslide king, in

1306, had passed to Henry, duke of Carinthia. The emperor accepted this offer on behalf of his son, who married Elizabeth (d. 1330), a sister of Wenceslas, and after Henry's departure for Italy, John was crowned king of Bohemia at Prague (Feb. 1311). Henry of Carinthia was driven from the land, order restored, and Moravia again united with Bohemia.

As imperial vicar John represented his father at the diet of Nuremberg (Jan. 1313), and was leading an army to his assistance in Italy when he heard of the emperor's death (Aug. 1313). John's claim to the imperial throne was disregarded on account of his youth, and he became a partisan of Louis, duke of Upper Bavaria, afterwards the Emperor Louis the Bavarian whom he helped in his struggle against the rival claimant, Philip the Fair of Austria. While Bohemia, where John and his German followers were unpopular, relapsed into revolt and anarchy, he himself fought campaigns over all Europe. He fought against the citizens of Metz and against his kinsman, John III., duke of Brabant; he led the knights of the Teutonic Order against the heathen in Lithuania and Pomerania and promised Pope John XXII. to head a crusade; and claiming to be king of Poland he attacked the Poles and brought Silesia under his rule. He obtained Tirol by marrying his son, John Henry, to Margaret Maultasch, the heiress of the county, assisted the emperor to defeat and capture Frederick the Fair at the Battle of Mühldorf (1322) and was alternately at peace and at war with the dukes of Austria and with his former foe, Henry of Carinthia. He several times assisted his brother-in-law, Charles IV. of France and his successor Philip VI., whose son John, afterwards King John II., married a daughter of the Bohemian king. Soon after the battle of Mühldorf, the relations between John and the emperor became strained, partly owing to the king's growing friendship with the Papacy and with France, and partly owing to territorial disputes. An agreement, however, was concluded, and John invaded Italy with a small following, and made himself ruler of much of the peninsula (1331).

But John's soldiers were few and his enemies were many, and a second invasion of Italy in 1333 was followed by the dissipation of his dreams of making himself king of Lombardy and Tuscany, and even of supplanting Louis on the imperial throne. The fresh trouble between king and emperor, caused by this enterprise, was intensified by a quarrel over the lands left by Henry of Carinthia, and still later by the interference of Louis in Tirol; and with bewildering rapidity John was allying himself with the kings of Hungary and Poland, fighting against the emperor and his Austrian allies, defending Bohemia, governing Luxemburg, visiting France and negotiating with the pope. About 1340 the king was overtaken by blindness, but he continued to lead an active life, successfully resisting the attacks of Louis and his allies, and campaigning in Lithuania. In 1346, acting in union with Pope Clement VI., he secured the formal deposition of Louis and the election of his own son Charles, margrave of Moravia, as German king (July 1346). Then journeying to help Philip of France against the English, he fought at the battle of Crécy, where his heroic death (Aug. 26, 1346) was a fitting conclusion to his adventurous life.

John was a chivalrous and romantic personage; but as a ruler he was careless and extravagant, interested only in his kingdom when seeking relief from his constant pecuniary embarrassments. According to Camden the crest of three ostrich feathers, with the motto *Ich dien,* borne by the prince of Wales, was originally that of John of Bohemia and was first assumed by Edward the Black Prince after the battle of Crécy. There is no proof, however, that this badge was ever worn by John—it certainly was not his crest—and its origin must be sought elsewhere.

See J. Schötter, *Johann, Graf von Luxemburg und König von Böhmen* (Luxemburg, 1865); F. von Weech, *Kaiser Ludwig der Bayer und König Johann von Böhmen* (Munich, 1860), and U. Chevalier, *Répertoire des sources historiques,* tome v. (Paris, 1905).

JOHN I. (1358–1390), king of Castile, son of Henry II. and Joan, daughter of John Manuel de Villena. Brought into conflict with John of Gaunt, who claimed the Crown by right of his wife, Constance, daughter of Peter the Cruel, he bought off his English competitor by arranging a marriage (1387), between John of Gaunt's daughter Catherine and his son Henry. He settled his quarrel with Portugal, John of Gaunt's ally, by marrying Beatrix, daughter of the Portuguese king Ferdinand. On Ferdinand's death (1383), John claimed the Portuguese crown: he was resisted by the national sentiment and utterly defeated at Aljubarrota on Aug. 14, 1385. He died at Alcalá on Oct. 9, 1390.

JOHN II. (1405–1454), king of Castile, son of Henry III. of Castile and Catherine, daughter of John of Gaunt, born March 6, 1405. He succeeded his father on Dec. 25, 1406. One of the most incapable of kings, weak, amiable and dependent, he had no taste except for ornament, no serious interest except in amusements, verse-making and tournaments. At first the tool of his favourite, Alvaro de Luna, he was persuaded to overthrow him by his second wife, Isabella of Portugal (mother of Isabella the Catholic). He died at Valladolid, July 20, 1454.

JOHN (1167–1216), king of England, the youngest son of Henry II. by Eleanor of Aquitaine, was born at Oxford on Dec. 24, 1167. He was given the nickname of Lackland because, unlike his elder brothers, he received no apanage in the Continental provinces. When only five, John was betrothed to the heiress of Maurienne and Savoy, a principality which, as dominating the chief routes from France and Burgundy to Italy, enjoyed a consequence out of all proportion to its area. Later, when this plan had fallen through, he was endowed with castles, revenues and lands on both sides of the channel; the vacant earldom of Cornwall was reserved for him (1175); he was betrothed to Isabella the heiress of the earldom of Gloucester (1176); and he was granted the lordship of Ireland with the homage of the Anglo-Irish baronage (1177). Henry II. even provoked a civil war by attempting to transfer the duchy of Aquitaine from the hands of Richard Coeur de Lion to those of John (1183). In spite of the incapacity which he displayed in this war, John was sent a little later to govern Ireland (1185); but he returned in a few months, having alienated the loyal chiefs by his childish insolence and failed to defend the settlers from the hostile septs. He joined with his brother Richard and the French king Philip Augustus in the great conspiracy of 1189, and the discovery of his treason broke the heart of the old king (*see* HENRY II.).

Richard on his accession confirmed John's existing possessions; married him to Isabella of Gloucester; and gave him, besides other grants, the entire revenues of six English shires; but excluded him from any share in the regency which was appointed to govern England during the third crusade; and only allowed him to live in the kingdom because urged to this concession by their mother. Soon after the king's departure for the Holy Land it became known that he had designated his nephew, the young Arthur of Brittany, as his successor. John at once began to intrigue against the regents with the aim of securing England for himself. He picked a quarrel with the unpopular chancellor William Longchamp (*q.v.*), and succeeded, by the help of the barons and the Londoners, in expelling this minister. Not being permitted to succeed Longchamp as the head of the administration, John next turned to Philip Augustus for help. A bargain was struck; and when Richard was captured by Leopold, duke of Austria (Dec. 1192), the allies planned a partition of his dominions. They were, however, unable to win either English or Norman support and their schemes collapsed with Richard's return (March 1194). He magnanimously pardoned his brother, and they lived on not unfriendly terms for the next five years. On his deathbed Richard, reversing his former arrangements, caused his barons to swear fealty to John (1199), although the hereditary claim of Arthur was by the law of primogeniture undoubtedly superior.

England and Normandy, after some hesitation, recognized John's title; the attempt of Anjou and Brittany to assert the rights of Arthur ended disastrously with the capture of the young prince at Mirebeau in Poitou (1202). Originally accepted as a political necessity, John was soon detested by the people as a tyrant and despised by the nobles for his cowardice and sloth. He inherited great difficulties—the feud with France, the dissensions of the continental provinces, the growing indifference of England to foreign conquests, the discontent of all his subjects

with a strict executive and severe taxation. But he cannot be acquitted of personal responsibility for his misfortunes. Astute in small matters, he had no breadth of view; his policy was continually warped by his passions or caprices; he flaunted vices of the most sordid kind with a cynical indifference to public opinion, and shocked an age which was far from tender-hearted by his ferocity to vanquished enemies. He treated his most respectable supporters with ingratitude, favoured unscrupulous adventurers, and gave a free rein to the licence of his mercenaries. Each of his great humiliations followed as the natural result of crimes or blunders. By his divorce from Isabella of Gloucester he offended the English baronage (1200); by his marriage with Isabella of Angoulême, the betrothed of Hugh of Lusignan, he gave an opportunity to the discontented Poitevins for invoking French assistance and to Philip Augustus for pronouncing against him a sentence of forfeiture. The murder of Arthur (1203) ruined his cause in Normandy and Anjou, though the story that the court of the peers of France condemned him for the murder is a fable. In the quarrel with Innocent III. (1207–13; *see* LANGTON, STEPHEN) he prejudiced his case by proposing a worthless favourite for the primacy and by plundering the clergy who bowed to the pope's sentences. Threatened with the desertion of his barons he drove all whom he suspected to desperation by his terrible severity towards the Braose family (1210); and by his misgovernment irrevocably estranged the lower classes.

When submission to Rome had somewhat improved his position he squandered his last resources in a new and unsuccessful war with France (1214), and enraged the feudal classes by new claims for military service and scutages. The barons were consequently able to exact, in Magna Carta (June 1215), much more than the redress of legitimate grievances; and the people allowed the Crown to be placed under the control of an oligarchical committee. When once the sovereign power had been thus divided, the natural consequence was civil war and the intervention of the French king, who had long watched for some such opportunity. John's struggle against the barons and Prince Louis (1216), afterwards King Louis VIII., was the most creditable episode of his career. He died on Oct. 19, 1216.

John's second wife, Isabella of Angoulême (d. 1246), who married her former lover, Hugh of Lusignan, after the English king's death, bore the king two sons, Henry III. and Richard, earl of Cornwall; and three daughters, Joan (1210–38), wife of Alexander II., king of Scotland, Isabella (d. 1241), wife of the emperor Frederick II., and Eleanor (d. 1274), wife of William Marshal, earl of Pembroke, and then of Simon de Montfort, earl of Leicester. John had also two illegitimate sons, and a daughter, Joan or Joanna, who married Llewelyn I. ab Iorwerth, prince of North Wales, and who died in 1236 or 1237.

BIBLIOGRAPHY.—The chief chronicles for the reign are Gervase of Canterbury's *Gesta regum,* Ralf of Coggeshall's *Chronicon,* Walter of Coventry's *Memoriale,* Roger of Wendover's *Flores historiarum,* the Annals of Burton, Dunstaple and Margan—all in the Rolls Series. The French chronicle of the so-called "Anonyme de Béthune" (Bouquet, *Recueil des historiens des Gaules et de la France,* vol. xxiv.), the *Histoire des ducs de Normandie et des rois d'Angleterre* (ed. F. Michel, 1840) and the metrical biography of William the Marshal (*Histoire de Guillaume le Maréchal,* ed. Paul Meyer, 3 vols., 1891, etc.) throw valuable light on certain episodes. H. S. Sweetman's *Calendar of Documents relating to Ireland,* vol. i. (Rolls Series); W. H. Bliss's *Calendar of Entries in the Papal Registers,* vol. i. (Rolls Series); Potthast's *Regesta pontificum,* vol. i. (Berlin, 1874); Sir T. D. Hardy's *Rotuli litterarum clausarum* (Rec. Commission, 1835) and *Rotuli litterarum patentium* (Rec. Commission, 1835) and L. Delisle's *Catalogue des actes de Philippe Auguste* (1856) are the most important guides to the documents. Of modern works W. Stubbs's *Constitutional history,* vol. i. (Oxford, 1897); the same writer's preface to *Walter of Coventry,* vol. ii. (Rolls Series); K. Norgate's *John Lackland* (1902); C. Petit-Dutaillis' *Étude sur la vie et le règne de Louis VIII.* (1894), W. S. McKechnie's *Magna Carta* (1905; 2nd ed. 1915) and *Magna Carta Commemoration Essays* ed. H. E. Malden (1917) are among the most useful. (H. W. C. D.)

JOHN I. (b. and d. 1316), king of France, son of Louis X. and Clemence, daughter of Charles Martel, who claimed to be king of Hungary, was born after his father's death, on Nov. 15, 1316, and lived only seven days. His uncle, afterwards Philip V., has been accused of having caused his death, or of having substituted a dead child in his place; but nothing was ever proved.

JOHN II. (1319–1364), surnamed the Good, king of France, son of Philip VI. and Jeanne of Burgundy, succeeded his father in 1350. At the age of 13 he married Bona of Luxemburg, daughter of John, king of Bohemia. His first act upon becoming king was to order the execution of the constable, Raoul de Brienne. John surrounded himself with evil counsellors, Simon de Buci, Robert de Lorris, Nicolas Braque, who robbed the treasury and oppressed the people, while the king gave himself up to tournaments and festivities. Raids of the Black Prince in Languedoc led to the states-general of 1355, which readily voted money, but sanctioned the right of resistance against all kinds of pillage—a distinct commentary on the incompetence of the king. In Sept. 1356 John gathered the flower of his chivalry and attacked the Black Prince at Poitiers where he was defeated and made prisoner. Taken to England to await ransom, John was at first installed in the Savoy Palace, then at Windsor, Hertford, Somerton, and at last in the Tower. He was granted royal state with his captive companions, made a guest at tournaments, and supplied with luxuries imported by him from France. The treaty of Brétigny (1360), which fixed his ransom at 3,000,000 crowns, enabled him to return to France, but although he married his daughter Isabella to Gian Galeazzo Visconti of Milan, for a gift of 600,000 golden crowns, imposed a heavy feudal "aid" on merchandise, and various other taxes, John was unable to pay the ransom. He returned of his own free will to England in January 1364 and was received with great honour, lodged again in the Savoy, and was a frequent guest of Edward at Westminster. He died on April 8, and the body was sent back to France with royal honours.

See Froissart's *Chronicles;* Duc d'Aumale, *Notes et documents relatifs à Jean, roi de France, et à sa captivité* (1856); A. Coville, in Lavisse's *Histoire de France,* vol. iv., and authorities cited there.

JOHN (ZÁPOLYA) (1487–1540), king of Hungary, was the son of the palatine Stephen Zápolya and the princess Hedwig of Teschen, and was born at the castle of Szepesvár. He began his public career at the famous Rákos diet of 1505, when, on his motion, the assembly decided that after the death of the reigning king, Wladislaus II., no foreign prince should be elected king of Hungary. Henceforth he became the national candidate for the throne, which his family had long coveted. In 1510 Zápolya sued in person for the hand of the Princess Anne in vain, and his appointment to the voivody of Transylvania (1511) was with the evident intention of removing him far from court. In 1513, he renewed his suit, which was again rejected. In 1514 he stamped out the peasant rising under Dozsa (*q.v.*) with incredible brutality. This increased his popularity with the gentry, and, on the death of Wladislaus II., the second diet of Rákos (1516) appointed him the governor of the infant king Louis II. He now aimed at the dignity of palatine also, but the council of state and the court party combined against him and appointed István Báthory instead (1519). The dissensions between Zápolya and Báthory were responsible for the fall of Belgrade (1521). In 1522 the court made Báthory sole captain-general, against the wishes of the diet; thereupon Zápolya attempted to depose the palatine and other great officers of state. In the following year, however, the revolutionary Hátvan diet drove out all the members of the council of state and made István Verböczy, the great jurist, and a friend of Zápolya, palatine. In the midst of this hopeless anarchy, Suleiman I., the Magnificent, invaded Hungary and the young king perished with his army at Mohács, Zápolya arriving too late to save the day. The court party accused him, but probably without ground, of deliberate treachery. The diets of Tokaj (Oct. 14) and Székesféhérvár (Nov. 10) then elected Zápolya king of Hungary, and he was crowned on Nov. 11.

A struggle with the rival candidate, the German king Ferdinand I., at once ensued (*see* HUNGARY: *History*), Zápolya receiving support from the Turks. In 1538, by the compact of Nagyvárad, Ferdinand recognized John as king of Hungary, but secured the right of succession on his death. Nevertheless John broke the compact by bequeathing the kingdom to his infant son John Sigismund under Turkish protection.

See Vilmos Fraknoi, *Ungarn vor der Schlacht bei Mohács* (Budapest, 1886); L. Kupelwieser, *Die Kämpfe Ungarns mit den Osmanen*

bis zur Schlacht bei Mohács (Vienna, 1895).

JOHN III. (SOBIESKI) (1624–1696), king of Poland, was the eldest son of James Sobieski, castellan of Cracow, and Theofila Danillowiczowna, grand-daughter of the great Hetman Zolkiewski. After being educated at Cracow, he made the grand tour with his brother Mark and returned to Poland in 1648. He served against Chmielnicki and the Cossacks and was present at the battles of Beresteczko (1651) and Batoka (1652), but when the Swedes invaded Poland in 1654 at once deserted to them and actually assisted them to conquer the Prussian provinces in 1655. Next year, however, he again changed coats and helped Czarniecki expel the Swedes from the central Polish provinces. For his subsequent services to King John Casimir, especially in the Ukraine against the Tatars and Cossacks, he received the grand bâton of the crown, or commandership-in-chief (1668). He had already (1665) succeeded Czarniecki as acting commander-in-chief. His military capacities were extraordinary, but he was unscrupulous and absolutely self-seeking.

At the election diet of 1669 he accepted large bribes from Louis XIV. to support one of the French candidates; after the election of Michael Wisniowiecki (June 19, 1669) he openly conspired, again in the French interest, against the king in an hour of the utmost national danger. The plot he had formed with the primate Prazmowski and others was discovered in 1670 and disavowed by Louis; the traitors then appealed to the Elector of Brandenburg against their own countrymen. Two years later they renewed the plot just as the Turks were advancing into Poland; and the king was consequently forced to sign the disgraceful peace of Buczacz (Oct. 17, 1672) whereby Poland ceded to the Porte the entire Ukraine with Podolia and Kamieniec.

Sobieski himself partially retrieved the situation by winning four victories in ten days. The peace of Buczacz was repudiated, and Sobieski defeated the Turks brilliantly at Khotin (Nov. 10, 1673). The same day king Michael died, and Sobieski, abandoning the frontier to its fate, hastened to the capital to secure the throne. Appearing at the elective diet of 1674 at the head of 6,000 veterans he overawed every other competitor, and despite the persistent opposition of the Lithuanians was elected king (May 21). He was then obliged to return at once to the Ukraine. He attempted to negotiate with the Sultan and the Tatar khan; to entrust the whole guardianship of the Ukraine to the Cossacks, and himself concentrate the regulars and militia at Lemberg. The Polish gentry however failed to support him, and he faced the Turk alone, with a few devoted lieutenants. Returning to Cracow to be crowned (Feb. 14, 1676), he renewed the campaign and at last recovered by special treaty two-thirds of the Ukraine, but without Kamieniec (treaty of Zaravno, Oct. 16, 1676).

Sobieski hoped now to establish absolute monarchy in Poland; but Louis XIV. looked coldly on the project and relations between France and Poland gradually grew more strained until on March 31, 1683, Sobieski signed the treaty with the Emperor Leopold against the Turks which was the prelude to the most glorious episode of his life, the relief of Vienna and the liberation of Hungary from the Ottoman yoke. The epoch-making victory of Sept. 12, 1683, was ultimately decided by the charge of the Polish cavalry led by Sobieski in person. Poland profited little by this triumph, being left to fight on in the Ukraine with whatever assistance she could obtain from the unwilling and unready Muscovites. The last twelve years of the reign of John III. were a period of humiliation and disaster. A treasonable senate, a mutinous diet, ungrateful allies, surrounded him.

His last campaign (in 1690) was an utter failure, and the last years of his life were embittered by the violence and the intrigues of his dotingly beloved wife, Marya Kazimiera d'Arquien, by whom he had three sons, James, Alexander and Constantine. He died on June 17, 1696, disillusioned and broken-hearted.

See E. H. R. Tatham, *John Sobieski* (Oxford, 1881); Kazimierz Waliszewski, *Archives of French Foreign Affairs*, 1674–1696, v. (Cracow, 1881); Ludwik Piotr Leliwa, *John Sobieski and His Times* (Pol.) (Cracow, 1882–85); Georg Rieder, *Johann Sobieski in Wien* (Vienna, 1882).

JOHN I. (1357–1433), king of Portugal, the natural son of Pedro I. (*el Justicieiro*), was born at Lisbon on April 22, 1357, and in 1364 was created grand-master of Aviz. On the death of his lawful brother Ferdinand I., without male issue, in 1383, efforts were made to secure the succession for Beatrice, the only child of Ferdinand I., who as heiress-apparent had been married to John I. of Castile (Spain). John was after violent tumults proclaimed protector and regent in the following December. In April 1385 he was unanimously chosen king by the estates of the realm at Coimbra. The king of Castile invaded Portugal, but his army was compelled by pestilence to withdraw, and subsequently by the decisive battle of Aljubarrota (Aug. 14, 1385) the stability of John's throne was permanently secured. Hostilities continued intermittently until John of Castile died, without leaving issue by Beatrice, in 1390. In 1415 Ceuta was taken from the Moors by his sons who had been born to John by his wife Philippa, daughter of John, duke of Lancaster. John I. died on Aug. 14, 1433, in a reign which had been characterized by great prudence, ability and success; he was succeeded by his son Edward or Duarte.

See J. P. Oliveira Martins, *Os filhos de D. João I.* and *A vida de Nun' Alvares* (Lisbon, 2nd ed. 1894; English translation with adds. etc. by T. T. Abraham, 1911); F. M. Esteves Pereira, *Livro da Montaria* (1918).

JOHN II. (1455–1495), the Perfect, king of Portugal, succeeded his father, Alphonso V., in August 1481. He first curtailed the overgrown power of his aristocracy; noteworthy incidents in the contest were the execution (1483) of the duke of Braganza for correspondence with Castile, and the murder, by the king's own hand, of the youthful duke of Viseu for conspiracy. This reign was signalized by Bartholomeu Diaz's discovery of the Cape of Good Hope in 1488. Maritime rivalry led to disputes between Portugal and Castile until their claims were adjusted by the famous treaty of Tordesillas (June 7, 1494). John II. died, without leaving male issue, in Oct. 1495, and was succeeded by his brother-in-law Emmanuel (Manoel) I.

See J. P. Oliveira Martins, *O principe perfeito* (Lisbon, 1895).

JOHN III. (1502–1557), king of Portugal, born at Lisbon, on June 6, 1502, succeeded his father Emmanuel I. in Dec. 1521. In 1524 he married Catherine, sister to the Emperor Charles V., who shortly afterwards married the infanta Isabella, John's sister. John III. became subservient to the clerical party among his subjects, with disastrous consequences to the commercial and social prosperity of his kingdom. He died on June 6, 1557, and was succeeded by his grandson Sebastian, a child aged three years.

JOHN IV. (1603–1656), the Fortunate, king of Portugal, founder of the Braganza dynasty, was born at Villaviciosa on March 19, 1603, succeeded to the dukedom of Braganza in 1630, and married Luisa de Guzman, eldest daughter of the duke of Medina Sidonia, in 1633. By the unanimous voice of the people he was raised to the throne of Portugal (of which he was held to be the legitimate heir) at the revolution effected in December 1640 against the Spanish king, Philip IV. His accession led to a protracted war with Spain, which only ended with the recognition of Portuguese independence in a subsequent reign (1668). He died on Nov. 6, 1656, and was succeeded by his son Alphonso VI.

JOHN V. (1689–1750), king of Portugal, was born at Lisbon on Oct. 22, 1689, and succeeded his father Pedro II. in Dec. 1706, being proclaimed on Jan. 1, 1707. One of his first acts was to intimate his adherence to the Grand Alliance, which his father had joined in 1703. Accordingly his general Das Minas, with Lord Galway, advanced into Castile, but was defeated at Almanza (April 14). In Oct. 1708 he married Maria Anna, daughter of Leopold I., thus strengthening the alliance with Austria; the series of unsuccessful campaigns which ensued ultimately terminated in a favourable peace with France in 1713 and with Spain in 1715. John was entirely under the domination of the clergy, and the title "Most Faithful King," was bestowed upon him and his successors by a bull of Pope Benedict XIV. in 1748. The army, navy and other branches of administration were neglected in favour of the church. John V. died on July 31, 1750, and was succeeded by his son Joseph.

JOHN VI. (1769–1826), king of Portugal, son of Peter III., was born at Lisbon on May 13, 1769, and received the title of prince of Brazil in 1788. In 1792 he assumed the reins of govern-

ment in name of his mother Queen Mary I., who had become insane. In 1799 he assumed the title of regent, which he retained until his mother's death in 1816. (For the political history of his regency, the French occupation and the English peninsular campaign *see* PORTUGAL.) In 1816 he was recognized as king of Portugal but he continued to reside in Brazil, whither he had fled from the French in 1807. The consequent spread of dissatisfaction resulted in the peaceful revolution of 1820, and the proclamation of a constitutional government, to which he swore fidelity on his return to Portugal in 1822. In the same year, and again in 1823, he had to suppress a rebellion led by his son Dom Miguel, whom he banished in 1824. John recognized the independence of Brazil in 1825. He died at Lisbon on March 26, 1826, and was succeeded by Pedro IV.

JOHN (JOHN NEPOMUK MARIA JOSEPH) (1801–1873), king of Saxony, son of Prince Maximilian of Saxony and his wife Caroline of Parma (d. 1804), was born at Dresden on Dec. 12, 1801. As a boy he took a keen interest in literature and art (also in history, law and political science), and studied with the greatest ardour classical and German literature (Herder, Schiller, Goethe). He soon began to compose poetry himself, and drew great inspiration from a journey in Italy (1821–1822), the pleasure of which was however darkened by the death of his brother Clemens. In Pavia the prince met with Biagioli's edition of Dante, and this gave rise to his lifelong and fruitful studies of Dante. The first part of his German translation of Dante was published in 1828, and in 1833 appeared the complete work, with a valuable commentary. Several new editions appeared under his constant supervision, and he collected a complete library of works on Dante.

By his marriage with Amalia of Bavaria, John became the brother-in-law of Frederick William IV., king of Prussia, with whom he had a deep and lasting friendship. His wife died on Nov. 8, 1877, having borne him nine children, two of whom, Albert and George, later became kings of Saxony.

On his return to Dresden, John was called in 1822 to the privy board of finance (*Geheimes Finanzkollegium*) and in 1825 became its vice-president. He entered the privy council in 1830. During the revolution in Saxony he helped in the pacification of the country, became commandant of the new national guard, the political tendencies of which he tried to check, and took part in the organization of the constitution of Sept. 4, 1831. On the death of his brother Frederick Augustus II., John became, on Aug. 9, 1854, king of Saxony. He advocated the formation of a confederation of the smaller German states independent of Prussia and Austria. He supported Austria against Prussia at the diet of Princes in 1863, but he rallied to the North German Confederation after 1866, and dismissed Beust (*q.v.*), who had hitherto directed Saxon foreign policy. In the war of 1870–71 with France his troops fought with conspicuous courage. He died at Dresden on Oct. 29, 1873.

See H. Ermisch, *Die Wettiner und die Landesgeschichte* (Leipzig, 1902); O. Kaemmel, *Sächsische Geschichte* (Leipzig, 1899, Sammlung Göschen). His son John George edited his correspondence with Frederick William IV. and Wilhelm I. (1911), and with George Ticknor (1920).

JOHN (1468–1532), called the Steadfast, elector of Saxony, fourth son of the elector Ernest, was born on June 30, 1468. In 1486, when his eldest brother became elector as Frederick III., John received a part of the paternal inheritance. He was an early adherent of Luther, and, becoming elector of Saxony by his brother's death in May 1525, helped Philip, landgrave of Hesse, to found the league of Gotha, formed in 1526 for the protection of the Reformers. He was active at the diet of Speyer in 1526, and the "recess" of this diet gave him an opportunity to reform the church in Saxony, where a plan for divine service was drawn up by Luther. He signed the protest against the "recess" of the diet of Speyer in 1529, being thus one of the original Protestants, and opposed Charles V. at the diet of Augsburg in 1530. He signed the Augsburg Confession, and was alone among the electors in objecting to the election of Ferdinand, afterwards the emperor Ferdinand I., as king of the Romans. He was among the first members of the league of Schmalkalden, assented to the peace of Nuremberg in 1532, and died at Schweidnitz on Aug. 16, 1532.

See J. Becker, *Kurfürst Johann von Sachsen und seine Beziehungen zu Luther* (Leipzig, 1890).

JOHN or **HANS** (1513–1571), margrave of Brandenburg-Cüstrin, was the younger son of Joachim I., elector of Brandenburg, and was born at Tangermünde on Aug. 3, 1513. In spite of the *dispositio Achillea* which decreed the indivisibility of the electorate, John inherited the new mark of Brandenburg on his father's death in July 1535. He had been brought up as a strict Catholic, but in 1538 ranged himself definitely on the side of the Reformers. He joined the league of Schmalkalden; but was won over to the imperial side. After the conclusion of the war, the relations between John and Charles became somewhat strained. The margrave opposed the Augsburg *Interim* (1548), and he was the leader of the princes who formed a league for the defence of the Lutheran doctrines in Feb. 1550. After some differences of opinion with Maurice, elector of Saxony, however, he returned to the emperor's side. His remaining years were mainly spent in the new mark, which he ruled carefully and economically. He purchased Beeskow and Storkow, and fortified the towns of Cüstrin and Peitz. He died at Cüstrin on Jan. 13, 1571. His wife Catherine was a daughter of Henry II., duke of Brunswick, and as he left no sons the new mark passed on his death to his nephew John George, elector of Brandenburg.

See Berg, *Beiträge zur Geschichte des Markgrafen Johann von Küstrin* (Landsberg, 1903).

JOHN I. (d. 1294), duke of Brabant and Lorraine, surnamed the Victorious, was the second son of Duke Henry III. and Aleidis of Burgundy. In 1267 his elder brother Henry was deposed in his favour. In 1271 John married Margaret, daughter of Louis IX. of France, and following her death took as his second wife (1273) Margaret of Flanders, daughter of Guy de Dampierre. His sister Marie was espoused in 1275 to Philip III. (the Bold) of France. During the reign of Philip and his son Philip IV. there were close relations of friendship and alliance between Brabant and France. In 1285 John accompanied Philip III. in his expedition against Peter III., king of Aragon. After the death of Waleran IV. in 1279 the succession to the duchy of Limburg was disputed. His heiress, Ermengarde, had married Reinald I. count of Gelderland. She died childless, but her husband continued to rule in Limburg, although his rights were disputed by Count Adolph of Berg, nephew to Waleran IV. (*See* LIMBURG.)

Not being strong enough to eject his rival, Adolph sold his rights to John of Brabant, and hostilities broke out in 1283. Harassed by desultory warfare and endless negotiations, and seeing no prospect of holding his own against the powerful duke of Brabant, Reinald made over his rights to Henry III. count of Luxemburg, who was a descendant of Waleran III. of Limburg. Henry III. was sustained by the archbishop of Cologne and other allies, as well as by Reinald of Gelderland. The duke of Brabant at once invaded the Rhineland and laid siege to the castle of Woeringen near Bonn. Here he defeated the forces of the confederacy on June 5, 1288. Limburg was henceforth attached to the duchy of Brabant. John consolidated his conquest by giving his daughter in marriage to Henry of Luxemburg (1291). He died of a wound received at a tournament at Bar (May 3, 1294).

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JOHN (1371–1419), called the Fearless (*Sans Peur*), duke of Burgundy, son of Philip the Bold, duke of Burgundy, and Margaret of Flanders, was born at Dijon on May 28, 1371. On the death of his maternal grandfather in 1384 he received the title of count of Nevers, which he bore until his father's death. He married in 1385 Margaret, daughter of Duke Albert of Bavaria, an alliance which consolidated his position in the Netherlands. In the spring of 1396 he took arms for Hungary against the Turks and on the 28th of September was taken prisoner by the Sultan Bayezid I. at the bloody battle of Nicopolis, where he earned his surname of "the Fearless." He did not recover his liberty until 1397, and then only by paying an enormous ransom. He succeeded

his father in 1404, and immediately found himself in conflict with Louis of Orleans, the young brother of Charles VI. The history of the following years is filled with struggles between these two princes and with their attempts to seize the authority in the name of the demented king. John endeavoured to strengthen his position by marrying his daughter Margaret to the dauphin Louis, and by betrothing his son Philip to a daughter of Charles VI. Like his father, he looked for support to the popular party, to the tradesmen, particularly the powerful gild of the butchers, and also to the university of Paris. In 1405 he opposed in the royal council a scheme of taxation proposed by the duke of Orleans, which was nevertheless adopted. Louis retaliated by refusing to sanction the duke of Burgundy's projected expedition against Calais, whereupon John quitted the court in chagrin on the pretext of taking up his mother's heritage. He was, however, called back to the council to find that the duke of Orleans and the queen had carried off the dauphin. John succeeded in bringing back the dauphin to Paris, and open war seemed imminent between the two princes. But an arrangement was effected in October 1405, and in 1406 John was made by royal decree guardian of the dauphin and the king's children.

The struggle, however, soon revived with increased force. On Nov. 20, 1407, the two princes were formally reconciled by their uncle, the duke of Berry, but three days later Louis was assassinated by John's orders in the Rue Barbette, Paris. John abruptly left Paris. His vassals, however, showed themselves determined to support him in his struggle against the avengers of the duke of Orleans. The court decided to negotiate, and called upon the duke to return. John entered Paris in triumph, and instructed the Franciscan theologian Jean Petit (d. 1411) to pronounce an apology for the murder. But he was soon called back to his estates by a rising of the people of Liége against his brother-in-law, the bishop of that town. The queen and the Orleans party took every advantage of his absence and had Petit's discourse solemnly refuted. John's victory over the Liégeois at Hasbain on Sept. 23, 1408, enabled him to return to Paris, where he was reinstated in his ancient privileges. By the peace of Chartres (March 9, 1409) the king absolved him from the crime, and an edict of Dec. 27, 1409, gave John the guardianship of the dauphin. A new league was formed against the duke of Burgundy by Bernard, count of Armagnac, from whom the party opposed to the Burgundians took its name. The peace of Bicêtre (Nov. 2, 1410) prevented the outbreak of hostilities; but in 1411, in consequence of ravages committed by the Armagnacs in the environs of Paris, the duke of Burgundy was called back to Paris. He relied more than ever on the support of the popular party, which then obtained the reforming *Ordonnance Cabochienne* (so called from Simon Caboche, a prominent member of the gild of the butchers). But the bloodthirsty excesses of the populace brought a change. John was forced to withdraw to Burgundy (August 1413), and the university of Paris and John Gerson once more censured Petit's propositions. Meanwhile John negotiated with the court and also with the English. His troops took no part in the battle of Agincourt (1415), where, however, two of his brothers, Anthony, duke of Brabant, and Philip, count of Nevers, fell fighting for France.

In 1417 John made an attack on Paris, which failed through his loitering at Lagny; but on May 30, 1418 a traitor, one Perrinet Leclerc, opened the gates of Paris to the Burgundian captain, Villiers de l'Isle Adam. The dauphin, afterwards King Charles VII., fled, and John betook himself to the king, who promised to forget the past. John, however, did nothing to prevent the surrender of Rouen, which had been besieged by the English, and on which the fate of the kingdom seemed to depend; and the town was taken in 1419. The dauphin then decided on a reconciliation, and on July 11 the two princes swore peace on the bridge of Pouilly, near Melun. A fresh interview was proposed by the dauphin and took place on Sept. 10, 1419 on the bridge of Montereau, when the duke of Burgundy was felled with an axe by Tanneguy du Chastel, one of the dauphin's companions, and done to death by the other members of the dauphin's escort. His body was removed to the Chartreuse of Dijon and placed in a magnificent tomb sculptured by Juan de la Huerta; the tomb was afterwards transferred to the museum in the *hôtel de ville*.

See A. G. P. Baron de Barante, *Histoire des ducs de Bourgogne* (Brussels, 1835–36); B. Zeller, *Louis de France et Jean sans Peur* (Paris, 1886); and E. Petit, *Itinéraire de Philippe le Hardi et de Jean sans Peur* (Paris, 1888).

JOHN, AUGUSTUS EDWIN (1878–), British painter, was born at Tenby, Wales, Jan. 4, 1878. He received his art education at the Slade School, London, and afterwards worked in Paris, later spending some time in Provence. He became a regular exhibitor at the New English Art Club, and in 1901–2 was teacher of art at University College, Liverpool, returning to London in 1902. His earlier work includes "The Way Down to the Sea" (1906), "The Kitchen Garden," "The Smiling Woman" (1910) and "The Mumpers" (1912). He was commissioned by Sir Hugh Lane to paint a series of decorative panels for the museum in Johannesburg, South Africa. For the Arts and Crafts Exhibition at Burlington House, London, 1916, he executed a mural decoration illustrating "Peasant Industry." During the World War he held a commission as official artist in the Canadian Corps, and exhibited at the Canadian War Memorial Exhibition, 1919, a cartoon for a large decoration, "Canadians opposite Lens." He was later commissioned to paint the chief characters of the Peace Conference. He also painted portraits of Lloyd George (1916), Bernard Shaw (1916), Lord Fisher (1917), Lord Sumner (1918), the Marchesa Casati (1918–9) and the Princess Bibesco (1924). His etchings form an important part of his work, the majority being produced between 1901–10. He is represented in the Tate Gallery by several pictures, including "The Smiling Woman," "Peasant Industry," "Robin" (1917–8), and "Rachael," in the Print Room of the British Museum, in the Walker Art Gallery, Liverpool; in the Birmingham Art Gallery; the Fitzwilliam Museum, Cambridge; the National Gallery, Dublin; the museums of Victoria and Melbourne, Australia, and in the Metropolitan Museum, New York. His early work, with its definite contour enclosing areas of colour, relates him to the *quattrocento* Italian painters. Distortion for personal emphasis and decorative effect is another marked characteristic. He was elected A.R.A. in 1921, R.A. in 1928, but resigned in 1938.

See A. B., *Augustus John* (1923); C. Dodgson, *A Catalogue of Etchings by A. John 1901–1914* (1921).

JOHN, DON (1545–78), of Austria, was the natural son of the emperor Charles V. by Barbara Blomberg, the daughter of an opulent citizen of Regensburg. He was born in Regensburg on Feb. 24, 1545, and at first confided under the name of Geronimo to foster parents of humble birth, at a village near Madrid; but in 1554 transferred to the charge of Madalena da Ulloa, the wife of Don Luis de Quijada, and brought up in ignorance of his parentage at Quijada's castle of Villagarcia, near Valladolid. Charles V. in a codicil of his will recognized Geronimo as his son, and recommended him to the care of his successor. In September 1559 Philip II. of Spain publicly recognized the boy as a member of the royal family, and he was known at court as Don Juan de Austria. Although first intended for a monk, Don John preferred a military career. In 1568 he commanded a fleet of galleys against Algerian corsairs; in 1569–70 he conducted operations against the rebel Moriscos in Granada; and in 1571 commanded the fleet which won the great victory of Lepanto against the Turkish fleet (Oct. 7, 1571).

This great triumph aroused Don John's ambition and filled his imagination with schemes of personal aggrandizement. He thought of erecting first a principality in Albania and the Morea, and then a kingdom in Tunis. But the conclusion by Venice of a separate peace with the sultan put an end to the league, and though Don John captured Tunis in 1573, it was again speedily lost. Philip II. refused to support Don John's schemes, and even withheld from him the title of infante of Spain. At last, however, he was appointed (1576) governor-general of the Netherlands, in succession to Luis de Requesens, in the hope that his prestige and activities would prove sufficient to put down the wide-spread revolt against Spanish rule headed by William of Orange. Confronted by the refusal of the states general to accept him as governor unless he assented to the conditions of the Pacification of

Ghent, swore to maintain the rights and privileges of the provinces, and to employ only Netherlanders in his service, Don John, after some months of fruitless negotiations, was obliged to give way and sign the "Perpetual Edict" complying with these terms (Huey, Feb. 12, 1577). On May 1 he entered Brussels, but he found himself governor-general only in name, and the prince of Orange master of the situation. In July he suddenly betook himself to Namur and withdrew his concessions. William of Orange forthwith took up his residence at Brussels, and gave his support to the archduke Matthias, afterwards emperor, whom the states-general accepted as their sovereign. Meanwhile Philip had sent large reinforcements to Don John under his cousin Alexander Farnese. Don John now attacked and defeated the patriot army at Gembloux (Jan. 31, 1578). Lack of funds prevented him, however, from following up his victory. After a summer of forced inactivity, he was attacked by fever and died on Oct. 1, 1578.

See Sir W. Stirling Maxwell, *Don John of Austria 1547–1575* (1883) and the bibliography under PHILIP II. OF SPAIN.

JOHN, DON (1629–1679), of Austria, the younger, was recognized as the natural son of Philip IV., king of Spain, his mother, Maria Calderon, or Calderona, being an actress. Scandal accused her of a prodigality of favours which must have rendered the paternity of Don John very dubious. He was, however, recognized by the king, received a princely education at Ocaña, and was amply endowed with commanderies in the military orders and other forms of income. Don John was sent in 1647 to Naples to support the viceroy against the popular rising led by Masaniello. He was then made viceroy of Sicily but in 1651 recalled to complete the pacification of Catalonia, presiding over the final siege of Barcelona and the convention which terminated the revolt in October 1652. On both occasions he had played the peacemaker, and this sympathetic part, combined with his own pleasant manners and handsome person with bright eyes and abundant raven-black hair—a complete contrast to the fair complexions of the Habsburgs—made him a popular favourite. In 1656 he was sent to command in Flanders, in combination with the prince of Condé, then in revolt against his own sovereign. At Valenciennes in 1656, Don John displayed brilliant personal courage at the head of a cavalry charge, but was completely defeated at the Dunes in 1658 by Turenne. During 1661 and 1662 he commanded against the Portuguese in Estremadura, with some success until in 1663 the Portuguese were reinforced by English troops, and put under the command of the Huguenot Schomberg. By him Don John was completely beaten at Estremos. The unsuccessful campaign was partly due to Don John's own indolence; but it was chiefly the jealousy of his father's wife, Queen Mariana, that caused him to be removed from command and sent to his commandery at Consuegra. After the death of Philip IV. in 1665 Don John became the recognized leader of the opposition to the government of Philip's widow, the queen regent, against whom he headed a rising of Aragon and Catalonia, which led to the expulsion of her favourite, Nithard (1669). Don John was, however, forced to content himself with the viceroyalty of Aragon. In 1677, the queen mother having aroused universal opposition, Don John was able to drive her from court, and establish himself as prime minister. Great hopes were entertained of his administration, but it proved disappointing and was of short duration. He died on Sept. 17, 1679.

JOHN, GRIFFITH (1831–1912), Welsh missionary, was born at Swansea on Dec. 14, 1831, and was brought up a Congregationalist. His work in China as a missionary covered a period of 55 years. In 1861 he went from Shanghai through the provinces of central China, which he was the first Christian missionary to penetrate, and he claimed that with his colleagues he had established over 100 stations of the London Missionary Society in Hu-peh and Hu-nan. He acquired an intimate knowledge of the Chinese language and literature, and translated the New Testament and a great part of the Old into more than one Chinese dialect. In the Yangtsze valley he founded a theological college for native preachers which bears his name. He died at Hampstead, London, on July 25, 1912.

JOHN, SIR WILLIAM GOSCOMBE (1860–), British sculptor, was born at Cardiff on Feb. 21, 1860, and studied at Cardiff and in London. After gaining the Royal Academy gold medal and travelling studentship, he spent a year in Paris (1890–91), and in 1892 gained honourable mention at the Paris Salon. He was elected A.R.A. in 1899 and R.A. in 1909. In 1900 the gold medal was awarded him at the Paris International Exhibition, and he was made corresponding member of the Institut de France. He was knighted at the investiture of the prince of Wales at Carnarvon castle in 1911. He is an expert technician. Among his best work are his portrait busts, especially of children, and medals. His principal works include "King Edward VII.," at Cape Town; "W. E. H. Lecky," at Trinity college, Dublin; "Thomas Sutton, founder of Charterhouse," at Charterhouse, Godalming; "The Rt. Hon. David Lloyd George," at Carnarvon; "The Duke of Devonshire," at Eastbourne; "The Marquis of Salisbury," in Westminster Abbey; equestrian statues of King Edward VII., at Liverpool; Viscount Wolseley, Horse Guards Parade, London; and Gen. Sir Stanley Maude, at Baghdad; and also many memorials, among which those of the Coldstream Guards and War Correspondents in St. Paul's cathedral may be mentioned. The Tate Gallery contains "The Boy at Play"; the Glasgow art gallery, "The Elf"; the Cardiff art gallery "Morpheus" and "St. John the Baptist." He designed the King's Silver Jubilee Medal, 1935.

JOHN, GOSPEL OF ST., the fourth and latest of the Gospels, in the Bible, and, next to that of St. Mark, the shortest. This article will first describe its general structure and more obvious contents, compare it with the Synoptic Gospels, and draw out its leading characteristics and final object; it will then apply the tests thus gained to the narratives special to this Gospel, and point out the book's special difficulties and limits, and its abiding appeal and greatness; and finally, consider the questions of its origin and authorship.

Analysis of Contents.—The book's chief break is at xiii. 1, the solemn introduction to the feet-washing; all up to here reports Jesus' signs and apologetic or polemical discourses to the outer world; hence onwards it pictures the manifestation of His glory to the inner circle of His disciples. These two parts contain three sections each.

1. (i.) Introduces the whole work (i. 1–ii. 11). (*a*) The prologue (i. 1–18). The Logos existed before creation and time; was with the very God and was God; and all things were made through Him. For in this Logos is Life, and this Life is a Light which, though shining in darkness, cannot be suppressed by it. This true Light became flesh and tabernacled amongst us; and we beheld His glory, as of an Only-Begotten from the Father, full of grace and truth. John the Baptist testified concerning Him, the Logos-Light and Logos-Life incarnate; but this Logos alone, who is in the bosom of the Father, hath declared the very God. (*b*) The four days' work (i. 19–51). On the first three days John declares that he is not the Christ, proclaims Jesus to be the Christ, and sends his own disciples away to Jesus. On the fourth day, Jesus Himself calls Philip and Nathanael. (*c*) The seventh day's first manifestation of the Incarnate Light's glory (ii. 1–11); Jesus at Cana turns water into wine.

(ii.) Records the manifestations of the Light's and Life's glory and power to friend and foe (ii. 22–vi. 71). (*d*) Solemn inauguration of the Messianic ministry (ii. 12–iii. 21): cleansing of the Temple and prophecy of His resurrection; discourse to Nicodemus on baptismal regeneration. (*e*) Three scenes in Judea, Samaria, Galilee respectively (iii. 32–iv. 54): the Baptist's second testimony; Jesus' discourse with the woman at the well concerning the spiritual, universal character of the new religion; and cure of the ruler's son, the reward of faith in the simple word of Jesus. (*f*) Manifestation of Jesus as the vivifying Life-Logos and its contradiction in Judea, v.: the paralytic's cure. (*g*) Manifestation of Jesus as the heaven-descended living Bread and its contradiction in Galilee, vi.: multiplication of the loaves; walking on the waters; and His discourse on the Holy Eucharist.

(iii.) Acute conflict between the New Light and the old darkness (vii.–xii.). (*h*) Self-manifestation of the Logos-Light in the Temple (vii. 1–x. 39). Journey to the feast of tabernacles; invita-

tion to the soul athirst to come to Him (the fountain of Life) and drink, and proclamation of Himself as the Light of the world; cure of the man born blind; allegory of the good shepherd. The allegory continued at the feast of the dedication. They strive to stone or to take Him. (*i*) The Logos-Life brings Lazarus to life; effects of the act (x. 40–xii. 50). Jesus withdraws beyond Jordan, and then comes to Bethany, His friend Lazarus being buried three days; proclaims Himself the Resurrection and the Life; and calls Lazarus back to life. Some who saw it report the act to the Pharisees; the Sanhedrim meets, Caiaphas declares that one man must die for the people, and henceforward they ceaselessly plan His death. Jesus withdraws to the Judean desert, but soon returns, six days before Passover, to Bethany; Mary anoints Him, a crowd comes to see Him and Lazarus, and the hierarchs then plan the killing of Lazarus also. Next morning He rides into Jerusalem on an ass's colt. Certain Greeks desire to see Him: He declares the hour of His glorification to have come: "Now My soul is troubled. . . . Father, save Me from this hour. But for this have I come unto this hour: Father, glorify Thy Name." A voice answers, "I have glorified it and will glorify it again": some think that an angel spoke; but Jesus explains that this voice was not for His sake but for theirs. When lifted up from the earth, He will draw all men to Himself; they are to believe in Him, the Light. The writer's concluding reflection: the small success of Jesus' activity among the Jews. Once again He cries: "I am come a Light into the world, that whoso believeth in Me should not abide in darkness."

2. The Logos-Christ's manifestation of His life and love to His disciples, during the last supper, the passion, the risen life (xiii.–xx.).

(iv.) The Last Supper (xiii.–xvii.). (*j*) Solemn washing of the disciples' feet; the beloved disciple; designates the traitor; Judas goes forth, it is night (xiii. 1–30). (*k*) Last discourses, first series (xiii. 31–xiv. 31): the new commandment, the other helper; "Arise, let us go hence." Second series (xv. 1–xvi. 33): allegory of the true vine; "Greater love than this hath no man, that he lay down his life for his friend"; the world's hatred; the spirit of truth shall lead them into all truth; "I came forth from the Father and am come into the world, again I leave the world and go to the Father"; "Be of good cheer, I have overcome the world." (*l*) The high-priestly prayer (xvii.). "Father, glorify Thy Son . . . with the glory which I had with Thee before the world was . . . that to as many as Thou hast given Him, He should give eternal life." "I pray for them, I pray not for the world. I pray also for them that shall believe in Me through their word, that they may be all one, as Thou Father art in Me, and I in Thee."

(v.) The Passion (xviii.–xix.). (*m*) In the garden: the Roman soldiers come to apprehend Him, fall back upon the ground at His declaration "I am He." Peter and Malchus. (*n*) Before Annas at night and Caiaphas at dawn; Peter's denials (xviii. 12–27). (*o*) Before Pilate (xviii. 28–40). Jesus declares, "My kingdom is not of this world. I have come into the world that I may bear witness to the truth: everyone that is of the truth, heareth My voice"; Pilate asks sceptically "What is truth?" and the crowd prefers Barabbas. (*p*) The true king presented to the people as a mock-king; His rejection by the Jews and abandonment to them (xix. 1–16). (*q*) Jesus carries His cross to Golgotha, and is crucified there between two others; the cross's title and Pilate's refusal to alter it (xix. 17–22). (*r*) The soldiers cast lots upon His garments and seamless tunic; His mother with two faithful women and the beloved disciple at the cross's foot; His commendation of His mother and the disciple to each other; His last two sayings in deliberate accomplishment of scripture "I thirst," "It is accomplished." He gives up the spirit; His bones remain unbroken; and from His spear-lanced side blood and water issue (xix. 23–37). (*s*) The two nobles, Joseph of Arimathaea and Nicodemus, bind the dead body in a winding sheet with one hundred pounds of precious spices, and place it in a new monument in a near garden, since the sabbath is at hand.

(vi.) The risen Jesus, Lord and God (xx.). (*t*) At early dawn on the first day of the week, Mary Magdalen, finding the stone rolled away from the monument, runs to tell Peter and the beloved disciple that the Lord's body has been removed. Peter and the other disciple run to the grave; the latter, arriving first, enters only after Peter has gone in and noted the empty grave-clothes—enters and believes. After their departure, Mary sees two angels where His body had lain and turning away beholds Jesus standing, yet recognizes Him only when He addresses her. He bids her "Do not touch Me, for I have not yet ascended," but to tell His brethren "I ascend to My Father and to your Father, to My God and to your God." And she does so. (*u*) Second apparition (xx. 19–23). Later on the same day, the doors being shut, Jesus appears amongst His disciples, shows them His (pierced) hands and side, and solemnly commissions and endows them for the apostolate by the words, "As the Father hath sent Me, so I send you," and by breathing upon them saying "Receive the Holy Spirit: whose sins ye remit, they are remitted to them; whose sins ye retain, they are retained." (*v*) Third apparition and culminating saying; conclusion of entire book (xx. 24–31). Thomas, who had been absent, doubts the resurrection; Jesus comes and submits to the doubter's tests. Thomas exclaims, "My Lord and my God"; but Jesus declares "Blessed are they that have not seen and yet have believed." "Now Jesus," concludes the writer, "did many other signs, . . . but these are written, that ye may believe that Jesus is the Christ, the Son of God, and that believing ye may have life in His name."

This analysis is rough, since the sections, indeed the two parts themselves, are interrelated by delicate complex references; also it omits the account of the adulteress (vii. 53–viii. 11)—a valuable report of an occurrence which probably belonged to some primitive document otherwise incorporated by the Synoptists—because it is un-Johannine in vocabulary, style and character, intercepts the Gospel's thread wherever placed, and is absent from its best mss. It also omits xxi. This chapter's first two stages contain an important early historical document of Synoptic type: Jesus' apparition to seven disciples by the Lake of Galilee and the miraculous draught of fishes; and Peter's threefold confession and Jesus' threefold commission to him. And its third stage, Jesus' prophecies to Peter and to the beloved disciple concerning their future, and the declaration "This is the disciple who testifies to these things and who has written them, and we know that his testimony is true," is doubtless written by the redactor of the previous two stages. This writer imitates, but is different from, the great author of the first twenty chapters.

Comparison With the Synoptists.—The following are the most obvious differences between the original book and the Synoptists. John has a metaphysical prologue; Matthew and Luke have historical prologues; and Mark is without any prologue. The earthly scene is here Judea, indeed Jerusalem, with but five breaks (vi. 1–vii. 10 is the only long one); whilst over two-thirds of each Synoptist deal with Galilee or Samaria. The ministry here lasts about three and a half years (it begins some months before the first Passover, ii. 13; the feast of v. 1 is probably a second; the third occurs vi. 4; and on the fourth, xi. 55, He dies); whilst the Synoptists have but the one Passover of His death, after barely a year of ministry. Here Jesus' teaching contains no parables and but three allegories, the Synoptists present it as parabolic through and through. Here not one exorcism occurs; in the Synoptists the exorcisms are as prominent as the cures and the preaching. John has, besides the passion, seven accounts in common with the Synoptists: the Baptist and Jesus (i. 19–34); cleansing of the Temple (ii. 13–16); cure of the centurion's (ruler's) servant (son) (iv. 46–54); multiplication of the loaves (vi. 1–13); walking upon the water (vi. 16–21); anointing at Bethany (xii. 1–8); entry into Jerusalem (xii. 12–16); all unique occurrences. In the first, John describes how the Baptist, on Jesus' approach, cries "Behold the Lamb of God, which taketh away the sins of the world"; and how he says "I saw the spirit descending upon Him, and I bore witness that this is the Son of God." But the Synoptists, especially Mark, give the slow steps in even the apostles' realization of Jesus' Messianic character; only at Caesarea Philippi, Simon alone, for the first time, clearly discerns it, Jesus declaring that His Father has revealed it to Him, and yet Simon is still scandalized at the thought of a suffer-

ing Messiah (Mark viii. 28–34). Only some two weeks before the end is He proclaimed Messiah at Jericho (x. 46–48); then in Jerusalem, five days before dying for this upon the cross (xi. 1–10, xv. 37). As to the Baptist, in all three Synoptists, he baptizes Jesus, and, in Mark i. 10, 11, it is Jesus who sees the Spirit descending upon Himself on His emerging from beneath the water, and it is to Himself that God's voice is addressed; in John, Jesus' baptism is ignored, only the Spirit remains hovering above him, as a sign for the Baptist's instruction. And in Matt. xi. 2–6, the Baptist, several months after the Jordan scene, sends from his prison to ascertain if Jesus is indeed the Messiah; in John, the Baptist remains at large so as again (iii. 22–36) to proclaim Jesus' heavenly provenance. The cleansing of the Temple occurs in the Synoptists four days before His death, and instantly determines the hierarchs to seek His destruction (Mark xi. 15–18); John puts it three years back, as an appropriate frontispiece to His complete claims and work.

The passion-narratives reveal the following main differences. John omits, at the last supper, its central point, the great historic act of the Holy Eucharist, carefully given by the Synoptists and St. Paul, having provided a highly doctrinal equivalent in the discourse on the living Bread, here spoken by Jesus in Capernaum over a year before the passion (vi. 4), the day after the multiplication of the loaves. This transference is doubtless connected with the change in the relations between the time of the Passover meal and that of His death: in the Synoptists, the Thursday evening's supper is a true Passover meal, the lamb had been slain that afternoon and Jesus dies some twenty-four hours later; in John, the supper is not a Passover meal, the Passover is celebrated on Friday, and Jesus, proclaimed here from the first, the Lamb of God, dies whilst the paschal lambs, His prototypes, are being slain. The scene in the garden is without the agony of Gethsemane; a faint echo of this historic anguish appears in the scene with the Greeks four days earlier, and even that peaceful appeal to, and answer of, the Father occurs only for His followers' sakes. In the garden Jesus here Himself goes forth to meet His captors, and these fall back upon the ground, on His revealing Himself as Jesus of Nazareth. The long scenes with Pilate culminate in the great sayings concerning His kingdom not being of this world and the object of this His coming being to bear witness to the truth, thus explaining how, though affirming kingship (Mark xv. 2), He could be innocent. In John He does not declare Himself Messiah before the Jewish Sanhedrim (Mark xiv. 61) but declares Himself supermundane regal witness to the truth before the Roman governor. The scene on Calvary differs as follows: In the Synoptists the soldiers divide His garments among them, casting lots (Mark xv. 24); in John they make four parts of them and cast lots concerning His seamless tunic, thus fulfilling the text, "They divided My garments among them and upon My vesture they cast lots": the parallelism of Hebrew poetry, which twice describes one fact, being taken as witnessing to two, and the tunic doubtless symbolizing the unity of the Church, as in Philo the high priest's seamless robe symbolizes the indivisible unity of the universe, expressive of the Logos (*De ebrietate*, xxi.). In the Synoptists, of His followers only women—the careful, seemingly exhaustive lists do not include His mother—remain, looking on "from afar" (Mark xv. 40); in John, His mother stands with the two other Marys and the beloved disciple beneath the cross, and "from that hour the disciple took her unto his own (house)," while in the older literature His mother does not appear in Jerusalem till just before Pentecost, and with "His brethren" (Acts i. 14). And John alone tells how the bones of the dead body remained unbroken, fulfilling the ordinance as to the paschal lamb (Exod. xii. 46), and how blood and water flowed from His spear-pierced side: thus the Lamb "taketh away the sins of the world" by shedding His blood which "cleanseth us from every sin"; and "He cometh by water and blood," historically at His baptism and crucifixion, and mystically to each faithful soul in baptism and the eucharist. The story of the risen Christ (xx.) shows dependence on and contrast to the Synoptic accounts. Its two halves have each a negative and a positive scene. The empty grave (1–10) and the apparition to the Magdalen (11–18) together correspond to the message brought by the women (Matt. xxviii. 1–10); and the apparition to the ten joyously believing apostles (19–23) and then to the sadly doubting Thomas (24–29) together correspond to Luke xxiv. 36–43, where the eleven apostles jointly receive one visit from the risen One, and both doubt and believe, mourn and rejoice.

The Johannine discourses reveal differences from the Synoptists so profound as to be admitted by all. Here Jesus, the Baptist and the writer speak so much alike that it is sometimes impossible to say where each speaker begins and ends: *e.g.*, in iii. 27–30, 31–36. The speeches dwell upon Jesus' person and work, as we shall find, with a didactic directness, philosophical terminology and denunciatory exclusiveness unmatched in the Synoptist sayings. "This is eternal life, that they may know Thee the only true God and Jesus Christ whom Thou hast sent" (xvii. 3), is part of the high-priestly prayer; yet Père Calmes, with the papal censor's approbation, says, "It seems to us impossible not to admit that we have here dogmatic developments explicable rather by the evangelist's habits of mind than by the actual words of Jesus." "I have told you of earthly things and you believe not; how shall ye believe if I tell you of heavenly things?" (iii. 12), and "Ye are from beneath, I am from above" (viii. 23), give us a Plato- (Philo-) like upper, "true" world, and a lower, delusive world. "Ye shall die in your sins" (viii. 21); "ye are from your father the devil" (viii. 44); "I am the door of the sheep, all they that came before Me are thieves and robbers," (x. 7, 8); "they have no excuse for their sin" (xv. 22)—contrast strongly with the yearning over Jerusalem: "The blood of Abel the just" and "the blood of Zacharias son of Barachias" (Matt. xxiii. 35–37); and "Father, forgive them; for they know not what they do" (Luke xxiii. 34). And whilst the Synoptist speeches and actions stand in loose and natural relation to each other, the Johannine deeds so closely illustrate the sayings that each set everywhere supplements the other: the history itself here tends to become one long allegory. So with the woman at the well and "the living water"; the multiplication of the loaves and "the living Bread"; "I am the Light of the world" and the blind man's cure; "I am the Resurrection and the Life" and the raising of Lazarus; indeed even with the Temple-cleansing and the prophecy as to His resurrection; Nicodemus's night visit and "men loved the darkness rather than the light"; the cure of the inoperative paralytic and "My Father and I work hitherto"; the walking, phantom-like, upon the waters (John vi. 15–21; Mark vi. 49); and the declaration concerning the eucharist, "the spirit it is that quickeneth" (John vi. 63). Only some sixteen Synoptic sayings reappear here; but we are given some great new sayings full of the Synoptic spirit.

Characteristics and Object.—The book's character results from the continuous operation of four great tendencies. There is everywhere a readiness to handle traditional, largely historical, materials with a sovereign freedom, controlled and limited by doctrinal convictions and devotional experiences alone. There is everywhere the mystic's deep love for double, even treble meanings: *e.g.*, the "again" in iii. 2, means, literally, "from the beginning," to be physically born again; morally, to become as a little child; mystically, "from heaven, God," to be spiritually renewed. "Judgment" (*κρίσις*) in the popular sense, condemnation, a future act; in the mystical sense, discrimination, a present fact. There is everywhere the influence of certain central ideas, partly identical with, but largely developments of, those less reflectively operative in the Synoptists. Thus six great terms are characteristic of, or even special to, this Gospel. "The Only-Begotten" is most nearly reached by St. Paul's term "His own Son." The "Word," or "Logos," is a term derived from Heracleitus of Ephesus and the Stoics, through the Alexandrian Jew Philo, but conceived here throughout as definitely personal. "The Light of the World" the Jesus-Logos here proclaims Himself to be; in the Synoptists He only declares His disciples to be such. "The Paraclete," as in Philo, is a "helper," "intercessor"; but in Philo he is the intelligible universe, whilst here He is a self-conscious Spirit. "Truth," "the truth," "to know," have here a prominence and significance far beyond their Synoptic or even their Pauline use. And above all stand the uses of "Life," "Eternal Life."

The living ever-working Father (vi. 57; v. 17) has a Logos in whom is Life (i. 4), an ever-working Son (v. 17), who declares Himself "the living Bread," " the Resurrection and the Life," "the Way, the Truth and the Life" (vi. 51; xi. 25; xiv. 16): so that Father and Son quicken whom they will (v. 21); the Father's commandment is life everlasting, and Jesus' words are spirit and life (xii. 50; vi. 63, 68). The term, already Synoptic, takes over here most of the connotations of the "Kingdom of God," the standing Synoptic expression, which appears here only in iii. 3–5; xviii. 36. Note that the term "the Logos" is peculiar to the Apocalypse (xix. 13), and the prologue here, but that, as Light and Life, the Logos-conception is present throughout the book. And thus there is everywhere a striving to contemplate history *sub specie aeternitatis* and to englobe the successiveness of man in the simultaneity of God.

Narratives Peculiar to John.—Of his seven great symbolical, doctrinally interpreted "signs," John shares three, the cure of the ruler's son, the multiplication of the loaves, the walking on the waters, with the Synoptists: yet here the first is transformed almost beyond recognition; and the two others only typify and prepare the eucharistic discourse. Of the four purely Johannine signs, two—the cures of the paralytic (v. 1–16), and of the man born blind (ix. 1–34)—are, admittedly, profoundly symbolical. In the first case, the man's physical and spiritual lethargy are closely interconnected and strongly contrasted with the ever-active God and His Logos. In the second case there is also the closest parallel between physical blindness cured, and spiritual darkness dispelled, by the Logos-Light as described in the accompanying discourse. Both narratives are doubtless based upon actual occurrences—the cures narrated in Mark ii., iii., viii., x., and scenes witnessed by the writer in later times—yet here they do but picture our Lord's spiritual work in the human soul achieved throughout Christian history. We cannot well claim more than these three kinds of reality for the first and the last signs, the miracle at Cana and the resurrection of Lazarus.

For the marriage-feast sign yields throughout an allegorical meaning. Water stands in this Gospel for what is still but symbol; thus the water-pots serve here the external Jewish ablutions—old bottles which the "new wine" of the Gospel is to burst (Mark ii. 22). Wine is the blood of the new covenant, and He will drink the fruit of the vine new in the Kingdom of God (Mark xiv. 23–25); the vineyard where He Himself is the true Vine (Mark xii. 1; John xv. 1). And "the kingdom of heaven is like to a marriage-feast" (Matt. xxii. 2); Jesus is the Bridegroom (Mark ii. 19); "the marriage of the Lamb has come" (Rev. xix. 7). "They have no wine": the hopelessness of the old conditions is announced here by the true Israel, the Messiah's spiritual mother, the same "woman" who in Rev. xii. 2, 5 "brought forth a man-child who was to rule all nations." Cardinal Newman admitted that the latter woman "represents the church, this is the real or direct sense"; yet as her man-child is certainly the Messiah, this church must be the faithful Jewish church. Thus also the "woman" at the wedding and beneath the cross stands primarily for the faithful Old Testament community, corresponding to the beloved disciple, the typical New Testament follower of her Son, the Messiah: in each case the devotional accommodation to His earthly mother is equally ancient and legitimate. He answers her "My hour is not yet come," *i.e.*, in the symbolic story, the moment for working the miracle; in the symbolized reality, the hour of His death, condition for the spirit's advent; and "what is there between Me and thee?" *i.e.*, "My motives spring no more from the old religion," words devoid of difficulty, if spoken thus by the Eternal Logos to the passing Jewish church. The transformation is soon afterwards accomplished, but in symbol only; the "hour" of the full sense is still over three years off. Already Philo says "the Logos is the master of the spiritual drinking-feast," and "let Melchisedeck"—the Logos—"in lieu of water offer wine to souls and inebriate them" (*De somn.* ii. 37; *Legg. all.* iii. 26). But in John this symbolism figures a great historic fact, the joyous freshness of Jesus' ministerial beginnings, as indicated in the sayings of the Bridegroom and of the new wine, a freshness typical of Jesus' ceaseless renovation of souls.

The raising of Lazarus, in appearance a massive, definitely localized historical fact, requires a similar interpretation, unless we would, in favour of the direct historicity of a story peculiar to a profoundly allegorical treatise, ruin the historical trustworthiness of the largely historical Synoptists in precisely their most complete and verisimilar part. For especially in Mark, the passing through Jericho, the entry into Jerusalem, the Temple-cleansing and its immediate effect upon the hierarchs, their next day's interrogatory, "By what authority doest thou these things?" *i.e.*, the cleansing (x. 46–xi. 33), are all closely interdependent and lead at once to His discussions with His Jerusalem opponents (xii., xiii.), and to the anointing, last supper, and passion (xiv., xv.). John's last and greatest symbolic sign replaces those historic motives, since here it is the raising of Lazarus which determines the hierarchs to kill Jesus (xi. 46–52), and occasions the crowds which accompany and meet him on His entry (xii. 9–19). The intrinsic improbabilities of the narrative, if taken as direct history are also great: Jesus' deliberate delay of two days to secure His friend's dying, and His rejoicing at the death, since thus He can revivify His friend and bring His disciples to believe in Himself as the Life; His deliberate weeping over the death which He has thus let happen, yet His anger at the similar tears of Lazarus's other friends; and His praying, as He tells the Father in the prayer itself, simply to edify the bystanders: all point to a doctrinal allegory. Indeed the climax of the whole account is already reached in Jesus' great saying: "I am the Resurrection and the Life; he that believeth in Me . . . shall not die for ever," and in Martha's answer: "I believe that Thou art the Christ, the Son of God, who hast come into the world" (xi. 26, 27); the sign which follows is but the pictorial representation of this abiding truth. The materials for the allegory will have been certain Old Testament narratives, but especially the Synoptic accounts of Jesus' raisings of Jairus's daughter and of the widow's son (Mark v.; Luke vii.). Mary and Martha are admittedly identical with the sisters in Luke x. 38–42; and already some Greek fathers connect the Lazarus of this allegory with the Lazarus of the parable (Luke xvi. 19–31). In the parable Lazarus returns not to earth, since Abraham foresees that the rich man's brethren would disbelieve even if one rose from the dead; in the corresponding allegory, Lazarus does actually return to life, and the Jews believe so little as to determine upon killing the very Life Himself.

Special Difficulties and Greatness.—The difficulties, limitations and temporary means special to the book are closely connected with its ready appeal and abiding power; let us take both sets of things together, in three couples of inter-related price and gift.

The book's method and form are pervadingly allegorical; its instinct and aim are profoundly mystical. Now from Philo to Origen we have a long Hellenistic, Jewish and Christian application of that all-embracing allegorism, where one thing stands for another and where no factual details resist resolution into a symbol of religious ideas and forces. Thus Philo had, in his life of Moses, allegorized the Pentateuchal narratives so as to represent him as mediator, saviour, intercessor of his people, the one great organ of revelation, and the soul's guide from the false lower world into the upper true one. The Fourth Gospel is the noblest instance of this kind of literature, of which the truth depends not on the factual accuracy of the symbolizing appearances but on the truth of the ideas and experiences thus symbolized. And Origen is still full of spontaneous sympathy with its pervading allegorism. But this method has lost its attraction; the Synoptists, with their rarer and slighter pragmatic rearrangements and their greater closeness to our Lord's actual words, deeds, experiences, environment, now come home to us as indefinitely richer in content and stimulative appeal. Yet mysticism persists, as the intuitive and emotional apprehension of the most specifically religious of all truths, viz., the already full, operative existence of eternal beauty, truth and goodness, of infinite Personality and Spirit independently of our action, and not, as in ethics, the simple possibility and obligation for ourselves to produce such-like things. And of this elemental mode of apprehension

and root-truth, the Johannine Gospel is the greatest literary document and incentive extant: its ultimate aim and deepest content retain all their potency.

The book contains an intellectualist, static, determinist, abstractive trend. In Luke x. 25–28, eternal life depends upon loving God and man; here it consists in knowing the one true God and Christ whom He has sent. In the Synoptists, Jesus grows in favour with God and man, passes through true human experiences and trials, prays alone on the mountain-side, and dies with a cry of desolation; here the Logos' watchword is "I am," He has deliberately to stir up emotion in Himself, never prays for Himself, and in the garden and on the cross shows but power and self-possession. Here we find "ye cannot hear, cannot believe, because ye are not from God, not of My sheep" (viii. 47, x. 26); "the world cannot receive the spirit of truth" (xiv. 17). Yet the ethical current appears here also strongly: "he who doeth the truth, cometh to the light" (iii. 21), "if you love Me, keep My commandments" (xiv. 15). Libertarianism is here: "the light came, but men loved the darkness better than the light," "ye will not come to Me" (iii. 19, v. 40); hence the appeal "abide in Me"—the branch can cease to be in Him the Vine (xv. 4, 2). Indeed even those first currents stand here for the deepest religious truths, the prevenience of God and man's affinity to Him. "Not we loved God (first), but He (first) loved us"; "let us love Him, because He first loved us" (1 John iv. 10, 19): "no man can come to Me, unless the Father draw him" (vi. 44), a drawing which effects a hunger and thirst for Christ and God (iv. 14, vi. 35). Thus man's spirit can respond actively to the historic Jesus, because already touched and made hungry by the all-actual Spirit-God who made that soul akin unto Himself.

The book has an outer protective shell of acutely polemical and exclusive moods and insistences, whilst certain splendid Synoptic breadths and reconciliations are nowhere reached; but this is primarily because it is fighting, more consciously than they, for that inalienable ideal of all deepest religion, unity, even external and corporate, amongst all believers. The "Pneumatic" Gospel comes thus specially to emphasize certain central historical facts; and, the most explicitly institutional and sacramental of the four, to proclaim the most universalistic and developmental of all Biblical sayings. Here indeed Jesus will not pray for the world (xvii. 9): "ye shall die in your sins," He insists to His opponents (viii. 44, 24); it is the Jews generally who appear throughout as such; nowhere is there a word as to forgiving our enemies; and the commandment of love is designated by Jesus as His, as new, and as binding the disciples to "love one another" within the community to which He gives His "example" (xv. 12. xiii. 34, 15). In the Synoptists, the disciples' intolerance is rebuked (Mark ix. 38–41); Jesus' opposition is everywhere restricted to the Pharisees and the worldly Sadducees; He ever longs for the conversion of Jerusalem; the great double commandment of love is proclaimed as already formulated in the Mosaic law (Mark xii. 28–34); the neighbour to be thus loved and served is simply any and every suffering fellow-man; and the pattern for such perfect love is found in a schismatical Samaritan (Luke x. 25–37). Yet the deepest strain here is more serenely universalist even than St. Paul, for here Jesus says: "God so loved the world, that He gave His only begotten Son, that whosoever believeth in Him should . . . have everlasting life" (iii. 16). True, the great prologue passage (i. 9) probably reads "He was the true Light coming into the world, that enlighteneth every man," so that the writer would everywhere concentrate his mind upon the grace attendant upon explicit knowledge of the incarnate, historic Christ. Yet Christian orthodoxy, which itself has, all but uniformly, understood this passage of the spiritual radiation throughout the world of the Word before His incarnation, has been aided towards such breadth as to the past by the Johannine outlook into the future. For, in contrast to the earliest Synoptic tradition, where the full Christian truth and its first form remain undistinguished, and where its earthly future appears restricted to that generation, in John the Eternal Life conception largely absorbs the attention away from all successiveness; Jesus' earthly life does not limit the religion's assimilation of further truth and experience: "I have many things to tell you, but you cannot bear them now," "the Father will give you another Helper, the spirit of truth, who will abide with you for ever" (xvi. 12, xiv. 15). This universalism is not simply spiritual; the external element, presupposed in the Synoptists as that of the Jewish church within which Jesus' earthly life was spent, is here that of the now separate Christian community: He has other sheep not of this fold—them also He must bring, there will be one fold, one shepherd; and His seamless tunic, and Peter's net which, holding every kind of fish, is not rent, are symbols of this visible unity. Ministerial gradations exist in this church; Jesus begins the feet-washing with Peter, who alone speaks and is spoken to; the beloved disciple outruns Peter to Jesus' monument, yet waits to go in till Peter has done so first; and in the appendix the treble pastoral commission is to Peter alone: a Petrine pre-eminence which but echoes the Synoptists. And sacramentalism informs the great discourses concerning rebirth by water and the spirit, and feeding on the Living Bread, Jesus' flesh and blood, and the narrative of the issue of blood and water from the dead Jesus' side. Indeed so severe a stress is laid upon the explicitly Christian life and its specific means, that orthodoxy itself interprets the rebirth by water and spirit, and the eating the flesh and drinking the blood to which entrance into the Kingdom and possession of interior life are here exclusively attached, as often represented by a simple sincere desire and will for spiritual purification and a keen hunger and thirst for God's aid, together with such cultural acts as such souls can know or find, even without any knowledge of the Christian rites. Thus there is many "a pedagogue to Christ," and the Christian visible means and expressions are the culmination and measure of what, in various degrees and forms, accompanies every sincerely striving soul throughout all human history.

Origin and Authorship.—The question as to the book's origin has lost its poignancy through the ever-increasing recognition of its intrinsic character. Thus the defenders of the apostolic authorship, the Unitarian James Drummond (1903), the Anglican William Sanday (1905), the Roman Catholic Theodore Calmes (1904), can tell us: the first, that "the evangelist did not aim at an illustrative picture of what was most characteristic of Jesus"; the second, that "the author sank into his own consciousness and at last brought to light what he found there"; the third, that "the Gospel contains an entire theological system," "history is seen through the intervening dogmatic development," "the Samaritan woman is . . . a personification," "the behaviour of the Greeks is entirely natural in such a book." We thus get at cross-purposes with this powerful, profound work: only some such position as Abbé Loisy's critical summing up (1903) brings out its specific greatness. "What the author was, his book, in spite of himself, tells us to some extent: a Christian of Judeo-Alexandrine formation; a believer without, apparently, any personal reminiscence of what had actually been the life, preaching and death of Jesus; a theologian far removed from every historical preoccupation, though he retains certain principal facts of tradition without which Christianity would evaporate into pure ideas; and a seer who has lived the Gospel which he propounds." "To find his book beautiful and true, we need but take it as it is and understand it." "The church, which has never discussed the literary problem of this Gospel, in nowise erred as to its worth."

Several traditional positions have indeed been approximately maintained or reconquered against the critics. As to the Gospel's date, critics have returned from 160–170 (Baur), 150 (Zeller), 130 (Keim), to 110–115 (Renan) and 80–110 (Harnack): since Irenaeus says its author lived into the times of Trajan (90–117), a date somewhere about 105 would satisfy tradition. As to the place, the critics accept proconsular Asia with practical unanimity, thus endorsing Irenaeus's declaration that the Gospel was published in Ephesus. As to the author's antecedents, critics have ceased to hold that he could not have been a Jew-Christian, and admit that he must have been by birth a Jew of the Dispersion or the son of Christian parents who had been such Jews. And as to the vivid accuracy of many of his topographical and social details, the predominant critical verdict now is that he betrays

an eye-witness's knowledge of the country between Sichem and Jordan and as to Jerusalem; he will have visited these places, say in 90, or may have lived in Jerusalem shortly before its fall. But the reasons against the author being John the Zebedean or any other eyewitness of Jesus' earthly life have accumulated to a practical demonstration.

As to the external evidence for the book's early date, we must remember that the Epistle to the Hebrews and the Book of Revelation, though admittedly earlier, are of the same school, and, with the great Pauline Epistles, show many preformations of Johannine phrases and ideas. Other slighter prolusions will have circulated in that Philonian centre Ephesus, before the great Gospel englobed and superseded them. Hence the precariousness of the proofs derived from more or less close parallels to Johannine passages in the apostolic fathers. Justin Martyr (163–167) certainly uses the Gospel; but his conception of Jesus' life is so strictly Synoptic that he can hardly have accepted it as from an apostolic eyewitness. Papias of Hierapolis, in his *Exposition of the Lord's Sayings* (145–160), appears nowhere to have mentioned it, and clearly distinguishes between "what Andrew, Peter, . . . John or Matthew or any other of the Lord's disciples spoke," and "what Aristion and the presbyter John, the Lord's disciples, say." Thus Papias, as Eusebius, about 314, insists, knew two Johns, and the apostle was to him a far-away figure; indeed early mediaeval chroniclers recount that Papias "in the second book of the Lord's sayings" asserted that both the sons of Zebedee were "slain by Jews," so that the apostle John would have died before 70. Irenaeus's testimony is the earliest and admittedly the strongest we possess for the Zebedean authorship; yet, as Calmes admits, "it cannot be considered decisive." In his work against the Heresies and in his letter to Florinus, about 185–191, he tells how he had himself known Bishop Polycarp of Smyrna, and how Polycarp "used to recount his familiar intercourse with John and the others who had seen the Lord"; and explicitly identifies this John with the Zebedean and the evangelist. But Irenaeus was at most 15 when thus frequenting Polycarp; writes 35 to 50 years later in Lyons, admitting that he noted down nothing at the time; and, since his mistaken description of Papias as "a hearer of John" the Zebedean was certainly reached by mistaking the presbyter for the apostle, his additional words "and a companion of Polycarp" point to this same mistaken identification having also operated in his mind with regard to Polycarp. In any case, the very real and important presbyter is completely unknown to Irenaeus, and his conclusion as to the book's authorship resulted apparently from a comparison of its contents with Polycarp's teaching. If the presbyter wrote Revelation and was Polycarp's master, such a mistake could easily arise. Certainly Polycrates, bishop of Ephesus, made a precisely similar mistake when about 190 he described the Philip "who rests in Hierapolis" as "one of the twelve apostles," since Eusebius rightly identifies this Philip with the deacon of Acts xxi. A positive testimony for the critical conclusion is derived from the existence of a group of Asia Minor Christians who about 165 rejected the Gospel as not by John but by Cerinthus. The attribution is doubtless mistaken; but could Christians who were sufficiently numerous to deserve a long discussion by St. Epiphanius in 374–377, and who upheld the Synoptists, stoutly opposed the Gnostics and Montanists, and had escaped every special designation till the bishop nicknamed them the "Alogi" (irrational rejectors of the Logos-Gospel), dare, in such a time and country, to hold such views, had the apostolic origin been incontestable? Surely not. The Alexandrian Clement, Tertullian, Origen, Eusebius, Jerome and Augustine only tell of the Zebedean what is traceable to stories told by Papias of others, to passages of Revelation and the Gospel, or to the assured fact of the long-lived Asian presbyter.

As to the internal evidence, if the Gospel typifies various imperfect or sinful attitudes in Nicodemus, the Samaritan woman and Thomas; if even the mother appears to symbolize faithful Israel: then, profoundly spiritual and forward-looking as it is, a type of the perfect disciple, not all unlike Clement's perfect "Gnostic," could hardly be omitted by it; and the precise details of this figure may well be only ideally, mystically true. The original work nowhere identifies this disciple with any particular historic figure. "He who saw" the lance-thrust "hath borne witness, and his witness is true," is asserted (xix. 35) of the disciple. Yet "to see" is said also of intuitive faith, "whoso hath seen Me, hath seen the Father" (xiv. 9); and "true" appears also in "the true Light," "the true Bread from heaven," as characterizing the realities of the upper, alone fully true world, and equals "heavenly" (iii. 12); thus a "true witness" testifies to some heavenly reality, and appeals to the reader's "pneumatic," *i.e.*, allegorical, understanding.

Only in the appendix do we find any deliberate identification with a particular historic person: "this is the disciple who witnessed to and who wrote these things" (xxi. 24) refers doubtless to the whole previous work and to "the disciple whom Jesus loved," identified here with an unnamed historic personage whose recent death had created a shock, evidently because he was the last of that apostolic generation which had so keenly expected the second coming (18–23). This man was so great that the writer strives to win his authority for this Gospel; and yet this man was not John the Zebedean, else why, now he is dead and gone, not proclaim the fact? If the dead man was John the presbyter—if this John had in youth just seen Jesus and the Zebedean, and in extreme old age had still seen and approved the Gospel—to attribute this Gospel to him, as is done here, would not violate the literary ethics of those times. Thus the heathen philosopher Iamblichus (d. *c.* 330) declares: "this was admirable" amongst the Neo-Pythagoreans "that they ascribed everything to Pythagoras; but few of them acknowledge their own works as their own" (*de Pythag. vita,* 198). And as to Christians, Tertullian about 210 tells how the presbyter who, in proconsular Asia, had "composed the *Acts of Paul and Thecla*" was convicted and deposed, for how could it be credible that Paul should confer upon women the power to "teach and baptize" as these *Acts* averred? The attribution as such, then, was not condemned.

The facts of the problem would all appear covered by the hypothesis that John the presbyter, the eleven being all dead, wrote the book of Revelation (its more ancient Christian portions) say in 69, and died at Ephesus say in 100; that the author of the Gospel wrote the first draft, here, say in 97; that this book, expanded by him, first circulated within a select Ephesian Christian circle; and that the Ephesian church officials added to it the appendix and published it in 110–120. But however different or more complicated may have been the actual origins, three points remain certain. The real situation that confronts us is not an unbroken tradition of apostolic eye-witnesses, incapable of re-statement with any hope of ecclesiastical acceptance, except by another apostolic eye-witness. On one side indeed there was the record, underlying the Synoptists, of at least two eye-witnesses, and the necessity of its preservation and transmission; but on the other side a profound double change had come over the Christian outlook and requirements. St. Paul's heroic labours (30–64) had gradually gained full recognition and separate organization for the universalist strain in our Lord's teaching; and he who had never seen the earthly Jesus, but only the heavenly Christ, could even declare that Christ "though from the Jewish fathers according to the flesh" had died, "so that henceforth, even if we have known Christ according to the flesh, now we no further know Him thus," "the Lord is the Spirit," and "where the Spirit of the Lord is, there is liberty." And the Jewish church, within which Christianity had first lived and moved, ceased to have a visible centre. Thus a super-spatial and super-temporal interpretation of that first markedly Jewish setting and apprehension of the Christian truth became as necessary as the attachment to the original contingencies. The Fourth Gospel, inexplicable without St. Paul and the fall of Jerusalem, is fully understandable with them. The attribution of the book to an eye-witness nowhere resolves, it everywhere increases, the real difficulties; and by insisting upon having history in the same degree and way in John as in the Synoptists, we cease to get it sufficiently anywhere at all. And the Fourth Gospel's true greatness lies well within

the range of this its special character. In character it is profoundly "pneumatic"; Paul's super-earthly Spirit-Christ here breathes and speaks, and invites a corresponding spiritual comprehension. And its greatness appears in its inexhaustibly deep teachings concerning Christ's sheep and fold; the Father's drawing of souls to Christ; the dependence of knowledge as to Christ's doctrine upon the doing of God's will; the fulfilling of the commandment of love, as the test of true discipleship; eternal life, begun even here and now; and God a Spirit, to be served in spirit and in truth.

BIBLIOGRAPHY.—*See* JOHN THE APOSTLE; APOCALYPSE. Among the immense literature of the subject, the following books will be found especially instructive by the classically trained reader: Origen's commentary, *c.* 235–237 (ed. by Brooke, 1896; Preuschen 1903); St. Augustine's *Tractatus in Joannis Ev. et Ep., c.* 416. The Spanish Jesuit Juan Maldonatus' Latin commentary, pubd. 1596 (critical reprint, ed. by Raich, 1874), a pathfinder on many obscure points, is still a model for tenacious penetration of Johannine ideas. Bretschneider's short *Probabilia de Evangelii . . . Joannis Apostoli indole et origine* (1820), the first systematic assault on the traditional attribution, remains unrefuted in its main contention. The best summing up and ripest fruit of the critical labour since then are Professor H. J. Holtzmann's *Handkommentar* (2nd ed., 1893) and the respective sections in his *Einleitung in d. N. T.* (3rd ed., 1892) and his *Lehrbuch der N. T. Theologie* (1897), vol. ii. Among the few critically satisfactory French books, Abbé Loisy's *Le Quatrième évangile* (1903, 2nd ed. 1921) stands pre-eminent for delicate psychological analysis and continuous sense of the book's closely knit unity; whilst Père Th. Calmes' *Évangile selon S. Jean* (1904) indicates how numerous are the admissions as to the book's character and the evidences for its authorship, made by intelligent Roman Catholic apologists with Rome's explicit approbation. Bp. Lightfoot's *Essays on . . . Supernatural Religion* (1874–77; collected 1889) are often masterly conservative interpretations of the external evidence; but they leave this evidence still inconclusive, and the formidable contrary internal evidence remains practically untouched. Much the same applies to Bp. Westcott's *Gospel according to St. John* (1882), devotionally so attractive, and in textual criticism excellent. V. H. Stanton's *Gospels as Historical Documents*, Pt. iii. (1920), shows how far conservative scholarship has moved since Westcott's time. Prof. F. C. Burkitt's *The Gospel History* (1906) vigorously sketches the book's dominant characteristics and true function. E. F. Scott's *The Fourth Gospel* (1906, 2nd ed. 1909) gives a lucid, critical and religiously tempered account of the Gospels ideas, aims, affinities, difficulties and abiding significance. Wellhausen, *Das Evang. Johannis* (1908). C. F. Burney, *The Aramaic Origin of the Fourth Gospel* (1922), attempts to prove that the Gospel is based on an Aramaic original; but the thesis has not met with wide acceptance. The origin, authorship and character of the Gospel are considered in B. H. Streeter, *The Four Gospels* (1924). D. W. Bauer, *Das Johannesevangelium* in the Handbuch z. N.T. (2nd ed. 1925) contains elaborate references, giving prominence to the suggested parallels in the Mandaean literature (*see* MANDAEANS). (F. v. H.)

JOHN, THE EPISTLES OF. Three writings appear as such in the New Testament, but none answers exactly to the description, for the so-called "First Epistle" is an address or pastoral letter in epistolary form, in reality a homily, whilst the two smaller "epistles" are brief notes or letters. The first consists of a series of meditations upon central themes of the faith, which the writer felt to be endangered; it is not so marked a "letter" as, *e.g.*, the addresses to the seven churches in Rev. ii.–iii. The second "epistle" is indeed addressed to some Christian community, but it is so brief that it may almost be termed a letter. As for the third, it is a private letter in the strict sense of the term, even more private than Philemon (*see* PHILEMON, EPISTLE TO).

1. The homily or manifesto which is called "The First Epistle of John" did not arise from any special occasion. The author felt impelled to counteract (i. 4) a tendency in the Church which threatened, in his view, both theology and ethics, but there are no indications of where or how the movement worked. No name is mentioned, and there is no indication or watermark of date. All we overhear are some catchwords of the people who were responsible for the movement in question. They claimed to have fellowship with God (i. 6f), for example, and at the same time to be free from sin; "We are not guilty," "We have not sinned." They claimed to "know God" (ii. 4f) and to "abide in God," but this claim was accompanied by uncharitable feelings towards other Christians. Apparently they distinguished between the historical Jesus and the Christ (ii. 22f), depreciating the incarnation (iv. 2f) in the interests of a mystical illumination or a spiritual religion. Against such teachers the writer protests that the real fellowship with God involves a nexus with the historical revelation in Jesus (i. 1f), and that, although the errorists had apparently withdrawn from the Church (ii. 19), the evil they had done required to be resisted, *i.e.*, the false, fascinating, "knowledge," which in speculative guise undermined the historical basis of the gospel. "Fellowship with God," implying fellowship with Christians, is the keynote of the homily, and the writer plays on various melodies suggested by the keynote. After describing the fellowship as his subject (i. 1f) he proceeds to mention its tests and conditions, primarily the sense of sin (i. 5f), involving a sense of the need of forgiveness through Jesus Christ, and also obedience to the supreme law of brotherly love, which is called the true light of life. Then the dangers of this fellowship are taken up (ii. 18f) under the category of truth and falsehood, belief in the incarnate Christ being the test of Christian truth. The characteristics of the fellowship are once more discussed (iii. 1f), as sinlessness, due to regeneration, and brotherly love, the latter bulking so largely in the writer's mind that he goes into three of its features, confidence towards God (iii. 13f), moral discernment (iv. 1f), and assurance of union with the God of love (iv. 7f), all these being bound up with belief in Jesus as the Christ (v. 1f). A brief epilogue (v. 13–21) sums up the certainties of the Christian knowledge on which any fellowship rests.

It is needless to attempt to identify the tendency attacked in the epistle with any one form of contemporary thought, such as Cerinthianism. The writer seeks to put his readers on their guard against a spirit of the age which assumed a variety of forms but which fundamentally was characterized by an ultra-spiritualism. In the background we can detect the gnostic or semi-docetic view that the divine power or Christ did not really identify itself with the human Jesus, as though the spiritual God was too fine to come into contact with the flesh or matter; if this divine aeon or Christ withdrew from Jesus before the passion and death, as Cerinthus seems to have taught, entering Jesus only at baptism and leaving Him before the Cross, the point of iv. 2f and v. 5f becomes clearer. Again, the claims of the illuminati involved a superior knowledge of God, which led to a disparagement of ordinary Christians; perhaps too the overstrained spiritualism led to an antinomianism, by its indifference to sins of the flesh. At any rate it is plain that the errorists failed to recognise that brotherly love was the cardinal law of God for human fellowship, either because they adhered to the Old Testament law or because they denied the redeeming love of God in the Cross, from which, the writer contends, true Christian love flowed. But the teaching of the manifesto is positive. The writer is seeking to recall his hearers to the original faith of the gospel, to belief and love; it is not an exposure of error which he offers so much as an exposition of the Christian standing.

2. The so-called "Second Epistle" is addressed by the author, who calls himself "The Elder, or Presbyter," to an unknown community described as "The Elect Lady and Her Children." It is a warning against indiscriminate hospitality towards wandering teachers who were evidently promulgating heretical views of a docetic character about the person of Christ. It is thought by some that the lady is an individual, but the allusions to the family are much better understood if the family is conceived as a small church, some of whose members (ver. 4) had commended themselves to the writer.

The note was familiar to Irenaeus, but tradition has not preserved any information as to the church addressed or the authorship of the note. It is only guess-work to fix on Antioch or Rome; if the Presbyter be identified with the author of the Fourth Gospel or of the Apocalypse, some Asiatic church is more likely, but we are in the dark on this matter.

3. The third letter is by the same author as the second, and addressed to an individual. It is one of the letters of commendation, like Rom. xvi. 1f, witnessing to the high character of a certain Demetrius, and promising to deal sharply with a local official called Diotrephes, who repudiated the writer and his adherents. It is likely that the allusion in ver. 9 ("I wrote to the church") is to the second epistle. Otherwise, we are ignorant of the reasons

which led Diotrephes to challenge the Presbyter. But it is plain that the Presbyter had some authority, whether or not he was a representative of the primitive apostolic band, whose sway over the churches was being resisted by Diotrephes as a monarchical bishop (Harnack). The various theories which attempt to throw light upon the letter by identifying Gaius and Demetrius with the Gaius of Rom. xvi. 23 and the Demas of 2 Tim. iv. 10 or the Demetrius of Acts xix. 24, are fanciful rather than helpful to the serious criticism of the letter.

It is obvious to most critics that the Second and Third "Epistles" came from the same hand. But who the author was, depends on the conclusions reached by a study of the Johannine tradition, in connection with the Fourth Gospel and the Apocalypse. Those who believe that the apostle John wrote the Gospel are able to go further and add to his credit the three epistles. But if the witness of Papias be true, there were two Johns in Asia Minor, or at least in the early church, one of them John the Presbyter. It is a fair hypothesis that this Presbyter wrote the Apocalypse and also the Second and Third Epistles, whilst the Fourth Gospel and the First Epistle may have come from another author. There is a certain similarity of language, indeed, between the three epistles, which at first sight is striking. But this may be accounted for by their origin in a common circle. And on the other hand, there are differences between the First Epistle and the Fourth Gospel, which are not inconsiderable (*see* the present writer's *Introduction to the Literature of the NT,* pp. 589f). The Epistle may have been intended as a tract to supplement the Gospel, or it may be an independent treatise; but identity of authorship is another question. There are scholars still who are prepared to hold that the Fourth Gospel and the Apocalypse were composed by the same writer. If so, there is less difficulty in assuming that he could have written the other two "Johannine" epistles, whoever he may have been. On the other hand, when the Fourth Gospel and the Apocalypse are assigned to different writers, and when the latter in particular is attributed to John the Presbyter, the two smaller epistles not unnaturally follow in its wake, whereas the First Epistle may be left alongside of the Fourth Gospel, either as a product of the same pen or as a kindred document from the same sphere of Christian thought. To sum up—there is sufficient tradition to warrant us in believing that in Asia Minor about the end of the first century a distinguished Presbyter lived who was called John. "Harnack's conjecture, based upon the most natural interpretation of the fragment of Papias' preface which Eusebius has preserved, that he was a pupil of John the Apostle, and in some sense a disciple of the Lord, is perhaps the hypothesis which leaves fewest difficulties unsolved. That he is the author of the two smaller Epistles is the view which seems to be best supported by external tradition and by internal probability" (Brooke, p. lxxvii). That he also wrote the First Epistle is less likely, since that homily is closely linked to the Fourth Gospel; unless we suppose that the same Presbyter wrote both Gospel and Apocalypse, or edited the former; the alternative whereas the Fourth Gospel belongs to the same soil as that on which the First Epistle shot up.

BIBLIOGRAPHY.—The best of the older editions of all three epistles are by Ewald (*Die Johan. Briefe übersetzt und erklärt,* Göttingen, 1862), Alexander (*Speaker's Commentary,* 1881), and Bernhard Weiss (Meyer's *Commentar,* 1900). Later editions of special value are by Westcott (third edition, 1892), Holtzmann-Bauer (*Handcommentar,* 1908), Windisch (in Lietzmann's *Handbuch,* 1911), and A. E. Brooke (*International Critical Commentary,* 1912), to which may be added Pummer's edition in the *Cambridge Greek Testament,* and Dr. Gore's English notes in *The Epistles of St. John* (1920). General studies of the three are offered in Schmiedel's critical article (*Encyclopaedia Biblica,* 2556f), in A. V. Green's *Ephesian Canonical Writings* (1910, pp. 128f), and in H. H. Wendt's *Die Johannische Briefe und das Joh. Christenthum* (Halle, 1925), as well as incidentally in any critical study of the Johannine writings and tradition.

The religious ideas and historical environment of the first epistle are discussed in Wurm's *Die Irrlehrer im ersten Johannisbrief* (1904), in G. G. Findlay's *Fellowship in the Life Eternal* (1909), and in R. Law's *Tests of Life* (second edition, 1909). For the two smaller, consult especially Poggel's monograph, *Der 2 und 3 Briefe des Apostel Johannes* (1896), J. Chapman's study in *The Journal of Theological Studies* (1904, pp. 357f, 517f), Vernon Bartlet (*ibid.* 1905, 204f), Harnack (*Texte und Untersuchungen,* xv. 3), E. C. Selwyn's *The Christian Prophets and the Prophetic Apocalypse* (1900, pp. 1331), and Jean Reville (*Le quatrième Evangile,* pp. 49f). (J. MOF.)

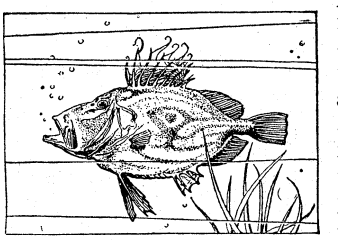
JOHN ALBERT (1459–1501), king of Poland, third son of Casimir IV., king of Poland, and Elizabeth of Austria. As crown prince he distinguished himself by his brilliant victory over the Tatars at Kopersztyn in 1487. He succeeded his father in 1492. Primarily a warrior and adventurer, John Albert desired to pose as the champion of Christendom against the Turks, and in 1494 (Conference of Leutschau) arranged a combined campaign with his brother Wladislaus, king of Hungary and Bohemia, the elector Frederick of Brandenburg and John Albert's vassal Stephen, hospodar of Moldavia. In 1496 John Albert collected 80,000 men in Poland, but the hospodar, apparently suspecting his designs, invaded Galicia. The war became one between Poland and Moldavia, in which John Albert, weakened by the insubordination of the *szlachta,* had the worst of matters. He was more successful in the north, compelling the recalcitrant grand master of the Teutonic Order, Frederick of Saxony, to do homage, but a further campaign was frustrated by his sudden death in 1501.

See V. Czerny, *The Reigns of John Albert and Alexander Jagiello* (Pol.) (Cracow, 1882).

JOHN ANGELUS (d. 1244), emperor of Thessalonica. In 1240 he received the throne from his father, Theodore, who made John the nominal sovereign. His reign is chiefly marked by the aggressions of the rival emperor of Nicaea, John Vatatzes, who besieged Thessalonica in 1242 and only withdrew upon John Angelus consenting to exchange the title "emperor" for "despot."

JOHN BULL, a popular name for England, personifying the bluff frankness and solidity of the English character. Dr. John Arbuthnot (*q.v.*), though he did not invent John Bull, fixed his lineaments in five tracts, begun in 1712, and printed as "The History of John Bull," in *Miscellanies in Prose and Verse* (1727), the preface to which is signed by Pope and Swift.

JOHN DORY or **DORY** (*Zeus faber*), an Acanthopterygian fish, the type of the family Zeidae. The body is much compressed and nearly oval, while the mouth is large and capable of extensive protrusion. It possesses two dorsal fins, of which the anterior is armed with long spines, and the connecting membrane is produced into tendril-like filaments. The side is marked with a prominent dark spot, on account of which the dory divides with the haddock the reputation of being the fish from which Peter took tribute money. It inhabits the Atlantic coasts of Europe and the Mediterranean with a closely related species in Australian seas. It is exceedingly voracious, feeding on molluscs, shrimps and the young of other fish. It is often taken in nets off the Cornwall and Devon coast, having entered these in pursuit of pilchards. It prefers sandy bays, among the weeds growing on the bottom of which it lies in wait for its prey. The dory may attain a weight of 12 lb. It is highly valued as an article of food. (*See* FISHES.)



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JOHN DORY (ZEUS FABER), A FISH IN GREAT ESTEEM IN EUROPE AS FOOD

JOHN FREDERICK I. (1503–1554), called the Magnanimous, elector of Saxony, was the elder son of the elector, John the Steadfast, and belonged to the Ernestine branch of the Wettin family. Born at Torgau on June 30, 1503, and educated as a Lutheran, he succeeded his father in August 1532. His lands comprised the western part of Saxony, and included Thuringia, but in 1542 Coburg was surrendered to form an appanage for his brother, John Ernest (d. 1553). John Frederick continued the religious policy of his father. His general attitude was one of vacillation between the emperor and his own impetuous colleague in the league of Schmalkalden, Philip, landgrave of Hesse. He was often at variance with Philip, whose bigamy he disliked, and his belief in the pacific intentions of Charles V. and his loyalty to the empire prevented him from strong measures for the defence of Protestantism. In 1541 his kinsman Maurice became duke of Saxony, and cast covetous eyes upon the electoral dignity. In 1541 John

Frederick forced Nicolaus von Amsdorf into the see of Naumburg in spite of the chapter, who had elected a Roman Catholic, Julius von Pflug; and about the same time he seized Wurzen, the property of the bishop of Meissen, whose see was under the joint protection of electoral and ducal Saxony. Maurice took up arms, and war was only averted by the efforts of Philip of Hesse and Luther. In 1542 the elector helped to drive Henry, duke of Brunswick-Wolfenbüttel, from his duchy, but his relations with Charles V. at the diet of Spires in 1544 were amicable. But the emperor made preparations for attacking the league of Schmalkalden, and especially John Frederick and Philip of Hesse. The neutrality of Maurice was won by the hope of the electoral dignity, and in July 1546 war broke out between Charles and the league. In September John Frederick was placed under the imperial ban, and in November Maurice invaded the electorate. Hastening from southern Germany the elector drove Maurice from the land, took his ally, Albert Alcibiades, prince of Bayreuth, prisoner at Rochlitz, and overran ducal Saxony. His progress, however, was checked by the advance of Charles V. He was wounded and taken prisoner at Mühlberg (April 24, 1547), and was condemned to death in order to induce Wittenberg to surrender. The sentence was not carried out, but by the capitulation of Wittenberg (May 1547) he renounced the electoral dignity and a part of his lands in favour of Maurice, steadfastly refusing, however, concessions on religious matters, and remained in captivity until May 1552, when he returned to the Thuringian lands which his sons had been allowed to retain, his return being hailed with wild enthusiasm. During his imprisonment he had refused to accept the Augsburg interim, and had urged his sons to make no peace with Maurice. After his release the emperor had restored his dignities, and his assumption of the electoral arms and title prevented any arrangement with Maurice. After the death of Maurice in July 1553, a treaty was made at Naumburg in Feb. 1554 with his successor Augustus. John Frederick consented to the transfer of the electoral dignity, and was thus the last Ernestine elector of Saxony. He died at Weimar on March 3, 1554, and was succeeded by his eldest son, John Frederick. The elector was a great hunter and a hard drinker, whose dignified bearing in misfortune won for him his surname of Magnanimous, and drew eulogies from Roger Ascham and Melanchthon. He founded the university of Jena and was a benefactor to that of Leipzig.

See Mentz, *Johann Friedrich der Grossmütige* (Jena, 1903); Rogge, *Johann Friedrich der Grossmütige* (Halle, 1902) and L. von Ranke, *Deutsche Geschichte im Zeitalter der Reformation* (Leipzig, 1882).

JOHN FREDERICK (1529–1595), called *der Mittlere,* duke of Saxony, was the eldest son of John Frederick, who had been deprived of the Saxon electorate by the emperor Charles V. in 1547. Born at Torgau on Jan. 8, 1529, he received a good education, and when his father was imprisoned in 1547 undertook the government of the remnant of electoral Saxony left to the Ernestine branch of the Wettin family. After the death of John Frederick the elder in 1554 his three sons ruled Ernestine Saxony together until 1557, when John Frederick was made sole ruler. This arrangement lasted until 1565, when John Frederick shared his lands with his surviving brother, John William (1530–1573), retaining for himself Gotha and Weimar. The duke was a strong, even a fanatical, Lutheran, but his religious views were gradually subordinated to the one idea of regaining the electoral dignity then held by Augustus I. He lent a willing ear to the schemes of Wilhelm von Grumbach (*q.v.*), who offered to regain the electoral dignity and even to acquire the empire for his patron. In 1566 his obstinacy caused John Frederick to be placed under the imperial ban. The execution of the imperial sentence was entrusted to Augustus, who, aided by the duke's brother, John William, marched against Gotha with a strong force. The town surrendered in April 1567, and John Frederick was imprisoned in Vienna, his lands were given to his brother, and he remained in captivity until his death at Steyer on May 6, 1595. His wife Elizabeth, daughter of the elector palatine, Frederick III., shared her husband's imprisonment for 22 years.

See A. Beck, *Johann Friedrich der Mittlere, Herzog zu Sachsen* (Vienna, 1858); and F. Ortloff, *Geschichte der Grumbachischen Händel* (Jena, 1868–70).

JOHN GEORGE I. (1585–1656), elector of Saxony, second son of the elector Christian I., was born on March 5, 1585, succeeding his elder brother, Christian II., in 1611. Though a Lutheran, he voted for the election of Ferdinand, archduke of Styria, as emperor in Aug. 1619, an action which nullified the anticipated opposition of the Protestant electors. The new emperor secured the help of John George for the impending campaign in Bohemia by promising that he should be undisturbed in his possession of certain ecclesiastical lands. John George occupied Silesia and Lusatia, and had thus some part in driving Frederick V., elector palatine of the Rhine, from Bohemia and in crushing Protestantism in that country, the crown of which he had previously refused. Gradually his policy veered towards the Protestant side, and when the imperial troops under Tilly began to ravage Saxony, he concluded an alliance with Gustavus Adolphus in 1631. The Saxon troops were present at the battle of Breitenfeld, but were routed by the imperialists. Marching into Bohemia the Saxons occupied Prague, but John George soon began to negotiate for peace, and consequently his soldiers offered little resistance to Wallenstein, who drove them back into Saxony. After the death of the Swedish king at Lützen in 1632, John George again negotiated for peace, and in May 1635 he concluded the treaty of Prague with Ferdinand II. His reward was Lusatia and other additions of territory; the retention by his son Augustus of the archbishopric of Magdeburg; and some concessions with regard to the edict (1629) of restitution of ecclesiastical lands. Almost at once he declared war upon the Swedes, but in Oct. 1636 he was beaten at Wittstock; and Saxony was ravaged impartially by both sides. In Sept. 1645 the elector agreed to a truce with the Swedes, who, however, retained Leipzig; and as far as Saxony was concerned this ended the Thirty Years' War. John George died on Oct. 8, 1656. He was twice married, and in addition to his successor John George II. he left three sons, Augustus (1614–1680), Christian (d. 1691) and Maurice (d. 1681) who founded cadet branches of the Saxon house.

JOHN GEORGE II. (1613–1680), elector of Saxony, was born on May 31, 1613. In 1657, just after his accession, he made an arrangement with his three brothers with the object of preventing disputes over their separate territories, and in 1664 he entered into friendly relations with Louis XIV. The existence of a strong anti-French party in Saxony, however, prevented open hostility to the emperor Leopold I. The elector's primary interests were not in politics, but in music and art. He adorned Dresden, which under him became the musical centre of Germany; welcoming foreign musicians and others he gathered around him a large and splendid court, and his capital was the constant scene of musical and other festivals. His enormous expenditure compelled him in 1661 to grant greater control over monetary matters to the Estates, a step which laid the foundation of the later system of finance in Saxony. John George died at Freiberg on Aug. 22, 1680.

JOHN GEORGE III. (1647–1691), elector of Saxony, the only son of John George II., was born on June 20, 1647. In June 1683 he joined an alliance against France. Having raised the first standing army in the electorate he helped to drive the Turks from Vienna in September 1680; but disagreed with Leopold I., and returned at once to Saxony. However, he sent aid to the emperor in 1685. When Louis XIV.'s armies invaded Germany in September 1688 John George took up arms against the French, and after sharing in the capture of Mainz he was appointed commander-in-chief of the imperial forces. He died at Tübingen on Sept. 12, 1691.

JOHN GEORGE IV. (1668–1694), elector of Saxony, was born on Oct. 18, 1668. This elector, who only reigned for 2½ years, is chiefly celebrated for his passion for Magdalene Sibylle von Neidschütz (d. 1694), created in 1693 countess of Rochlitz, whom on his accession he publicly established as his mistress. John George left no legitimate issue when he died on April 27, 1694.

JOHN MAURICE OF NASSAU (1604–1679), surnamed the Brazilian, was the son of John the Younger, count of Nassau-

Siegen-Dillenburg, and the grandson of John, the elder brother of William the Silent and the chief author of the Union of Utrecht. He fought in the campaigns of his cousin, the stadtholder Frederick Henry of Orange, and was by him recommended to the directors of the Dutch West India company in 1636 to be governor-general of the new dominion in Brazil recently conquered by the company. He landed at the Recife, the port of Pernambuco, and the chief stronghold of the Dutch, in January 1637. By successful expeditions he extended the Dutch possessions from Sergipe on the south to S. Luis de Maranham in the north. He likewise conquered the Portuguese possessions of St. George del Mina and St. Thomas on the west coast of Africa. With the assistance of the famous architect, Pieter Post of Haarlem, he transformed the Recife by building a new town called after his name Mauritstad. He brought the colony into a flourishing condition, and reconciled the Portuguese settlers to submit to Dutch rule. His large schemes and lavish expenditure, however, alarmed the directors of the West India company, and John Maurice returned to Europe in July 1644. He was appointed by Frederick Henry to the command of the cavalry in the States army, and he took part in the campaigns of 1645 and 1646.

After the peace of Münster (1648), John Maurice accepted from the elector of Brandenburg the post of governor of Cleves, Mark and Ravensberg, and later also of Minden. At the end of 1652 he was appointed head of the order of St. John and made a prince of the Empire. In 1664 he came back to Holland; when the war broke out with England he was appointed commander-in-chief of the Dutch forces on land. In 1673 he was appointed by the stadtholder William III. to command the forces in Friesland and Groningen, and to defend the eastern frontier of the Provinces. In 1675 he retired. He died at Cleves on Dec. 20, 1679. The house which he built at The Hague, named after him the Maurits-huis, now contains the collections of pictures so well known to all admirers of Dutch art.

Bibliography.—Caspar Barlaeus, *Rerum per octennium in Brasilia et alibi nuper gestarum historia, sub praefectura illustrissimi comitis J. Mauritii Nassoviae* (Amsterdam, 1647); L. Driessen, *Leben des Fürsten Johann Moritz von Nassau* (Berlin, 1849); D. Veegens, *Leven van Jaan Maurits, Graaf van Nassau-Siegen* (Haarlem, 1840).

JOHN OF ASIA (or of Ephesus) (b. *c.* 505), a leader of the Monophysite Syriac-speaking Church in the 6th century, and one of the earliest and most important of Syriac historians. Born at Āmid (Diarbekr) about 505, he was there ordained as a deacon in 529; but in 534 we find him in Palestine, and in 535 he passed to Constantinople, on account of pestilence or persecution. In Constantinople he seems to have early won the notice of Justinian, who desired the consolidation of Eastern Christianity as a bulwark against the heathen power of Persia. He was entrusted with the administration of the entire revenues of the Monophysite Church. He was also sent, with the rank of bishop, on a mission in Asia Minor, and informs us that the number of those whom he baptized amounted to 70,000. He built a large monastery at Tralles on the hills skirting the valley of the Meander, and more than 90 other monasteries. He promoted a mission to the Nubians. In 546 the emperor entrusted him with the task of rooting out the secret practice of idolatry in Constantinople and its neighbourhood. But his fortunes changed soon after the accession of Justin II. About 571 Paul of Asia began (with the sanction of the emperor) a rigorous persecution of the Monophysite Church leaders, and John was among the sufferers. He died probably soon after 585.

John's main work was his *Ecclesiastical History,* in three parts, which covered more than six centuries, from the time of Julius Caesar to 585. The first part seems to have wholly perished. The second, which extended from Theodosius II. to the 6th or 7th year of Justin II., was (as F. Nau has proved) reproduced in the third part of the *Chronicle* once attributed to the patriarch Dionysius Telmaharensis. The third part of John's history, covering the years 571–585, survives in a fairly complete state in Add. 14640, a British Museum ms. of the 7th century. This third part was edited by Cureton (Oxford, 1853), and was translated into English by R. Payne-Smith (Oxford, 1860) and into German by J. M. Schönfelder (Munich, 1862).

John's other known work was a series of *Biographies of Eastern Saints,* compiled about 569. These have been edited by Land in *Anecdota Syriaca,* ii. 1–288, and translated into Latin by Douwen and Land (Amsterdam, 1889). *See* a memoir read before the five French Academies (Oct. 25, 1892) by the abbé Duchesne.

JOHN OF BEVERLEY, ST. (d. 721), English bishop, was educated at Canterbury under Archbishop Theodore. He was for a time a member of the Whitby community, under St. Hilda, and in 687 he was consecrated bishop of Hexham and in 705 was promoted to the bishopric of York. He resigned the latter see in 718, and retired to a monastery which he had founded at Beverley, where he died on May 7, 721. He was canonized in 1037, and his feast is celebrated on May 7.

The following works are ascribed to John by J. Bale: *Pro Luca exponendo* (an exposition of Luke); *Homiliae in Evangelia; Epistolae ad Herebaldum, Audenam, et Bertinum;* and *Epistolae ad Hyldam abbatissam. See* life by Folcard, based on Bede, in *Acta SS. Bolland;* and J. Raine's *Fasti eboracenses* (1863).

JOHN OF BRIENNE (*c.* 1148–1237), king of Jerusalem and Latin emperor of Constantinople, was a man sixty years of age before he began to play any considerable part in history. In forty years of tournaments and fights he had won some fame, when in 1208 envoys came from the Holy Land to ask Philip Augustus, king of France, to select a husband for the heiress of the kingdom of Jerusalem, Mary (daughter of Isabella and Conrad of Montferrat). Philip selected John, who assumed the title of king after his marriage. In 1211, after some desultory operations, he concluded a six years' truce with Malik-el-Adil; in 1212 he lost his wife, who left him a daughter, Isabella; soon afterwards he married an Armenian princess. In the fifth crusade (1218–1221) he was a prominent figure. The legate Pelagius, however, claimed the command; and insisting on the advance from Damietta, in spite of John's warnings, he refused to accept the favourable terms of the sultan, as the king advised, until it was too late. After the failure of the crusade, King John came to the West to obtain help for his kingdom. In 1223 he met Honorius III. and the emperor Frederick II. at Ferentino, where, in order that he might be connected more closely with the Holy Land, Frederick was betrothed to John's daughter Isabella, now heiress of the kingdom. John then travelled to France, England and Compostella, where he married a new wife, Berengaria of Castile. After a visit to Germany he returned to Rome (1225).

Frederick II. (who had now married Isabella), now demanded that he should abandon his title and dignity of king, which—so Frederick claimed—had passed to himself along with the heiress of the kingdom. John was now a septuagenarian "king in exile," but he was still vigorous enough to revenge himself on Frederick, by commanding the papal troops which attacked southern Italy during the emperor's absence on the sixth crusade (1228–1229). In 1229 John, now eighty years of age, was invited by the barons of the Latin empire of Constantinople to become emperor, on condition that Baldwin of Courtenay should marry his second daughter and succeed him. For nine years he ruled in Constantinople, and in 1235, with a few troops, he repelled a great siege of the city by Vataces of Nicaea and Azen of Bulgaria. After this last feat of arms, which has perhaps been exaggerated by the Latin chroniclers, who compare him to Hector and the Maccabees, John died in the habit of a Franciscan friar.

The story of John's career must be sought partly in histories of the kingdom of Jerusalem and of the Latin Empire of the East, partly in monographs. Among these, of which R. Röhricht gives a list (*Geschichte des Königreichs Jerusalem,* p. 699, n. 3), *see* especially that of E. de Montcarmet, *Un chevalier du temps passé* (Limoges, 1876 and 1881).

JOHN OF DAMASCUS (Johannes Damascenus) (d. before 754), an eminent theologian of the Eastern Church, derives his surname from Damascus, where he was born about the close of the 7th century. His Arabic name was Mansur (the victor), and he received the epithet Chrysorrhoas (gold-pouring) on account of his eloquence. His father Sergius, a Christian, held high office under the Saracen caliph, in which he was succeeded by his son. John wrote (*c.* 730) several treatises in defence of image-worship, which the emperor, Leo the Isaurian, was making strenuous efforts to suppress. He then surrendered his worldly goods, and betook himself to the monastery of St. Sabas, near Jerusalem, where he spent the rest of his life. He was ordained priest by the patriarch of Jerusalem. In his last years he travelled

through Syria contending against the iconoclasts, and visited Constantinople at the imminent risk of his life during the reign of Constantine Copronymus. With him the "mysteries," the entire ritual, are an integral part of the Orthodox system, and all dogma culminates in image-worship. He died probably about 752. John Damascenus is a saint both in the Greek and in the Latin Churches, his festival being on Dec. 4, and May 6, respectively.

The most important of the treatises of Damascenus contains three parts under the general title Πηγὴ γνώσεως ("The Fountain of Knowledge"). The first part, entitled Κεφάλαια φιλοσοφικά, is an exposition and application of theology of Aristotle's *Dialectic*. The second, entitled Περὶ αἱρέσεων ("Of Heresies"), is a reproduction of the earlier work of Epiphanius, with a continuation giving an account of the heresies that arose after the time of that writer. The third part, entitled Ἔκδοσις ἀκριβὴς τῆς ὀρθοδόξου πίστεως ("An Accurate Exposition of the Orthodox Faith"), is much the most important, containing as it does a complete system of theology founded on the teaching of the fathers and church councils, from the 4th to the 7th century. It thus embodies the finished result of the theological thought of the early Greek Church. Through a Latin translation made by Burgundio of Pisa in the 12th century, it was well known to Peter Lombard and Aquinas, and in this way it influenced the scholastic theology of the West. Another well-known work is the *Sacra parallela*, a collection of biblical passages followed by illustrations drawn from other scriptural sources and from the fathers.

BIBLIOGRAPHY.—The *Life* of John of Damascus was written by John, patriarch of Jerusalem in the 10th century (Migne, *Patrol. Graec.*, xciv. 429–489). The works were edited by Le Quien (2 vols., fol., Paris, 1712) and form vols. 94 to 96 in Migne's Greek series. A monograph by J. Langen was published in 1879. A. Harnack's *History of Dogma* is very full (*see* especially vols. iii. and iv.; on the image-worship controversy, iv. 322 *seq.*), and so are the similar works of F. Loofs-Seeberg and A. Dorner. *See* also O. Bardenhewer's *Patrologie*, and other literature cited in F. Kattenbusch's excellent article in Herzog-Hauck, *Realencyklopädie*, vol. ix.

JOHN OF GAUNT, duke of Lancaster; *see* LANCASTER, JOHN OF GAUNT, duke of.

JOHN OF GOD, ST. (JUAN CIUDAD) (1495–1550), founder of the Brothers of Charity, was born at Montemor, Novo, Portugal. From the life of a shepherd he turned to that of soldiering in the Austrian army, then in active conflict with the Turks. On returning to Granada, he was so deeply impressed by the sermons of Blessed John of Avila that he determined to devote his life to the care of the poor and the sick, and rented a house for that purpose. When he died, 10 years later, his companion, Antonio Martino, succeeded him as head of the institution. Other houses, including the large hospital at Madrid, richly endowed by Philip II., were soon opened, and in 1572 Pius V. raised the lay society to an order with the Augustinian rule. Its founder was canonized in 1690.

See C. Wilmet, *Lebensbeschreibung des . . . Johannes von Gott* (Regensburg, 1860); L. Saglier, *Vie de S. Jean de Dieu* (1877).

JOHN OF HEXHAM (*fl.* 1160–1209), English chronicler, is known to us merely as the author of a work called the *Historia XXV. annorum*, which continues the *Historia regum* of Simeon of Durham and contains an account of English events 1130–53. He was prior of Hexham between 1160 and 1209. Up to the year 1139 he follows closely the history written by his predecessor, Prior Richard; thenceforward he is an independent though not a very valuable authority.

The one manuscript of John's chronicle is a 13th century copy; ms. C. C. C. Cambridge, cxxxix. 8. The best edition is that of T. Arnold in *Symeonis monachi opera*, vol. ii. (Rolls Series, 1885). There is an English translation in J. Stevenson's *Church Historians of England*, vol. iv. (1856).

JOHN OF IRELAND (JOHANNIS DE IRLANDIA) (*fl.* 1480), Scottish writer, perhaps of Lowland origin, was resident for 30 years in Paris and later a professor of theology. He was confessor to James IV. and also to Louis XI. of France, and was rector of Yarrow (de Foresta) when he completed, at Edinburgh, the work on which rests his sole claim as a vernacular writer. This book, preserved in ms. in the Advocates' library, Edinburgh (ms. 18, 2, 8), and labelled "Johannis de Irlandia opera theologica," is a treatise in Scots on the wisdom and discipline necessary to a prince, especially intended for the use of the young James IV. The book is the earliest extant example of original Scots prose.

See the notices in John Lyden's Introduction to his edition of the *Complaynt of Scotlande* (1801); *The Scottish Antiquary*, xiii. and xv. Annotated extracts are given in Gregory Smith's *Specimens of Middle Scots* (1902).

JOHN OF LEIDEN: *see* BUCKHOLDT, JOHANN.

JOHN OF RAVENNA. Two distinct persons of this name, formerly confused and identified with a third (anonymous) Ravennese in Petrarch's letters, lived at the end of the 14th and the beginning of the 15th century.

1. A young Ravennese born about 1347, who in 1364 went to live with Petrarch as secretary. In 1367 he set out to see the world and make a name for himself, returned in a state of destitution, but, growing restless again, left his employer for good in 1368.

2. Son of Conversanus (Conversinus, Convertinus). He is first heard of (Nov. 17, 1368) as appointed to the professorship of rhetoric at Florence, where he had for some time held the post of notary at the courts of justice. This differentiates him from (1). He entered (*c.* 1370) the service of the ducal house of Padua, the Carraras, in which he continued at least until 1404, during part of which time he was professor of rhetoric at Padua. In 1406 he is last heard of living at Venice. His history of the Carraras, a tasteless production in barbarous Latin, says little for his literary capacity; but as a teacher he enjoyed a great reputation, amongst his pupils being Vittorino da Feltre and Guarino of Verona.

3. Malpaghini (De Malpaghinis), the most important. Born about 1356, he was a pupil of Petrarch from a very early age to 1374. On Sept. 19, 1397, he was appointed professor of rhetoric and eloquence at Florence, and he died in May 1417. Although Malpaghini left nothing behind him, he did much to encourage the study of Latin; among his pupils was Poggio Bracciolini.

The local documents and other authorities on the subject will be found in E. T. Klette, *Beiträge zur Geschichte und Litteratur der italienischen Gelehrtenrenaissance*, vol. i. (1888); *see* also G. Voigt, *Die Wiederbelebung des klassischen Altertums* (3rd ed. 1893), who, however, identifies (1) and (2).

JOHN OF SALISBURY (*c.* 1115–1180), English author, diplomatist and bishop of Chartres, was born at Salisbury. From his own accounts, he seems to have crossed to France in 1136 and to have studied for the next ten years under Abelard, Alberich of Reims, Robert of Melun, Gilbert de la Porrée, Robert Pullus, Simon of Poissy, William of Conches, and Richard l'Evêque. From the last two, who were disciples of Bernard of Chartres, he imbibed his Platonic leanings and especially his love of the Latin classics. The purity of his own style, which was evidently moulded on that of Cicero, was unsurpassed in the middle ages. On the completion of his studies, John stayed for a time with his friend Peter, the Cistercian abbot of Moustier la Celle, near Troyes. In 1148 he was present at the council of Reims, in which St. Bernard opposed Gilbert de la Porrée, and was probably presented to Bernard by Theobald, archbishop of Canterbury, who made him his secretary in 1150. He was frequently sent on missions to the pope, to whose household he seems to have been attached from 1148 onwards. After the death of Theobald in 1161, John continued as secretary to Thomas Becket, whom he supported in his long disputes with Henry II. His letters throw light on the constitutional struggle then agitating the English world. In 1163–64 he withdrew with Becket to France during the king's displeasure; he returned with him in 1170, and was present at his assassination. In 1176 he was made bishop of Chartres, where he passed the remainder of his life, taking an active part in the council of the Lateran in 1179. He died at or near Chartres on Oct. 25, 1180.

John's writings, the chief of which are the *Policraticus* and the *Metalogicus*, both completed in 1159, exhibit a highly cultivated intelligence well versed in practical affairs. The former sketches an ideal state not unlike that of Plato: the soul is the clergy, the head is the prince, who is the servant of the clergy, the heart is

the senate, the eyes, ears and tongue are the governors of the provinces, the hands are the armed and the administrative classes, and the feet are the husbandmen. The prince receives the material sword from the church, but only when he disobeys the law or ceases to rule the people by it, can he be deposed. In the *Metalogicus* we find a fusion of Augustinian and Aristotelian philosophy. Thus the doctrine of the necessity of the *rationes aeternae* as the foundation of certitude is combined with a moderate realism. There is also a noteworthy appreciation of the difficulties of such problems as that of substance, the movement of bodies, tides and other natural phenomena, time and space, the nature of the soul, the limits of knowledge, and Providence. In addition to these two works, John wrote a *Historia Pontificalis,* a philosophical poem, *Eutheticus de Dogmate Philosophorum,* two lives of St. Anselm, and a life of St. Thomas of Canterbury.

His collected works were edited by J. A. Giles (5 vols. 1848) and reprinted in Migne's *Patrol. Lat.*, vol. 199. The *Polycraticus* has been edited by C. C. J. Webb (2 vols., 1909) and the *Historia Pontificalis* by R. L. Poole (1927); and also in the *Mon. Germ. Hist.* (1868, 2nd ed. 1885). *See* C. Shaarschmidt, *Johannes Sarisberiensis* (1862); R. L. Poole, *Illustrations of the Hist. of Mediaeval Thought* (1884, 2nd ed. 1920); "Early Correspondence of John of Salisbury," in *Proc. of Brit. Acad.* (vol. xi. 1924), articles in the *Eng. Hist. Review* for 1920 and 1923, and in the *Dict. Nat. Biog.;* and E. F. Jacob's article in *Social and Political Ideas of Some Great Mediaeval Thinkers* (edit. Hearnshaw, 1923).

JOHN OF THE CROSS, ST. (1542–1591), Spanish mystic, was born at Ontiveros (Old Castile) on June 24, 1542. He became a professed Carmelite in 1564, and was ordained priest at Salamanca in 1567. He met with much opposition in his efforts to introduce the reforms proposed by St. Theresa, and was more than once imprisoned. His real name was Juan de Yepez y Álvarez; in religion he was known as Juan de San Matías till 1568, when he adopted the name of Juan de la Cruz. Broken by persecution, he was sent to the monastery of Ubeda, where he died in 1591; his *Obras espirituales* were published posthumously in 1618. He was beatified in 1674 and canonized on Dec. 27, 1726. The lofty symbolism of his prose is frequently obscure, but his lyrical verses are distinguished for their rapturous ecstasy and beauty of expression.

Some of his poems have been translated with great success by Arthur Symons in *Images of Good and Evil;* the most convenient edition of his works, which have been frequently reprinted, is that contained in vol. xvi. of the *Biblioteca de autores españoles. See* also J. D. Berrueta, *Sta. Teresa de Jesús y S. Jean de la Croix* (1915).

JOHN O' GROAT'S HOUSE, a spot on the north coast of Caithness, Scotland, 14 m. N. of Wick and $1\frac{3}{4}$ m. W. of Duncansby Head. It is the mythical site of an octagonal house said to have been erected early in the 16th century by one John Groot, a Dutchman who had migrated to the north of Scotland by permission of James IV. According to the legend, other members of the Groot family followed John, and acquired lands around Duncansby. When there were eight Groot families, disputes began to arise as to precedence at annual feasts. These quarrels John Groot is said to have settled by building an octagonal house which had eight entrances and eight tables, so that the head of each family could enter by his own door and sit at the head of his own table. Being but a few miles south of Dunnet Head, John o' Groat's is a colloquial term for the most northerly point of Great Britain. The site of the traditional building is marked by a mound and flagstaff.

JOHN THE BAPTIST, the "forerunner" of Jesus in the Gospel story. His preaching made a great impression upon his contemporaries (*cf.* Josephus *Ant.* xviii., 5). According to the birth-narrative in Luke i. and ii., he was born in "a city of Judah" (read, "the Province of Judah"), in "the hill country" (possibly Hebron). In this narrative his father, Zacharias, is represented as a priest "of the course of Abijah," and his mother Elizabeth (also of priestly descent) as related to Mary, the mother of Jesus. This narrative, which embodies some very primitive features Palestinian in character (it probably depends upon a Hebrew original, and reflects the point of view of the early Palestinian Christian Church), manifests a strong tendency to bring the Baptist into close connection with Jesus.

In the 15th year of the emperor Tiberius (?A.D. 28–29) John began his public life in the "wilderness of Judea," the wild district between the Kedron and the Dead sea, especially near the Jordan. According to the Synoptics his preaching was essentially eschatological in character, being concerned with the nearness of the Messianic kingdom and the consequent urgency for preparation by repentance.

Possibly as Streeter (*J.Th.S.* July 1913) suggests John's baptism was eschatological. "It was regarded as a 'sealing' or symbolical act entitling to admission to the coming kingdom. . . . The essential meaning of the rite would be rather aspiration for the future than regret for the past." Josephus, as cited, seems to suggest that John's baptism must be regarded as a bodily purification corresponding to an inward change, not as a means of remitting sins; in fact Josephus does not agree with the Synoptic accounts in this respect. Jewish scholars (*e.g.*, Kohler and I. Abrahams) insist on the Essene affinities of John, though John was less rigid. The fourth Gospel preserves a trustworthy tradition in locating one place of John's baptism at "Aenon near to Sâlim" (John iii. 23.) This must be the modern 'Ainûn, nearly eight miles north-east of Sâlim (a town east of Nablus). This fact confirms the view that John preached to the Samaritans, and the persistent tradition that he was buried at Sebaste in Samaria. *See* W. F. Albright, *Harvard Th. Rev.*, xvii. p. 193 f.

If, as has been suggested, John's preaching was first of all directed to those who practised an ascetic mode of life, there must have followed a later period when the scope of his mission was widened and he delivered his message to the masses of the people, "the people of the land." He had disciples who fasted (Mark ii. 18, etc.), who visited him regularly in prison (Matt. xi. 2, xiv. 12), and to whom he taught special forms of prayer (Luke v. 33, xi. 1). Some of these afterwards became followers of Christ (John i. 37). John's activity indeed had far-reaching effects. It profoundly influenced the Messianic movement depicted in the Gospels. The preaching of Jesus shows traces of this, and the Fourth Gospel (as well as the Synoptics) displays a marked interest in connecting the Johannine movement with the beginnings of Christianity, though in fact the original connection may have been exaggerated. The existence of disciples of John at Ephesus after the lapse of 25 years is significant (Acts xviii. 25, xix. 3). It is curious that the Mandaeans or Sabians (from Saba—"Baptise"), called also "Christians according to John," have preserved some confused traditions about the Baptist. For Christ's estimate of John, *cf.* Matt. xi. 7 f. John's ministry terminated in his imprisonment in the fortress of Machaerus, where he was executed by order of Herod Antipas.

See Kohler, in *Jew. Encyc.*, vii. p. 218 f.; I. Abrahams, *Studies in Phar. and Gospels,* 1st series, pp. 30 ff.; Foakes Jackson and K. Lake, *Beginnings of Christianity,* i., pp. 101 ff.; Arts. MANDAEANS in *E.R.E.* and in this *Encyc.;* Box, *St. Matt.* (Century Bible), pp. 236 ff. for chronology. (G. H. B.)

JOHNS HOPKINS UNIVERSITY, an American educational institution at Baltimore (Md.). Its trustees, chosen by Johns Hopkins (1794–1873), a successful Baltimore merchant, were incorporated August 24, 1867, under a general act "for the promotion of education in the State of Maryland." But nothing was actually done until after the death of Johns Hopkins (Dec. 24, 1873), when his fortune of $7,000,000 was equally divided between the projected university and a hospital, also to bear his name, and intended to be an auxiliary to the medical school of the university. The trustees of the university consulted men prominent in higher education, notably Charles W. Eliot of Harvard university, Andrew D. White of Cornell university, and James B. Angell, University of Michigan; on December 30, 1874, they elected Daniel Coit Gilman (*q.v.*) president. The university was formally opened February 22, 1876, the first classes meeting October 3, 1876.

The first year was largely given up to consultation among the newly chosen professors, among whom were: in Greek, B. L. Gildersleeve (1831–1924); in mathematics, J. J. Sylvester (1814–97); in chemistry, Ira Remsen (1846–1927); in biology, Henry Newell Martin (1848–96); in zoology, William Keith Brooks (1848–1908); and in physics, Henry Augustus Rowland (1848–

1901). Prominent among later teachers were Arthur Cayley, in mathematics; the Semitic scholar, Paul Haupt (1858–1926); Granville Stanley Hall (1846–1924), in psychology; Maurice Bloomfield (1848–1928), in Sanskrit and comparative philosophy; James Rendel Harris in Biblical philology; James Wilson Bright (1852–1926) in English philology; Herbert B. Adams (1855–1901), in history; and Richard T. Ely (1854–), in economics.

The university at once became a pioneer in the United States in teaching by means of seminary courses and laboratories, and was eminently successful in encouraging research, in scholarly publications, and in the preparation of its students to become instructors in other colleges and universities. It includes graduate departments under the faculty of philosophy and the medical faculty, a school of hygiene and public health, a college of arts and sciences, a school of engineering, a school of business economics, and a college for teachers.

From its foundation the university had novel features and a liberal administration. Twenty annual fellowships of $500 each were opened to the graduates of any college. Petrography and laboratory psychology were among the new sciences fostered by the new university. Such eminent outsiders were secured for brief residence and lecture courses as James Russell Lowell, F. J. Child, Simon Newcomb, H. E. von Holst, F. A. Walker, William James, James Bryce, E. A. Freeman, W. W. Goodwin, and Alfred Russell Wallace. The poet, Sidney Lanier, held an appointment as lecturer in English literature from 1879 until his death in the year 1881.

The medical department, inaugurated in 1893, is closely affiliated with the excellently equipped Johns Hopkins hospital (opened in 1889), and is actually a graduate school, as it admits only students holding the bachelor's degree or its equivalent. The degree of doctor of medicine is conferred after four years of successful study, and advanced courses are offered. Among the department's greatest teachers have been William Osler (1849–1919) and William Henry Welch (1850–1934). President Gilman retired in September 1901, and was succeeded by Ira Remsen, a member of the original faculty. In October 1914 Frank Johnson Goodnow became president. He was followed, in 1929, by Joseph Sweetman Ames. Isaiah Bowman succeeded Dr. Ames in 1935.

In 1909 the university, in co-operation with Goucher college, a well-equipped undergraduate school of high standing, initiated college courses for teachers, now the college for teachers; in 1911, summer courses; in 1916, evening courses in business economics and night courses for technical workers. A school of business economics, providing academic training for business careers, and conferring the degree of bachelor of science in economics, was opened in 1922. The Walter Hines Page school of international relations was opened in 1930.

Upon an initial State appropriation of $600,000, continued by annual grants, a school of engineering was opened in 1913, with instruction in civil, electrical, and mechanical branches. This school's courses were extended in 1924 to include gas engineering, and in 1936 a course in chemical engineering was added. For these departments two laboratories and a power-house have been erected.

Teaching in Medicine.—The university received from 1913 to 1927, gifts and grants to about $20,000,000. The clinical departments of medicine, surgery, pediatrics, obstetrics, psychiatry, and ophthalmology were placed on a full-time basis. The General Education Board led with several large grants in all these cases, besides giving two laboratories—the new Hunterian (1915) and the pathological (1923)—and $3,000,000 for expansion now in process, including a central heating plant (1925). Capt. Joseph R. DeLamar, who died in 1918, left bequests amounting to more than $5,000,000 in 1927. In 1923, $2,000,000 was voted by the Carnegie Corporation for the erection and maintenance of an out-patient dispensary and diagnostic clinic on the hospital grounds.

In 1925, the Wilmer ophthalmological institute, named after the first director, Dr. William Holland Wilmer, with endowment of the university department of ophthalmology, was established at the hospital, on a fund of $3,000,000. Advanced ophthalmological training in America was thus made possible. The university has also profited from the establishment of six other clinics in the hospital, the Harriet Lane home for pediatrics (1912), the Phipps psychiatric clinic (1913), the Brady urological institute (1914), the women's clinic for obstetrics and gynecology (1923), and the Osler and Halsted clinics for medicine and surgery respectively (1929), all teaching hospitals staffed from the personnel of the school.

In 1918, under the direction of Dr. William H. Welch, assisted by Dr. William H. Howell, former dean of the school of medicine, a school of hygiene and public health was opened, with an annual grant from the Rockefeller Foundation, which in 1922 became an endowment of $5,000,000, with another $1,000,000 for a building, completed and occupied in 1925.

This school, together with the hospital and the school of medicine, is a unit in one of the strongest medical centres in America. The main objects of this school are to train for public health work, promote investigation, and disseminate sound hygienic knowledge. The school operates eleven departments and a field study and training area. The degrees granted are doctor of public health, doctor of science in hygiene, master of science in hygiene, and certificate in public health. Of the 134 students enrolled in 1935–36, 24 came from foreign countries.

The government of the university is entrusted to a board of trustees, of which the president is a member ex-officio, while the direction of affairs of a strictly academic nature is delegated to an academic council and to department boards. In 1907–8 the regular faculty numbered 175 persons. In 1936 it numbered 597, with 84 additional instructors in the afternoon, evening, and summer courses. In 1907–8 there were 683 students, of whom 518 were in post-graduate courses; in 1936, 4,434, including 834 in graduate courses.

The libraries of the university had in 1936 about five hundred thousand bound volumes and many pamphlets. During 1927 plans were completed for the creation of a central medical library, the William H. Welch medical library, to serve both the hospital and the departments of the university devoted to various branches of medical science. The project was made possible because of a generous gift from the General Education Board of New York and other friends of the university. The library contained 125,000 volumes in 1936.

Buildings and Equipment.—The buildings of the university in 1901 were crowded unpretentiously near the business centre of the city of Baltimore. In 1902 a gift of about 125 acres in the northern suburbs of the city made by a group of generous Baltimore citizens, brought about plans for removal. In 1916 the removal from the old site to Homewood was completed with the exception of the department of chemistry, which occupied its new laboratory in 1924. A physics building was added in 1929. The new tract is expertly developed. The new university buildings were fashioned in Georgian colonial architectural style in order to conform to the Homewood mansion, which was erected on the site early in the nineteenth century.

A dormitory, designated as a World War memorial, was opened in the year 1923 in the name of the university alumni. An ingeniously equipped laboratory in plant physiology, botanical garden, and arboretum, athletic fields, and concrete grand-stand complete the development. In 1936 the university's endowment amounted to more than $29,000,000 and the value of its physical equipment was $14,000,000.

Scientific Expeditions.—The university has sponsored, or has participated in, a number of field expeditions in biology, geology and archaeology, besides two botanical expeditions to the island of Jamaica in the year 1910. Two geological expeditions in 1919 and 1924 made the first detailed cross section of the Andes. A Johns Hopkins archaeologist directed excavations at Pisidian Antioch and discovered and explored the site of ancient Olynthus. Another archaeologist has directed numerous expeditions in Palestine, excavating at Gibeah of Saul, Tell Beit Mirsim, Bethel, Moab, Petra, and other sites.

Publications.—Active in publication, members of the faculty of the university in the year 1936 recorded about six hundred

printed contributions. The Johns Hopkins Press publishes annually a considerable number of learned periodicals, monographs and scholarly books written by various members of the faculty and others. In 1936 the Johns Hopkins Press published ten journals, nineteen monographs, seventeen bound volumes and forty-one Ph.D. dissertations.

JOHNSON, ANDREW (1808–1875), seventeenth president of the United States, was born at Raleigh, N.C., on Dec. 29, 1808. His parents did not belong to the slave-owning class and Andrew continued poor long enough to develop a feeling of hostility toward the dominant element in southern society. Of formal schooling he had none. At the age of ten the boy was apprenticed to a tailor and although his hours were long, he managed to learn to read and write. In 1826 he removed to Greenville in eastern Tennessee, where he married Eliza McCordle (1810–76), who possessed a fair education and was of considerable assistance to her husband in his pursuit of further learning. During the early Tennessee years Johnson earned his living by the practice of his trade, but before he was 21 he entered local politics, was elected an alderman, and in 1830 became mayor of Greenville. From 1834 to 1843 he participated in State politics, serving as a Democrat in the State constitutional convention (1834), in the House of Representatives (1835–37; 1839–41) and in the Senate (1841–43). These years marked Johnson's political apprenticeship. His powers were now mature and he was ready to assume the position of champion of his section which was composed in the main of small farmers, suspicious and jealous of the slave-holding plantation owners who dominated the social and political life of middle and western Tennessee.

Generally speaking, during the formative years of Johnson's political career and down to the middle of the 1850's, the Whig Party was the political agent of the plantation interests in Tennessee while the Democratic Party, true to its Jacksonian origin, continued as the exponent of the small farmer-labourer interests. As the years passed and the drift of events tended to force slave-owners everywhere to unite in one party, and that party by the force of circumstances became the Democratic, Johnson sometimes found himself in uncongenial company. Nevertheless he preferred the Democratic to the newly-formed Republican Party. As a Democrat he had served as a member of the Federal House of Representatives from 1843 to 1853; from 1853 to 1857 he was governor of Tennessee and from 1857 to 1862 he was a member of the United States senate. In Congress he was in harmony with the pro-slavery element of his party so far as low tariff, territorial expansion, slavery extension and opposition to abolitionist agitation were concerned. He opposed them when they attempted to obstruct the movement for free western land for actual settlers, and as governor of Tennessee when he espoused the cause of popular education at State expense. In 1860 he supported Breckenridge whom he regarded as the true Democratic standard-bearer. However, he did not consider the election of Lincoln a sufficient reason for the Southern States to secede. Accordingly when Tennessee passed an ordinance of secession in June, 1861, he refused to leave his seat in the United States Senate and join the newly organized Confederacy. In March, 1862, President Lincoln appointed him military governor of Tennessee and during the two years he held this position he rendered valuable service to the Union cause, and just before he left the office he succeeded in creating and putting into operation machinery for the restoration of a loyal civil government in the State. During these Civil War years Johnson never ceased to class himself as a Democrat, and when in 1864 he was nominated for vice president on the ticket with Lincoln, it was by a convention that called itself "Union," not "Republican." This distinction is important for it exculpates Johnson from the charge subsequently made that he was an apostate from the Republican Party.

When Lincoln was assassinated in April, 1865, Johnson succeeded to the Presidency. Although he had frequently expressed himself to the effect that secession was treason and that the leaders of the secession movement should be punished as traitors, he did not hold that the late Confederate States were conquered territories to be dealt with in such manner as Congress might see fit. In this his opinions were in harmony with those of Lincoln, who had acted on the theory that the States had never been out of the Union. As commander-in-chief of the army the President had full power to name the conditions upon which military rule might be withdrawn and civil rule substituted. Accordingly, on May 29, 1865, he issued a general amnesty proclamation, granting full pardon to all ex-Confederates (except certain leaders) who would take an unqualified oath of allegiance to the United States. He next appointed provisional governors for the seven rebel States which had not already begun the process of restoration under the direction of Lincoln. To these governors he issued instructions that they provide for State conventions to be elected by such persons as had taken the oath of allegiance and were otherwise qualified to vote under the laws of the respective States. To the conventions he suggested (one might almost say, ordered) that they embody in the State Constitutions a provision for the abolition of slavery, ratify the 13th amendment to the Federal Constitution, nullify the ordinances of secession and repudiate such parts of the State debts as had been contracted in support of the secession movement. These were essentially the same demands that Lincoln had made on the conventions in the States where he had erected loyal civil governments. All this took place during the summer and autumn of 1865 previous to the assembling of Congress on Dec. 4.

That body was overwhelmingly Republican in complexion and most of the Republicans were inclined to take a radical view of the southern situation. It refused admission to the senators and representatives from the rebel States and provided for the creation of a joint committee on reconstruction. The exigencies of politics and the status of the freedmen were the crucial points in the situation. The radicals demanded that the late slaves be granted the right to vote forthwith and that a sufficient number of ex-Confederates be disfranchised to assure Republican majorities in most of the Southern States, assuming, of course, that the negroes would vote Republican out of gratitude to the party which had effected their freedom. To none of these demands would the President yield and in the course of three or four months the breach between him and the Republican Congress was wide open. Meanwhile the Southern States remained unrepresented in Congress while the reconstruction committee conducted investigations into southern conditions to ascertain whether any of them were sufficiently loyal to warrant their being represented. In June, 1866, the committee reported that the rebel States were unfit for representation, but presumably would become fit should they ratify the 14th amendment which was reported at the same time. This amendment was defeated in all the late Confederate States except Tennessee. The representatives and senators from this State were forthwith admitted. Soon afterward Congress adjourned and the whole question of reconstruction was submitted to the electorate.

During the course of his contest with the radical Republicans Johnson had gradually drawn the Democrats to his side and hoped to secure the support of enough moderate Republicans to control the next Congress. To this end he took an active part in the campaign but it is a question whether his speeches, some of which were certainly undignified and in bad taste, did more harm than good to his cause. At any rate his hopes were dashed as the new Congress contained an even larger majority of radical Republicans than the old. Accordingly, in 1867 Congress threw aside his work of restoration and proceeded with a plan of its own, the main features of which were the restoration of military control, the enfranchisement of negroes and the disfranchisement of considerable numbers of ex-Confederates. Johnson opposed this plan with all the power he possessed, regarding it as dangerous to the Federal system of government. His opposition was vain but troublesome to the leaders of the radical movement. They therefore determined to deprive the President of practically all power. To this end Congress passed on March 2, 1867, over the President's veto, the Tenure of Office act, prohibiting the President from dismissing from office, unless the Senate should agree, any officer appointed by and with the consent of that body. For a long time Edwin M. Stanton, the secretary of war, had been dis-

loyal to his chief and in league with his enemies. To rid himself of his obnoxious war minister and at the same time test before the Supreme Court the constitutionality of the Tenure of Office act, Johnson removed Stanton without obtaining the consent of the Senate. His plan for bringing the case before the Supreme Court, however, miscarried. Whereupon the House of Representatives brought articles of impeachment against the President, the only important charge being his violation of the Tenure of Office act. The evidence was entirely inadequate for convicting him on the graver charge before any fair-minded and impartial tribunal. The Senate at that time, however, was extremely partisan, and Johnson escaped conviction by only one vote (35 to 19; a two-thirds majority was necessary for conviction), on May 16, 1868. The remainder of Johnson's term as President was comparatively quiet and uneventful. On March 4, 1869, he left the Presidency a beaten and embittered man, but something of his fighting spirit remained. After a number of unsuccessful efforts, in 1875 his Tennessee constituents returned him to his old place in the Senate. But his triumph was not for long. He made one brilliant speech in the Senate in apology for his own reconstruction policy and in denunciation of that of his opponents. But it was his last. Shortly afterward, on July 31, 1875, he died. Faults of personality were Andrew Johnson's great handicap. He lacked the finish of systematic education. He was frequently tactless and at times even undignified. Though possessing fundamentally a kind and sympathetic disposition, his natural shyness caused him to appear to all except his closest intimates, hard and inflexible. His career as president was of the essence of tragedy. Of unlimited faith in the people, his reconstruction policies were overwhelmingly rejected by them. Of unswerving devotion to the letter and spirit of the Constitution he was impeached for its violation.

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JOHNSON, EASTMAN (1824–1906), U.S. artist, was born at Lovell (Me.), July 29, 1824. He studied at Düsseldorf, Paris, Rome and The Hague. In 1860 he was elected to the National Academy of Design, New York. A distinguished portrait and genre painter, he made distinctively American themes his own, depicting the Negro, fisherfolk and farm life with unusual interest. Such pictures as "Old Kentucky Home" (1867), "Husking Bee" (1876), "Cranberry Harvest, Nantucket" (1880), and his portrait group "The Funding Bill" (1881), achieved a national reputation. Among his sitters were many prominent men, including Daniel Webster; Presidents Hayes, Arthur, Cleveland and Harrison; William M. Evarts, Charles J. Folger; Emerson, Longfellow, Hawthorne, James McCosh, Noah Porter and Sir Edward Archbald. He died in New York city April 5, 1906.

JOHNSON, EDWARD, tenor, was born at Guelph, Ont. He was educated at the University of Toronto and went to New York as a church soloist in 1907. Turning soon to light opera, he rapidly became a public favourite. After further vocal study in Italy, he made his operatic début at Padua, in *Andrea Chenier* in 1911; and sang in Rome, Bologna and at La Scala, Milan, for five seasons. In 1916 he was invited to the Teatro Colon, Buenos Aires. His first operatic appearance in the U.S. was with the Chicago Opera company, Nov. 30, 1919. He joined the Metropolitan Opera company, N.Y., in 1922, becoming an American citizen. In 1935 he became general manager of the Metropolitan.

JOHNSON, HIRAM WARREN (1866–1945), U.S. politician, was born at Sacramento, Calif., on Sept. 2, 1866. He entered the University of California, but did not finish his course. He became a reporter, at the same time studying law in his father's office; was admitted to the bar 1888, and practised with his father and his brother in Sacramento. In 1902 he opened an office in San Francisco, where he became widely known in 1906–07, when as prosecuting attorney he proceeded against dishonest public officials and corporations. He was elected governor of California for the term 1911–15; and in 1912 was an unsuccessful candidate for vice-president (on the ticket with Theodore Roosevelt), as nominee of the National Progressive party, which he had helped to organize. As governor he signed in 1913 the Webb Anti-alien bill, designed to prohibit the ownership of land in California by Japanese, although the president had asked for delay. He was re-elected governor 1915–19, but resigned in 1917 to enter the U.S. senate, where he served continuously until his death. He opposed many of the policies of President Wilson's administration, and declared that a league of nations would involve the United States in European wars. He opposed the third term for President Roosevelt, the attempt to enlarge the supreme court, modification of the Neutrality act, conscription, and the United Nations World charter. He died on Aug. 6, 1945, at Bethesda, Md.

JOHNSON, JOHN GRAVER (1841–1917), U.S. lawyer and art collector, was born April 4, 1841, at Chestnut Hill, near Philadelphia, Pa. After graduating from the Central High School of Philadelphia in 1857, he entered the office of Benjamin Rush as a scrivener. He enrolled in the law school of the University of Pennsylvania in 1862 and received his degree in 1863. He enlisted in the Union army during the Gettysburg campaign and fought in an engagement near Carlisle.

Johnson was admitted to the bar in 1863 and quickly acquired a large and varied practice and recognition as an authority in estate and corporation law. In 1869 he became counsel for the Pennsylvania company. He won national fame by his victories in the Sugar Trust case (*U.S.* vs. *E. C. Knight*) and the metropolitan traction cases in the early 1890s. Thereafter while continuing a vast general practice he was retained in many of the leading cases involving the construction of the Sherman Anti-Trust act. These included the Northern Securities case (1903), the Standard Oil and American Tobacco cases (1911), the Coal Trust cases and the United States Steel corporation case (1914). Other litigation in which he acted covered the Carnegie-Frick controversy and the case of Philip and Alfred du Pont against Pierre and Coleman du Pont. Johnson twice declined appointment to the supreme court of the United States.

While still a young man he began his collection of paintings, and his nearly 1,300 paintings include examples of European schools of nearly seven centuries, as well as important American paintings. At his death on April 14, 1917, his collection was bequeathed to the city of Philadelphia.

He wrote *Sight-seeing in Berlin and Holland Among Pictures* (1892) and *A Defense of Dr. Benjamin Rush* (1867).

JOHNSON, LIONEL PIGOT (1867–1902), English critic and poet, was born at Broadstairs on March 15, 1867, and educated at Winchester, and at New College, Oxford. He began writing verse while still at school, and his essay on "The Fools of Shakespeare" was published in 1887, in *Noctes Shakesperiance*. In 1890, on leaving Oxford, he settled in London, where he undertook reviewing for the *Academy*, *Pall Mall Gazette* and other journals. In June 1891, he was received into the Church of Rome, and the influence of his conversion is seen in his poetry after that date. In 1895 the first collected edition of his poems appeared. His second volume *Ireland and other Poems* (1897), reflects his growing interest in Ireland, which he visited in Sept. 1893, and on several later occasions.

He died on Oct. 4, 1902, as the result of a fall in Fleet street, following on a long period of ill-health.

A collected edition of his poems was published in 1915.

JOHNSON, REVERDY (1796–1876), U.S. political leader and jurist, was born at Annapolis, Md., on May 21, 1796. His father, John Johnson (1770–1824), was a distinguished lawyer, who served in both legislative houses of Maryland, as attorney general of the state (1806–11), as a judge (1811–21), and as a chancellor of his state (1821–24). Reverdy graduated from St. John's college in 1812. He then studied law in his father's office, was admitted to the bar in 1815 and began to practise in Upper Marlborough. In 1817 he removed to Baltimore, where he became the professional associate of Luther Martin, William Pinkney and

Roger B. Taney; with Thomas Harris he reported the decisions of the court of appeals in *Harris and Johnson's Reports* (1820–27). From 1845 to 1849, as a Whig, he was a member of the United States Senate; and in 1849–50 he was attorney general of the United States. In 1856 he became identified with the conservative wing of the Democratic Party, and four years later supported Stephen A. Douglas for the presidency.

After the capture of New Orleans he was commissioned by Lincoln to revise the decisions of the military commandant, General B. F. Butler, in regard to foreign governments, and reversed all those decisions to the entire satisfaction of the administration. In 1863 he again took his seat in the United States Senate. In 1868 he was appointed minister to Great Britain, returning on the accession of Grant to the presidency. Again resuming his practice he was engaged by the government in the prosecution of Ku-Klux cases. He repudiated the doctrine of secession, and pleaded for compromise and conciliation. Opposed to the Reconstruction measures, he voted for them on the ground that it was better to accept than reject them, since they were probably the best that could be obtained. As a lawyer he was engaged during his later years in most of the especially important cases in the Supreme Court of the United States. He died at Annapolis on Feb. 10, 1876.

JOHNSON, RICHARD (1573–1659?), English romance writer, was baptized in London on May 24, 1573. His most famous romance is *The Famous Historie of the Seaven Champions of Christendom* (1596?). The success of this book was so great that the author added a second and a third part in 1608 and 1616.

His other stories include: *The Nine Worthies of London* (1592); *The Pleasant Walks of Moorefields* (1607); *The Pleasant Conceites of Old Hobson* (1607), the hero being a well-known haberdasher in the Poultry; *The Most Pleasant History of Tom a Lincolne* (1607); *A Remembrance of . . . Robert Earle of Salisbury* (1612); *Looke on Me, London* (1613); *The History of Tom Thumbe* (1621). *The Crown Garland of Golden Roses . . . set forth in Many Pleasant new Songs and Sonnets* (1612) was reprinted for the Percy Society (1842 and 1845).

JOHNSON, RICHARD MENTOR (1781–1850), ninth vice-president of the United States, was born at Bryant's Station (Ky.) on Oct. 17, 1781. He was admitted to the bar in 1800, and became prominent as a lawyer and Democratic politician serving in the Federal House of Representatives and in the Senate for many years. From 1837 to 1841 he was vice-president of the United States, to which position he was elected over Francis Granger, by the Senate, none of the four candidates for the vice-presidency having received a majority of the electoral votes. The opposition to Johnson within the party greatly increased during his term, and the Democratic national convention of 1840 adopted the unprecedented course of refusing to nominate anyone for the vice-presidency. In the ensuing election Johnson received most of the Democratic electoral votes, but was defeated by the Whig candidate, John Tyler. He died in Frankfort (Ky.) on Nov. 19, 1850.

JOHNSON, SAMUEL (1709–1784), English writer and lexicographer, was the son of Michael Johnson (1656–1731), bookseller and magistrate of Lichfield, who married in 1706 Sarah Ford (1669–1759). Michael's abilities and attainments seem to have been considerable. He was so well acquainted with the contents of the volumes which he exposed for sale that the country rectors of Staffordshire and Worcestershire thought him an oracle on points of learning. Between him and the clergy, indeed, there was a strong religious and political sympathy. He was a zealous churchman, and, though he had qualified himself for municipal office by taking the oaths to the sovereigns in possession, was to the last a Jacobite in heart. The social position of Samuel's paternal grandfather, William Johnson, remains obscure; his mother was the daughter of Cornelius Ford, "a little Warwickshire Gent."

At a house (now the Johnson museum) in the Market Square, Lichfield, Samuel Johnson was born on Sept. 18, 1709 and baptized on the same day at St. Mary's, Lichfield. In the child the physical, intellectual and moral peculiarities which afterwards distinguished the man were plainly discernible: great muscular strength accompanied by much awkwardness and many infirmities; great quickness of parts, with a morbid propensity to sloth and procrastination; a kind and generous heart, with a gloomy and irritable temper. He had inherited from his ancestors a scrofulous taint, and his parents were weak enough to believe that the royal touch would cure him. In his third year he was taken up to London, inspected by the court surgeon, prayed over by the court chaplains and stroked and presented with a piece of gold by Queen Anne. Her hand was applied in vain. The boy's features, which were originally noble and not irregular, were distorted by his malady. His cheeks were deeply scarred. He lost for a time the sight of one eye; and he saw but very imperfectly with the other. But the force of his mind overcame every impediment. Indolent as he was, he acquired knowledge with such ease and rapidity that at every school (such as those at Lichfield and Stourbridge) to which he was sent he was soon the best scholar. From 16 to 18 he resided at home, and was left to his own devices. He learned much at this time, though his studies were without guidance and without plan. He ransacked his father's shelves, dipped into a multitude of books, read what was interesting and passed over what was dull. An ordinary lad would have acquired little or no useful knowledge in such a way; but much that was dull to ordinary lads was interesting to Samuel. He read little Greek; for his proficiency in that language was not such that he could take much pleasure in the masters of Attic poetry and eloquence. But he had left school a good Latinist, and he soon acquired an extensive knowledge of Latin literature. He was peculiarly attracted by the works of the great restorers of learning. Once, while searching for some apples, he found a huge folio volume of Petrarch's works. The name excited his curiosity, and he eagerly devoured hundreds of pages. Indeed, the diction and versification of his own Latin compositions show that he had paid at least as much attention to modern copies from the antique as to the original models.

While he was thus irregularly educating himself, his family was sinking into hopeless poverty. Old Michael Johnson was much better qualified to pore over books, and to talk about them, than to trade in them. His business declined; his debts increased; it was with difficulty that the daily expenses of his household were defrayed. It was out of his power to support his son at either university; but a wealthy neighbour offered assistance; and, in reliance on promises which proved to be of very little value, Samuel was entered at Pembroke College, Oxford. When the young scholar presented himself to the rulers of that society, they were amazed not more by his ungainly figure and eccentric manners than by the quantity of extensive and curious information which he had picked up during many months of desultory but not unprofitable study. On the first day of his residence he surprised his teachers by quoting Macrobius; and one of the most learned among them declared that he had never known a freshman of equal attainments.

At Oxford Johnson resided barely over two years, possibly less. He was poor, even to raggedness; and his appearance excited a mirth and a pity which were equally intolerable to his haughty spirit. He was driven from the quadrangle of Christ Church by the sneering looks which the members of that aristocratical society cast at the holes in his shoes. Some charitable person placed a new pair at his door; but he spurned them away in a fury. Distress made him, not servile, but reckless and ungovernable. No opulent gentleman commoner, panting for one-and-twenty, could have treated the academical authorities with more gross disrespect. The needy scholar was generally to be seen under the gate of Pembroke, a gate now adorned with his effigy, haranguing a circle of lads, over whom, in spite of his tattered gown and dirty linen, his wit and audacity gave him an undisputed ascendancy. In every mutiny against the discipline of the college he was the ringleader. Much was pardoned, however, to a youth so highly distinguished by abilities and acquirements. He had early made himself known by turning Pope's "Messiah" into Latin verse. The style and rhythm, indeed, were not exactly Virgilian; but the translation found many admirers, and was read with pleasure by Pope himself.

The time drew near at which Johnson would, in the ordinary course of things, have become a Bachelor of Arts; but he was at the end of his resources. Those promises of support on which he had relied had not been kept. His family could do nothing for him. His debts to Oxford tradesmen were small indeed, yet larger than

he could pay. In the autumn of 1731 he was under the necessity of quitting the university without a degree. In the following winter his father died. The old man left but a pittance; and of that pittance almost the whole was appropriated to the support of his widow. The property to which Samuel succeeded amounted to no more than twenty pounds.

His life, during the thirty years which followed, was one hard struggle with poverty. The misery of that struggle needed no aggravation, but was aggravated by the sufferings of an unsound body and an unsound mind. Before the young man left the university, his hereditary malady had broken forth in a singularly cruel form. He had become an incurable hypochondriac. He said long after that he had been mad all his life, or at least not perfectly sane; and, in truth, eccentricities less strange than his have often been thought ground sufficient for absolving felons and for setting aside wills. His grimaces, his gestures, his mutterings, sometimes diverted and sometimes terrified people who did not know him. At a dinner table he would absent-mindedly stoop down and twitch off a lady's shoe. He would amaze a drawing-room by suddenly ejaculating a clause of the Lord's Prayer. He would conceive an unintelligible aversion to a particular alley, and perform a great circuit rather than see the hateful place. He would set his heart on touching every post in the streets through which he walked. If by any chance he missed a post, he would go back a hundred yards and repair the omission. Under the influence of his disease, his senses became morbidly torpid, and his imagination morbidly active. At one time he would stand poring on the town clock without being able to tell the hour. At another he would distinctly hear his mother, who was many miles off, calling him by his name. But this was not the worst. A deep melancholy took possession of him, and gave a dark tinge to all his views of human nature and of human destiny. Such wretchedness as he endured has driven many men to shoot themselves or drown themselves. But he was under no temptation to commit suicide. He was sick of life; but he was afraid of death; and he shuddered at every sight or sound which reminded him of the inevitable hour. In religion he found but little comfort during his long and frequent fits of dejection; for his religion partook of his own character. The light from heaven shone on him indeed, but not in a direct line, or with its own pure splendour. The rays had to struggle through a disturbing medium; they reached him refracted, dulled and discoloured by the thick gloom which had settled on his soul, and, though they might be sufficiently clear to guide him, were too dim to cheer him.

With such infirmities of body and of mind, he was left, at two-and-twenty, to fight his way through the world. He remained during about five years in the midland counties. At Lichfield, his birthplace and his early home, he had inherited some friends and acquired others. He was kindly noticed by Henry Hervey, a gay officer of noble family, who happened to be quartered there. Gilbert Walmesley, registrar of the ecclesiastical court of the diocese, a man of distinguished parts, learning and knowledge of the world, did himself honour by patronizing the young adventurer, whose repulsive person, unpolished manners and squalid garb moved many of the petty aristocracy of the neighbourhood to laughter or disgust. At Lichfield, however, Johnson could find no way of earning a livelihood. He became usher of a grammar school in Leicestershire; he resided as a humble companion in the house of a country gentleman; but a life of dependence was insupportable to his haughty spirit. He repaired to Birmingham, and there earned a few guineas by literary drudgery. In that town he printed a translation, little noticed at that time, and long forgotten, of a Latin book about Abyssinia. He then put forth proposals for publishing by subscription the poems of Politian, with notes containing a history of modern Latin verse; but subscriptions did not come in, and the volume never appeared.

While leading this vagrant and miserable life, Johnson fell in love. The object of his passion was Mrs. Elizabeth Porter (1688–1752), widow of Harry Porter (d. 1734), whose daughter Lucy was born only six years after Johnson himself. To ordinary spectators the lady appeared to be a short, fat, coarse woman, painted half an inch thick, dressed in gaudy colours, and fond of exhibiting provincial airs and graces which were not exactly those of the Queensberrys and Lepels. To Johnson, however, whose passions were strong, and whose eyesight was too weak to distinguish rouge from natural bloom, and who had seldom or never been in the same room with a woman of real fashion, his Tetty, as he called her, was the most beautiful, graceful and accomplished of her sex. That his admiration was unfeigned cannot be doubted; she had, however, a jointure of £600 and perhaps a little more; she came of a good family, and her son Jervis (d. 1763) commanded H.M.S. "Hercules." The marriage, in spite of occasional wranglings, proved happier than might have been expected. The lover continued to be under the illusions of the wedding-day (July 9, 1735) till the lady died in her sixty-fourth year. On her monument at Bromley he placed an inscription extolling the charms of her person and of her manners; and when, long after her decease, he had occasion to mention her, he exclaimed with a tenderness half ludicrous, half pathetic, "Pretty creature!"

His marriage made it necessary for him to exert himself more strenuously than he had hitherto done. He took a house at Edial near Lichfield and advertised for pupils. But 18 months passed away, and only three pupils came to his academy. The "faces" that Johnson habitually made (probably nervous contortions due to his disorder) may well have alarmed parents. Good scholar though he was, these twitchings had lost him usherships in 1735 and 1736. David Garrick, who was one of the pupils, used, many years later, to throw the best company of London into convulsions of laughter by mimicking the master and his lady.

At length Johnson, in the twenty-eighth year of his age, determined to seek his fortune in London as a literary adventurer. He set out with a few guineas, three acts of his tragedy of *Irene* in manuscript and two or three letters of introduction from his friend Walmesley. Never since literature became a calling in England had it been a less gainful calling than at the time when Johnson took up his residence in London. In the preceding generation a writer of eminent merit was sure to be munificently rewarded by the Government. The least that he could expect was a pension or a sinecure place; and, if he showed any aptitude for politics, he might hope to be a member of parliament, a lord of the treasury, an ambassador, a secretary of state. But literature had ceased to flourish under the patronage of the great, and had not yet begun to flourish under the patronage of the public. One man of letters, indeed, Pope, had acquired by his pen what was then considered as a handsome fortune, and lived on a footing of equality with nobles and ministers of state. But this was a solitary exception. Even an author whose reputation was established, and whose works were popular—such an author as Thomson, whose *Seasons* was in every library, such an author as Fielding, whose *Pasquin* had had a greater run than any drama since *The Beggar's Opera*—was sometimes glad to obtain, by pawning his best coat, the means of dining on tripe at a cookshop underground, where he could wipe his hands, after his greasy meal, on the back of a Newfoundland dog. It is easy, therefore, to imagine what humiliations and privations must have awaited the novice who had still to earn a name. One of the publishers to whom Johnson applied for employment measured with a scornful eye that athletic though uncouth frame, and exclaimed, "You had better get a porter's knot and carry trunks." Nor was the advice bad, for a porter was likely to be as plentifully fed, and as comfortably lodged, as a poet.

Some time appears to have elapsed before Johnson was able to form any literary connection from which he could expect more than bread for the day which was passing over him. He never forgot the generosity with which Hervey, who was now residing in London, relieved his wants during this time of trial. "Harry Hervey," said Johnson many years later, "was a vicious man; but he was very kind to me. If you call a dog Hervey, I shall love him." At Hervey's table Johnson sometimes enjoyed feasts which were made more agreeable by contrast. But in general he dined, and thought that he dined well, on sixpennyworth of meat and a pennyworth of bread at an alehouse near Drury Lane.

The effect of the privations and sufferings which he endured at this time was discernible to the last in his temper and his deportment. His manners had never been courtly. They now became

almost savage. Being frequently under the necessity of wearing shabby coats and dirty shirts, he became a confirmed sloven. Being often very hungry when he sat down to his meals, he contracted a habit of eating with ravenous greediness. Even to the end of his life, and even at the tables of the great, the sight of food affected him as it affects wild beasts and birds of prey. His taste in cookery, formed in subterranean ordinaries and *à la mode* beef shops, was far from delicate. Whenever he was so fortunate as to have near him a hare that had been kept too long, or a meat pie made with rancid butter, he gorged himself with such violence that his veins swelled and the moisture broke out on his forehead. The affronts which his poverty emboldened stupid and low-minded men to offer him would have broken a mean spirit into sycophancy, but made him rude even to ferocity. Unhappily the insolence which, while it was defensive, was pardonable, and in some sense respectable, accompanied him into societies where he was treated with courtesy and kindness. He was repeatedly provoked into striking those who had taken liberties with him. All the sufferers, however, were wise enough to abstain from talking about their beatings, except Osborne, the most rapacious and brutal of booksellers, who proclaimed everywhere that he had been knocked down by the huge fellow whom he had hired to puff the Harleian Library.

About a year after Johnson had begun to reside in London he was fortunate enough to obtain regular employment from Edward Cave (*q.v.*) on the *Gentleman's Magazine*. That periodical, just entering on the ninth year of its long existence, was the only one in the kingdom which then had what would now be called a large circulation. Johnson was engaged to write the speeches in the "Reports of the Debates of the Senate of Lilliput" (*see* REPORTING), under which thin disguise the proceedings of parliament were published. He was generally furnished with notes, meagre indeed and inaccurate, of what had been said; but sometimes he had to find arguments and eloquence both for the ministry and for the opposition. He was himself a Tory, not from rational conviction—for his serious opinion was that one form of government was just as good or as bad as another—but from mere passion, such as inflamed the Capulets against the Montagues, or the Blues of the Roman circus against the Greens. In his infancy he had heard so much talk about the villainies of the Whigs, and the dangers of the Church, that he had become a furious partisan when he could scarcely speak. Before he was three he had insisted on being taken to hear Sacheverell preach at Lichfield Cathedral, and had listened to the sermon with as much respect and probably with as much intelligence, as any Staffordshire squire in the congregation. The work which had been begun in the nursery had been completed by the university. Oxford, when Johnson resided there, was the most Jacobitical place in England; and Pembroke was one of the most Jacobitical colleges in Oxford. The prejudices which he brought up to London were scarcely less absurd than those of his own Tom Tempest. Charles II. and James II. were two of the best kings that ever reigned. Laud was a prodigy of parts and learning over whose tomb Art and Genius still continued to weep. Hampden deserved no more honourable name than that of the "zealot of rebellion." Even the ship-money Johnson would not pronounce to have been an unconstitutional impost. Under a government which allowed to the people an unprecedented liberty of speech and action, he fancied that he was a slave. He hated Dissenters and stock-jobbers, the excise and the army, septennial parliaments, and Continental connections. He long had an aversion to the Scots, an aversion of which he could not remember the commencement, but which, he owned, had probably originated in his abhorrence of the conduct of the nation during the Great Rebellion. It is easy to guess in what manner debates on great party questions were likely to be reported by a man whose judgment was so much distorted by party spirit. A show of fairness was indeed necessary to the prosperity of the *Magazine*. But Johnson long afterwards owned that, though he had saved appearances, he had taken care that the Whig dogs should not have the best of it; and, in fact, every passage which has lived, every passage which bears the marks of his higher faculties, is put into the mouth of some member of the opposition.

A few weeks after Johnson had entered on these obscure labours, he published a work which at once placed him high among the writers of his age. It is probable that what he had suffered during his first year in London had often reminded him of some parts of the satire in which Juvenal had described the misery and degradation of a needy man of letters, lodged among the pigeons' nests in the tottering garrets which overhung the streets of Rome. Pope's admirable imitations of Horace's *Satires* and *Epistles* had recently appeared, were in every hand, and were by many readers thought superior to the originals. What Pope had done for Horace, Johnson aspired to do for Juvenal.

Johnson's *London* appeared without his name in May 1738. He received only ten guineas for this stately and vigorous poem; but the sale was rapid and the success complete. A second edition was required within a week. Those small critics who are always desirous to lower established reputations ran about proclaiming that the anonymous satirist was superior to Pope in Pope's own peculiar department of literature. It ought to be remembered, to the honour of Pope, that he joined heartily in the applause with which the appearance of a rival genius was welcomed. He made inquiries about the author of *London*. Such a man, he said, could not long be concealed. The name was soon discovered; and Pope, with great kindness, exerted himself to obtain an academical degree and the mastership of a grammar school for the poor young poet. The attempt failed, and Johnson remained a bookseller's hack.

It does not appear that these two men, the most eminent writer of the generation which was going out, and the most eminent writer of the generation which was coming in, ever saw each other. They lived in very different circles, one surrounded by dukes and earls, the other by starving pamphleteers and index-makers. Among Johnson's associates at this time may be mentioned Boyse, who, when his shirts were pledged, scrawled Latin verses sitting up in bed with his arms through two holes in his blanket, who composed very respectable sacred poetry when he was sober, and who was at last run over by a hackney coach when he was drunk; Hoole, surnamed the metaphysical tailor, who, instead of attending to his measures, used to trace geometrical diagrams on the board where he sat cross-legged; and the penitent impostor, George Psalmanazar, who, after poring all day, in a humble lodging, on the folios of Jewish rabbis and Christian fathers, indulged himself at night with literary and theological conversation at an alehouse in the City. But the most remarkable of the persons with whom at this time Johnson consorted was Richard Savage, an earl's son, a shoemaker's apprentice, who had seen life in all its forms, who had feasted among blue ribands in St. James's Square, and had lain with fifty pounds weight of irons on his legs in the condemned ward of Newgate. This man had, after many vicissitudes of fortune, sunk at last into abject and hopeless poverty. His pen had failed him. His patrons had been taken away by death, or estranged by the riotous profusion with which he squandered their bounty, and the ungrateful insolence with which he rejected their advice. He now lived by begging. He dined on venison and champagne whenever he had been so fortunate as to borrow a guinea. If his questing had been unsuccessful, he appeased the rage of hunger with some scraps of broken meat, and lay down to rest under the piazza of Covent Garden in warm weather, and, in cold weather, as near as he could get to the furnace of a glass house. Yet in his misery he was still an agreeable companion. He had an inexhaustible store of anecdotes about that gay and brilliant world from which he was now an outcast. He had observed the great men of both parties in hours of careless relaxation, had seen the leaders of opposition without the mask of patriotism, and had heard the prime minister roar with laughter and tell stories not over-decent. During some months Savage lived in the closest familiarity with Johnson; and then the friends parted, not without tears. Johnson remained in London to drudge for Cave. Savage went to the west of England, lived there as he had lived everywhere, and in 1743 died, penniless and heartbroken, in Bristol Gaol.

Soon after his death, while the public curiosity was strongly excited about his extraordinary character and his not less extraordinary adventures, a life of him appeared widely different from the catchpenny lives of eminent men which were then a staple article of manufacture in Grub Street. The style was indeed deficient in

ease and variety; and the writer was evidently too partial to the Latin element of our language. But the little work, with all its faults, was a masterpiece. No finer specimen of literary biography existed in any language, living or dead; and a discerning critic might have confidently predicted that the author was destined to be the founder of a new school of English eloquence.

The *Life of Savage* was anonymous; but it was well known in literary circles that Johnson was the writer. During the three years which followed, he produced no important work; but he was not, and indeed could not be, idle. The fame of his abilities and learning continued to grow. Warburton pronounced him a man of parts and genius; and the praise of Warburton was then no light thing. Such was Johnson's reputation that, in 1747, several eminent booksellers combined to employ him in the arduous work of preparing a *Dictionary of the English Language,* in two folio volumes. The sum which they agreed to pay him was only fifteen hundred guineas; and out of this sum he had to pay several poor men of letters who assisted him in the humbler parts of his task.

The prospectus of the *Dictionary* he addressed to the earl of Chesterfield. Chesterfield had long been celebrated for the politeness of his manners, the brilliancy of his wit and the delicacy of his taste. He was acknowledged to be the finest speaker in the House of Lords. He had recently governed Ireland, at a momentous conjuncture, with eminent firmness, wisdom and humanity; and he had since become secretary of state. He received Johnson's homage with the most winning affability, and requited it with a few guineas, bestowed doubtless in a very graceful manner, but was by no means desirous to see all his carpets blackened with the London mud, and his soups and wines thrown to right and left over the gowns of fine ladies and the waistcoats of fine gentlemen, by an absent-minded scholar, who gave strange starts and uttered strange growls, who dressed like a scarecrow and ate like a cormorant. During some time Johnson continued to call on his patron, but, after being repeatedly told by the porter that his lordship was not at home, took the hint and ceased to present himself at the inhospitable door.

Johnson had flattered himself that he should have completed his *Dictionary* by the end of 1750; but it was not till 1755 that he at length gave his huge volumes to the world. During the seven years which he passed in the drudgery of penning definitions and marking quotations for transcription, he sought for relaxation in literary labour of a more agreeable kind. In January 1749 he published *The Vanity of Human Wishes,* an excellent imitation of the tenth satire of Juvenal, for which he received fifteen guineas.

A few days after the publication of this poem, his tragedy of *Irene,* begun many years before, was brought on the stage by his old pupil, David Garrick, now manager of Drury Lane Theatre. The relation between him and his old preceptor was of a very singular kind. They repelled each other strongly, and yet attracted each other strongly. Nature had made them of very different clay; and circumstances had fully brought out the natural peculiarities of both. Sudden prosperity had turned Garrick's head. Continued adversity had soured Johnson's temper. Johnson saw with more envy than became so great a man the villa, the plate, the china, the Brussels carpet, which the little mimic had got by repeating, with grimaces and gesticulations, what wiser men had written; and the exquisitely sensitive vanity of Garrick was galled by the thought that, while all the rest of the world was applauding him, he could obtain from one morose cynic, whose opinion it was impossible to despise, scarcely any compliment not acidulated with scorn. Yet the two Lichfield men had so many early recollections in common, and sympathized with each other on so many points on which they sympathized with nobody else in the vast population of the capital, that, though the master was often provoked by the monkey-like impertinence of the pupil, and the pupil by the bearish rudeness of the master, they remained friends till they were parted by death. Garrick now brought *Irene* out, with alterations sufficient to displease the author, yet not sufficient to make the piece pleasing to the audience. After nine representations the play was withdrawn. The poet however cleared by his benefit nights, and by the sale of the copyright of his tragedy, about three hundred pounds, then a great sum in his estimation.

About a year after the representation of *Irene,* he began to publish a series of short essays on morals, manners and literature. This species of composition had been brought into fashion by the success of the *Tatler,* and by the still more brilliant success of the *Spectator.* A crowd of small writers had vainly attempted to rival Addison. The *Lay Monastery,* the *Censor,* the *Freethinker,* the *Plain Dealer,* the *Champion,* and other works of the same kind had had their short day. At length Johnson undertook the adventure in which so many aspirants had failed. In the 36th year after the appearance of the last number of the *Spectator* appeared the first number of the *Rambler.* From March 1750 to March 1752 this paper continued to come out every Tuesday and Saturday.

From the first the *Rambler* was enthusiastically admired by a few eminent men. Richardson, when only five numbers had appeared, pronounced it equal if not superior to the *Spectator.* Young and Hartley expressed their approbation not less warmly. In consequence probably of the good offices of Bubb Dodington, who was then the confidential adviser of Prince Frederick, two of his royal highness's gentlemen carried a gracious message to the printing office, and ordered seven copies for Leicester House. But Johnson had had enough of the patronage of the great to last him all his life, and was not disposed to haunt any other door as he had haunted the door of Chesterfield.

By the public the *Rambler* was at first very coldly received. Though the price of a number was only twopence, the sale did not amount to five hundred. The profits were therefore very small. But as soon as the flying leaves were collected and reprinted they became popular. The author lived to see thirteen thousand copies spread over England alone. Separate editions were published for the Scotch and Irish markets. A large party pronounced the style perfect, so absolutely perfect that in some essays it would be impossible for the writer himself to alter a single word for the better. Another party, not less numerous, vehemently accused him of having corrupted the purity of the English tongue. The best critics admitted that his diction was too monotonous, too obviously artificial, and now and then turgid even to absurdity. But they did justice to the acuteness of his observations on morals and manners, to the constant precision and frequent brilliancy of his language, to the weighty and magnificent eloquence of many serious passages, and to the solemn yet pleasing humour of some of the lighter papers.

The last *Rambler* was written in a sad and gloomy hour. Mrs. Johnson had been given over by the physicians. Three days later she died. She left her husband almost broken-hearted. Many people had been surprised to see a man of his genius and learning stooping to every drudgery, and denying himself almost every comfort, for the purpose of supplying a silly, affected old woman with superfluities, which she accepted with but little gratitude. But all his affection had been concentrated on her. He had neither brother nor sister, neither son nor daughter. Her opinion of his writings was more important to him than the voice of the pit of Drury Lane Theatre, or the judgment of the *Monthly Review.* The chief support which had sustained him through the most arduous labour of his life was the hope that she would enjoy the fame and the profit which he anticipated from his *Dictionary.* She was gone; and in that vast labyrinth of streets, peopled by eight hundred thousand human beings, he was alone. Yet it was necessary for him to set himself, as he expressed it, doggedly to work. After three more laborious years, the *Dictionary* was at length complete.

It had been generally supposed that this great work would be dedicated to the eloquent and accomplished nobleman to whom the prospectus had been addressed. Lord Chesterfield well knew the value of such a compliment; and therefore, when the day of publication drew near, he exerted himself to soothe, by a show of zealous and at the same time of delicate and judicious kindness, the pride which he had so cruelly wounded. Since the *Rambler* had ceased to appear, the town had been entertained by a journal called the *World,* to which many men of high rank and fashion contributed. In two successive numbers of the *World,* the *Dictionary* was, to use the modern phrase, puffed with wonderful skill. The writings of Johnson were warmly praised. It was proposed that he should be invested with the authority of a dictator, nay, of a pope,

over our language, and that his decisions about the meaning and the spelling of words should be received as final. His two folios, it was said, would of course be bought by everybody who could afford to buy them. It was soon known that these papers were written by Chesterfield. But the just resentment of Johnson was not to be so appeased. In a letter written with singular energy and dignity of thought and language, he repelled the tardy advances of his patron. The *Dictionary* came forth without a dedication. In the Preface the author truly declared that he owed nothing to the great, and described the difficulties with which he had been left to struggle so forcibly and pathetically that the ablest and most malevolent of all the enemies of his fame, Horne Tooke, never could read that passage without tears.

Johnson's *Dictionary* was hailed with an enthusiasm such as no similar work has ever excited. It was indeed the first dictionary which could be read with pleasure. The definitions show so much acuteness of thought and command of language, and the passages quoted from poets, divines and philosophers are so skilfully selected, that a leisure hour may always be very agreeably spent in turning over the pages. The faults of the book resolve themselves, for the most part, into one great fault. Johnson was a wretched etymologist. He knew little or nothing of any Teutonic language except English, which indeed, as he wrote it, was scarcely a Teutonic language; and thus he was absolutely at the mercy of Junius and Skinner.

The *Dictionary,* though it raised Johnson's fame, added nothing to his pecuniary means. The fifteen hundred guineas which the booksellers had agreed to pay him had been advanced and spent before the last sheets issued from the press. It is painful to relate that twice in the course of the year which followed the publication of this great work he was arrested and carried to sponging-houses, and that he was twice indebted for his liberty to his excellent friend Richardson. It was still necessary for the man who had been formerly saluted by the highest authority as dictator of the English language to supply his wants by constant toil. He abridged his *Dictionary.* He proposed to bring out an edition of Shakespeare by subscription, and many subscribers sent in their names and laid down their money; but he soon found the task so little to his taste that he turned to more attractive employments. He contributed many papers to a new monthly journal, which was called the *Literary Magazine.* Few of these papers have much interest; but among them was one of the best things that he ever wrote, a masterpiece both of reasoning and of satirical pleasantry, the review of Jenyns' *Inquiry into the Nature and Origin of Evil.*

In the spring of 1758 Johnson put forth the first of a series of essays, entitled the *Idler.* During two years these essays continued to appear weekly. They were eagerly read, widely circulated, and indeed impudently pirated, while they were still in the original form, and had a large sale when collected into volumes. The *Idler* may be described as a second part of the *Rambler,* somewhat livelier and somewhat weaker than the first part.

While Johnson was busied with his *Idlers,* his mother, who had accomplished her ninetieth year, died at Lichfield. It was long since he had seen her, but he had not failed to contribute largely out of his small means to her comfort. In order to defray the charges of her funeral, and to pay some debts which she had left, he wrote a little book in a single week, and sent off the sheets to the press without reading them over. A hundred pounds were paid him for the copyright, and the purchasers had great cause to be pleased with their bargain, for the book was *Rasselas,* and it had a great success.

The plan of *Rasselas* might, however, have seemed to invite severe criticism. Johnson has frequently blamed Shakespeare for neglecting the proprieties of time and place, and for ascribing to one age or nation the manners and opinions of another. Yet Shakespeare has not sinned in this way more grievously than Johnson. Rasselas and Imlac, Nekayah and Pekuah, are evidently meant to be Abyssinians of the 18th century; for the Europe which Imlac describes is the Europe of the 18th century, and the inmates of the Happy Valley talk familiarly of that law of gravitation which Newton discovered and which was not fully received even at Cambridge till the 18th century. Johnson, not content with turning filthy savages, ignorant of their letters, and gorged with raw steaks cut from living cows, into philosophers as eloquent and enlightened as himself or his friend Burke, and into ladies as highly accomplished as Mrs. Lennox or Mrs. Sheridan, transferred the whole domestic system of England to Egypt. Into a land of harems, a land of polygamy, a land where women are married without ever being seen, he introduced the flirtations and jealousies of our ball-rooms. In a land where there is boundless liberty of divorce, wedlock is described as the indissoluble compact. "A youth and maiden meeting by chance, or brought together by artifice, exchange glances, reciprocate civilities, go home, and dream of each other. Such," says Rasselas, "is the common process of marriage." A writer who was guilty of such improprieties had little right to blame the poet who made Hector quote Aristotle, and represented Julio Romano as flourishing in the days of the Oracle of Delphi.

By such exertions as have been described Johnson supported himself till the year 1762. In that year a great change in his circumstances took place. He had from a child been an enemy of the reigning dynasty. His Jacobite prejudices had been exhibited with little disguise both in his works and in his conversation. Even in his massy and elaborate *Dictionary* he had, with a strange want of taste and judgment, inserted bitter and contumelious reflections on the Whig party. The excise, which was a favourite resource of Whig financiers, he had designated as a hateful tax. He had railed against the commissioners of excise in language so coarse that they had seriously thought of prosecuting him. He had with difficulty been prevented from holding up the lord privy seal by name as an example of the meaning of the word "renegade." A pension he had defined as pay given to a state hireling to betray his country; a pensioner as a slave of state hired by a stipend to obey a master. It seemed unlikely that the author of these definitions would himself be pensioned. But that was a time of wonders. George III. had ascended the throne, and had, in the course of a few months, disgusted many of the old friends, and conciliated many of the old enemies of his house. The city was becoming mutinous; Oxford was becoming loyal. Cavendishes and Bentincks were murmuring; Somersets and Wyndhams were hastening to kiss hands. The head of the Treasury was now Lord Bute, who was a Tory, and could have no objection to Johnson's Toryism. Bute wished to be thought a patron of men of letters; and Johnson was one of the most eminent and one of the most needy men of letters in Europe. A pension of three hundred a year was graciously offered, and with very little hesitation accepted.

This event produced a change in Johnson's whole way of life. For the first time since his boyhood he no longer felt the daily goad urging him to the daily toil. He was at liberty, after 30 years of anxiety and drudgery, to indulge his constitutional indolence, to lie in bed till two in the afternoon, and to sit up talking till four in the morning, without fearing either the printer's devil or the sheriff's officer.

One laborious task indeed he had bound himself to perform. He had received large subscriptions for his promised edition of Shakespeare; he had lived on those subscriptions during some years; and he could not without disgrace omit to perform his part of the contract. His friends repeatedly exhorted him to make an effort, and he repeatedly resolved to do so. But, notwithstanding their exhortations and his resolutions, month followed month, year followed year, and nothing was done. He prayed fervently against his idleness; he determined, as often as he received the sacrament, that he would no longer doze away and trifle away his time; but the spell under which he lay resisted prayer and sacrament. Happily for his honour, the charm which held him captive was at length broken by no gentle or friendly hand. He had been weak enough to pay serious attention to a story about a ghost which haunted a house in Cock Lane, and had actually gone himself, with some of his friends, at one in the morning, to St. John's Church, Clerkenwell, in the hope of receiving a communication from the perturbed spirit. But the spirit, though adjured with all solemnity, remained obstinately silent; and it soon appeared that a naughty girl of eleven had been amus-

ing herself by making fools of so many philosophers. Churchill, who, confident in his powers, drunk with popularity, and burning with party spirit, was looking for some man of established fame and Tory politics to insult, celebrated the Cock Lane ghost in three cantos, nicknamed Johnson Pomposo, asked where the book was which had been so long promised and so liberally paid for, and directly accused the great moralist of cheating. This terrible word proved effectual, and in October 1765 appeared, after a delay of nine years, the new edition of Shakespeare.

This publication saved Johnson's character for honesty, but added nothing to the fame of his abilities and learning. The Preface, though it contains some good passages, is not in his best manner. The most valuable notes are those in which he had an opportunity of showing how attentively he had during many years observed human life and human nature. The best specimen is the note on the character of Polonius. Nothing so good is to be found even in Wilhelm Meister's admirable examination of *Hamlet*. But here praise must end. It would be difficult to name a more slovenly, a more worthless edition of any great classic.[1] Johnson had, in his prospectus, told the world that he was peculiarly fitted for the task which he had undertaken, because he had, as a lexicographer, been under the necessity of taking a wider view of the English language than any of his predecessors. But, unfortunately, he had altogether neglected that very part of our literature with which it is especially desirable that an editor of Shakespeare should be conversant. In the two folio volumes of the *English Dictionary* there is not a single passage quoted from any dramatist of the Elizabethan age except Shakespeare and Ben Jonson. Even from Ben the quotations are few. Johnson might easily in a few months have made himself well acquainted with every old play that was extant. But it never seems to have occurred to him that this was a necessary preparation for the work which he had undertaken. He would doubtless have admitted that it would be the height of absurdity in a man who was not familiar with the works of Aeschylus and Euripides to publish an edition of Sophocles. Yet he ventured to publish an edition of Shakespeare, without having ever in his life, as far as can be discovered, read a single scene of Massinger, Ford, Dekker, Webster, Marlow, Beaumont or Fletcher. His detractors were noisy and scurrilous. He had, however, acquitted himself of a debt which had long lain heavy on his conscience and he sank back into the repose from which the sting of satire had roused him. He long continued to live upon the fame which he had already won. He was honoured by the university of Oxford with a doctor's degree, by the Royal Academy with a professorship, and by the king with an interview, in which his majesty most graciously expressed a hope that so excellent a writer would not cease to write. In the interval between 1765 and 1775 Johnson published only two or three political tracts.

But, though his pen was now idle, his tongue was active. The influence exercised by his conversation, directly upon those with whom he lived, and indirectly on the whole literary world, was altogether without a parallel. His colloquial talents were indeed of the highest order. He had strong sense, quick discernment, wit, humour, immense knowledge of literature and of life, and an infinite store of curious anecdotes. As respected style, he spoke far better than he wrote. Every sentence which dropped from his lips was as correct in structure as the most nicely balanced period of the *Rambler*. But in his talk there were no pompous triads, and little more than a fair proportion of words in *-osity* and *-ation*. All was simplicity, ease and vigour. He uttered his short, weighty, and pointed sentences with a power of voice, and a justness and energy of emphasis, of which the effect was rather increased than diminished by the rollings of his huge form, and by the asthmatic gaspings and puffings in which the peals of his eloquence generally ended. Nor did the laziness which made him unwilling to sit down to his desk prevent him from giving instruction or entertainment orally. To discuss questions of taste, of learning, of casuistry, in language so exact and so forcible that it might have been printed without the alteration of a word, was to him no exertion, but a pleasure. He loved, as he said, to fold his legs and have his talk out. He was ready to bestow the overflowings of his full mind on anybody who would start a subject: on a fellow-passenger in a stage coach, or on the person who sat at the same table with him in an eating-house. But his conversation was nowhere so brilliant and striking as when he was surrounded by a few friends, whose abilities and knowledge enabled them, as he once expressed it, to send him back every ball that he threw. Some of these, in 1764, formed themselves into a club, which gradually became a formidable power in the commonwealth of letters. The verdicts pronounced by this conclave on new books were speedily known over all London, and were sufficient to sell off a whole edition in a day, or to condemn the sheets to the service of the trunkmaker and the pastrycook. Goldsmith was the representative of poetry and light literature, Reynolds of the arts, Burke of political eloquence and political philosophy. There, too, were Gibbon the greatest historian and Sir William Jones the greatest linguist of the age. Garrick brought to the meetings his inexhaustible pleasantry, his incomparable mimicry, and his consummate knowledge of stage effect. Among the most constant attendants were two high-born and high-bred gentlemen, closely bound together by friendship, but of widely different characters and habits—Bennet Langton, distinguished by his skill in Greek literature, by the orthodoxy of his opinions, and by the sanctity of his life, and Topham Beauclerk, renowned for his amours, his knowledge of the gay world, his fastidious taste and his sarcastic wit.

Among the members of this celebrated body was one to whom it has owed the greater part of its celebrity, yet who was regarded with little respect by his brethren, and had not without difficulty obtained a seat among them. This was James Boswell (*q.v.*), a young Scots lawyer, heir to an honourable name and a fair estate. That he was a coxcomb and a bore, weak, vain, pushing, curious, garrulous, was obvious to all who were acquainted with him.

To a man of Johnson's strong understanding and irritable temper, the silly egotism and adulation of Boswell must have been as teasing as the constant buzz of a fly. Johnson hated to be questioned; and Boswell was eternally catechizing him on all kinds of subjects, and sometimes propounded such questions as, "What would you do, sir, if you were locked up in a tower with a baby?" Johnson was a water-drinker and Boswell was a wine-bibber, and indeed little better than an habitual sot. It was impossible that there should be perfect harmony between two such companions. Indeed, the great man was sometimes provoked into fits of passion, in which he said things which the small man, during a few hours, seriously resented. Every quarrel, however, was soon made up. During 20 years the disciple continued to worship the master; the master continued to scold the disciple, to sneer at him, and to love him. The two friends ordinarily resided at a great distance from each other. Boswell practised in the Parliament House of Edinburgh, and could pay only occasional visits to London. During those visits his chief business was to watch Johnson, to discover all Johnson's habits, to turn the conversation to subjects about which Johnson was likely to say something remarkable, and to fill quarto notebooks with minutes of what Johnson had said. In this way were gathered the materials out of which was afterwards constructed the most interesting biographical work in the world.

Soon after the club began to exist, Johnson formed a connection less important indeed to his fame, but much more important to his happiness, than his connection with Boswell. Henry Thrale, one of the most opulent brewers in the kingdom, a man of sound and cultivated understanding, rigid principles, and liberal spirit, was married to one of those clever, kind-hearted, engaging, vain, pert young women who are perpetually doing or saying what is not exactly right, but who, do or say what they may, are always agreeable. In 1765 the Thrales became acquainted with Johnson, and the acquaintance ripened fast into friendship. They were

[1] This famous dictum of Macaulay, though endorsed by Lord Rosebery, has been energetically rebutted by Professor W. Raleigh and others, who recognize both sagacity and scholarship in Johnson's Preface and Notes. Johnson's wide grasp of the discourse and knowledge of human nature enable him in a hundred entangled passages to go straight to the dramatist's meaning.

astonished and delighted by the brilliancy of his conversation. They were flattered by finding that a man so widely celebrated preferred their house to any other in London. Johnson soon had an apartment at the brewery in Southwark, and a still more pleasant apartment at the villa of his friends on Streatham Common. A large part of every year he passed in those abodes, which must have seemed magnificent and luxurious indeed, when compared with the dens in which he had generally been lodged. But his chief pleasures were derived from what the astronomer of his Abyssinian tale called "the endearing elegance of female friendship." Mrs. Thrale rallied him, soothed him, coaxed him, and if she sometimes provoked him by her flippancy, made ample amends by listening to his reproofs with angelic sweetness of temper. When he was diseased in body and in mind, she was the most tender of nurses. No comfort that wealth could purchase, no contrivance that womanly ingenuity, set to work by womanly compassion, could devise, was wanting to his sick room. It would seem that a full half of Johnson's life during about 16 years was passed under the roof of the Thrales. He accompanied the family sometimes to Bath, and sometimes to Brighton, once to Wales and once to Paris. But he had at the same time a house in one of the narrow and gloomy courts on the north of Fleet Street. In the garret was his library, a large and miscellaneous collection of books, falling to pieces and begrimed with dust. On a lower floor he sometimes, but very rarely, regaled a friend with a plain dinner —a veal pie, or a leg of lamb and spinach, and a rice pudding. Nor was the dwelling uninhabited during his long absences. It was the home of the most extraordinary assemblage of inmates that ever was brought together. At the head of the establishment Johnson had placed an old lady named Williams, whose chief recommendations were her blindness and her poverty. But, in spite of her murmurs and reproaches, he gave an asylum to another lady who was as poor as herself, Mrs. Desmoulins, whose family he had known many years before in Staffordshire. Room was found for the daughter of Mrs. Desmoulins, and for another destitute damsel, who was generally addressed as Miss Carmichael, but whom her generous host called Polly. An old quack doctor named Levett, who had a wide practice, but among the very poorest class, poured out Johnson's tea in the morning and completed this strange menagerie. All these poor creatures were at constant war with each other, and with Johnson's negro servant Frank. Sometimes, indeed, they transferred their hostilities from the servant to the master, complained that a better table was not kept for them, and railed or maundered till their benefactor was glad to make his escape to Streatham or to the Mitre Tavern. And yet he, who was generally the haughtiest and most irritable of mankind, who was but too prompt to resent anything which looked like a slight on the part of a purse-proud bookseller, or of a noble and powerful patron, bore patiently from mendicants, who, but for his bounty, must have gone to the workhouse, insults more provoking than those for which he had knocked down Osborne and bidden defiance to Chesterfield. Year after year Mrs. Williams and Mrs. Desmoulins, Polly and Levett, continued to torment him and to live upon him.

The course of life which has been described was interrupted in Johnson's sixty-fourth year by an important event. He had early read an account of the Hebrides, and had been much interested by learning that there was so near to him a land peopled by a race which was still as rude and simple as in the Middle Ages. A wish to become intimately acquainted with a state of society so utterly unlike all that he had ever seen frequently crossed his mind. But it is not probable that his curiosity would have overcome his habitual sluggishness, and his love of the smoke, the mud, and the cries of London, had not Boswell importuned him to attempt the adventure, and offered to be his squire. At length, in August 1773, Johnson crossed the Highland line, and plunged courageously into what was then considered, by most Englishmen, as a dreary and perilous wilderness. After wandering about two months through the Celtic region, sometimes in rude boats which did not protect him from the rain, and sometimes on small shaggy ponies which could hardly bear his weight, he returned to his old haunts with a mind full of new images and new theories. During the following year he employed himself in recording his adventures. About the beginning of 1775 his *Journey to the Hebrides* was published, and was, during some weeks, the chief subject of conversation in all circles in which any attention was paid to literature. His prejudice against the Scots had at length become little more than matter of jest; and whatever remained of the old feeling had been effectually removed by the kind and respectful hospitality with which he had been received in every part of Scotland. It was, of course, not to be expected that an Oxonian Tory should praise the Presbyterian polity and ritual, or that an eye accustomed to the hedgerows and parks of England should not be struck by the bareness of Berwickshire and East Lothian. But even in censure Johnson's tone is not unfriendly. The most enlightened Scotsmen, with Lord Mansfield at their head, were well pleased. But some foolish and ignorant Scotsmen were moved to anger by a little unpalatable truth which was mingled with much eulogy, and assailed him whom they chose to consider as the enemy of their country with libels much more dishonourable to their country than anything that he had ever said or written. They published paragraphs in the newspapers, articles in the magazines, sixpenny pamphlets, five-shilling books. One scribbler abused Johnson for being blear-eyed, another for being a pensioner; a third informed the world that one of the doctor's uncles had been convicted of felony in Scotland, and had found that there was in that country one tree capable of supporting the weight of an Englishman. Macpherson, whose *Fingal* had been treated in the *Journey* as an impudent forgery, threatened to take vengeance with a cane. The only effect of this threat was that Johnson reiterated the charge of forgery in the most contemptuous terms, and walked about, during some time, with a cudgel.

Of other assailants Johnson took no notice whatever. He had early resolved never to be drawn into controversy; and he adhered to his resolution with a steadfastness which is the more extraordinary because he was, both intellectually and morally, of the stuff of which controversialists are made. In conversation he was a singularly eager, acute and pertinacious disputant. When at a loss for good reasons, he had recourse to sophistry; and when heated by altercation, he made unsparing use of sarcasm and invective. But when he took his pen in his hand, his whole character seemed to be changed. A hundred bad writers misrepresented him and reviled him; but not one of the hundred could boast of having been thought by him worthy of a refutation, or even of a retort. One Scotsman, bent on vindicating the fame of Scots learning, defied him to the combat in a detestable Latin hexameter:—

Maxime, si tu vis, cupio contendere tecum.

But Johnson took no notice of the challenge. He always maintained that fame was a shuttlecock which could be kept up only by being beaten back as well as beaten forward, and which would soon fall if there were only one battledore. No saying was oftener in his mouth than that fine old apophthegm of Bentley, that no man was ever written down but by himself.

Unhappily, a few months after the appearance of the *Journey to the Hebrides*, Johnson did what none of his envious assailants could have done, and to a certain extent succeeded in writing himself down. The disputes between England and her American colonies had reached a point at which no amicable adjustment was possible. War was evidently impending; and the ministers seem to have thought that the eloquence of Johnson might with advantage be employed to inflame the nation against the opposition at home, and against the rebels beyond the Atlantic. He had already written two or three tracts in defence of the foreign and domestic policy of the government; and those tracts, though hardly worthy of him, were much superior to the crowd of pamphlets which lay on the counters of Almon and Stockdale. But his *Taxation no Tyranny* was a pitiable failure. Even Boswell was forced to own that in this unfortunate piece he could detect no trace of his master's powers. The general opinion was that the strong faculties which had produced the *Dictionary* and the *Rambler* were beginning to feel the effect of time and of disease, and that the old man would best consult his credit by writing no more. But this was a great mistake. Johnson had failed, not because his mind was less

vigorous than when he wrote *Rasselas* in the evenings of a week, but because he had foolishly chosen, or suffered others to choose for him, a subject such as he would at no time have been competent to treat. He was in no sense a statesman. He never willingly read or thought or talked about affairs of state. He loved biography, literary history, the history of manners; but political history was positively distasteful to him. The question at issue between the colonies and the mother country was a question about which he had really nothing to say. Happily, Johnson soon had an opportunity of proving most signally that his failure was not to be ascribed to intellectual decay.

On Easter Eve 1777 some persons, deputed by a meeting which consisted of 40 of the first booksellers in London, called upon him. Though he had some scruples about doing business at that season, he received his visitors with much civility. They came to inform him that a new edition of the English poets, from Cowley downwards, was in contemplation, and to ask him to furnish short biographical prefaces. He readily undertook the task for which he was pre-eminently qualified. His knowledge of the literary history of England since the Restoration was unrivalled. That knowledge he had derived partly from books, and partly from sources which had long been closed: from old Grub Street traditions; from the talk of forgotten poetasters and pamphleteers, who had long been lying in parish vaults; from the recollections of such men as Gilbert Walmesley, who had conversed with the wits of Button, Cibber, who had mutilated the plays of two generations of dramatists, Orrery, who had been admitted to the society of Swift and Savage, who had rendered services of no very honorable kind to Pope. The biographer therefore sat down to his task with a mind full of matter. He had at first intended to give only a paragraph to every minor poet, and only four or five pages to the greatest name. But the flood of anecdote and criticism overflowed the narrow channel. The work, which was originally meant to consist only of a few sheets, swelled into ten volumes—small volumes, it is true, and not closely printed. The first four appeared in 1779, the remaining six in 1781.

The *Lives of the Poets* is, on the whole, the best of Johnson's works. The narratives are as entertaining as any novel. The remarks on life and on human nature are eminently shrewd and profound. The criticisms are often excellent, and, even when grossly and provokingly unjust, well deserve to be studied. *Savage's Life* Johnson reprinted nearly as it had appeared in 1744. Whoever, after reading that life, will turn to the other lives will be struck by the difference of style. Since Johnson had been at ease in his circumstances he had written little and had talked much. When therefore he, after the lapse of years, resumed his pen, the mannerism which he had contracted while he was in the constant habit of elaborate composition was less perceptible than formerly, and his diction frequently had a colloquial ease which it had formerly wanted. The improvement may be discerned by a skilful critic in the *Journey to the Hebrides*, and in the *Lives of the Poets* is so obvious that it cannot escape the notice of the most careless reader. Among the *Lives* the best are perhaps those of Cowley, Dryden and Pope. The very worst is, beyond all doubt, that of Gray; the most controverted that of Milton.

This great work at once became popular. There was, indeed, much just and much unjust censure; but even those who were loudest in blame were attracted by the book in spite of themselves. Malone computed the gains of the publishers at five or six thousand pounds. But the writer was very poorly remunerated. Intending at first to write very short prefaces, he had stipulated for only two hundred guineas. The booksellers, when they saw how far his performance had surpassed his promise, added only another hundred. Indeed Johnson, though he did not despise or affect to despise money, and though his strong sense and long experience ought to have qualified him to protect his own interests, seems to have been singularly unskilful and unlucky in his literary bargains. He was generally reputed the first English writer of his time. Yet several writers of his time sold their copyrights for sums such as he never ventured to ask. To give a single instance, Robertson received £4,500 for the *History of Charles V.*

Johnson was now in his seventy-second year. The infirmities of age were coming fast upon him. That inevitable event of which he never thought without horror was brought near to him; and his whole life was darkened by the shadow of death. The strange dependants to whom he had given shelter, and to whom, in spite of their faults, he was strongly attached by habit, dropped off one by one; and, in the silence of his home, he regretted even the noise of their scolding matches. The kind and generous Thrale was no more; and it was soon plain that the old Streatham intimacy could not be maintained upon the same footing. Mrs. Thrale herself confessed that without her husband's assistance she did not feel able to entertain Johnson as a constant inmate of her house. Free from the yoke of the brewer, she fell in love with a music master, high in his profession, from Brescia, named Gabriel Piozzi, in whom nobody but herself could discover anything to admire. The secret of this attachment was soon discovered by Fanny Burney, but Johnson at most only suspected it.

In September 1782 the place at Streatham was from motives of economy let to Lord Shelburne, and Mrs. Thrale took a house at Brighton, whither Johnson accompanied her; they remained for six weeks on the old familiar footing. In March 1783 Boswell was glad to discover Johnson well looked after and staying with Mrs. Thrale in Argyll Street, but in a bad state of health. Impatience of Johnson's criticisms and infirmities had been steadily growing with Mrs. Thrale since 1774. She now went to Bath with her daughters, partly to escape his supervision. Johnson was very ill in his lodgings during the summer, but he still corresponded affectionately with his "mistress" and received many favours from her. He retained the full use of his senses during the paralytic attack, and in July he was sufficiently recovered to renew his old club life and to meditate further journeys. In June 1784 he went with Boswell to Oxford for the last time. In September he was in Lichfield. On his return his health was rather worse; but he would submit to no dietary régime. His asthma tormented him day and night, and dropsical symptoms made their appearance. His wrath was excited in no measured terms against the remarriage of his old friend Mrs. Thrale, the news of which he heard this summer. The whole dispute seems, to-day, entirely uncalled-for, but the marriage aroused some of Johnson's strongest prejudices. He wrote inconsiderately on the subject, but we must remember that he was at the time afflicted in body and mentally haunted by dread of impending change. Throughout all his troubles he had clung vehemently to life. The feeling described in that fine but gloomy paper which closes the series of his *Idlers* seemed to grow stronger in him as his last hour drew near. He fancied that he should be able to draw his breath more easily in a southern climate, and would probably have set out for Rome and Naples but for his fear of the expense of the journey. That expense, indeed, he had the means of defraying; for he had laid up about two thousand pounds, the fruit of labours which had made the fortune of several publishers. But he was unwilling to break in upon this hoard, and he seems to have wished even to keep its existence a secret. Some of his friends hoped that the Government might be induced to increase his pension to six hundred pounds a year, but this hope was disappointed, and he resolved to stand one English winter more.

That winter was his last. His legs grew weaker; his breath grew shorter; the fatal water gathered fast in spite of incisions which he, courageous against pain but timid against death, urged his surgeons to make deeper and deeper. Though the tender care which had mitigated his sufferings during months of sickness at Streatham was withdrawn, and though Boswell was absent, he was not left desolate. The ablest physicians and surgeons attended him, and refused to accept fees from him. Burke parted from him with deep emotion. Windham sat much in the sick-room. Frances Burney, whom the old man had cherished with fatherly kindness, stood weeping at the door; while Langton, whose piety eminently qualified him to be an adviser and comforter at such a time, received the last pressure of his friend's hand within. When at length the moment, dreaded through so many years, came close, the dark cloud passed away from Johnson's mind. Windham's servant, who sat up with him during his last night, declared that "no man could appear more collected, more devout or less terrified at the thoughts

of the approaching minute." At hour intervals, often of much pain, he was moved in bed and addressed himself vehemently to prayer. In the morning he was still able to give his blessing, but in the afternoon he became drowsy, and at a quarter past seven in the evening on the 13th of December 1784, in his seventy-sixth year, he passed away. He was laid, a week later, in Westminster Abbey, among the eminent men of whom he had been the historian —Cowley and Denham, Dryden and Congreve, Gay, Prior and Addison. (M.)

Note.—The above is a reprint of Macaulay's article as revised for the 11th edn. of the *Encyclopædia Britannica* by T. Seccombe, who added the following note: "The splendid example of his style which Macaulay contributed in the article on Johnson to the 8th edition of this encyclopædia has become classic, and has therefore been retained above with a few trifling modifications in those places in which his invincible love of the picturesque has drawn him demonstrably aside from the dull line of veracity. Macaulay, it must be noted, exaggerated persistently the poverty of Johnson's pedigree, the squalor of his early married life, the grotesqueness of his entourage in Fleet Street, the decline and fall from complete virtue of Mrs. Thrale, the novelty and success of the *Dictionary,* the complete failure of the Shakespeare and the political tracts. Yet this contribution is far more mellow than the article contributed on Johnson twenty-five years before to the *Edinburgh Review* in correction of Croker. Matthew Arnold, who edited six selected *Lives* of the poets, regarded it as one of Macaulay's happiest and ripest efforts. It was written out of friendship for Adam Black, and 'payment was not so much as mentioned.' The big reviews, especially the quarterlies, have always been the natural home of Johnsonian study. Sir Walter Scott, Croker, Hayward, Macaulay, Thomas Carlyle (whose famous Fraser article was reprinted in 1853) and Whitwell Elwin have done as much as anybody perhaps to sustain the zest for Johnsonian studies. Macaulay's prediction that the interest in the man would supersede that in his 'works' seemed and seems likely enough to justify itself; but his theory that the man alone mattered and that a portrait painted by the hand of an inspired idiot was a true measure of the man has not worn better than the common run of literary propositions. Johnson's prose is not extensively read. But the same is true of nearly all the great prose masters of the 18th century. As in the case of all great men, Johnson has suffered a good deal at the hands of his imitators and admirers. His prose, though not nearly so uniformly monotonous or polysyllabic as the parodists would have us believe, was at one time greatly overpraised. From the 'Life of Savage' to the 'Life of Pope' it developed a great deal, and in the main improved. To the last he sacrificed expression rather too much to style, and he was perhaps over-conscious of the balanced epithet. But he contributed both dignity and dialectical force to the prose movement of his period."

BIBLIOGRAPHY.—Since Seccombe's comment was written there has been a steady output of Johnsonian literature. In the first place, Courtney and Nichol Smith's *Bibliography of Johnson* (1915) provides a sound basis for the study of the text of the whole of Johnson's works; an index of Johnson's literary criticism is contained in J. E. Brown's *Critical Opinions of Dr. Johnson* (1926) and P. H. Houston's *Doctor Johnson, A Study in XVIII. Century Humanism* (1923) discusses Johnson from the scholastic point of view. Such works are evidence of the greater attention now being paid to Johnson's own writings. Of the *Collected Works* it is still true to say that the best edition is the Oxford edition of 1825 in 9 volumes, with two supplementary volumes containing the *Debates.* Similarly the Birkbeck Hill editions of the *Lives of the Poets* (1905) and of the *Letters* (1892) remain the standard editions, though *Proposals* for a definitive edition of the *Letters* have been published by R. W. Chapman (Essays and Studies, Eng. Assoc. xii.). The latter editor has also produced editions of the *Journey to the Western Islands* (1924) and of *Rasselas* (1927); in both books the text is edited with scrupulous care. Though *Rasselas* was in Johnson's own day by far the most popular of his prose writings, later generations have preferred the *Lives of the Poets,* and it is significant that this work is now available in the World's Classics (ed. A. Waugh, 1906) and in Everyman's Library (ed. L. Archer-Hind, 1925). Enthusiasts for Johnson's prose have also endeavoured to popularize it by books of selections; *e.g., Selections from The Rambler* (ed. W. Hale White, 1907), *Selections from The Idler* (ed. S. C. Roberts, 1921), *Johnson on Shakespeare* (ed. W. Raleigh, 1908), *Selected Letters* (ed. R. W. Chapman, 1925), *Samuel Johnson: Writer* (ed. S. C. Roberts, 1927). A handy reprint of Johnson's *Poems* is contained in *The Poems of Johnson, Goldsmith, Gray and Collins* (ed. T. Methuen Ward, 1905) and D. Nichol Smith's edition of the *Poems* is in preparation.

Recent editions of and selections from Boswell's *Life* are noted under BOSWELL (*q.v.*), but Sir Leslie Stephen's *Samuel Johnson* (1878) remains the best short biography; Col. F. Grant's *Life and Writings of Samuel Johnson,* planned on a similar scale, contains a useful bibliography; T. Seccombe's *The Age of Johnson* (1899) gives a concise account of the period, and S. C. Roberts' *Story of Dr. Johnson* (1919) provides an introduction for the beginner in Johnsoniana; the most intensive study of the byways of Johnson's career is that undertaken by Aleyn Lyell Reade, of whose *Johnsonian Gleanings* five parts have been published. A. M. Broadley's *Dr. Johnson and Mrs. Thrale* (1909), with an essay by T. Seccombe, contained much new material, and Mrs. Piozzi's *Anecdotes* have been freshly edited by S. C. Roberts (1925). The revival of general interest in Johnsoniana may perhaps be dated from the publication of Sir Walter Raleigh's *Six Essays on Johnson* (1910), a model of sane appreciation, and such small books as John Bailey's *Dr. Johnson and his Circle* (1913) and Robert Lynd's *Dr. Johnson and Company* (1927) are significant of the really popular interest in the subject. Many of the lesser lives, or parts of them, by Hawkins, Murphy, Tyers and others are included in the two volumes of Birkbeck Hill's *Johnsonian Miscellanies* (1897); in *Dr. Johnson and Fanny Burney* (1912) C. B. Tinker collects the passages from the diary and letters of Madame D'Arblay which relate to Johnson. Collectors (notably R. B. Adam and A. Edward Newton) have facilitated research and editing; in particular, the former's *Catalogue,* containing many facsimiles of letters and mss., is of great value. Johnson's "Club" has continued till the present day and its members are for the most part eminent in literature or politics or both. The Johnson Club, founded in 1884, meets in the Johnson House in Gough Square, London, happily rescued from ruin by Mr. Cecil Harmsworth. Two volumes of *Johnson Club Papers* have been published. A Johnson Society has also been founded at Lichfield where the anniversary of Johnson's birth is regularly celebrated. (S. C. R.)

JOHNSON, SIR THOMAS (1664–1729), English merchant, was born in Liverpool in Nov. 1664. He succeeded his father in 1689 as bailiff and in 1695 as mayor. From 1701 to 1723 he represented Liverpool in parliament, and he was knighted by Queen Anne in 1708. He effected the separation of Liverpool from the parish of Walton-on-the-Hill; from the Crown he obtained the grant to the corporation of the site of the old castle where he planned the town market; while the construction of the first floating dock (1708) and the building of St. Peter's and St. George's churches were due in great measure to his efforts. He was interested in the tobacco trade; in 1715 he conveyed 130 Jacobite prisoners to the American plantations. In 1723, having lost his fortune, he went himself to Virginia as a collector of customs. He died in Jamaica in 1729. A street in Liverpool is named Sir Thomas Buildings after him.

JOHNSON, THOMAS, English 18th century wood-carver and furniture designer. Of excellent repute as a craftsman, his original conceptions and his adaptations were remarkable for their rococo absurdities and thin and meretricious ornament. On the other hand, he occasionally produced a mirror frame or a mantelpiece which was simple and dignified. The three leading "motives" of the time—Chinese, Gothic and Louis Quatorze—were mixed up in his work in the most amazing manner; and he introduced human figures, animals, birds and fishes in highly incongruous places. Johnson, who was in business at the "Golden Boy" in Grafton street, Westminster, published a folio volume of *Designs for Picture Frames, Candelabra, Ceilings, etc.* (1758); and *One Hundred and Fifty New Designs* (1761).

JOHNSON, SIR WILLIAM (1715–1774), British soldier and American pioneer, was born in Smithtown, Co. Meath, Ireland, the son of a country gentleman, Christopher Johnson. In 1737 he removed to America for the purpose of managing a tract of land in the Mohawk valley, N.Y., belonging to his uncle, Admiral Sir Peter Warren. He established himself on the south bank of the Mohawk, about 25m. W. of Schenectady, but before 1743 removed to the north bank where he had purchased a large tract of his own. His settlement prospered and a valuable trade was built up with the Indians. Fort Johnson with a store and mill was erected. His situation, together with his character, soon won for Johnson an immense influence over the Indians. He was adopted by the Mohawks and learned their language. In 1744

Governor George Clinton of New York appointed him superintendent of the affairs of the Six Nations (Iroquois). In 1746 he was made commissary of the province for Indian affairs and was influential in enlisting and equipping the Six Nations for participation in the conflict with French Canada. Two years later he was placed in command of a line of outposts on the New York frontier, but the peace of Aix-la-Chapelle interrupted the offensive operations he had planned. In May 1750, by royal appointment, he became a member for life of the governor's council. In 1754 he was one of the New York delegates to the Albany intercolonial Congress, where plans of union were discussed and a council held with the Indians. In 1755 he was commissioned a major-general, in which capacity he directed the expedition against Crown Point, and in September defeated the Indians and French at the battle of Lake George. For this success he received the thanks of parliament and was created a baronet. Also in 1756 he was appointed sole agent and superintendent of the Six Nations and all other Indians inhabiting British territory north of the Carolinas and the Ohio river, a position which he held until his death. Johnson took part in Abercrombie's disastrous campaign against Ticonderoga (1758), and in 1759 was second-in-command in Gen. Prideaux's expedition against Ft. Niagara, succeeding to the chief command on that officer's death and capturing the fort. In 1760 he was with Gen. Amherst at the capture of Montreal. As a reward for his services the king granted him 100,000ac. of land north of the Mohawk river, on which he built Johnson Hall (on the site of the present Johnstown) and lived in baronial style after the war. It was Johnson's influence that kept the Iroquois loyal and made them effective in the French and Indian War. It was his influence which kept them from joining Pontiac in his conspiracy in 1763. Again, Johnson was instrumental in arranging the treaty of Stanwix in 1768. His services for a period of 30 years, through successive crises, as the outstanding Indian diplomat of the colonies, can hardly be over-estimated.

His son, SIR JOHN JOHNSON, who also served through the French and Indian War, succeeded to the baronetcy upon his father's death; but during the Revolution he chose to remain on the British side and organized a loyalist regiment, whereupon the estates in the Mohawk valley were confiscated.

BIBLIOGRAPHY.—Five volumes of *The Papers of Sir William Johnson* were published at Albany (1921–27); others are to follow. *See* also the collection in *Documentary History of the State of New York,* vol. ii., pp. 543–1009 (Albany, 1849); W. L. Stone, *Life of Sir William Johnson* (1865); W. E. Griffis, *Sir William Johnson and the Six Nations* (1891); A. C. Buell, *Sir William Johnson* (1903); and *Proceedings of the New York State Historical Association,* vols. i., iv., xi., xiii., xix.

JOHNSONBURG, a borough of Elk county, Pa., U.S.A., on the Clarion river, 105 mi. N.E. of Pittsburgh. It is on federal highway 219, and is served by the Baltimore and Ohio, the Erie and the Pennsylvania railroads. The population was 4,955 in 1940. It is in a farming and lumbering region. The dominant manufacturing industry of the borough is the making of magazine paper. Johnsonburg was founded about 1875 and was named after the first settler, Thomas Johnson, a hunter.

JOHNSON CITY, a city of Washington county, Tennessee, U.S.A., in the mountainous eastern part of the state, at an altitude of 1,700 ft. It is served by the Clinchfield, the East Tennessee and Western North Carolina, and the Southern railways. The population was 12,442 in 1920 and was 25,332 (93% native white) by the federal census in 1940.

It is surrounded by very beautiful scenery, and is developing as a touring centre. Behind the town rise the heights of Buffalo and Cherokee; within a few miles is the Unaka national forest; Roan mountain (6,000 ft.) and the peaks of Holston are in the landscape.

The town has various manufacturing industries. It is the seat of a branch of the National Home for Disabled Volunteer Soldiers, and of the East Tennessee State Teachers college (established 1909). Johnson City was settled about 1787, incorporated as a town in 1879 and as a city in 1887. The region has many associations with Daniel Boone, Andrew Jackson, Andrew Johnson and early events in the history of Tennessee.

JOHNSTON, ALBERT SIDNEY (1803–1862), American Confederate general in the Civil War, was born at Washington, Ky., on Feb. 3, 1803. He graduated at West Point in 1826, and served for eight years in the U.S. infantry as a company officer, adjutant and staff officer. In 1834 he resigned his commission, emigrated in 1836 to Texas, then a republic, and joined its army as a private. His rise was very rapid, and before long he was serving as commander-in-chief in preference to Gen. Felix Huston, with whom he fought a duel. From 1838 to 1840 he was Texan secretary for war, and in 1839 he led a successful expedition against the Cherokee Indians. From 1840 to the outbreak of the Mexican War he lived in retirement on his farm, but in 1846 he led a regiment of Texan volunteers in the field, and at Monterey, as a staff officer, he had three horses shot under him. In 1849 he returned to the U.S. army as major, and in 1855 became colonel of the 2nd U.S. Cavalry (afterwards 5th), in which his lieut.-colonel was Robert E. Lee, and his majors were Hardee and Thomas. In 1857 he commanded the expedition sent against the Mormons, and performed his difficult and dangerous mission so successfully that the objects of the expedition were attained without bloodshed. He was rewarded with the brevet of brigadier-general. At the outbreak of the Civil War in 1861 Johnston, then in command of the Pacific department, resigned his commission and made his way to Richmond, where President Jefferson Davis, whom he had known at West Point, at once made him a full general in the Confederate army and assigned him to command the department of Kentucky. Here he had to guard a long and weak line from the Mississippi to the Alleghany mountains, which was dangerously advanced on account of the political necessity of covering friendly country. The first serious advance of the Federals forced him back at once, and he was freely criticized and denounced for what, in ignorance of the facts, the Southern press and people regarded as a weak and irresolute defence. Johnston himself, who had entered upon the Civil War with the reputation of being the foremost soldier on either side, bore with fortitude the reproaches of his countrymen, and Davis loyally supported his old friend. Johnston then marched to join Beauregard at Corinth, Miss., and with the united forces took the offensive against Grant's army at Pittsburg Landing. The battle of Shiloh (*q.v.*) took place on April 6 and 7, 1862. The Federals were completely surprised, and Johnston was in the full tide of success when he fell mortally wounded, dying a few minutes afterwards. President Davis said, in his message to the Confederate Congress, "Without doing injustice to the living, it may safely be said that our loss is irreparable," and the subsequent history of the war in the west went far to prove the truth of his eulogy.

His son, WILLIAM PRESTON JOHNSTON (1831–99), who served on the staff of Gen. Johnston and subsequently on that of President Davis, was a distinguished professor and president of Tulane university. His chief work is the *Life of General Albert Sidney Johnston* (1878), a most valuable and exhaustive biography.

See "The Death of General Albert Sidney Johnston on the Battlefield of Shiloh," in *Iowa Journal of History and Politics,* vol. xvi. p. 275–281 (1918); *see* also Amory Dwight Mayo, *William Preston Johnston's Work for a New South,* U.S. Educ. Bur. (1900).

JOHNSTON, ALEXANDER KEITH (1804–71), Scottish geographer, was born at Kirkhill, near Edinburgh, on Dec. 28, 1804. He was educated at Edinburgh high school and university, and was apprenticed to an engraver. In 1826 he joined his brother in the cartographical firm of W. and A. K. Johnston. His first important work was the *National Atlas* of general geography, which gained for him (1843) the appointment of Geographer-royal for Scotland. Johnston published his magnificent *Physical Atlas* in 1848 (2nd ed. enlarged, 1856). This illustrates the geology, hydrography, meteorology, botany, zoology and ethnology of the globe. He died at Ben Rhydding, Yorkshire, on July 9, 1871. His son of the same name (1844–79) also wrote geographical works and papers; in 1873–75 he was geographer to a commission for the survey of Paraguay; and he died in Africa while leading the Royal Geographical society's expedition to Lake Nyasa. The elder Johnston published a *Dictionary of Geography* (1850 and many later editions); *The Royal Atlas of Modern*

Geography (begun in 1855); and many other atlases and maps for scientific or educational purposes.

JOHNSTON, ARTHUR (1587–1641), Scottish physician and writer of Latin verse, was the son of an Aberdeenshire laird Johnston of Johnston and Caskieben, and on his mother's side a grandson of the seventh Lord Forbes. It is probable that he began his university studies at one, or both, of the colleges at Aberdeen, but in 1608 he proceeded to Italy and graduated M.D. at Padua in 1610. Thereafter he resided at Sedan, in the company of the exiled Andrew Melville (*q.v.*), and in 1619 was in practice in Paris. He appears to have returned to England about the time of James I.'s death and to have been in Aberdeen about 1628. He met Laud in Edinburgh at the time of Charles I.'s Scottish coronation (1633) and was encouraged by him in his literary efforts, partly, it is said, for the undoing of Buchanan's reputation as a Latin poet. He was appointed rector of King's College, Aberdeen, in June 1637. Four years later he died at Oxford, on his way to London, whither Laud had invited him.

Johnston left more than ten works, all in Latin. On two of these, published in the same year, his reputation entirely rests: (*a*) his version of the Psalms (*Psalmorum Davidis paraphrasis poetica et canticorum evangelicorum, Aberdeen,* 1637), and (*b*) his anthology of contemporary Latin verse by Scottish poets (*Deliciae poetarum scotorum hujus aevi illustrium,* Amsterdam, 1637). His sacred poems, which had appeared in the *Opera* (1642), were reprinted by Lauder in his *Poetarum Scotorum musae sacrae* (1739). The earliest lives are by Lauder (*op. cit.*) and Benson (in *Psalmi Davidici,* 1741). Ruddiman's *Vindication of Mr. George Buchanan's Paraphrase* (1745) began a pamphlet controversy regarding the merits of the rival poets.

JOHNSTON, SIR HARRY HAMILTON (1858–1927), British administrator and explorer, was born on June 12, 1858, at Kennington, London, and educated at Stockwell grammar school and King's college, London. He was a student for four years in the painting schools of the Royal Academy. At the age of eighteen he began a series of travels in Europe and North Africa, chiefly as a student of painting, architecture and languages. In 1879–1880 he visited the then little known interior of Tunisia. In 1882 he joined the earl of Mayo in an expedition to the southern part of Angola, a district then much traversed by Transvaal Boers. In 1883 Johnston visited H. M. Stanley on the Congo, and explored the river above Stanley Pool at a time when it was scarcely known to other Europeans than Stanley and De Brazza. The British Association, and the Royal Society conferred on Johnston the leadership of the scientific expedition to Mount Kilimanjaro which started from Zanzibar in April 1884.

While in the Kilimanjaro district Johnston concluded treaties with the chiefs of Moshi and Taveta (Taveita). These treaties or concessions were transferred to the merchants who founded the British East Africa Company, and in the final agreement with Germany Taveta fell to Great Britain. In October 1885 Johnston was appointed British vice-consul in Cameroon and in the Niger delta, and he became in 1887 acting consul for that region. A British protectorate over the Niger delta had been notified in June 1885, and between the date of his appointment and 1888, together with the consul E. H. Hewett, Johnston laid the foundations of the British administration in that part of the delta not reserved for the Royal Niger Company. His action in removing the turbulent chief Ja-ja led to the complete pacification of a region long disturbed by trade disputes. During these three years of residence in the Gulf of Guinea Johnston ascended the Cameroon Mountain, and made large collections of the flora and fauna of Cameroon for the British Museum.

In the spring of 1889 he was sent to Lisbon to negotiate the delimitation of the British and Portuguese spheres of influence in South-East Africa, but the scheme drawn up was not given effect to at the time. On his return from Lisbon he was despatched to Mozambique as consul for Portuguese East Africa, and was charged with a mission to Lake Nyasa to pacify that region, then in a disturbed state owing to the attacks of slave-trading Arabs on the stations of the African Lakes Trading Company—an unofficial war. Owing to the unexpected arrival on the scene of Major Serpa Pinto, Johnston was compelled to declare a British protectorate over the Nyasa region. A truce was arranged with the Arabs on Lake Nyasa, and within twelve months the British flag, by agreement with the natives, had been hoisted over a very large region which extended north of Lake Tanganyika to the vicinity of Uganda, to Katanga in the Congo Free State, the Shiré Highlands and the central Zambezi. Johnston's scheme, in fact, was that known as the "Cape-to-Cairo," a phrase which he had brought into use in an article in *The Times* in August 1888. According to his arrangement there would have been an all-British route from Alexandria to Cape Town. But by the Anglo-German agreement of July 1, 1890, the British sphere north of Tanganyika was abandoned to Germany, and the Cape-to-Cairo route broken by a wedge of German territory.

Johnston returned to British Central Africa as commissioner and consul-general in 1891, and retained that post till 1896, in which year he was made a K.C.B. He was transferred to Tunis as consul-general in 1897 on account of his health. In the autumn of 1899 Sir Harry Johnston was despatched to Uganda as special commissioner to reorganize the administration of that protectorate after the suppression of the mutiny of the Sudanese soldiers and the long war with Unyoro. His two years' work in Uganda and a portion of what is now British East Africa were rewarded at the close of 1901 by a G.C.M.G. In the spring of the following year he retired from the consular service. After 1904 he interested himself greatly in the affairs of the Liberian republic, and negotiated various arrangements with that negro state by which order was brought into its finances, the frontier with French territory was delimited, and the development of the interior by roads was commenced. In 1903 he was defeated as Liberal candidate for parliament at a by-election at Rochester. He met with no better success at West Marylebone at the general election of 1906.

For his services to zoology he was awarded the gold medal of the Zoological Society in 1902, and in the same year was made an honorary doctor of science at Cambridge. He received the gold medal of the Royal Geographical and the Royal Scottish Geographical societies, and other medals for his artistic work from South Kensington and the Society of Arts. His pictures, chiefly dealing with African subjects, were frequently exhibited at the Royal Academy. He was the author of numerous books on Africa, including *British Central Africa* (1897); *The Colonization of Africa* (1899); *The Uganda Protectorate* (1902); *Liberia* (1906); *George Grenfell and the Congo* (1908). During his travels in the north-eastern part of the Congo Free State in 1900 he was instrumental in discovering and naming the okapi, a mammal nearly allied to the giraffe. His name has been connected with many other discoveries in the African fauna and flora.

In 1919 he wrote an amusing novel, *The Gay Dombeys,* the personages in which are descended from the Dickens' Dombeys. He died on July 31, 1927.

His later works include:—*The Opening up of Africa* (1911); *Pioneers in West Africa, etc.* (6 vols. 1911–13); *The Story of My Life* (1923).

JOHNSTON, JOSEPH EGGLESTON (1807–1891), American Confederate general in the Civil War, was born near Farmville, Va., on Feb. 3, 1807. His father, Peter Johnston (1763–1841), a Virginian of Scottish descent, served in the Revolutionary War, and afterwards became a distinguished jurist; his mother was a niece of Patrick Henry. He graduated at West Point, in the same class with Robert E. Lee. He served in the Black Hawk and Seminole wars, and left the army in 1837 to become a civil engineer, but a year afterwards he was reappointed to the army as first lieutenant, Topographical Engineers. During the Mexican war he was twice severely wounded, was engaged in the siege of Vera Cruz, the battles of Contreras, Churubusco, and Molino del Rey, the storming of Chapultepec, and the assault on the city of Mexico, and received three brevets for gallant and meritorious service. In April 1861 he resigned from the U.S. army and entered the Confederate service. He was commissioned major-general of volunteers in the army of Virginia, and assisted in organizing the volunteers. He was later appointed a general officer of the Confederacy and assigned to the command of the army of the Shenandoah. When McDowell advanced upon the Confederate forces under Beauregard at Manassas, Johnston moved from the Shenandoah valley with great rapidity to Beauregard's assistance. As

senior officer he took command on the field, and at Bull Run (Manassas) (*q.v.*) won the first important Confederate victory. In Aug. 1861 he was made one of the five full generals of the Confederacy, remaining in command of the main army in Virginia. He commanded in the battle of Fair Oaks (May 31, 1862), and was severely wounded. In March 1863, still troubled by his wound, he was assigned to the command of the southwest, and in May was ordered to take immediate command of all the Confederate forces in Mississippi, then threatened by Grant's movement on Vicksburg. When Pemberton's army was besieged in Vicksburg by Grant, Johnston made every effort to relieve it, but his force was inadequate. Later in 1863 he commanded the army of Tennessee at Dalton, and in the early days of May 1864 the combined armies of the north under Sherman advanced against his lines. For the main outlines of the famous campaign between Sherman and Johnston *see* AMERICAN CIVIL WAR. When Johnston had been driven back to Atlanta he was superseded by Hood with orders to fight a battle. The wisdom of Johnston's course was soon abundantly clear, and the Confederate cause was already lost when Lee reinstated him on Feb. 23, 1865. He opposed Sherman's march through the Carolinas, and at Bentonville, N.C., fought a most gallant and skilful battle against heavy odds. But the Union troops steadily advanced, and a few days after Lee's surrender Johnston advised President Davis that it was in his opinion useless to continue the conflict, and he was authorized to make terms with Sherman. After the close of the war Johnston engaged in civil pursuits. In 1874 he published a *Narrative of Military Operations during the Civil War;* in 1877 he was elected to represent the Richmond district of Virginia in congress; and in 1887 he was appointed by President Cleveland U.S. commissioner of railroads. He died at Washington, D.C., on March 21, 1891.

It was not the good fortune of Johnston to acquire the prestige which so much assisted Lee and Jackson, nor indeed did he possess the power of enforcing his will on others in the same degree; but his methods were exact, his strategy calm and balanced, and, if he showed himself less daring than his comrades, he was unsurpassed in steadiness.

See Hughes, *General Johnston,* in "Great Commanders Series" (1893); Gamaliel Bradford, *Confederate Portraits* (1914); Sir Frederick Barton Maurice, *Statesmen and Soldiers of the Civil War* (1926).

JOHNSTON CITY, a coal mining city of Williamson county, Illinois, U.S.A., 90 mi. S.E. of Saint Louis. It is served by the Chicago and Eastern Illinois and the Missouri Pacific railways. The population was 787 in 1900; 5,955 in 1930; 5,418 in 1940 by federal census. The city was incorporated in 1896.

JOHNSTONE, a small burgh, Renfrewshire, Scotland, on the Black Cart, 11 mi. W. of Glasgow by the L.M.S.R. Pop. (est. 1938) 13,882. Leading industries include flax spinning, cotton and thread manufactures, papermaking, iron foundries, machine manufacture and engineering works. There are also iron and coal mines and oil works. Elderslie, one mi. E., where cotton-spinning and carpetmaking are carried on, is the reputed birthplace of Sir William Wallace, but it is doubtful if "Wallace's Yew," though of great age, and the small castellated building (traditionally his house) which preceded the present mansion in the west end of the village, existed in his day.

JOHNSTOWN, city, New York, U.S.A., 48 mi. N.W. of Albany, on Cayadutta creek, 4 mi. N. of the Mohawk river; the county seat of Fulton county. It is served by the Fonda, Johnstown and Gloversville railroad, connecting at Fonda, 4 mi. S., with the New York Central. The population in 1940 was 10,666. Like the adjacent city of Gloversville (*q.v.*) it is an important glove-manufacturing centre. The aggregate retail sales in 1940 reached a total of $4,461,000. The site of Johnstown was in the extensive grant of Sir William Johnson, and the city was founded by a colony of Scots he brought to America about 1760, and was named for him in 1771. His fine mansion, built in 1762, is maintained as a museum by the historical society. Originally it was flanked by two stone forts, and one of them still stands. The county courthouse, built by Sir William in 1772, is said to be the oldest in the United States. The jail (1772) was first used for all New York west of Schenectady county, and was a military prison during the Revolution. Three miles south of the city is Butler house, built in 1742 by Col. John Butler, a prominent Tory leader during the Revolutionary War. Johnstown was the scene of important conferences with the Iroquois Indians in colonial days, and a minor engagement of the Revolution took place there on Oct. 28, 1781. The village was incorporated in 1808 and became a city in 1895.

JOHNSTOWN, a city of Cambria county, Pa., U.S.A., 75 mi. E. by S. of Pittsburgh, on the Conemaugh river at the mouth of Stony creek. It is on federal highway 219, and is served by the Baltimore and Ohio and the Pennsylvania railways. The population was 67,327 in 1920, of whom 12,142 were foreign-born white (largely from southern and eastern Europe), and in 1940 had fallen by the federal census to 66,668. Including the contiguous boroughs, the population of the metropolitan area in 1940 was estimated locally at 108,485.

The city lies 1,149 ft. above the sea, on level ground along the river, nearly enclosed by high, precipitous hills which afford many charming vistas, and is surrounded by some of the most picturesque scenery of the Alleghenies. It is the metropolis of the Conemaugh valley, and one of the chief coal mining and steel producing centres of the state, with over 18,000 men employed in these two industries.

Iron, fire clay, limestone and timber also abound in the vicinity. Within the city are some 140 industrial establishments (including the Cambria works of the Bethlehem Steel company, employing 14,500 men in mills and mines).

Among the numerous manufactures besides steel are silk, radiators, stoves, radios, paints, brick, concrete block, cigars, tires, playing cards, mattresses, motor trucks, mine cars, electrical equipment and hoists for mines and electrical conduit.

Bank clearings in 1940 were $198,705,000. There are 230 ac. in the public parks, and in 1926 a municipal stadium seating 17,000 was completed. The city has a commission form of government.

Joseph Jahns, a Swiss pioneer, settled there in 1791, and a little later a town was laid out and named after him. It was an important port of call on the Pennsylvania canal, before the Pennsylvania railroad was built, but grew slowly until 1880, when the population was 8,380.

With the development of the iron and steel industry in the following decade, the population increased almost threefold. The city was incorporated in 1889.

On May 31, 1889, after unprecedented rains, a dam across the South Fork, 12 mi. above the city (built in 1852 to provide a storage reservoir for the Pennsylvania canal) gave way, releasing a body of water 60–70 ft. deep and 700 ac. in area. The flood swept down the valley in a mass 20 ft. or more in height at its head, at a speed of 20 mi. an hour, and within an hour almost completely destroyed Johnstown and wiped out entirely seven other towns in the valley. The Pennsylvania railroad bridge withstood the strain, and against it the water piled up a mass of wreckage on which many persons were saved from drowning, only to be burned when it caught fire. Between 2,000 and 3,000 lives were lost, out of a population of 30,000, and the loss of property was estimated at $12,000,000.

In Grandview cemetery, overlooking the city, where most of the victims were buried, is a large plot containing the graves of 779 who were not identified. A relief fund of over $4,000,000 was raised by a nation-wide subscription and disbursed through a state commission. The city was quickly rebuilt and made a rapid recovery from the disaster.

JOHORE (JOHOR), a Malayan state at the southern end of the peninsula, occupied by Japan in Jan. 1942; it stretches from 2° 40′ S. to Cape Romania (Ramunya), the most southerly point on the mainland of Asia, and including all the small islands adjacent to the coast which lie to the south of parallel 2° 40′ S. The state forms a region of comparative lowland; the highest point is Mt. Ophir (Gunong Ledang), about 4,000 ft.

Like the rest of the peninsula, Johore is covered with forest broken by clearings and settlements. The capital is Johore Bahru, situated at the nearest point on the mainland to the island of

Singapore. The palace built by the sultan Abubakar is the principal feature of the town. The capital of the province of Muar (placed under the administration of Johore by the British government in 1877), is Bandar Maharani. The temperature varies from 98.5° to 65°. The rainfall averages 97·28 in. per annum. The population in 1941 was estimated at 664,472, of whom 296,727 were Malays, 303,338 Chinese, 58,622 Indians, 1,249 Europeans and 349 Eurasians. (*See* MALAY STATES.)

It is claimed that the Mohammedan empire of Johore was founded by the sultan of Malacca after his expulsion from his kingdom by the Portuguese in 1511. It is certain that Johore took an active part, together with Achin, in the war between the Portuguese and the Dutch for the possession of Malacca. Later we find Johore ruled by an officer of the sultan of Riouw (Rīau), bearing the title of Temenggong, and owing feudal allegiance to his master in common with the Bendahara of Pahang. In 1812, however, this officer seems to have thrown off the control of Riouw, and to have assumed the title of sultan, for one of his descendants, Sultan Husain, ceded the island of Singapore to the East India company in 1819. In 1855 the then sultan, Ali, was deposed, and his principal chief, the Temenggong, was given the supreme rule by the British. His son Temenggong Abubakar was made a maharaja in 1879. In 1885 he entered into a new agreement with the British government, and assumed the title of sultan of Johore. This agreement was amended in 1914; the sultan to act on the advice of a British adviser. The sultan was assisted in his government by an executive council and by a legislative council. Although Johore was the Malay state longest associated with the British, it was the last to accept a British adviser. In spite of its proximity to Singapore, it retained the greatest degree of substantial independence, the only written constitution, the largest alien population, and the highest degree of economic development of any of the Unfederated states. Rubber was its greatest asset, but it also exported large quantities of pineapples and minerals. In 1938 the state's total revenue amounted to $(Str.)17,922,090 and expenditures came to $18,853,093, the deficit having been due to an ambitious Public Works program. That same year there were 988 mi. of roads, of which 897 were metalled. The state had 88 Muslim religious schools, 134 vernacular Malay boys' schools (enrolment 15,907 pupils), 21 vernacular Malay girls' schools (enrolment 2,236 pupils), and 7 English boys' schools (1,993 pupils).

The railway from Penang to Singapore crosses Johore for 120 miles. The Johore portion was re-leased in 1932 to the federal government for a 21-year period. The riverways are also important for the rubber traffic. (H. CL.; X.)

JOIGNY, a town of central France in the department of Yonne, 18 mi. N.N.W. of Auxerre by the P.L.M. railway. Pop. (1936) 6,892. Joigny (*Joviniacum*) was probably of Roman origin. In the 10th century it became the seat of a countship dependent on that of Champagne. A fragment of a ladder in the church of St. André commemorates the successful resistance offered by the town to the English in 1429. Joigny is situated on the flank of Côte St. Jacques on the bank of the Yonne. Its streets are steep and narrow, and old houses with carved wooden façades are numerous. The church of St. Jean (16th century), which once stood within the *enceinte* of the old castle, contains a representation (15th century) of the Holy Sepulchre in white marble. Other interesting buildings are the church of St. André (12th, 16th and 17th centuries) with its Renaissance portal and its fine bas-reliefs; and the church of St. Thibault (16th century). The Porte du Bois, a gateway with two massive flanking towers, is a relic of the 10th century castle; there is also a castle of the 16th and 17th centuries, partly demolished. The hôtel de ville (18th century) shelters the library; the law-court contains the sepulchral chapel of the Ferrands (16th century). Joigny has trade in wines, coal, wood, wooden shoes and hosiery.

JOINDER: *see* PRACTICE AND PROCEDURE.

JOINERY, one of the useful constructive arts which contribute to the comfort and convenience of man. As the arts of joinery and carpentry are often followed by the same individual, it may appear that the same principles are common to both, but a close examination leads to a different conclusion. The art of carpentry is directed almost wholly to the support of load and its principles must be sought in the mechanical sciences. In a building it includes all the timber work necessary for support, division or connection, and its object is to give firmness and stability to the structure. The art of joinery has for its object the addition in a building of all the fixed woodwork necessary for comfort, convenience or ornament. The work of the joiner is in many cases of a complicated nature, and often requires to be executed in an expensive material, therefore joinery requires much skill in that part of geometrical science which treats of the projection and relation of lines, surfaces and solids, as well as an intimate knowledge of the structure and nature of wood. A good carpenter may not be a joiner, but a good joiner is competent, at least, to supervise all the operations required in carpentry. The heavy labour of the carpenter does not fit him to produce that accurate workmanship expected from a joiner. In carpentry, strength is mainly due to the form and position of its parts; in joinery, strength depends to a larger extent upon the rigidity of the joints. It is important that a joiner's work shall be constructed of sound and dry materials, and on such principles as to allow of movement due to changes of temperature and humidity.

In early times, woodwork was crude, and jointing was difficult and roughly done. The first dawnings of the art of modern joinery appear in the thrones, stalls, pulpits and screens of early Gothic cathedrals and churches, but even in these the art is indebted to the carver for everything that is worthy of regard. With the revival of classic art, however, great changes took place in every kind of construction. Forms were introduced in architecture which demanded new principles for their satisfactory execution, and these principles were discovered and published by craftsmen. These men had scanty geometrical knowledge and confused notions and definitions of principles and their descriptions were often obscure and sometimes erroneous. During this period the framed wainscot of small panels gave way to the large bolection moulded panelling; doors which were formerly heavily framed and hung on massive posts or in jambs of cut stone were now framed in light panels and hung in moulded dressings of wood. Oak timber was generally used but the scarcity of oak and the expense of working it subsequently led to the importation of fir timber from northern Europe, and this gradually superseded all other material save for special work. In recent years, owing to the development of more ample, quicker and less costly means of transport, a great variety of hardwoods and softwoods have been imported and are now extensively used in all types of building.

MODERN TECHNIQUE

The Joiner's Tools.—The joiner operates with a large variety of tools, the names and uses of the principal ones being:

Saws: the hand saw for cutting large material across the grain; the rip saw for cutting large material with the grain; the tenon saw for smaller material and more accurate cutting than either of the foregoing; the dove-tail saw for still finer cutting; the bow-saw, the key-hole saw, the pad-saw and the table-saw, for cutting along curves and for pierced work.

Planes: the jack plane for removing rough surfaces and reducing material to size; the trying plane for forming straight and true surfaces; the smoothing plane for finishing surfaces; the rebate plane for working internal angles; the shoulder plane for truing up hardwood shoulders and similar work; the bullnose plane for working close up to stops and for similar uses; the plough for grooving with the grain; the side fillister and sash fillister for forming rebates; the grooving plane for grooving across the grain; the compass plane for curved surfaces; the side rebate plane for planing the sides of grooves; the chamfer plane; various moulding planes.

Chisels: the firmer chisel for removing waste; the paring chisel for finishing surfaces that are inaccessible or unsuited to the plane; the mortise chisel for large mortises; the sash chisel for small mortises.

Gouges: the firmer gouge for heavy circular cutting; the paring

gouge for finishing concave curved surfaces; the scribing gouge for scribing mouldings.

Boring bits: the twist or augur bit; the centre bit; the centerless bit; the expanding bit; the shell bit; the nose bit; the gimlet bit; twist drills; countersinks for wood and metal.

Brace or stock: for holding every form of boring bit.

Try squares: for testing the right angle between adjacent surfaces and for squaring lines across material.

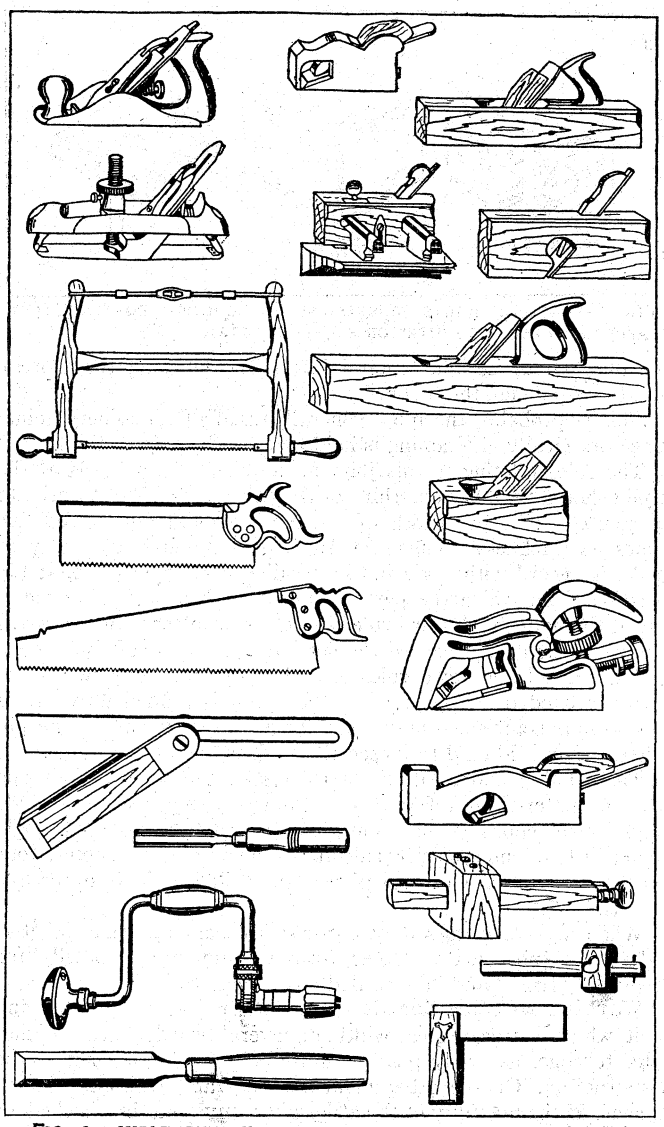

FIG. 1.—IMPLEMENTS USED IN VARIOUS PROCESSES OF JOINERY

Bevel: for testing angles other than right angles and for marking lines inclined to the surfaces of the material.

Gauges: the marking gauge for marking lines parallel to the surfaces of the material; the mortise gauge for marking mortise lines on the material; the spider gauge for marking and testing curved and twisted material.

Spokeshaves: for cleaning up and shaping curved surfaces.

Mitre block and mitre box: used in sawing mitred intersections.

Mitre shoot: used in planing mitred surfaces.

Cramp: for forcing and holding surfaces into close contact.

Hand screw: a form of wooden cramp.

Routers: for forming grooves in curved and twisted material and for finishing sunk surfaces.

Hammer, Mallet, Screwdriver, Bradawl, Gimlet, Pincers, Sharpening stone and Slips: and a variety of minor tools. (*See* fig. 1.)

In making a typical example of joinery, such as a panelled door and door linings, and assuming the whole of the work to be done by hand, the chief operations and their order of procedure would be as follows:—the measurements are taken from the architect's scale and detail drawings and full size sections and special details are set out on a thin board called a setting out rod, or on paper. A quantity sheet, containing the sawn and finished sizes and the names of the various members, together with a list of the ironmongery required, is prepared. The material is then cut and planed to the required sizes, skill and great care being exercised to produce true surfaces and the required angles between the surfaces. If the width of the panels necessitates glue jointing this operation is performed at this stage to give time for the glue to harden before the panel is required for fitting.

The shoulder mortise and other cutting lines are then transferred from the rod to the material; the important lines being marked with a scribing knife or gauge.

The mortising is then done and the tenons that are parallel to the grain (fibres) are cut by the saw.

The rebating, grooving and moulding are the next operations, after which the cheeks of the tenons are cut, the tenons haunched and the stuck mouldings (if any) scribed or mitred. The panels are then fitted and cleaned up, and all the surfaces of the framing that will be inaccessible when the work is put together are lightly planed and glass-papered. The work is next assembled and lightly cramped up for inspection. If everything is found to be satisfactory the work is partially knocked apart, the glue or other adhesive is applied and the final cramping and wedging up is completed. Finally, the surfaces are finished with the plane and in the case of hardwoods, the scraper and glass-paper.

The preparation of joinery entirely by hand is now the exception—a fact due to the ever-increasing use of machines, which have remarkably shortened the time required to execute ordinary operations. Various machines rapidly and perfectly execute planing and surfacing, mortising and moulding, leaving the craftsman merely to assemble, glue and wedge. Large quantities of machine-made flooring, window-frames and doors are now imported into England from abroad.

Joinery Woods.—The structure and properties of wood should be thoroughly understood by every joiner. Timber shrinks considerably in the width, but not appreciably in the length; its size and sectional shape alters with changes of temperature and humidity. Owing to these changes certain joints and details, hereinafter described and illustrated, are in common use for the purpose of counteracting the bad effect of movements which would otherwise injure the joinery work.

The kinds of wood commonly employed in joinery are the different species of North European and North American pine, oak, teak and mahogany (*see* TIMBER). The greater part of English joiners' work is executed in the northern pine exported from the Baltic countries. Hence the joiner obtains the planks, deals, battens and strips from which he shapes his work. The timber reaches the workman from the sawmills in a size convenient for the use he intends, considerable time and labour being saved in this way.

A log of timber sawn to a square section is termed a *balk*. In section it may range from 1 to 1½ ft. square. *Planks* are formed by sawing the balk into sections from 11 to 18 in. wide and 3 to 6 in. thick, and the term *deal* is applied to sawn stuff 9 in. wide and 2 to 4½ in. thick. *Battens* are boards running not more than 3 in. thick and 4 to 7 in. wide. A *strip* is not thicker than 1½ in., the width being about 4 in.

Joints.—(*See* figs. 2, 3 and 4.) The simplest type of joint used to obtain an increased width of material is the square or smooth joint, in which the edges of the boards to be jointed are planed straight and square to the faces, after which the edges are glued and rubbed into close contact; to hold the edges together until the glue is hard, iron dogs are driven lightly into the ends of the boards across the joint.

A joint in general use for joining up boards for fascias, panels, linings, window-boards, and other work of a like nature is formed in a similar manner to the above, but with a cross-grained tongue inserted, thereby greatly strengthening the work at an otherwise naturally weak point. This is termed a *cross-tongued and glued* joint. The *dowelled* joint is a square glued joint strengthened with hard wood or iron dowels inserted in the edge of each board to a

depth of about ¾ in. and placed about 18 in. apart. The *matched* joint is shown in two forms, beaded and V jointed. Matched boarding is frequently used as a less expensive substitute for panelled framing. Although of course in appearance it cannot compare with the latter, it has a somewhat ornamental appearance, and the moulded joints allow shrinkage to take place without detriment to the appearance of the work. The *rebated* joint is used in the meeting styles of casements and folding doors, and it is useful in excluding draughts and preventing observation through the joint.

Angle Joints.—For joining the edges of boards and framing together so as to form an angle between the faces of the material the following are the principal joints used: the plain mitre joint, the tongued mitre joint, the rebated and mitred joint, the tongued grooved and moulded joint, and the rebated grooved and moulded joint. Their chief uses are at the external angles between dado and other vertical framing, and at the angles between beam and pipe casings.

The *dovetail* is a most important joint; its most usual forms are illustrated in fig. 3. The *mitre dovetail* is used only in the best

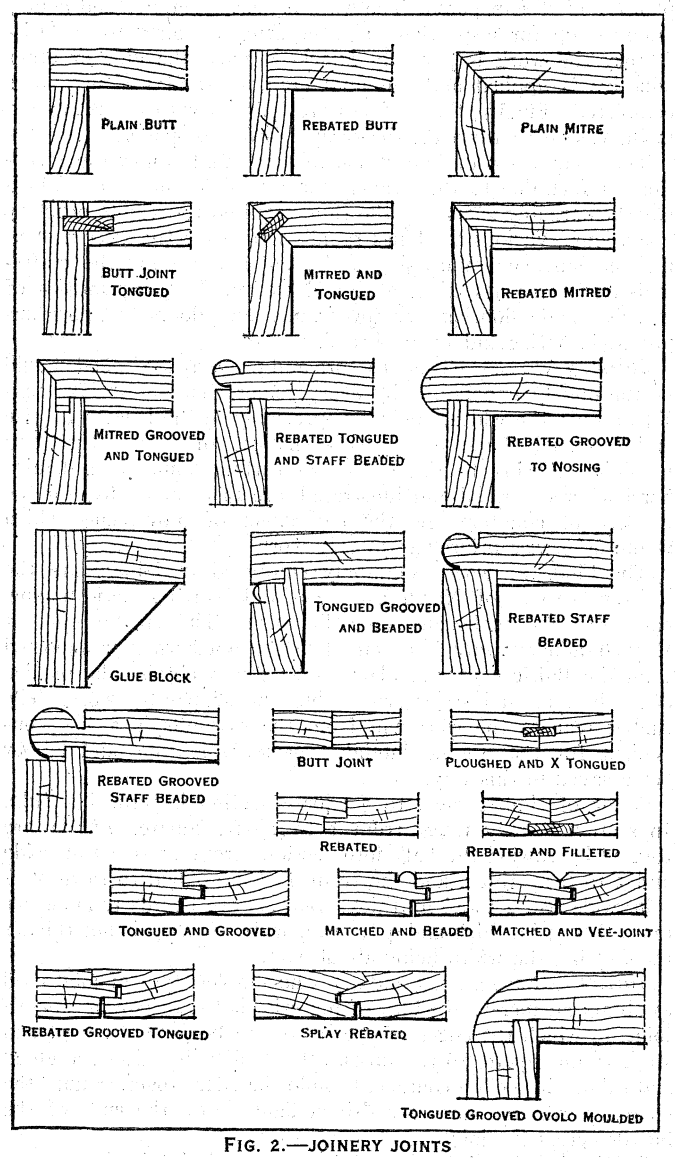

FIG. 2.—JOINERY JOINTS

work. It will be seen that the dovetail is a tenon, shaped as a wedge, and it is this distinguishing feature which, if closely fitted, gives it great strength irrespective of glue or screws. It is invaluable in framing together joiners' fittings; its use in drawers especially provides a good example of its purpose and structure.

Housed Joints.—This term is applied when the face of a board is grooved or trenched to receive the end of a second board; when the sides of the groove are square it is a plain housing, when the sides are bevelled it is a dovetailed housing. When the groove is stopped a short distance from the edge of the material it is called a stopped housing. The housed joint is used in fixing shelves, at the head and sill of a cased window frame, between the steps and strings of stairs, and for many other similar purposes.

Mortise and Tenon Joints.—When the end of a wooden member is cut to fit into a rectangular hole in a second member, the joint

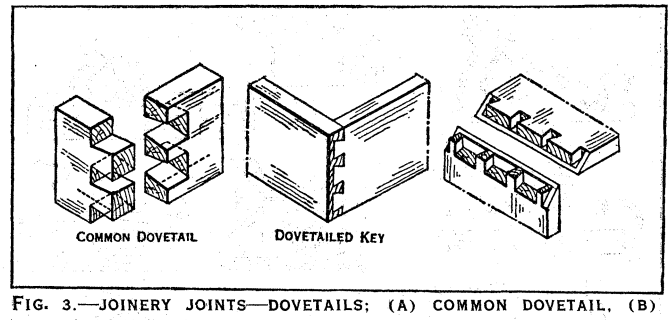

FIG. 3.—JOINERY JOINTS—DOVETAILS; (A) COMMON DOVETAIL, (B) LAPPED DOVETAIL, (C) MITRE OR SECRET DOVETAIL

is called a mortise and tenon joint; the hole being the mortise and the fitted end, the tenon.

This is probably the most generally used of all joinery joints since practically all framing is held together by this method.

The rules relating to this joint are:—(i.) the thickness of the tenon should be about one-third of the thickness of the material to be jointed; (ii.) the width of the tenon should not exceed five times its thickness. When the width of a tenon is cut away to make it accord with "rule ii." it is called a haunched tenon; the position from which the part of the tenon has been removed is called the haunch. A third rule is:—the sum of the widths of the haunches should not exceed the sum of the widths of the tenons.

The second and third rules are of importance only when the tenon is fixed by wedges; when the tenon is pinned its width is not so important since undue shrinkage would not affect the pin whereas it would tend to loosen the wedges.

The number and positions of tenons on the same end of one piece of material are referred to as follows:—one tenon is a single tenon; two tenons in the same plane are called "a pair of single tenons"; two tenons side by side are called a "double tenon"; four tenons, two in each of two planes are called a "pair of double tenons."

When a tenon passes only partially through the material it is called a "stub tenon." Other forms of tenon are called "fox wedged," "tusk," and "dovetailed and keyed tenon."

Warping in Wide Boards.—The tendency to warp, twist and split, which boards of great width, or several boards glued together edge to edge, naturally possess, must be provided against in the construction. On the other hand, swelling and shrinking due to changes in the humidity of the atmosphere must *not* be checked, or the result will be disastrous. To effect this end various simple devices are available. The direction of the annular rings in alternate boards may be reversed, and when the boards have been carefully jointed with tongues or dowels and glued up, a hard-wood tapering key, dovetail in section, may be sunk into a wide dovetail at the back (fig. 4). It must be accurately fitted and driven tightly home, but not glued. Battens of hard wood may be used for the same purpose, fixed either with hard wood buttons or by means of brass slots and screws, the slots allowing for any slight movement that may take place. With boards of a substantial thickness light iron rods may be used, holes being bored through the boards edgewise, the edges glued up and the rods passed through. This method is very effective and neat in appearance, and is specially suitable when a smooth surface is desired on both sides of the work.

MOULDINGS, SKIRTINGS AND DADOS

Mouldings.—These are used in joinery to relieve plain surfaces by the contrasts of light and shade formed by their members, and to ornament or accentuate those particular portions which the designer may wish to bring into prominence. Skill and discrimination are required in designing and applying mouldings, but the crafts-

man must be able to appreciate the beauty and refinement of a moulding in order to interpret the ideas of the designer and draftsman. The character of a moulding is greatly affected by the nature and appearance of the wood in which it is worked. A section suitable for a hard regularly grained wood, such as mahogany, would probably look insignificant if worked in a softer wood with pronounced markings. Mouldings worked on woods of the former type may consist of small and delicate members; woods of the latter class require bold treatment.

The mouldings of joinery, as well as of all other moulded work used in connection with a building, are usually worked in accordance with full-sized detail drawings prepared by the architect, and are designed by him to conform with the style and class of building. There are, however, a number of moulded forms in common use which have particular names; sections are shown of many of these in fig. 5. Most of them occur in the classic architecture of both Greeks and Romans. A striking distinction, however, existed

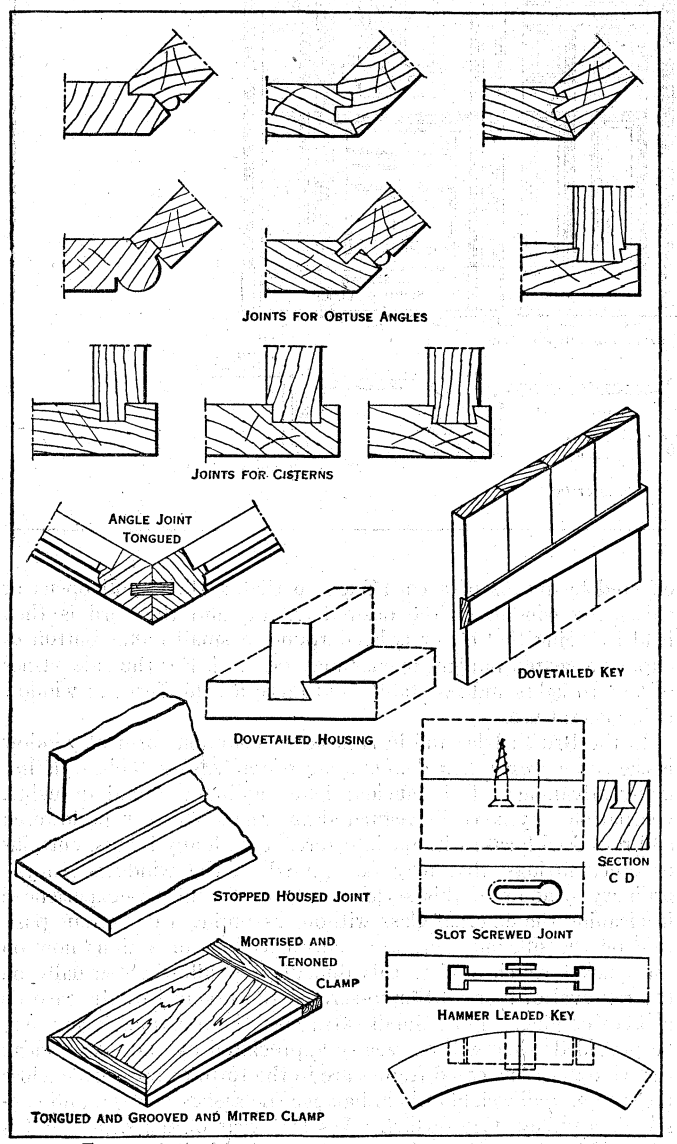

FIG. 4.—JOINERY JOINTS USED FOR SPECIAL PURPOSES

in the mouldings of these two peoples; the curves of the Greek mouldings were either derived from conic sections or drawn in freehand, while in typical Roman work the curved components were segments of a circle. Numerous examples of the use of these forms occur in ordinary joinery work, and may be recognized on reference to the illustrations.

Mouldings may be either stuck or planted on. A *stuck* moulding is worked directly on the solid framing; a *planted* moulding is separately worked and fixed in position with nails or screws. Beads and other small mouldings should always be stuck; larger ones are usually planted on. In the case of mouldings planted on panelled work, the nails should be driven through the moulding into the style or rail of the framing, and not into the panel. By adopting the former method the panel is free to expand and contract without altering the good appearance of the work, but if the moulding be fixed to the panel it will, when the latter shrinks, be pulled out of place, leaving an unsightly gap between the moulding and the

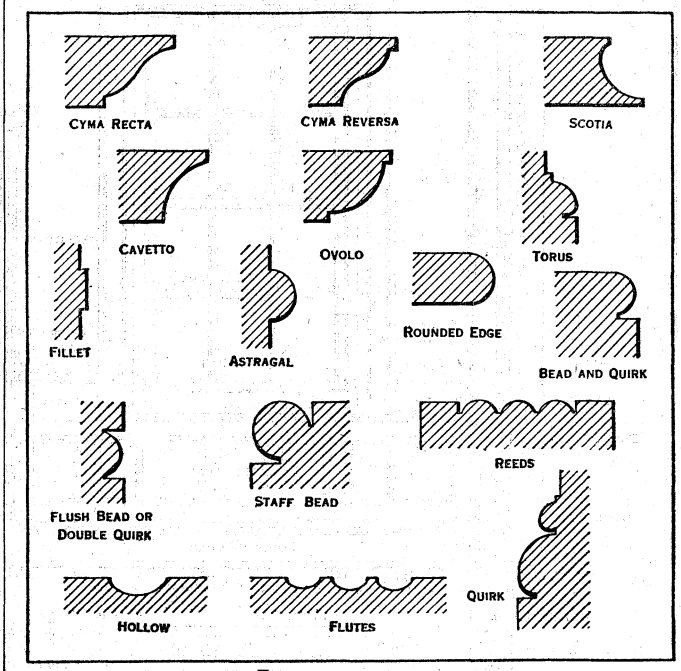

FIG. 5.—MOULDINGS

framing; or if sturdy mouldings be used, the panel may split under the strain.

Planted mouldings are cut to intersect on plain mitres, but mouldings stuck on the solid are scribed whenever the section of the moulding will permit. Scribing consists of cutting away the end of one moulding to form an exact reverse of the moulding profile so as to allow the cut surfaces to fit closely down on to the adjacent moulding. The advantage of scribing is that the appearance of the joint is less affected by shrinkage. In machine made joinery the scribing and tenoning are effected in one operation by the tenoning machine, while mitreing is done by hand.

Skirtings.—In joinery, a skirting is a board fixed around the base of an internal wall to form an ornamental base for the wall (*see* fig. 7). It also covers the joint between the flooring and the wall, and protects the base of the wall from injury. Skirtings may be placed in two classes—those formed from a plain board with its upper edge either left square or moulded, and those formed of two or more separate members and termed a *built-up* skirting (fig. 6). Small angle fillets or mouldings are often used as skirtings. The skirting should be worked so as to allow it to be fixed with the heart side of the wood outwards; any tendency to warp will then only serve to press the top edge more closely to the wall. In good work a groove should be formed in the floor and the skirting tongued into it so that an open joint is avoided should shrinkage occur. The skirting should be nailed only near the top to wood grounds secured to breeze fixing blocks in the brickwork. These grounds are about $\frac{3}{4}$ to 1 in. thick, *i.e.*, the same thickness as the plaster, and are generally splayed or grooved on the edge to form a key for the plaster. A rough coat of plaster should always be laid on the wall behind the skirting to keep out vermin.

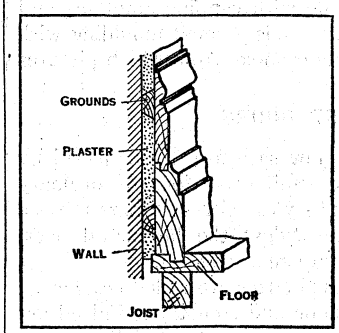

FIG 6.—BUILT-UP SKIRTING TONGUED TO FLOOR

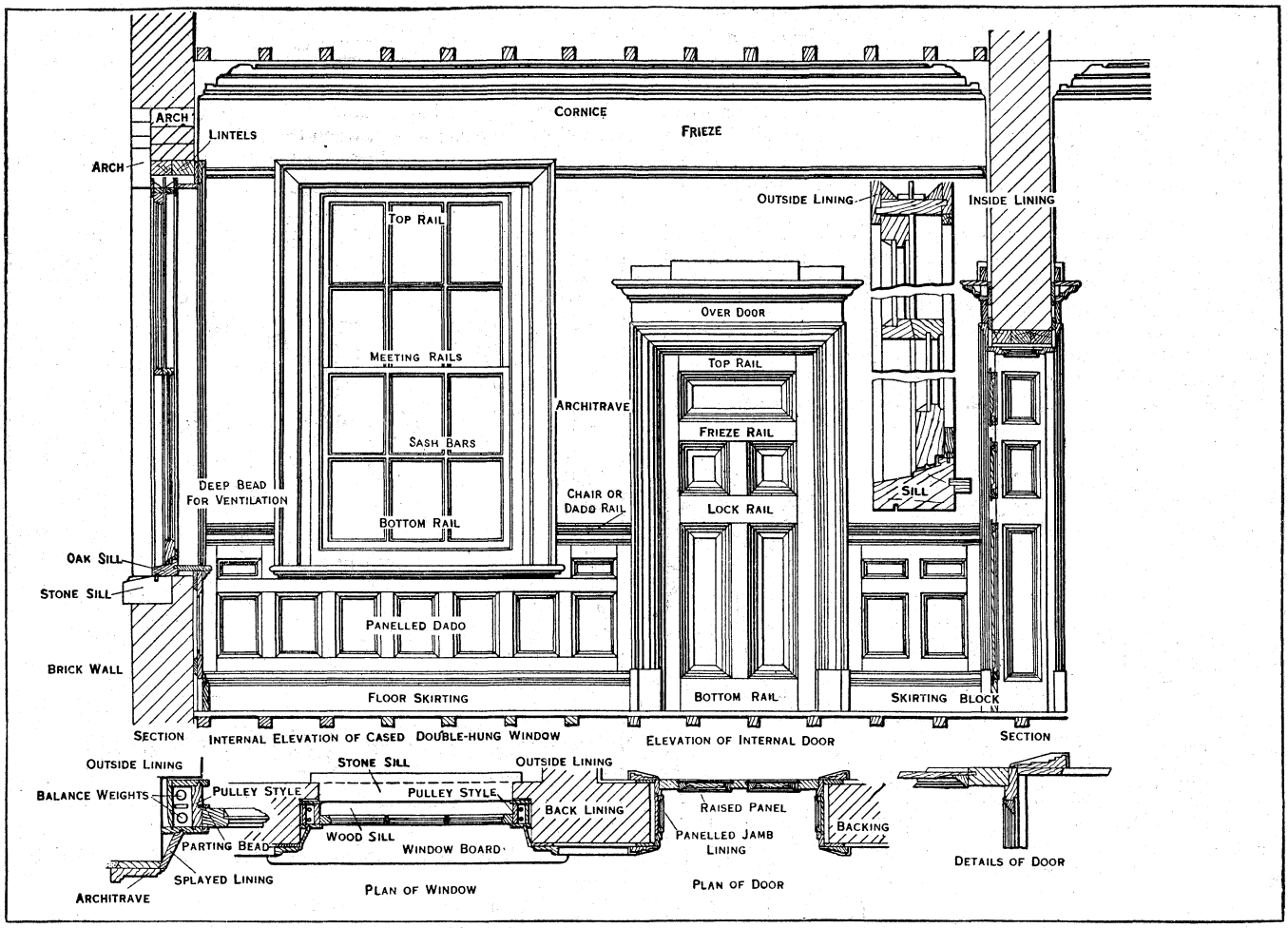

FIG. 7

Dados.—A dado, like a skirting, is useful both in a decorative and a protective sense. It is filled in to ornament and protect that portion of the wall between the *chair* or *dado rail* and the skirting. It may be of horizontal boards battened at the back and with cross tongued and glued joints, presenting a perfectly smooth surface, or of matched boarding fixed vertically, or of panelled framing. The last method is of course the most ornate and admits of great variety of design. The work is fixed to rough framed wood grounds which are nailed to fixing blocks built into the brickwork. Fig. 7 shows an example of a panelled dado with capping moulding and skirting. A *picture rail* also is shown; it is a small moulding with the top edge grooved to take the metal hooks from which pictures are hung.

WINDOWS AND DOORS

Windows.—The parts of a window sash are distinguished by the same terms as are applied to similar portions of ordinary framing, and are formed of rails and styles, with sash bars rebated for glazing. The upright sides are *styles;* the horizontal ones, which are tenoned into the styles, are *rails* (fig. 7).

Sashes hung by one of their vertical edges are called *casements.* They are really a kind of glazed door and sometimes indeed are used as such, as for example *French casements* (fig. 8). They may be made to open either outwards or inwards. It is very difficult with the latter to form perfectly water-tight joints; with those opening outwards the trouble does not exist to so great an extent. *Yorkshire sliding sashes* move in a horizontal direction upon grooved runners with the meeting styles vertical. They are little used, and are apt to admit draughts and wet unless efficient checks are worked upon the sashes and frames.

Lights in a position difficult of access are often hung on *centre pivots;* metal pivots are fixed to the frame and the sockets in which these pivots work are screwed to the sash. Movement is effected by means of a cord fixed so that a slight pull opens or closes the window to the desired extent, and the cord is then held by being tied to, or twisted round, a small metal button or clip, or a geared fanlight opener may be used. For the side sashes of lantern lights and for stables and factories this form of window is in general use.

In the British Isles and in America a common form of window is the *cased frame with double hung sliding sashes.* This style has many advantages. It is efficient in excluding wet and draughts, ventilation may be easily regulated and the sashes can be lowered and raised with ease without interference with any blinds, curtains or other fittings, that may be applied to the windows. In the ordinary window of this style, however, difficulty is experienced in cleaning the external glass without assuming a dangerous position on the sill, but there are many excellent inventions now on the market which obviate this difficulty by allowing—usually on the removal of a small thumb-screw—the reversal of the sash on a pivot or hinge. For a small extra cost these arrangements may be provided; they will be greatly appreciated by those who clean the windows. The cased frames are in the form of boxes to enclose the iron or lead weights which balance the sashes (fig. 7), and consist of a pulley style—which takes the wear of the sashes and is often of hard wood on this account—an inside lining, and an outside lining; these three members are continued to form the head of the frame. The sashes are connected with the weights by flax lines or chains of special make working over metal pulleys fixed in the pulley styles. Access to the weights for the purpose of fitting new cords is obtained by removing the pocket piece. A thin back lining is provided to the sides only and is not required in the head. The sill is of oak weathered to throw off the water. A parting bead separates the sashes, and the inside bead keeps them in position. A parting slip hung from the head inside the cased frame separates the balancing weights and ensures their smooth working.

The inside lining is usually grooved to take the elbow and soffit linings, and the window board is fitted into a groove formed in the sill. The example shown in fig. 7 has an extra deep bottom rail and bead; this enables the lower sash to be raised so as to permit of ventilation between the meeting rails without causing a draught at the bottom of the sash. This is a considerable improvement upon the ordinary form, and the cost of constructing the sashes in this manner is scarcely greater.

Bay windows with cased frames and double hung sashes often require the exercise of considerable ingenuity in their construction

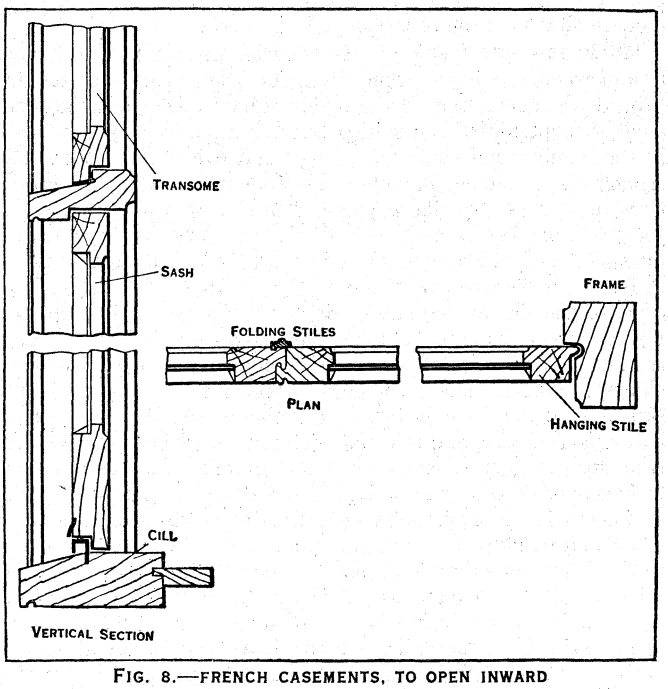

FIG. 8.—FRENCH CASEMENTS, TO OPEN INWARD

in order that the mullions shall be so small as not to intercept more light than necessary; at the same time the sashes must work easily and the whole framing be stable and strong. The sills should be mitred and tongued at the angles and secured by a hand-rail bolt. Frequently it is not desired to hang all the sashes of a bay window, the side lights being fixed. To enable smaller angle mullions to be obtained, the cords of the front windows may be taken by means of pulleys over the heads of the side lights and attached to counter-balance weights working in casings at the junction of the window with the wall. This enables solid angle mullions to be employed. If all the lights are required to be hung the difficulty may be surmounted by hanging two sashes to one weight. Lead weights take up less space than iron, and are used for heavy sashes.

In framing and fixing *skylights* and *lantern lights* also great care is necessary to ensure the result being capable of resisting rough weather and standing firm in high winds. Glue should not be used in any of the joints, as it would attract moisture from the atmosphere and set up decay. Provision must be made for the escape of the water which condenses on and runs down the inner side of the glass, by means of a lead-lined channelled moulding, provided with zinc or copper pipe outlets. The skylight stands on a curb raised at least 6 in. to allow of the exclusion of rain by proper flashing. The sashes of the lantern usually take the form of fixed or hung casements fitted to solid mullions and angle posts which are framed into and support a solid head. The glazed framing of the roof is made up of moulded sash bars framed to hips and ridges of stronger section; these rest on the head, projecting well beyond it in order to throw off the water.

Shutters for domestic windows have largely fallen into disuse, but a reference to the different forms they may take is perhaps necessary. They may be divided into two classes—those fixed to the outside of the window and those fixed inside. They may be battened, panelled or formed with louvres, the latter form admitting air and a little light. *External* shutters are generally hung by means of hinges to the frame of the window: when the window is set in a reveal these hinges are necessarily of special shape, being of large projection to enable the shutters to fold back against the face of the wall. *Internal* shutters may be hinged or may slide either vertically or horizontally. Hinged folding boxed shutters may be fitted into square or splayed recesses on the inside of a sliding sash or casement window, a number of panelled units being hinged together in order to fold neatly within the recess; they are usually held in position by means of a hinged iron bar secured with a special catch. Lifting shutters are usually fitted in a casing formed in the window back, and the window board is hinged to lift up, to allow the shutters to be raised by means of rings fixed in their upper edges. The shutters are balanced by weights enclosed with casings in the manner described for double hung sashes. The panels are of course filled in with wood and not glazed. The shutters are fixed by means of a thumb-screw through the meeting rails, the lower sash being supported on the window board which is closed down when the sashes have been lifted out. Shutters sliding horizontally are also used, but they are not so convenient as the forms described above.

Doors.—External doors are usually hung to solid frames placed in the reveals of the brick or stone wall. The frames are rebated for the door and ornamented by mouldings either stuck or planted on. The *jambs* or *posts* are tenoned, wedged and glued to the head, and the feet secured to the sill by stub tenons or dowels of iron. Solid window frames are of similar construction and are used chiefly for casements and sashes hung on centres as already described. Internal doors are hung to jamb linings (fig. 7). They are usually about $1\frac{1}{2}$ in. thick and rebated for the door. When the width of jamb allows it, panelling may be introduced as in the example shown. The linings are nailed or screwed to rough framed grounds 1 in. in thickness plugged or nailed to the wall or partition. *Architraves* are the borders or finishing mouldings fixed around a window or door opening, and screwed or nailed to wood grounds (fig. 7). Polished hard wood architraves may be secretly fixed, *i.e.*, without the heads of nails or screws showing on the face, by putting screws into the grounds with their heads slightly projecting, and hanging the moulding on them by means of keyhole slots formed in the back.

Doors may be made in a variety of ways. The simplest form, the *common ledged* door, consists of vertical boards with plain or matched joints nailed to horizontal battens which correspond to the rails in framed doors. For openings over 2 ft. 3 in. wide, the doors should be furnished with braces. *Ledged and braced* doors are similar, but have, in addition to the ledges at the back, oblique braces which prevent any tendency of the door to drop. The upper end of the brace is birdsmouthed into the under side of the rail near the lock edge of the door and crosses the door in an oblique direction to be birdsmouthed into the upper edge of the rail below, near the hanging edge of the door. This is done between each pair of rails.

Framed ledged and braced doors are a further development of this form of door. The framing consists of lock and hanging styles, top, middle and bottom rails, with oblique braces between the rails. These members are tenoned together and the door sheathed with boarding. The top rail and styles are the full thickness of the door, the braces and middle and bottom rails being less by the thickness of the sheathing boards, which are tongued into the top rail and styles and carried down over the other members to the bottom of the door. The three forms of door described above are used mainly for temporary purposes, and stables, farm buildings and outhouses of all descriptions.

The doors in dwelling-houses and other buildings of a like character are commonly *framed and panelled* in one of the many ways possible. The framing consists of styles, rails and muntins or mountings, and these members are grooved to receive and hold the panels, which are inserted previously to the door being glued and wedged up. The common forms are doors in four or six rectangular panels, and although they may be made with any form and number of panels, the principles of construction remain the same. The example shown in fig. 7 is of a five-panel door, with bolection moulded raised panels on one side, and moulded and flat

panels on the other (fig. 9).

A clear idea of the method of jointing the various members may be obtained from fig. 10. The tongues of raised panels should be of parallel thickness, the bevels being stopped at the moulding. The projecting ends or *horns* of the styles are kept on until commencement of the process of hanging, as they prevent the ends of the styles being damaged.

Where there is a great deal of traffic in both directions *swing doors,* either single or double, are used. To open them it is necessary simply to push, the inconvenience of turning a handle and shutting the door after passing through being avoided, as a spring causes the door to return to its original position without noise. They are usually glazed and should be of substantial construction. The door is hinged at the top on a steel pivot; the bottom part fits into a metal shoe connected with the spring, which is placed in a box fixed below the floor.

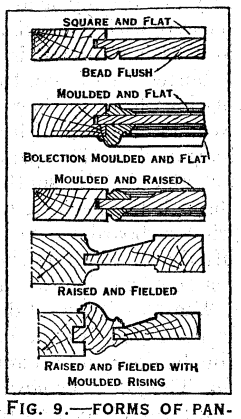

FIG. 9.—FORMS OF PANELLING

For large entrances, notably for hotels and banks, a form of door working on the *turnstile* principle is frequently adopted. It is formed of four leaves fixed in the shape of a cross and working on top and bottom central ball-bearing steel pivots, in a circular framing which forms a kind of vestibule. The leaves of the door are sometimes fitted with slips of india-rubber at their edges which, fitting close to the circular framing, prevent draughts.

When an elegant appearance is desired, and it is at the same time necessary to keep the cost of production as low as possible, doors of pine or other soft wood are sometimes covered with a *veneer* or thin layer of hard wood, such as oak, mahogany or teak, giving the appearance of a solid door of the better material. Made in the ordinary way, however, the shrinkage or warping of the soft wood is very liable to cause the veneer to buckle and peel off. Veneered doors made on an improved method obviating this difficulty have been placed on the market by a Canadian company. The core is made up of strips of pine with the grain reversed, dried at a temperature of 200° F, and glued up under pressure. Both the core and the hard wood veneer are grooved over their surfaces, and a special damp-resisting glue is applied; the two portions are then forced together under hydraulic pressure. By reason of their construction these doors possess the advantages of freedom from shrinking, warping and splitting, defects which are all too common in the ordinary veneered.

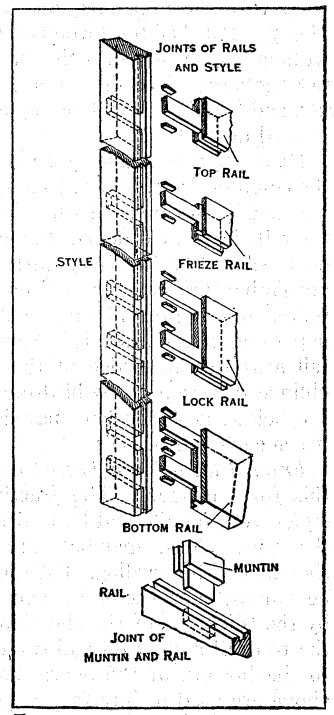

FIG. 10.—JOINTS IN DOOR FRAMING

Ordinary animal glue should not be used in work exposed to the weather as it absorbs damp and thus hastens decay; in its place a compound termed *beaumontique,* made of white lead, linseed oil and litharge, should be used.

SPECIAL WORK

Church Joinery.—Joinery work in connection with the fitting up of church interiors must be regarded as a separate branch of the art. Pitchpine is often used, but the best work is executed in English oak; and when the screens, stalls and seating are well designed and made in this material, a distinction and dignity of effect are added to the interior of the church which cannot be obtained in any other medium. The work is often of the richest character, and frequently enriched with elaborate carving. Many beautiful specimens of early work are to be seen in the English Gothic cathedrals and churches; good work of a later date will be found in many churches and public buildings erected in more recent years. Fine examples of Old English joinery exist at Hampton Court Palace, the Temple Church in London, the Chapel of Henry VII. in Westminster Abbey and Haddon Hall. Specimens of modern work are to be seen in Beverley Minster in Yorkshire, the Church of St. Etheldreda in Ely Place, London, and the Wycliffe Hall Chapel at Oxford. Other examples both ancient and modern abound in the country.

Machine-made Joinery.—The development and general adoption of wood-working machinery has for many years been tending towards the elimination of the highly skilled joiner, but the tendency is counteracted and skilled training assured by the increase in the number and efficiency of day and evening trade training schools. The number of voluntary students, comprising apprentices, improvers and journeymen, attending evening classes for joiners in one institute alone in the London area during the evening school session 1927–28 was in the neighbourhood of 200.

The joiner's hand operations necessary in producing common types of machine-made joinery are of a semi-skilled nature, involving little more than the cramping and wedging up of framing; even the final process of glass papering is frequently performed by machinery. Where there is a well equipped machine-shop highly skilled hand work is only required in the production of high class hard-wood joinery, and in connection with work of double curvature, such as geometrical stairs and handrails, door and window frames that are curved in both plan and elevation, and in examples of joinery involving complex moulding intersections such as may occur in a moulded lantern light or an open roof. To set out and work these and other examples of geometrical wood-work, the joiner must have a sound knowledge of three dimensional geometry in addition to a high standard of manual dexterity.

The skill and adaptability of the joiner was of great service during the World War, for he proved to be capable of performing all the wood-work operations necessary in the production of aircraft, including propeller shaping, without any preliminary period of special training.

Ironmongery.—In regard to the finishing of a building, no detail calls for greater consideration than the selection and accurate fixing of suitable ironmongery, which includes the hinges, bolts, locks, door and window fittings, and the many varieties of metal finishings required for the completion of a building. The task of the selection belongs to the employer or the architect; the fixing is performed by the joiner.

Of *hinges,* the variety termed *butts* are in general use for hanging doors, and are so called from being fitted to the butt edge of the door. They should be of wrought metal, cast-iron butts being liable to snap should they sustain a shock. *Lifting butts* are made with a removable pin to enable the door to be removed and replaced without unscrewing. *Rising butts* have oblique joints which cause the door to rise and clear a thick carpet and yet make a close joint with the floor when shut. Hinges of brass or gun-metal are used in special circumstances. Common forms of hinges used on ledged doors are the *cross garnet* and the *strap.* There are many varieties of *spring hinges* designed to bring the door automatically to a desired position.

Among *locks and fastenings* the ordinary *barrel* or *tower* bolt needs no description. The *flush barrel* is a bolt let in flush with the face of a door. The *espagnolette* is a development of the tower bolt and extends the whole height of the door; a handle at a convenient height, when turned, shoots the bolts at the top and bottom simultaneously. Their chief use is for French casements. The *padlock* is used to secure doors by means of a staple and eye. The *stock* lock is a large rim lock with hard wood casing and is used for stables, church doors, etc.; it is in the form of a dead lock opened only by a key, and is often used in conjunction with a Norfolk latch. The *metal cased* rim lock is a cheap form for domestic and general use. The use of a rim lock obviates the necessity of forming a mortise in the thickness of the door which is required

when a mortise lock is used. The Yale lock is now generally used for every ordinary type of door. *Finger plates* add greatly to the good appearance of a door, and protect the painted work. *Sash fasteners* are fixed at the meeting rails of double hung sashes to prevent the window being opened from the outside and serve also to clip the two sashes tightly together. They should be of a pattern to resist the attack of a knife inserted between the rails. *Sash lifts* and *pulls* of brass or bronze are fitted to large sashes. Ornamental *casement stays* and fasteners in many different metals are made in numerous designs and styles. *Fanlight openers* for single lights, or geared for a number of sashes, may be designed to suit positions difficult of access.

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JOINT: *see* PRACTICE AND PROCEDURE.

JOINT ACCOUNT, a financial and business term having three applications: (1) A temporary business association of two or more persons acting as partners, often known as a "joint venture" or "joint adventure." The legal rights and responsibilities of such partners are similar to those of members of a general partnership although there are several points of difference established by law. (2) A bank account in which two or more persons have joint interests or rights, often known as a joint deposit. The account is made and carried under the names of the several owners, connected by the word "and." It is the joint property of all of them, and is generally subject to withdrawals by cheque, although the method of signature is a matter of agreement between the joint depositors and the bank. This form of deposit is used very commonly by husband and wife as a matter of convenience. In case of the death of one of the joint depositors the account becomes the property of the survivor without administratorship. (3) Several banking or security houses associated as a syndicate in the marketing of a large block of securities to the public.

(J. H. B.)

JOINT-FIRS (*Ephedra*), a genus of peculiar shrubs of the family Gnetaceae, comprising 25 species native to warm temperate regions. Six species, commonly known as Mexican tea or joint-pine, occur in the western United States, widely distributed in arid districts from Wyoming to California and southward to western Texas and Mexico. A Chinese species, *Ephedra sinica,* yields the important drug ephedrine. (*See* EPHEDRINE; GYMNOSPERMS.)

JOINTS, in engineering, may be classed either (*a*) according to their material, as in stone or brick, wood or metal; or (*b*) according to their object, to prevent leakage of air, steam or water, or to transmit force, which may be thrust, pull or shear; or (*c*) according as they are stationary or moving ("working" in technical language). Many joints, like those of ship-plates and boiler-plates, have simultaneously to fulfil both objects mentioned under (*b*).

All stone joints of any consequence are stationary. It being uneconomical to dress the surface of the stones so as to be flat accurately, a layer of mortar or other cementing material is laid between them. If the ingredients of the mortar are chosen so that when hard it has about the same coefficient of compressibility as the stone or brick, the pressure will be nearly uniformly distributed. The cement also adheres to the stone or brick, and allows a certain amount of tension to be borne by the joint. It likewise acts to prevent the stones from slipping one on the other. The joints are made partially impervious to air or water by "pointing" their outer edges with a superior quality of cement.

Wood joints are also nearly all stationary. They are made partially fluid-tight by "grooving and tenoning," and by "caulking" with oakum or similar material. The wood swells when it is saturated with water, the edges of the joints press closer together, and the joints become tighter. Relatively to its strength, wood is a better material than iron for transmitting a thrust past a joint, for when a heavy pressure comes on the joint all the small irregularities of the surfaces in contact are crushed out and there results an approximately uniform distribution of the pressure over the whole area (*i.e.,* if there be no bending forces). To attain this result the abutting surfaces should be well fitted together, and the bolts binding the pieces together should be arranged so that they will not interfere with the timber surfaces coming into this close contact. Owing to its weak shearing strength parallel to the fibre, timber is peculiarly unfitted for tension joints. If the pieces exerting the pull are simply bolted together with wooden or iron bolts, the stresses become intensely localized in the immediate neighbourhood of the bolts. A tolerably strong timber tension joint can, however, be made by means of iron plates covering the joint and bolted together through the wood. These plates should have their surfaces which lie against the wood ribbed in a direction transverse to the pull. The bolts should fit their holes slackly, and should be well tightened up to make the ribs sink into the surface of the timber. There will then be very little localized shearing stress brought upon the interior portions of the wood.

Iron and the other commonly used metals possess in variously high degrees the qualities desirable in substances out of which joints are to be made. The joint ends of metal pieces can be fashioned to any desired form and size. Metallic surfaces can be cut smoothly and evenly to ensure the closest contact over their whole areas of contact. This is of the highest importance, especially in joints designed to transmit a force or an electric current. Wrought-iron and mild steel are especially suitable for joints where there is not continuous rapid motion. Where such motion occurs, a bushing or layer of brass is inserted. The joint then possesses the good frictional qualities of brass. Leakage past moving metal joints can be prevented by cutting the surfaces very accurately to fit each other. Steam-engine slide valves and their seats, and piston "packing-rings" and the cylinders they work to and fro in, may be cited as examples. A subsidiary compressible "packing" is sometimes employed in the "stuffing boxes" which prevent the escape of steam from cylinders through the piston-rod hole of steam engines. Fixed metal joints are made fluid tight—(*a*) by caulking a riveted joint, *i.e.,* by hammering in the edge of the metal with a square-edged chisel; (*b*) by the insertion between the surfaces of a layer of various cements; (*c*) by the insertion of a layer of soft solid substance called "packing" or "insertion."

Apart from cemented and glued joints, most joints are formed by cutting one or more holes in the ends of the pieces to be joined, and inserting pins in these holes. The word "pin" is technically restricted to mean a cylindrical pin in a movable joint. The word "bolt" is used when the cylindrical pin is screwed up tight with a nut so as to be immovable. When the pin is not screwed, but is fastened by being beaten down on either end, it is called a "rivet." The pin is sometimes rectangular in section, and tapered or parallel lengthwise. "Gibs" and "cotters" are examples of the latter. Fixed joints are seldom subject to simple compression in the direction of their length, though they are frequently subject to simple tension in that direction. A good example is the joint between a steam cylinder and cylinder head, where the bolts have to resist the whole thrust of the steam and at the same time to keep the joint steam-tight.

JOINTS, in geology, are the dividing planes by which nearly all rocks are traversed more or less completely and which extend in various directions and at various inclinations, generally at a high angle, to the horizontal. Unlike faults, joints are fissures where little or no movement between the blocks has taken place, though the presence of slickensides—striae on the smooth faces—show that in some cases there has been some rubbing movement. Jointing cannot extend to a very great depth: for towards the base of the "zone of fracture," estimated by Van Hise at about 12 km. in rigid rocks, joints and faults cannot form since the rocks tend to flow in relief of strain.

In unweathered rocks, joints, though present, are inconspicuous, but on weathering become marked, especially in a soluble rock such as limestone. Sedimentary rocks usually show two sets of joints perpendicular to the bedding and to one another, one set in the direction of dip, the other of strike. The more prominent set, if well developed and running for long distances, forms a set of

master joints. Individual fissures cannot be traced very far, since joints run into one another, though their approximate general parallelism is evident. The distance between joints varies from an inch or so to several yards: in alternating strata the degree of jointing may vary from bed to bed. In igneous rocks jointing is generally quite irregular, but in granite two vertical sets at right angles to one another, with another set of cross joints approximately horizontal, are frequently found. These cross joints are of a different origin: they are the effect of weathering since they conform to the surface of the ground and die out with depth. Intrusive sills and dikes in many places show a columnar structure perpendicular to the cooling surfaces, where jointing has been so symmetrical that the sheets weather out into polygonal prismatic columns: in the well known Giant's Causeway the columns are hexagonal implying three equally developed sets of joints.

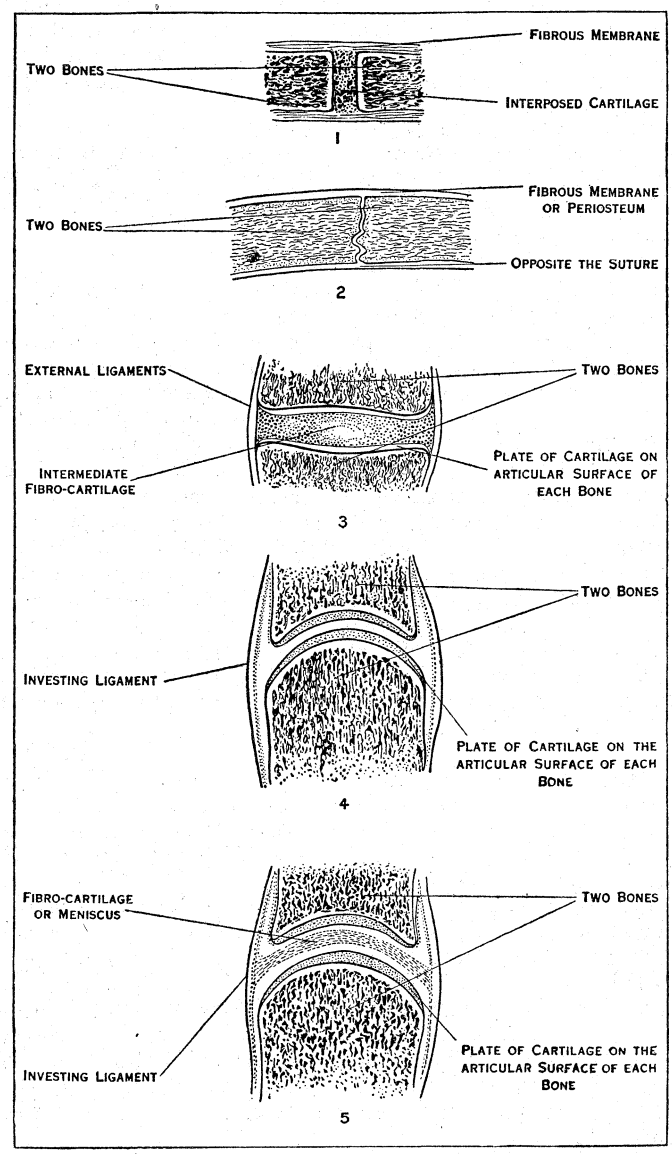
Near the surface joints are more or less open, especially in limestones. Solution by percolating water controlled by joints has led to the formation of large caves and underground rivers several miles in length. Highly jointed rocks are objectionable as a source of potable water; since such water is likely to be contaminated by surface impurities. Quarrying operations are much helped by the presence of a well developed joint system combined with the bedding planes of weakness. Large monoliths are obtainable from granite where the vertical jointing, widely spaced, is not interrupted by cross jointing.

Origin of Joints.—The principal cause of jointing in both stratified and igneous rocks is crustal movement. Certainly stratified rocks subjected to compression, tension and torsion must crack and fissure in the upper parts of the earth's crust. Thus strike and dip joints would originate along the axes of folds. The passage of earthquake waves would account for jointing in undisturbed horizontal strata, which is otherwise hardly explicable if folding is absent. Contraction on drying or crystallization also contributes to minor irregular jointing, as do also expansion and contraction due to epigene agents or the intrusion of heated igneous rocks. The columnar structure of basalt is due to the cooling effect of the walls between which it has been intruded and to which the structure is always at right angles. (C. B. B.)

JOINTS AND LIGAMENTS. Anatomically a joint is any connection between two or more adjacent parts of the skeleton, whether they be bone or cartilage. Joints may be immovable, like those of the skull, or movable, like the knee.

Immovable joints (*synarthroses*) are adaptations to growth and are always between bones. When growth ceases the bones often unite (*synostosis*). Immovable joints never have a cavity between the two bones; there is simply an unaltered layer of the substance in which the bone has been laid down. If the bone is being deposited in cartilage, a layer of cartilage intervenes, and the joint is called *synchondrosis* (fig. 1), but if in membrane, a thin layer of fibrous tissue persists, and the joint is then known as a *suture* (fig. 2). Good examples of synchondroses are the epiphysial lines separating the epiphyses from the shafts of developing long bones, or the occipito-sphenoid synchondrosis in the base of the skull. Examples of sutures are plentiful in the vault of the skull. There are two kinds of fibrous synarthroses, which differ from sutures in that they do not synostose. One of these is a *schindylesis,* in which a thin plate of one bone is received into a slot in another, as in the joint between the sphenoid and vomer. The other is a peg and socket joint, or *gomphosis,* found where the fangs of the teeth fit into the alveoli or tooth sockets in the jaws.

Movable joints (*diarthroses*) are divided into those in which there is much and little movement. When there is little movement the term half-joint or *amphiarthrosis* is used. The simplest kind of amphiarthrosis is that in which two bones are connected by bundles of fibrous tissue which pass at right angles from the one to the other; such a joint differs from a suture by the facts that the intervening fibrous tissue is organized into bundles (*interosseous ligaments*), and that it does not synostose when growth stops. A joint of this kind (*syndesmosis*) depends upon the amount of movement which is brought about by the muscles on the two bones. As an instance of this the inferior tibiofibular joint of mammals may be cited. In man this is a syndesmosis, and there is only a slight play between the two bones. In the mouse there is no movement, and the two bones form a synchondrosis between them which speedily becomes a synostosis, while in many Marsupials there is free mobility between the tibia and fibula, and a definite synovial cavity is established. The other variety of amphiarthrosis or half-joint is the *symphysis,*



FIGS. 1–5.—JOINTS

Vertical sections through (1) Synchondrosis, (2) Cranial Suture, (3) Amphiarthrodial joint, (4) Diarthrodial joint, (5) Diarthrodial joint with interposed fibro-cartilage, or meniscus

which differs from the syndesmosis in having both bony surfaces lined with cartilage and between the two cartilages a layer of fibro-cartilage, the centre of which often softens and forms a small synovial cavity. Examples of this are the symphysis pubis, the mesosternal joint, and the joints between the bodies of the vertebrae (fig. 3).

The *true diarthroses* are joints in which there is free movement. The opposing surfaces of the bones are lined with the unossified remnant of the cartilaginous model in which they are formed (fig. 4). Between the two cartilages is the *joint cavity,* while surrounding the joint is the *capsule* (fig. 4), which is formed chiefly by the superficial layers of the original periosteum or perichondrium, perhaps strengthened externally by tendinous insertions of muscles. The greater the intermittent strain on any part of the capsule the thicker it is. Lining the interior of the capsule, and all other parts of the joint cavity except where the

articular cartilage is present, is the *synovial membrane* (fig. 4, dotted line); this is a layer of endothelial cells which secrete the synovial fluid to lubricate the interior of the joint.

A *compound diarthrodial joint* is one in which the joint cavity is divided partly or wholly into two by a *meniscus* or *inter-articular fibro-cartilage* (fig. 5).

The shape of the joint cavity varies greatly, and the different divisions of movable joints depend upon it. It is often assumed that the structure of a joint determines its movement, but the converse view has much in its favour. Thus, the mobility of the metacarpo-phalangeal joint of the thumb in many working men is less than it is in many women who use needles and thread, or in many medical students who use pens and scalpels, and the slightly movable thumb has quite a differently shaped articular surface from the freely movable one (see *J. Anat. and Phys.*, xxix., 446).

The freely movable joints (true diarthrosis) are classified as follows:—

(1) *Gliding joints* (*Arthrodia*), in which the articular surfaces are flat, as in the carpal and tarsal bones.

(2) *Hinge joints* (*Ginglymus*), such as the elbow and inter-phalangeal joints.

(3) *Condyloid joints* (*Condylarthrosis*), allowing flexion and extension as well as lateral movement, but no rotation. The meta-carpo-phalangeal and wrist joints are examples of this.

(4) *Saddle-shaped joints* (*Articulus sellaris*), allowing the same movements as the last with greater strength. The carpo-meta-carpal joint of the thumb is an example.

(5) *Ball and socket joints* (*Enarthrosis*), allowing free movement in any direction, as in the shoulder and hip.

(6) *Pivot-joint* (*Trochoides*), allowing only rotation round a longitudinal axis, as in the radio-ulnar joints.

Embryology.—Joints are developed in the mesenchyme, or that part of the mesoderm which is not concerned in the formation of the serous cavities. The synarthroses may be looked upon merely as a delay in development. The diarthroses represent an arrest of development at an earlier stage, for a part of the original embryonic tissue remains as a plate of round cells, while the neighbouring two rods chondrify and ossify. This plate may become converted into fibro-cartilage, in which case an amphiarthrodial joint results, or may become absorbed in the centre to form a joint cavity, or, if this absorption occurs in two places, two joint cavities with an intervening meniscus may result. Although, ontogenetically, there is little doubt that menisci arise in the way just mentioned, the teaching of comparative anatomy suggests that, phylogenetically, they originate as an ingrowth from the capsule pushing the synovial membrane in front of them. In the human foetus the joint cavities are all formed by the tenth week of intra-uterine life.

ANATOMY

Joints of the Axial Skeleton.—The bodies of the vertebrae except those of the sacrum and coccyx are separated, and yet connected, by the *intervertebral disks*. These are formed of alternating concentric rings of fibrous tissue and fibro-cartilage, with an elastic mass in the centre. The bodies are also bound together by *anterior* and *posterior common ligaments*. The odontoid process of the axis fits into a pivot joint formed by the anterior arch of the atlas in front and the *transverse ligament* behind; it is attached to the basioccipital bone by two strong *lateral check ligaments*, and, in the mid line, by a feebler *middle check ligament* which is regarded morphologically as containing the remains of the notochord. This *atlanto-axial joint* is the one which allows the head to be shaken from side to side. Nodding the head occurs at the *occipito-atlantal joint*, which consists of the two occipital condyles received into the cup-shaped articular facets on the atlas and surrounded by capsular ligaments. The neural arches of the vertebrae articulate one with another by the *articular facets*, each of which has a capsular ligament. In addition to these the laminae are connected by the very elastic *ligamenta subflava*. The spinous processes are joined by *interspinous ligaments*, and their tips by a *supraspinous ligament*, which in the neck is continued from the spine of the seventh cervical vertebrae to the external occipital crest and protuberance as the *ligamentum nuchae*, a thin, fibrous, median septum between the muscles of the back of the neck.

The combined effect of all these joints and ligaments is to allow the spinal column to be bent in any direction or to be rotated, though only a small amount of movement occurs between any two vertebrae.

The heads of the ribs articulate with the bodies of two contiguous thoracic vertebrae and the disk between, and ligaments strengthen each articulation. At the junction of the ribs with their cartilages the periosteum simply becomes perichondrium and binds the two structures together. Where the cartilages, however, join the sternum, or where they join one another, diarthrodial joints with synovial cavities are established. In the case of the second rib this is double, and in that of the first usually wanting.

Comparative Anatomy. For the convexity or concavity of the vertebral centra in different classes of vertebrates, *see* SKELETON: *Axial.* The intervertebral disks first appear in the Crocodilia, the highest existing order of reptilia. The *ligamentum nuchae* is a strong elastic band in the Ungulata which supports the weight of the head. In the Carnivora it only reaches as far forward as the spine of the axis.

Jaw Joint.—This occurs between the sigmoid cavity of the temporal bone and the condyle of the jaw. Between the two there is an interarticular fibro-cartilage or meniscus, and the joint is surrounded by a capsule of which the outer part is the thickest. On first opening the mouth, the joint acts as a hinge, but very soon the condyle begins to glide forward on to the eminentia articularis (*see* SKULL) and takes the meniscus with it. This gliding movement between the meniscus and temporal bone may be separately brought about by protruding the lower teeth in front of the upper, or, on one side only, by moving the jaw across to the opposite side.

Comparative Anatomy. The joint between the temporal and mandibular bones is only found in Mammals; in the lower vertebrates the jaw opens between the quadrate and articular bones. In the Carnivora it is a perfect hinge; in many Rodents only the antero-posterior gliding movement is present; while in the Ruminants the lateralizing movement is the chief one. Sometimes, as in the Ornithorhynchus, the meniscus is absent.

Joints of the Upper Extremity.—The *sterno-clavicular articulation* is a gliding joint with an intervening meniscus, and allows slight upward and downward and forward and backward movements. There is a well-marked capsule, of which the anterior part is strongest. The two clavicles are joined across the top of the presternum by an *interclavicular ligament*.

The *acromio-clavicular articulation* is also a gliding joint, but allows a swinging or pendulum movement of the scapula on the clavicle. The upper part of the capsule is strongest, and from it hangs down a partial meniscus into the cavity.

Comparative Anatomy. Bland Sutton regards the inter-clavicular ligament as a vestige of the interclavicle of Reptiles and Monotremes. The menisci are only found in the Primates, but it must be borne in mind that many Mammals have no clavicle, or a very rudimentary one.

Shoulder Joint.—This is a good example of the ball and socket variety. Its most striking characteristic is mobility at the expense of strength. The small size of the glenoid cavity in comparison with the head of the humerus, and the great laxity of the capsule, favour this, although the glenoid cavity is slightly deepened by a fibrous lip, round its margin. The coracoid and acromial processes of the scapula, with the *coraco-acromial ligament* between them, serve as an overhanging protection to the joint, while the biceps tendon runs over the head of the humerus, inside the capsule, though surrounded by a sheath of synovial membrane. Were it not for these two extra safeguards the shoulder would be even more liable to dislocation than it is. Inside the front of the capsule are three folds of synovial membrane, called *gleno-humeral folds*.

Comparative Anatomy. In the lower Vertebrates the shoulder

is adapted to support rather than prehension and is not so freely movable as in the Primates. The tendon of the biceps has evidently sunk through the capsule into the joint, and even when it is intra-capsular there is usually a double fold connecting its sheath of synovial membrane with that lining the capsule. In Man this has been broken through, but remains of it persist in the *superior gleno-humeral fold*. The *middle gleno-humeral fold* is the vestige of a strong ligament, which steadies and limits the range of movement of the joint in many lower Mammals.

Elbow Joint.—This is a hinge, though its transverse axis of movement is not quite at right angles to the central axis of the limb, but is lower internally than externally. This tends to bring the forearm towards the body when the elbow is bent. The elbow is a great contrast to the shoulder, as the trochlea and capitellum of the humerus are closely adapted to the sigmoid cavity of the ulna and head of the radius (*see* SKELETON: *Appendicular*); consequently movement in one plane only is allowed, and the joint is a strong one. The capsule is really continuous. The joint cavity communicates freely with that of the superior radio-ulnar articulation.

The *radio-ulnar joints* are three: the upper one is an example of a pivot joint, and in it the disk-shaped head of the radius rotates in a circle formed by the lesser sigmoid cavity of the ulna internally and the *orbicular ligament* in the other three quarters.

The *middle radio-ulnar articulation* is simply an interosseous membrane, the fibres of which run downward and inward from the radius to the ulna.

The *inferior radio-ulnar joint* is formed by the disc-shaped lower end of the ulna fitting into the slightly concave sigmoid cavity of the radius. Below, the cavity of this joint is shut off from that of the wrist by a *triangular fibro-cartilage*. The movements allowed at these three articulations are called pronation and supination of the radius. The head of that bone twists, in the orbicular ligament, round its central vertical axis for about half a circle. Below, however, the whole lower end of the radius circles round the lower end of the ulna, the centre of rotation being close to the styloid process of the ulna. The radius, therefore, in its pronation, describes half a cone, the base of which is below, and the hand follows the radius.

Comparative Anatomy. In pronograde Mammals the forearm is usually permanently pronated, and the head of the radius, instead of being circular and at the side of the upper end of the ulna, is transversely oval and in front of that bone, occupying the same place as the coronoid process of the ulna in Man. This type of elbow, which is adapted simply to support and progression, is best seen in the Ungulata; in them both lateral ligaments are attached to the head of the radius, and there is no orbicular ligament, since the shape of the head of the radius does not allow of any supination. The olecranon process of the ulna forms merely a posterior guide or guard to the joint, but transmits no weight. No better example of the maximum changes which the uses of support and prehension bring about can be found than in contrasting the elbow of the Sheep or other Ungulate with that of Man. Towards one or other of these types the elbows of all Mammals tend. It may be roughly stated that, when pronation and supination to the extent of a quarter of a circle are possible, an orbicular ligament appears.

Wrist Joint.—This lies between the radius and triangular fibro-cartilage above, and the scaphoid, semilunar and cuneiform bones below. It is a condyloid joint allowing flexion and extension round one axis, and slight lateral movement (abduction and adduction) round the other. There is a well-marked capsule. The joint cavity is shut off from the inferior radio-ulnar joint above, and the intercarpal joints below.

The *intercarpal joints* are gliding articulations, the various bones being connected by palmar, dorsal, and a few interosseous ligaments, but only those connecting the first row of bones are complete, and so isolate one joint cavity from another. That part of the intercarpal joints which lies between the first and second rows of carpal bones is called the *transverse carpal joint*, and at this a good deal of the movement which seems to take place at the wrist really occurs.

The *carpo-metacarpal articulations* are, with the exception of that of the thumb, gliding joints, and continuous with the great intercarpal joint cavity. The carpo-metacarpal joint of the thumb is the best example of a saddle-shaped joint in Man. It allows forward and backward and lateral movement, and is very strong.

The *metacarpo-phalangeal joints* are condyloid joints like the wrist, and are remarkable for the great thickness of the palmar ligaments of their capsules. In the four inner fingers these are joined together by the *transverse metacarpal ligament*.

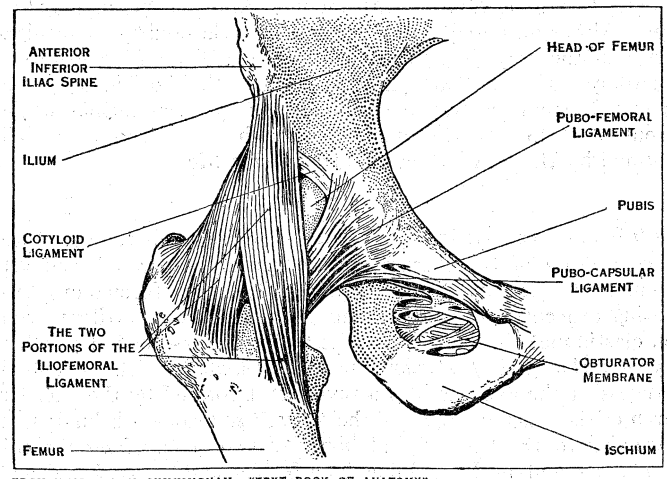
The *interphalangeal articulations* are simple hinges surrounded by a capsule, of which the dorsal part is very thin.

Comparative Anatomy. The wrist joint of the lower Mammals allows less lateral movement than does that of Man, while the lower end of the ulna is better developed and is received into a cup-shaped socket formed by the cuneiform and pisiform bones. Unless there is pretty free pronation and supination, the triangular fibro-cartilage is represented by an interosseous ligament, which may be continuous above with the interosseous membrane between the radius and ulna. In most Mammals the wrist is divided into two lateral parts, as in the human foetus, but free pronation and supination seem to cause the disappearance of the septum.

Joints of the Lower Extremity.—The *sacro-innominate articulation* consists of the *sacro-iliac joint* and the *sacro-sciatic ligaments*. The former is one of the amphiarthroses or half-joints by which the sacrum is bound to the ilium. The mechanism of the human sacrum is that of a suspension bridge slung between the two pillars or ilia by the very strong *posterior sacro-iliac ligaments* which represent the chains. The axis of the joint passes through the second sacral vertebra, but the sacrum is so nearly horizontal that the weight of the body, which is transmitted to the first sacral vertebra, tends to tilt that part down. This tendency is corrected by the *sacro-sciatic ligaments*, which fasten the lower part of the sacrum to the tuberosity and spine of the ischium, so that, although the sacrum is a suspension bridge when looked at from behind, it is a lever of the first kind when seen from the side or in sagittal section.

The *pubic symphysis* is the union between the two pubic bones. It has all the characteristics of a symphysis, already described, and may have a small median cavity.

Hip Joint.—This, like the shoulder, is a ball and socket, but does not allow such free movement because the socket or



FROM HEPBURN IN CUNNINGHAM, "TEXT BOOK OF ANATOMY"

FIG. 6.—DISSECTION OF HIP JOINT. ANTERIOR VIEW, SHOWING ATTACHMENT OF LIGAMENTS TO FEMUR, ILIUM, ISCHIUM AND PUBIS

acetabulum is deeper than the glenoid cavity and the capsule is not so lax. At the same time the loss of mobility is made up for by increased strength. The capsule has three thickened bands of which the most important is the *ilio-femoral* or *Y-shaped ligament of Bigelow*. The stalk of the Y is attached to the anterior inferior spine of the ilium, while the two limbs are fastened to the upper and lower parts of the spiral line of the femur. The ligament is so strong that it hardly ever ruptures in a dislocation of the hip. As a plumb-line, dropped from the centre of gravity of

the body, passes behind the centre of the hip joint, this ligament, lying as it does in front of the joint, takes the strain in Man's erect position. The other two thickened parts of the capsule are known as *pubo-femoral* and *ischio-femoral,* from their attachments. Inside the capsule, and deepening the margin of the acetabulum, is a fibrous rim known as the *cotyloid ligament,* which grips the spherical head of the femur and is continued across the cotyloid notch as the *transverse ligament.* The floor of the acetabulum has a horseshoe-shaped surface of articular cartilage, concave downward, and, occupying the "frog" of the horse's hoof, is a mass of fat called the *Haversian pad.* Attached to the inner margin of the horseshoe, and to the transverse ligament where that is deficient, is a reflexion of synovial membrane which forms a covering for the pad and is continued as a tube to the depression on the head of the femur. This reflexion carries blood-vessels and nerves to the femur, and also contains fibrous tissue from outside the joint. It is known as the *ligamentum teres.*

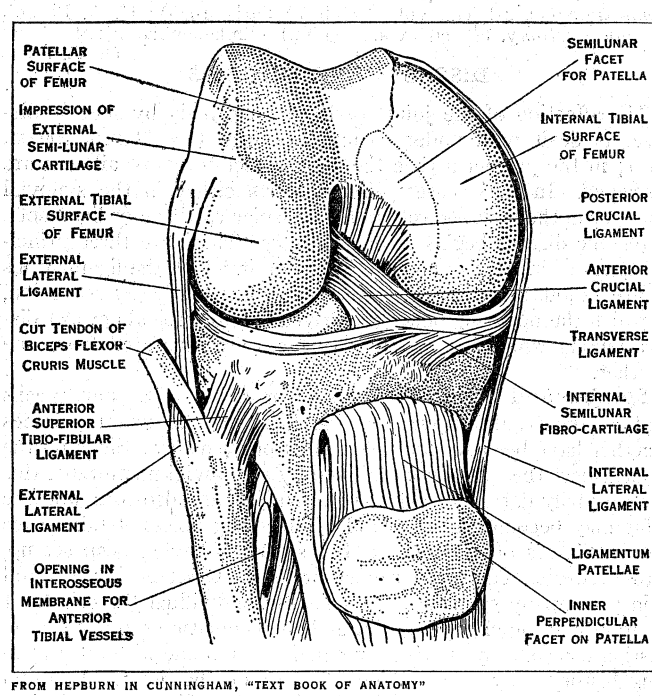
Comparative Anatomy. Bland Sutton regards the *ilio-femoral ligament* as an altered muscle, the scansorius, and the *ligamentum teres* as the divorced tendon of the pectineus muscle. The subject requires much more investigation. In many Mammals, and among them the Orang, there is no ligamentum teres. In others, such as the Armadillo, the structure has not sunk right into the joint, but is connected with the pubo-femoral part of the capsule.

Knee Joint.—This is a hinge formed by the condyles and trochlea of the femur, the patella, and the head of the tibia. The capsule is formed in front by the ligamentum patellae, and on each side special bands form the lateral ligaments. On the outer side there are two of these: the anterior or *long external lateral ligament* is a round cord running from the external condyle to the head of the fibula, while the posterior is slighter and passes from the same place to the styloid process of the fibula. The *internal lateral ligament* is a flat band which runs from the inner condyle of the femur to the internal surface of the tibia some two inches below the level of the knee joint. The posterior part of the capsule is strengthened by an oblique bundle of fibres running upward and outward from the semimembranosus tendon (*posterior ligament of Winslow*).

The intra-articular structures are numerous and interesting. Passing from the head of the tibia, in front and behind the spine, are the *anterior* and *posterior crucial ligaments.* These cross like an X. The *semilunar fibro-cartilages*—external and internal—are partial menisci, each of which has an anterior and a posterior cornu by which they are attached to the head of the tibia in front and behind the spine. They are also attached round the margin of the tibial head by a *coronary ligament,* but the external one is more movable than the internal, and this perhaps accounts for its coronary ligament being less often ruptured and the cartilage displaced than the inner one is. The external cartilage is broader, and forms more of a circle than the internal. The synovial cavity of the knee runs up, deep to the extensor muscles of the thigh, for about two inches above the top of the patella, forming the *bursa suprapatellaris.* At the lower part of the patella it covers a pad of fat, which lies between the ligamentum patellae and the front of the head of the tibia, and is carried up as a narrow tube to the lower margin of the trochlear surface of the femur. The tendon of the popliteus muscle is an intracapsular structure, and is therefore covered with a synovial sheath. There are a large number of bursae near the knee joint, one of which, common to the inner head of the gastrocnemius and the semimembranosus, often communicates with the joint. The hinge movement of the knee is accompanied by a small amount of external rotation at the end of extension, and a compensatory internal rotation during flexion. This slight twist is enough to tighten up almost all the ligaments so that they may take a share in resisting over-extension, because, in the erect position, a vertical line from the centre of gravity of the body passes in front of the knee.

Comparative Anatomy. In some Mammals, *e.g.,* Bradypus and Ornithorhynchus, the knee is divided into three parts, two condylotibial and one trochleo-patellar, by synovial folds. In a typical Mammal the external *semilunar cartilage* is attached by its posterior horn to the internal condyle of the femur only. In the Monkeys and anthropoid Apes this cartilage is circular. The *semilunar cartilages* first appear in the Amphibia, and, according to B. Sutton, are derived from muscles which are drawn into the joint. When only one kind of movement (hinge) is allowed, as in the fruit bat, the cartilages are not found. In most Mammals the superior tibio-fibular joint communicates with the knee.

The *tibio-fibular articulations* resemble the radio-ulnar in position but are much less movable. The superior in Man is usually



FROM HEPBURN IN CUNNINGHAM, "TEXT BOOK OF ANATOMY"

FIG. 7.—DISSECTION OF KNEE-JOINT FROM THE FRONT. THE PATELLA IS SEEN THROWN DOWN TO SHOW THE INTERNAL SEMILUNAR CARTILAGE AND TRANSVERSE LIGAMENT

cut off from the knee and is a gliding joint; the middle is the interosseous membrane, while the lower is of a syndesmosis or fibrous half joint.

Ankle Joint.—This is a hinge, the astragalus being received into a lateral arch formed by the lower ends of the tibia and fibula. Backward dislocation is prevented by the articular surface of the astragalus being broader in front than behind. The anterior and posterior parts of the capsule are feeble, but the lateral ligaments are very strong, the external consisting of three separate fasciculi which bind the fibula to the astragalus and calcaneum. To avoid confusion it is best to speak of the movements of the angle as dorsal and plantar flexion.

The *tarsal joints* resemble the carpal in being gliding articulations. There are two between the astragalus and calcaneum, and at these, inversion and eversion of the foot largely occur. The inner arch of the foot is maintained by a very important ligament called the *calcaneo-navicular* or *spring ligament;* it connects the sustentaculum tali of the calcaneum with the navicular, and upon it the head of the astragalus rests. When it becomes stretched, flat-foot results. The tarsal bones are connected by dorsal, plantar and interosseous ligaments. The *long* and *short calcaneo-cuboid* are plantar ligaments of special importance, and maintain the outer arch of the foot.

The joints of the foot closely resemble those of the hand, except that the tarso-metatarsal joint of the great toe is not saddle-shaped.

Comparative Anatomy. The anterior fasciculus of the external lateral ligament of the ankle is only found in Man, and is probably an adaptation to the erect position. In animals with a long foot, such as the Ungulates and the Kangaroo, the lateral ligaments of the ankle are in the form of an X, to give greater protection against lateral movement. In certain marsupials a fibro-cartilage is developed between the external malleolus and the astragalus, and its origin from the deeper fibres of the external

lateral ligament of the ankle can be traced. These animals have a rotatory movement of the fibula on its long axis, in addition to the hinge movement of the ankle.

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(F. G. P.)

DISEASES AND INJURIES

The affection of the joints of the human body by specific diseases is dealt with under various headings (*see* RHEUMATISM, etc.); in the present article the more direct forms of ailment are discussed. In most cases, disease starts either in the synovial lining or in the bone—rarely in the articular cartilage or ligaments. Often the disease begins after an injury. There are three principal types of injury: (1) sprain or strain, in which the ligamentous and tendinous structures are stretched or lacerated; (2) contusion, in which the opposing bones are driven forcibly together; (3) dislocation, in which the articular surfaces are separated from one another.

Sprains and Strains.—A *sprain* or *strain* of a joint means that as the result of violence the ligaments holding the bones together have been suddenly stretched or even torn. Since on the inner aspect the ligaments are lined by a synovial membrane, this is necessarily damaged. Small blood-vessels are also torn, and the joint may become full of blood. If bleeding does not take place the swelling is not immediate, but synovitis having been set up, serous effusion comes on sooner or later. Often local heat and pain accompany synovitis. In a healthy individual the effects of a sprain may quickly pass off, but in a rheumatic or gouty person obstinate chronic synovitis may remain, and in one with a tuberculous history may start serious disease of the joint. A sprain should, therefore, be treated with rest and prolonged supervision. In a person of health and vigour a sprained joint should be at once bandaged. Wide pieces of adhesive strapping, layer on layer, form a useful support and may be the only treatment needed. If the sprain is followed by much synovitis a plaster of paris or leather splint may be applied, complete rest being secured for the limb. Later on, blistering or even "firing" may be found advisable.

Synovitis.—When a joint has been injured, slight or severe inflammation occurs in the damaged tissue. As a rule, it is the synovial membrane lining the fibrous capsule of the joint which first and chiefly suffers. Synovitis may, however, be due to causes other than mechanical injury, as when the interior of the joint is attacked by the micro-organisms of pyaemia (blood-poisoning), typhoid fever, pneumonia, rheumatism, gonorrhoea or syphilis. Under judicious treatment the synovitis generally clears up, but it may linger on and cause the formation of adhesions which may temporarily stiffen the joint; or it may, especially in tuberculous, pneumonic, septic or pyaemic infections, involve the cartilages, ligaments and bones in such serious changes as to destroy the joint, and possibly call for amputation.

The symptoms of synovitis include stiffness and tenderness in the joint. Movements cause pain. Effusion of fluid takes place, and there is fullness in the neighbourhood. If the inflammation is advancing, and particularly if it is going on to suppuration, the skin over the joint is flushed and hot. Especially is this the case if the joint is near the surface, as at the knee, wrist or ankle.

The treatment of an inflamed joint demands rest. This may be conveniently obtained by the use of a light splint, padding and bandages. Slight compression of the joint by a bandage aids absorption of the fluid. If the inflammation is extremely acute a warm fomentation or an ice-bag or an evaporating lotion will often give relief. As the inflammation is passing off, massage of the limb and of the joint will prove useful.

Chronic Disease of a Joint.—This may be the tailing off of an acute affection, and may eventually clear up. But if chronic disease lingers in the joint of a child or young person, the probability of its being tuberculous must be considered. In such a case prolonged and absolute rest with sunlight treatment (*see* HELIOTHERAPY) is necessary. As the disease clears up, the splint, if it has been used, may be gradually left off, but on the slightest indication of return of trouble the former restrictive measures must be again resorted to. Massage and gentle exercises may be given day by day, but there must be, as yet, no thought of "breaking down the stiffness." Many a joint has in such circumstances been wrecked by the manipulations of a "bone-setter."

Permanent Stiffness.—During the treatment of chronic joint disease, the question arises whether the joint will be left permanently stiff. If an inflamed joint is kept long on a splint it may eventually be found permanently stiff; but except from disuse and shortening of muscles, it is not the *rest* of the inflamed joint which causes the stiffness. The matter should be put thus: in tuberculous and other forms of chronic disease stiffness may ensue in spite of long-continued rest. It is the destructive disease, not the enforced rest, which causes it; for inflammation of a joint rest is absolutely necessary.

The causes of permanent stiffness are destructive changes wrought by the inflammation. In one case the synovial membrane is so far destroyed that the joint ever afterwards creaks at its work and easily becomes tired and painful. It is crippled but not destroyed. In another case the ligaments and cartilages are implicated as well as the synovial membrane, and when the disease clears up, only a small range of motion is left, which forcible flexion and other methods of vigorous treatment are unable materially to improve. In yet another case the inflammatory germs quickly destroy the soft tissues of the joint, and then invade the bones, and, the disease having at last come to an end, with or without an intervening period of abscess formation, the softened ends of the bones unite like the broken fragments in simple fracture. For this reason the surgeon places the limb in that position in which it will be most useful if the bony union should occur. Thus, the leg is kept straight and the elbow bent. If a joint is left stiff in an awkward and useless position its excision may be desirable. The cut ends of the bones are then treated as a fracture.

A stiff joint may remain as the result of long continued inflammation; the unused muscles are wasted and the joint in consequence looks large. Careful measurement, however, may show that it is not materially larger than its fellow. No progress being made under massage or gentle exercises, the surgeon may advise that the lingering adhesion be broken down under an anaesthetic, after which the function of the joint may quickly return.

These are the cases over which the "bone-setter" secures his greatest triumphs. A qualified practitioner may have been for months judiciously treating an inflamed joint by rest, and hesitates to flex suddenly the stiffened limb. The "bone-setter" does not, and his manipulation here proves successful. But such vigorous treatment in other cases works irreparable damage and it is only instructed knowledge that can determine whether forcible movement of a stiff joint should or should not be undertaken.

Charcot's Disease.—This resembles rheumatoid arthritis (*see* RHEUMATOID ARTHRITIS) in that it causes destruction of a joint and greatly deforms it. The deformity comes on rapidly and without pain or tenderness. It is usually associated with the symptoms of locomotor ataxy, and depends upon disease of the nerves which preside over the nutrition of the joints. It is incurable.

Slipping of a Cartilage.—A loose cartilaginous body in the knee joint is apt to become caught in the hinge between the thigh-bone and the leg-bone, and by causing a sudden stretching of the ligaments of the joint to give rise to intense pain. When this happens the individual is liable to be thrown down as he walks, for it comes on with great suddenness. As a rule, the slipping of a cartilage first occurs as the result of a serious fall or of a sudden and violent action—often it happens when the man is "dodging" at football, the foot being firmly fixed on the ground and the body being violently twisted at the knee. After the slipping has occurred many times, the amount of swelling, distress and lameness may diminish with each subsequent slipping, and the individual may become somewhat reconciled to his condition, but the only satisfactory treatment is operation. The origin of these loose bodies is not known with certainty.

Wounds in Joints.—An accidental wound of a joint, as from a bullet or a fragment of shell or the blade of a knife, or a spike, is very serious, because of the risk of septic germs entering the synovial cavity at the time of injury. If the joint becomes thus infected there is great swelling with redness of the skin, and escape of blood-stained or purulent synovia. Absorption takes place of bacterial products and great constitutional disturbance arises. Blood-poisoning may thus threaten life, and in many cases amputation above the joint is the only course possible. Owing to the great extent of its synovial membrane and the difficulty of drainage, wounds of the knee joint are particularly dangerous. If the joint be saved probably it will be stiff permanently.

Dislocation.—The ease with which the joint-end of a bone is dislocated varies with its form and structure, and with the position in which it happens to be placed when the violence is applied. The relative frequency of fracture of the bone and dislocation of the joint depends on the strength of the bones above and below the joint relatively to the strength of the joint itself. The strength of the various joints in the body is dependent upon either ligament or muscle, or upon the shape of the bones. In the hip, for instance, all three sources of strength are present; therefore in spite of the great leverage of the long thigh-bone, the hip is rarely dislocated. The shoulder, in order to allow of extensive movement, has no osseous or ligamentous strength; it is, therefore, frequently dislocated. The wrist and ankle are rarely dislocated; as the result of violence at the wrist the radius gives way, at the ankle the fibula, these bones being relatively weaker than the respective joints. The wrist owes its strength to ligaments, the elbow and the ankle to the shape of the bones. The symptoms of a dislocation are distortion and limited movement, with absence of the grating sensation felt in fracture when the broken ends of the bone are rubbed together. The treatment consists in reducing the dislocation, and the sooner this replacement is effected the better—the longer the delay the more difficult it becomes to put things right. After a variable period, depending on the nature of the joint and the age of the person, it may be impossible to replace the bones. The result will be a more or less useless joint. The administration of an anaesthetic, by relaxing the muscles, greatly assists the operation of reduction. The length of time that a joint has to be kept quiet after it has been restored to its normal shape depends on its form, but, as a rule, early movement is advisable. But when by the formation of the bones a joint is weak, as at the outer end of the collarbone, and at the elbow-end of the radius, prolonged rest for the joint is necessary or dislocation may recur.

Congenital Dislocation at the Hip.—Possibly as a result of faulty position of the subject during intrauterine life, the head of the thigh-bone leaves, or fails throughout to occupy, its normal situation on the haunch-bone. The defect, which is a very serious one, is probably not discovered until the child begins to walk, when its peculiar rolling gait attracts attention. The want of fixation at the joint permits of the surgeon thrusting up the thigh-bone, or drawing it down in a painless, characteristic manner.

The first thing to be done is to find out by means of the X-rays whether a socket exists into which, under an anaesthetic, the surgeon may fortunately be enabled to lodge the end of the thigh-bone. If this offers no prospect of success, there are three courses open: first, to try under an anaesthetic to manipulate the limb until the head of the thigh-bone rests as nearly as possible in its normal position, and then to endeavour to fix it there by splints, weights and bandaging until a new joint is formed; second, to cut down upon the site of the joint, to scoop out a new socket in the haunch-bone, and thrust the end of the thigh-bone into it, keeping it fixed there as just described; and third, to allow the child to run about as it pleases, merely raising the sole of the foot of the short leg by a thick boot, so as to keep the lower part of the trunk fairly level, lest secondary curvature of the spine ensue. The first and second methods demand many months of careful treatment in bed. The ultimate result of the second is so often disappointing that the surgeon now rarely advises its adoption. But if, under an anaesthetic, as the result of skilful manipulation the head of the thigh-bone can be made to enter a more or less rudimentary socket, the case is worth all the time, care and attention bestowed upon it. Sometimes the results of prolonged treatment are so good that the child eventually is able to walk with scarcely a limp. But a vigorous attempt at placing the head of the bone in its proper position should be made in every case.

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JOINT TENANCY, the tenancy of an estate by two or more persons wherein those participating are subject to the same conditions of interest and possession and are individually responsible in respect of the tenure and survivorship of the property; such joint tenancy being only dissolved by partition. The purchaser of the share of a joint tenant is not entitled to resell and must accept the terms of the tenancy in common with the surviving partners. A joint tenancy is regarded by law as a single person and those concerned are jointly responsible for any legal proceedings in connection with the estate. Moreover, when one of the joint tenants dies, his share, instead of going to his own heirs, lapses to his co-tenant's by survivorship. This tenancy is distinguished from *tenancy in common* under which the property of each co-tenant passes to the heirs and not to the surviving tenants. (*See* PARTITION.)

In the United States joint tenancies have been looked upon with disfavour. Statutes have reversed the common law rule whereby a grant to two or more was supposed to create a joint tenancy, substituting the presumption that a tenancy in common is created unless a contrary intention appear upon the face of the grant. Some States have abolished the right of survivorship in the case of joint tenants, prescribing that no such right shall exist unless specifically contained in the grant. A few States have abolished joint tenancy completely, transforming such estates into tenancies in common.

JOINTURE, in law, a provision for a wife after the death of her husband. As defined by Sir E. Coke, it is "a competent livelihood of freehold for the wife, of lands or tenements, to take effect presently in possession or profit after the death of her husband, for the life of the wife at least, if she herself be not the cause of determination or forfeiture of it." (Co. Litt. 36b.) It must have been made before marriage and be expressed to her in lieu of dower (*q.v.*).

JOINTWORM, the name applied in the United States to the larvae of hymenopterous gall-forming insects of the genus *Harmolita,* two of which, *H. triciti* and *H. hordei,* are important parasites of wheat and barley respectively, causing swellings in the stems near or on the joints (whence the name). The adult insects are small wasps, about $\frac{1}{8}$ in. long and black in colour. (*See* ENTOMOLOGY, HYMENOPTERA.)

JOINVILLE, the name of a French noble family of Champagne, which traced its descent from Étienne de Vaux, who lived at the beginning of the 11th century. Geoffroi III. (d. 1184), sire de Joinville, who accompanied Henry the Liberal, count of Champagne, to the Holy Land in 1147, received from him the office of seneschal, and this office became hereditary in the house of Joinville. In 1203 Geoffroi V., sire de Joinville, died while on a crusade, leaving no children. He was succeeded by his brother Simon, who married Beatrice of Burgundy, daughter of the count of Auxonne, and had as his son Jean (*q.v.*), the historian and friend of St. Louis. Henri (d. 1374), sire de Joinville, the grandson of Jean, became count of Vaudémont, through his mother, Marguerite de Vaudémont. His daughter, Marguerite de Joinville, married in 1393 Ferry of Lorraine (d. 1415), to whom she brought the lands of Joinville. In 1552, Joinville was made into a principality for the house of Lorraine. Mlle. de Montpensier, the heiress of Mlle. de Guise, bequeathed the principality of Joinville to Philip, duke of Orleans (1693). The castle, which overhung the Marne, was sold in 1791 to be demolished. The title of prince de Joinville (*q.v.*) was given later to the third son of King Louis Philippe. Two branches of the house of Joinville have settled in other countries: one in England, descended from

Geoffroi de Joinville, sire de Vaucouleurs, and brother of the historian, who served under Henry III. and Edward I.; the other, descended from Geoffroi de Joinville, sire de Briquenay, and son of Jean, settled in the kingdom of Naples.

See J. Simonnet, *Essai sur l'histoire et la généalogie des seigneurs de Joinville* (1875); H. F. Delaborde, *Jean de Joinville et les seigneurs de Joinville* (1894). (M. P.; X.)

JOINVILLE, FRANÇOIS FERDINAND PHILIPPE LOUIS MARIE, PRINCE DE (1818–1900), third son of Louis Philippe, duc d'Orléans, afterwards king of the French, was born at Neuilly on Aug. 14, 1818. He was educated for the navy, and became lieutenant in 1836. In 1840 he was entrusted with the removal of the remains of Napoleon from St. Helena to France. In 1844 he conducted naval operations on the coast of Morocco, bombarding Tangier and occupying Mogador, and was recompensed with the grade of vice-admiral. In the following year he published in the *Revue des deux mondes* an article on the deficiencies of the French navy which attracted attention. By his hostility to the Guizot ministry, by an affectation of ill-will towards Great Britain, he gained considerable popularity. The revolution of 1848 nevertheless swept him away with the other Orleans princes. He hastened to quit Algeria, where he was then serving, and took refuge at Claremont, in Surrey, with the rest of his family. In 1861, upon the breaking out of the American Civil War, he proceeded to Washington, and placed the services of his son and two of his nephews at the disposal of the United States government. Otherwise, he was little heard of until the overthrow of the Empire in 1870, when he re-entered France, only to be promptly expelled by the government of national defence. Returning incognito, he joined the army of General d'Aurelle de Paladines, under the assumed name of Colonel Lutherod, fought bravely before Orleans, and afterwards, divulging his identity, formally sought permission to serve. Gambetta, however, arrested him and sent him back to England. In the National Assembly, elected in February 1871, the prince was returned by two departments and elected to sit for the Haute Marne, but, by an arrangement with Thiers, did not take his seat until the latter had been chosen president of the provincial republic. He resigned his seat in 1876. In 1886 the provisions of the law against pretenders to the throne deprived him of his rank as vice-admiral, but he continued to live in France; he died in Paris on the 16th of June 1900. He had married in 1843 the princess Francisca, sister of Pedro II., emperor of Brazil, and had a son, the duc de Penthièvre, also brought up to the navy, and a daughter Françoise, who married the duc de Chartres.

The prince de Joinville wrote *Essais sur la marine française* (1853); *Études sur la marine* (1859 and 1870); *La Guerre d'Amerique, campagne du Potomac* (1862 and 1872); *Encore un mot sur Sadowa* (Brussels, 1868); and *Vieux souvenirs* (1894).

JOINVILLE, JEAN, SIRE DE (1224–1317), was the second great writer of history in Old French, and occupies the interval between Villehardouin and Froissart. He was the head of a noble family of the province of Champagne (*see* JOINVILLE). His first appearance at the king's court was in 1241, on the occasion of the knighting of Louis IX.'s younger brother Alphonse. Seven years afterwards he took the cross. The crusade, in which he distinguished himself equally by wisdom and prowess, taught his practical spirit several lessons. He returned with the king in 1254. He was in the intervals of residence on his own fief a constant attendant on the court, but he declined to accompany the king on his last and fatal expedition. In 1282 he was one of the witnesses whose testimony was formally given at St. Denis in the matter of the canonization of Louis, and in 1298 he was present at the exhumation of the saint's body.

It was not till even later that he began his history, the occasion being a request from Jeanne of Navarre, the wife of Philippe le Bel. The great interval between his experiences and the period of the composition of his history is important for the due comprehension of the latter. Some years passed before the task was completed in Oct. 1309. Jeanne was by this time dead, and Joinville presented his book to her son Louis. This original ms. is now lost. Great as was his age, Joinville had not ceased to be actively loyal, and in 1315 he complied with the royal summons to bear arms against the Flemings. He was at Joinville again in 1317, and on July 11 he died, leaving his possessions and his position as seneschal of Champagne to his second son Anselm. He was buried in the neighbouring church of St. Laurent.

The Writer.—Joinville's *Histoire de Saint Louis* bears the vivid impress of the writer's personality. It does not, like Villehardouin's account, give us a picture of the temper and habits of a whole order or cast of men during an heroic period of human history; it falls far short of Froissart in vivid portrayal of the picturesque and external aspects of social life; but it is a more personal book than either. The writer was a very old man telling of circumstances which occurred in his youth. He evidently thinks that the times have not changed for the better—what with the frequency with which the devil is invoked in modern France, and the sinful expenditure common in the matter of embroidered silk coats. But this laudation of times past concentrates itself almost wholly on the person of the sainted king whom, while with feudal independence he had declined to swear fealty to him, "because I was not his man," he evidently regarded with an unlimited reverence. His age, too, while garrulous to a degree, seems to have been free from the slightest taint of boasting. No one perhaps ever took less trouble to make himself out a hero than Joinville. He is constantly admitting that on such and such an occasion he was terribly afraid; he confesses without the least shame that, when one of his followers suggested defiance of the Saracens and voluntary death, he (Joinville) paid not the least attention to him; nor does he attempt to gloss in any way his refusal to accompany St. Louis on his unlucky second crusade, or his invincible conviction that it was better to be in mortal sin than to have the leprosy, or his decided preference for wine as little watered as might be, or any other weakness. Yet he was a sincerely religious man, as the curious *Credo,* written at Acre and forming a kind of anticipatory appendix to the history, sufficiently shows.

His History.—Joinville's history is divided into three parts, dealing with the character and conduct of the hero, Saint Louis; the second with his acts and deeds in Egypt, Palestine, etc., as Joinville knew them; and his subsequent life and death. Of these the last is very brief, the first not long; the middle constitutes the bulk of the work. The contents of the first part are chiefly stories showing the valour of Louis, his piety, his justice, his personal temperance, and so forth.

The second part enters upon the history of the crusade itself, and tells how Joinville pledged all his land save so much as would bring in a thousand livres a year, and started with a brave retinue of nine knights (two of whom besides himself wore bannerets), and shared a ship with the sire d'Aspremont, leaving Joinville without raising his eyes, "pour ce que le cuer ne me attendrisist du biau chastel que je lessoie et de mes deux enfans"; how they could not get out of sight of a high mountainous island (Lampedusa or Pantellaria) till they had made a procession round the masts in honour of the Virgin; how they reached first Cyprus and then Egypt; how they took Damietta, and then entangled themselves in the Delta. Bad generalship, which is sufficiently obvious, unwholesome food—it was Lent, and they ate the Nile fish which had been feasting on the carcases of the slain—and Greek fire did the rest, and personal valour was of little avail, not merely against superior numbers and better generals, but against dysentery and a certain "mal de l'ost" which attacked the mouth and the legs, a curious human version of a well-known bestial malady. After ransom Acre was the chief scene of Louis's stay in the East, and here Joinville lived in some state, and saw not a few interesting things, hearing besides much gossip as to the affairs of Asia from ambassadors, merchants and others. At last they journeyed back again to France, not without considerable experiences of the perils of the deep, which Joinville tells with a good deal of spirit. The remainder of the book is very brief. Some anecdotes of the king's "justice," his favourite and distinguishing attribute during the 16 years which intervened between the two crusades, are given; then comes the story of Joinville's own refusal to join the second expedition, a refusal which bluntly alleged the harm done by the king's men who

stayed at home to the vassals of those who went abroad as the reason of Joinville's resolution to remain behind. The death of the king at Tunis, his *enseignement* to his son, and the story of his canonization complete the work.

The book in which this interesting story is told has had a literary history. It seems to have undergone very much the same fate as that which befell the originals of the first two volumes of the *Paston Letters* which Sir John Fenn presented to George III. Several royal library catalogues of the 14th century are known, but in none of these does the *Histoire de St. Louis* appear. It does appear in that of Charles V. (1411), but apparently no copy even of this survives. A copy at first or second hand which belonged to the fiddler king René of Provence in the 15th century was used for the first printed edition in 1547. Other editions were printed from other versions, all evidently posterior to the original. But in 1741 the well-known mediaevalist, La Curne de St. Palaye, found at Lucca a manuscript of the 16th century, evidently representing an older text than any yet printed. Three years later a 14th century copy was found at Brussels; this is the standard manuscript authority for the text of Joinville, and appears in the well-known collection of Michaud and Poujoulat as well as in that of Buchon, and in a careful and useful separate edition by Francisque Michel. The modern science of critical editing, however, which applies to mediaeval texts the principles long recognized in editing the classics, has discovered in the 16th century ms. and still more in the original miscellaneous works of Joinville, the letters, deeds, etc., already alluded to, the materials for what we have already called a conjectural restoration, which is not without its interest, though perhaps it is possible for that interest to be exaggerated.

For general readers Buchon's or Michaud's editions of Joinville will suffice amply. Both include translations into modern French, which are hardly necessary, for the language is easy. Natalis de Wailly's editions of 1868 and, particularly, 1874 are critical editions, embodying the modern research connected with the text, the value of which is considerable, but contestable. They are accompanied by ample annotations and appendices, with illustrations of great merit and value. Much valuable information appeared for the first time in the edition of F. Michel (1859). To these may be added A. F. Didot's *Études sur Joinville* (1870) and H. F. Delaborde's *Jean de Joinville* (1894). A good sketch of the whole subject will be found in Aubertin's *Histoire de la langue et de la littérature françaises au moyen âge*, ii.; *see* also Gaston Paris, *Litt. française au moyen âge* (1893), and A. Debidour, *Les Chroniqueurs* (1888). There are English translations by T. Johnes (1807), J. Hutton (1868), Ethel Wedgwood (1906), and (more literally) Sir F. T. Marzials ("Everyman's Library," 1908).

JOIST. In building, one of a row or tier of beams set edgewise from one wall or partition to another and carrying the flooring boards on the upper edge and the laths of the ceiling on the lower. In double flooring there are three series of joists, *binding*, *bridging*, and *ceiling* joists. The binding joists are the real support of the floor, running from wall to wall, and carrying the bridging joists above and the ceiling joists below (*see* CARPENTRY). The Mid. Eng. form of the word was *giste* or *gyste*, and was adapted from O.Fr. *giste*, modern *gîte*, a beam supporting the platform of a gun. By origin the word meant that on which anything lies or rests (*gésir*, to lie; Lat. *jacere*).

The English word "gist," in such phrases as "the gist of the matter," the main or central point in an argument, is a doublet of joist. According to Skeat, the origin of this meaning is an O.Fr. proverbial expression, *Je scay bien où gist le lièvre*, I know well where the hare lies; *i.e.*, I know the real point of the matter.

JÓKAI, MAURUS (1825–1904), Hungarian novelist, was born at Rév-Komárom on Feb. 19, 1825. His father, Joseph, was a member of the Asva branch of the ancient Jókay family; his mother was a scion of the noble Pulays. The lad was educated at Pressburg, and then at the Calvinist college at Pápá, where he first met Petöfi, Alexander Kozma, and other brilliant young men who subsequently became famous. Destined by his family to the legal profession, he studied law assiduously, and, as an advocate was successful in winning his first case. But the work was uncongenial to him, and, encouraged by the encomiums pronounced by the Hungarian Academy upon his first play, *Zsidó fiu* ("The Jew Boy"), he went to Pest in 1845 with a ms. romance in his pocket. He was introduced by Petöfi to literary society, and the same year his romance *Hétköznapok* ("Working Days"), appeared, first in the columns of the *Pesti Dievatlap*, and subsequently, in 1846, in book form. *Hétköznapok*, despite its crudities and extravagances, was recognized by the leading critics as a work of genius, and in the following year Jókai was appointed the editor of *Életképek*, the leading Hungarian literary journal. On the outbreak of the revolution of 1848 the young editor enthusiastically adopted the national cause, and served it with both pen and sword.

As a moderate Liberal he set his face steadily against all excesses; but, carried away by the Hungarian triumphs of April and May 1849, he supported Kossuth's deposition of the Hapsburg dynasty, and though, after the war was over, his life was saved by an ingenious stratagem of his wife, the great tragic actress, Roza Benke Laborfalvi, whom he had married on Aug. 29, 1848, he lived for the next fourteen years the life of a political suspect. During this period he devoted himself to the rehabilitation of the proscribed and humiliated Magyar language, composing in it no fewer than thirty great romances, besides innumerable volumes of tales, essays, criticisms and facetiae. This was the period of such masterpieces as *Erdély Arany Kord* ("The Golden Age of Transylvania"), with its sequel *Törökvilág Magyarországon* ("The Turks in Hungary"), *Egy Magyar Nábob* ("A Hungarian Nabob"), *Karpáthy Zoltán, Janicsárok végnapjai* ("The Last Days of the Janissaries"), *Szomorú napok* ("Sad Days"). On the re-establishment of the Hungarian constitution by the Composition of 1867, Jókai took an active part in politics. As a supporter of the Tisza administration, both in parliament, where he sat continuously for more than twenty years, and as the editor of the government organ, *Hon*, founded by him in 1863, he became a power in the state, though he never took office. In 1897 the emperor appointed him a member of the upper house, where he distinguished himself in debate.

Yet it was to literature that he devoted most of his time, and his productiveness after 1870 was stupendous, amounting to some hundreds of volumes. None of this work is slipshod, and the best of it deserves to endure. Amongst the finest of his later works may be mentioned the unique and incomparable *Az arany ember* ("A Man of Gold")—translated into English under the title of *Timar's Two Worlds*—and *A téngerzemü hölgy* ("Eyes like the Sea"), the latter of which won the Academy's prize in 1890. He died at Budapest on May 5, 1904; his wife having predeceased him in 1886. Jókai was an arch-romantic, with a perfervid Oriental imagination, and humour of the purest, rarest description.

See Névy László, *Jókai Mór;* Hegedúsis Sándor, *Jókai Mórról;* H. W. Temperley, "Maurus Jokai and the Historical Novel," *Contemporary Review* (July 1904); and the biographies by F. Zsigmond (1924), and T. Gál (1925).

JOKJAKARTA or **JOKYAKARTA** (also *Djokjakarta*), a government in Central Java, Netherlands Indies, area 1,223 sq.mi.; also the name of the capital. It is triangular in form, with a long coast line fronting the Indian ocean, and extends inland to the Gunung Merapi, being bounded on the E. by the government of Surakarta and on the W. by Kedu. Jokjakarta is mountainous in the northwest and there are limestone hills (Kidul) along the coast in the east, but between these regions, in the plains, well watered by the rivers Praga and Upak, are some of the most fertile and well-cultivated lands in Java, famed for their crops of tobacco and sugar cane, while rice flourishes and other food plants do well; there are also small teak forests. Coal has been found in the Kidul hills, but is not worked; manganese is known, also marble, in coloured varieties. The residency is one of the most thickly populated in the country; 1,559,027 (1930) included 7,317 Europeans and Eurasians, and 12,842 foreign Asiatics, the natives being almost entirely Javanese, mostly living in villages, of which Wonosari and Brosot are the largest. Jokjakarta is also a native Principality and has a Javanese ruler, who is known as the Sultan. His power is nominal, being subject to that of the Dutch governor, but he is the sovereign lord of the land and derives revenue therefrom for himself, his vassals and officials, has some judicial powers, great privileges and a large official salary. He has no rights, however, over the teak forests, the opium trade, the edible birds-nest cliffs or the coinage. Another native prince, Paku Alam, retains certain privileges. Jokjakarta is (with Surakarta) the only portion of Java where any semblance of native rule is maintained and where the interesting manners and customs of the Javanese of former days are still largely preserved. From the earliest days of European

settlements in Java, Jokjakarta was a thorn in the side of first the Dutch, then the British under Raffles, and again the Dutch. (*See* JAVA.) The government is well served with roads in the southwest and centre, but communications are poor in the difficult hilly country in the southeast. The railway from Batavia to Surabaya runs through Jokjakarta, the principal station being the capital (which had a population [1930] of 136,649; 5,593 Europeans and Eurasians); Jokjakarta, the city, is also connected by rail with Semarang, via Magelang. Pleasantly situated, about 20 mi. from the sea, Jokjakarta is the seat of the Dutch governor and the Sultan, who has an imposing palace, situated within the *Kraton,* an extensive citadel, a mile square, in the heart of the city, and there a native court is maintained with much ceremonial. The *Kraton* is strictly private and may be visited only by permission, at certain times, on certain days. Prince Paku Alam also has his palace in Jokjakarta. The streets of Jokjakarta are wide, well-kept, and some tree-planted, and apart from the old Dutch town and fort, there are many quite imposing business premises, shops and public buildings in European style, and a river with steep banks, flowing through its midst, lends to it a very picturesque touch. There is an extremely interesting native market-place and bazaar, famed throughout Java; also some ornamental gardens (Taman Sari), an Oriental Trianon, designed by a Portuguese in mid-18th century for Sultan Mangku Bumi, now in a state of ruin. Four miles S.E. of Jokjakarta is Pasar Gedeh, a large village famed for its craftsmen in gold and silver, copper-work and leather carving, and here are graves of some of the Sultans of Jokjakarta, dated 1509–79 and decadent in style; others are to be seen (together with those of the Sultans of Surakarta) at Imogiri, some 6 mi. further south. Permission is needed to visit either. Jokjakarta is the best-known centre for visiting Boro Budur and Prambanan, and from it there is easy access to the coast, where, at Nyabi Kidul, Rongkob and Selarong, there are sacred grottoes, and at Parang Tritis, a seaside resort. The government and city were occupied by Japan in March 1942. (E. E. L.)

JOLA, a round-faced, coarse-featured people with low foreheads and filed teeth closely related to the Serer, and living between the Lower Gambia and Lower Kasamansa. The principal tribes are Felup and Fogni. The Felup recognize a paramount chief (who must not leave his own territory or look upon the sea), elected by the notables. The Jola practise tillage and cattle-rearing, and irrigate the rice-fields. The dead, after exposure for three days, are buried near the house.

See Dr. Lasnet, *Une mission au Sénégal* (1900).

JOLIET, LOUIS (1645–1700), American explorer, was born at Quebec, Canada, on Sept. 21, 1645. He was selected by the French governor, Frontenac, to ascertain the direction and mouth of the Mississippi river, several branches of which French traders had already visited near their headwaters. He embarked with Father Marquette and five other Frenchmen at Green Bay, Wis., in June 1673, ascended the Fox river, portaged to the Wisconsin and descended that river to its meeting with the Mississippi, the upper reaches of which they were the first white men to see. Before turning back they followed the Mississippi southward beyond the mouth of the Arkansas river. The return journey to Lake Michigan was made by the Illinois-Chicago portage route. When near Montreal Joliet's canoe was overturned and his journal and papers lost. He wrote a short account from memory which agrees with Father Marquette's longer recital in his *Voyage et découverte de quelques pays et Nations de l'Amérique Septentrionale* (1681 and later reprints). Joliet later travelled to Hudson Bay and to Labrador in the interest of the fur trade and fisheries.

See also L. P. Kellogg, *The French Régime in the Northwest* (1925); F. Parkman, *La Salle or the Discovery of the Great West* (1869); and E. Gagnon, *Louis Joliet, découvreur du Mississippi* (1913).

JOLIET, a city of Illinois, U.S.A., 37 mi. S.W. of Chicago, in the Des Plaines river valley and on the Lakes-Gulf waterway; the county seat of Will county; on the Alton, Santa Fe, Rock Island, Michigan Central and Elgin, Joliet and Eastern railways. It is on federal highways 6, 30, 52 and 66A. The population was 38,442 in 1920 (22% foreign-born white), and in 1940 by the federal census had increased to 42,365. There are 150 manufacturing plants in Joliet, producing 1,700 different items. Seven wallpaper mills produce about 50% of the nation's output. Other industries are railroad shops, rod mills, wire mills, coke ovens, stoves, art calendars, boilers and tanks, cartons, containers, chemicals, roofing, horseshoes, machinery, oil refineries, crushed and building stone, sailplanes and large electric power and gas-generating plants. The U.S. government munitions plants south of the city cost $70,000,000. The northern Illinois penitentiary is situated there. The early settlement dates from 1833. In 1845 it was renamed after Louis Joliet, the French-Canadian explorer who had visited the site in 1673. It was incorporated in 1852. Since 1918 it has operated under a commission form of government.

JOLLY BALANCE is a device for determining the specific gravity (relative density) of solids and liquids. Its operation is based on (*a*) Archimedes's principle; *i.e.,* that a body immersed in a fluid is buoyed up by a force equal to the weight of the fluid displaced, and (*b*), on Hooke's law; *i.e.,* that in elastic bodies and within certain limits the strain is proportional to stress, or that displacement is proportional to displacing force. In its usual form the Jolly balance consists of a long, delicate, helical spring suspended by one end in front of a uniformly graduated scale. To the lower end of the spring is attached a weight pan, and immediately below that a small wire basket. At some convenient point, usually just above the weight pan, an index is provided which can be read with reference to the scale, which is usually graduated on the surface of a mirror to avoid parallax in reading the position of the index. A movable platform for supporting a small vessel of water is provided which can be clamped at any desired height along the vertical scale and immediately below the wire basket attached to the lower end of the spring. The point of suspension of the upper end of the spring is also usually movable vertically, as a means of increasing the range of the balance and as an aid in adjusting the index to a convenient zero setting.

In determining the specific gravity of a solid a zero reading of the position of the index is taken with the wire basket immersed in water up to a definite point on its suspension wire, care being taken to see that the point of suspension of the helical spring is such as to permit the necessary extension of the spring during subsequent steps of the determination. Let this reading be W_1. Next, place in the weight pan the specimen, the specific gravity of which is to be determined, lower the movable platform carrying the vessel of water until the water surface reaches the same point on the suspension wire as before, and again read the index. Let W_2 represent this reading. W_2-W_1, which represents the extension of the spring, may be taken as the weight of the specimen in air. Then place the specimen in the wire basket, immersed in water, and again adjust the height of the movable platform until the water surface is at the original height on the suspension wire above the basket, and again read the position of the index. Let this reading be W_3. W_2-W_3, which represents the difference in the extension of the spring when the specimen is immersed in air and in water, respectively, may be taken as the loss of weight in water. Then specific gravity

$$= \frac{\text{weight in air}}{\text{loss of weight in water}} = \frac{W_2-W_1}{W_2-W_3}$$

The specific gravity so obtained is the apparent specific gravity in air, in terms of water at the temperature of the determination. In order to determine the specific gravity of a liquid, the same procedure is followed except that the "loss of weight in water" and the "loss of weight in the unknown liquid" are determined with any convenient specimen of a solid not affected by either liquid. The specific gravity of the unknown liquid is the ratio of the loss of weight in the unknown liquid to the loss of weight in water. (*See* also BALANCE.) (H. W. BEA.)

JOLO, a municipality, port of entry, and capital of the Sulu province (which consists of the islands of the Sulu archipelago), is on the northwest coast of the island of Jolo, 540 mi. from Manila. Pop. (1939) 12,571 (a loss of 7,593 since 1918) of whom 6,654 were males and 26 whites. Jolo has an active trade with Zam-

boanga, Borneo and Singapore and the pearling fleet has its chief centre there. A native settlement there antedated not only the Spanish regime but also the Mohammedan. Mohammedanism was introduced into Jolo in the 14th century and continued with such progress that Jolo became the centre of that religion's activities in the region. In 1939 there were 7,514 Mohammedans as against 3,298 Roman Catholics, 1,126 Buddhists, 223 Shintoists and 218 Protestant Christians. Jolo was also a centre of Moro military activity against the Spaniards during most of the Spanish regime. The spiritual (and formerly the temporal) sovereignty of the Sultan of Sulu extended beyond the Philippines into Borneo. Cattle, horses and carabao are bred on the surrounding parts of the island for export. This trade was facilitated by a dock built under the auspices of the United States government. Of the inhabitants aged 6 to 19 inclusive, 38·8% in 1939 attended school; of the population 10 years old and over, 44·3% were literate.

JOLY DE LOTBINIÈRE, SIR HENRI GUSTAVE (1829–1908), Canadian politician, was born at Epernay in France on Dec. 5, 1829. Henri Gustave adopted the name of his mother's family, Lotbinière, in 1888, under a statute of the province of Quebec. He was educated in Paris, and called to the bar of lower Canada in 1858. At the general election of 1861 he was elected to the house of assembly of the province of Canada as Liberal member for the county of Lotbinière, which county 1867 to 1874 he represented in the House of Commons, Ottawa, and in the legislative assembly, Quebec. Joly was opposed to confederation. In 1878 he was called by Luc Letellier de St. Just, lieutenant-governor of Quebec, to form an administration, which was defeated in 1879, and until 1883 he was leader of the opposition. During his brief administration he adopted a policy of retrenchment, and endeavoured to abolish the legislative council. In 1885, as a protest against the attitude of his party towards Louis Riel, who was tried and executed for high treason, he retired from public life. But at the general election of 1896 he was returned as member for the county of Portneuf. He had already in 1895 been created K.C.M.G. On the formation of Sir Wilfrid Laurier's administration he accepted the office of controller of inland revenue, and a year later he became a privy councillor, as minister of inland revenue. From 1900 to 1906 he was lieutenant-governor of British Columbia. He died on Nov. 17, 1908.

JOMINI, ANTOINE HENRI, BARON (1779–1869), general, was born on March 6, 1779, at Payerne in the canton of Vaud, Switzerland. He wished for a military life; for some time he was a clerk in a Paris banking-house, until the outbreak of the Swiss revolution. At the age of nineteen he was appointed to a post on the Swiss headquarters staff, and when twenty-one commanded a battalion. At the peace of Lunéville in 1801 he returned to business life in Paris, where he devoted himself to the *Traité des grandes opérations militaires,* which was published in 1804–1805. Introduced to Marshal Ney, he served in the campaign of Austerlitz as a volunteer aide-de-camp on Ney's personal staff. In December 1805 Napoleon made him a colonel in the French service. Ney thereupon made him his principal aide-de-camp. In 1806 Jomini published his views on the impending war with Prussia, and this, along with his knowledge of Frederick the Great's campaigns, led Napoleon to attach him to his own headquarters. He was present with Napoleon at the battle of Jena, and at Eylau won the cross of the Legion of Honour. After the peace of Tilsit he was made chief of the staff to Ney, and created a baron. In the Spanish campaign of 1808 he gave the marshal much good advice, but Jomini quarrelled with his chief, and was left at the mercy of Berthier, the emperor's chief of staff. He had already been invited to enter the Russian service, but Napoleon compelled him to remain in the service as general of brigade. For some years thereafter Jomini held both a French and Russian commission, with the consent of both sovereigns. When war between France and Russia broke out, he escaped from his dilemma by taking a command on the line of communication. He was thus engaged when the seat of war shifted to central Germany. He rejoined Ney, took part in the battle of Lützen and, as chief of the staff of Ney's group of corps, distinguished himself at the battle of Bautzen, and was recommended for the rank of general of division. Berthier, however, had him arrested for failing to supply certain returns that had been called for.

How far Jomini was held responsible for certain misunderstandings which frustrated Ney's hopes (*see* BAUTZEN) there is no means of knowing. But the pretext for censure was trivial and baseless, and during the armistice Jomini entered the Russian service. This was regarded by Napoleon as going over to the enemy. Jomini had indeed for years held a dormant commission in the Russian army, had declined to take part in the invasion of Russia in 1812, and was a Swiss and not a Frenchman. He withdrew from the Allied Army in 1814 when the violation of Swiss neutrality was inevitable. Apart from love of his own country, the desire to study, to teach and to practise the art of war was his ruling motive. At the critical moment of the battle of Eylau he exclaimed, "If I were the Russian commander for two hours!" On joining the allies he became lieutenant-general and aide-de-camp to the tsar, and rendered important assistance during the German campaign. He declined as a Swiss patriot and as a French officer to take part in the passage of the Rhine at Basel and the subsequent invasion of France.

In 1815 he was with the emperor Alexander in Paris, and attempted in vain to save the life of his old commander Ney. This almost cost him his position in the Russian service, but he succeeded in making head against his enemies, and took part in the congress of Vienna. Resuming his post in the Russian army, he was about 1823 made a full general, and until his retirement in 1829 he was principally employed in the military education of the tsarevich Nicholas (afterwards emperor) and in the organization of the Russian staff college, which was opened in 1832. In 1828 he was employed in the field in the Russo-Turkish War, and at the siege of Varna he was given the grand cordon of the Alexander order. This was his last active service. In 1829 he settled at Brussels where he chiefly lived for the next thirty years.

In 1853, after trying without success to bring about a political understanding between France and Russia, Jomini was called to St. Petersburg to act as a military adviser to the tsar during the Crimean War. He returned to Brussels on the conclusion of peace in 1856 and some years afterwards settled at Passy near Paris. He was busily employed up to the end of his life in writing treatises, pamphlets and open letters on subjects of military art and history, and in 1859 he was asked by Napoleon III. to furnish a plan of campaign in the Italian War. One of his last essays dealt with the war of 1866 and the influence of the breech-loading rifle, and he died at Passy on March 24, 1869, only a year before the Franco-German War. Thus one of the earliest of the great military theorists lived to speculate on the tactics of the present day.

Amongst his numerous works the principal, besides the *Traité,* are: *Histoire critique et militaire des campagnes de la Révolution* (1806; new ed. 1819–24); *Vie politique et militaire de Napoléon racontée par lui-même* (1827) and, perhaps the best known of all his publications, the theoretical *Précis de l'art de la guerre* (1836).

See Ferdinand Lecomte, *Le Général Jomini, sa vie et ses écrits* (1861; new ed. 1888); C. A. Saint-Beuve, *Le Général Jomini* (1869); A. Pascal, *Observations historiques sur la vie, &c., du général Jomini* (1842).

JOMMELLI, NICCOLO (1714–1774), Italian composer, was born at Aversa near Naples on Sept. 10, 1714. His first opera, *L'Errore amoroso,* was successfully produced at Naples (under a pseudonym) when he was only twenty-three. Three years afterwards he went to Rome to bring out two new operas, and thence to Bologna, where he profited by the advice of Padre Martini, one of the greatest contrapuntists of his age. In 1748 he went to Vienna, where one of his finest operas, *Didone,* was produced. Three years later he returned to Italy, and in 1753 he obtained the post of *Kapellmeister* to the duke of Württemberg at Stuttgart. Here he wrote many more operas and adjusted his style so completely to German taste that when, after an absence of fifteen years, he returned to Naples, his countrymen hissed two of his operas off the stage, and he retired in consequence to his native village. He died at Naples on Aug. 25, 1774, his last composition being the celebrated *Miserere,* a setting for two female voices of Saverio Mattei's Italian paraphrase of Psalm li. Jommelli is one

of the most representative composers of the generation following Leo and Durante.

See Hermann Abert, *Jommelli als Opernkomponist* (Halle, 1908).

JONAH, in the Bible, a prophet who foretold the deliverance of Israel from the Aramaeans (2 Ki. xiv. 25). He may also be the hero of the much later book of Jonah, but how different a man is he! New problems have arisen out of that book, but here we can only attempt to consider what, in a certain sense, may be called the surface meaning of the text.

The prophet Jonah is summoned to go and prophesy against Nineveh, a great and wicked city (*cf.* 4 Esdras ii. 8, 9). He fears (iv. 2) that the Ninevites may repent, so he proceeds to Joppa, and takes his passage for Tarshish. But soon a storm arises of which he proves to be the cause. He is, at his own request, thrown into the sea, which at once becomes calm. Meantime God has "appointed a great fish" which swallows up Jonah till, at a word from Yahweh, three days later, it vomits him on to the dry ground. Again Jonah receives the divine call. This time he obeys. After delivering his message to Nineveh he waits in vain for the destruction of the city (probably iv. 5 is misplaced and should stand after iii. 4). Thereupon he beseeches Yahweh to take away his worthless life. As an answer Yahweh "appoints" a small quickly-growing tree with large leaves (the castor-oil plant) to shelter the angry prophet from the sun. But the next day the tree perishes by God's "appointment" from a wormbite. Then God "appoints" the east wind whose fierce heat brings Jonah again to desperation. The fine close reminds us of Job. God himself gives short-sighted man a lesson. Jonah has pitied the tree, and should not God have pity on so great a city?

It is generally agreed that the psalm in ch. ii. has been transferred from some other place; it is an anticipatory thanksgiving for the deliverance of Israel, mostly composed of phrases from other psalms. Further, the narrative is an imaginative story, a Midrash (*q.v.*), based upon Biblical data and tending to edification. The narrator considered that Israel had to be a prophet to the "nations" at large, that Israel had, like Jonah, neglected its duty and for its punishment was "swallowed up" in foreign lands. God had watched over His people and prepared its choicer members to fulfil His purpose. This company of faithful but not always sufficiently charitable men represented their people, so that it might be said that Israel itself (the "Servant of Yahweh"; *see* ISAIAH) had taken up its duty, but in an ungenial spirit which grieved the All-merciful One. The book, which is post-exilic, may therefore be grouped with another Midrash, the Book of Ruth, which also appears to represent a current of thought opposed to the exclusive spirit of Jewish legalism.

Besides symbolism there may be myth. The "great fish" has a mythological appearance. The Babylonian dragon myth (*see* CREATION, EPIC OF) is often alluded to in the old Testament; *e.g.*, in Jer. li. 44, which, as Cheyne long since pointed out, may supply the missing link between Jonah i. 17 and the original myth. For the "great fish" is ultimately Tiāmat, the dragon of chaos, represented historically by Nebuchadrezzar, by whom for a time God permitted or "appointed" Israel to be swallowed up.

BIBLIOGRAPHY.—Cheyne, *Ency. Bib.*, "Jonah"; and his article "Jonah, a Study in Jewish Folklore and Religion," *Theological Review* (1877), pp. 211–219; König, Hastings' *Dict. Bible*, "Jonah"; C. H. H. Wright, *Biblical Studies* (1886) argues ably for the symbolic theory. Against Cheyne, *see* Marti's *Commentary* (1894); the "great fish" and the "three days and three nights" remain unexplained by this writer.

(T. K. C.)

JONAH, RABBI (ABULWALID MERWAN IBN JANAH, also R. MARINUS) (*c.* 990–*c.* 1050), the greatest Hebrew grammarian and lexicographer of the middle ages. He was born in Cordova, studied in Lucena, and after somewhat protracted wanderings, settled in Saragossa, where he died. Though a physician, Rabbi Jonah devoted himself to the scientific investigation of the Hebrew language and to a rational biblical exegesis based upon sound linguistic knowledge. His first work—composed, like all the rest, in Arabic—bears the title *Almustalḥa*, and forms, as is indicated by the word, a criticism and at the same time a supplement to the two works of Yehuda Ḥayyuj on the verbs with weak-sounding and double-sounding roots. These two tractates, with which Ḥayyuj had laid the foundations of scientific Hebrew grammar, were recognized by Abulwalid as the basis of his own grammatical investigations. Rabbi Jonah's principal work, the *Kitab al Tanḳiḥ* ("Book of Exact Investigation") includes the *Kitab al-Luma* ("Book of Many-coloured Flower-beds") and the *Kitab al-uṣul* ("Book of Roots"). The former (ed. J. Derenbourg, Paris, 1886) contains the grammar, the latter (ed. Ad. Neubauer, Oxford, 1875) the lexicon of the Hebrew language. Both works were published in the Hebrew translation of Yehuda Ibn Tibbon (*Sefer Ha-Riḳmah*, ed. B. Goldberg, Frankfurt-am-Main, 1855; *Sefer Ha-Schoraschim*, ed. W. Bacher, Berlin, 1897). The other writings were edited in Arabic with French translation by Joseph and Hartwig Derenbourg (Paris 1880). A few fragments and numerous quotations in his principal book form our only knowledge of the *Kitab al-Tashwir* ("Book of Refutation") a controversial work in which he successfully answered the opponents of his first treatise. The grammatical work of Rabbi Jonah extended to the domain of rhetoric and biblical hermeneutics, and his lexicon contains many exegetical excursuses. This lexicon is of especial importance by reason of its ample contribution to the comparative philology of the Semitic languages—Hebrew and Arabic, in particular. Abulwalid's works exercised the greatest influence on Jewish exegesis.

See S. Munk, *Notice sur Abou'l Walid* (1851); W. Bacher, *Leben und Werke des Abulwalid* (Leipzig, 1885), *Aus der Schrifterklärung des Abulwalid* (Leipzig, 1889), *Die hebr.-arabische Sprachvergleichung des Abulwalid* (Vienna, 1884). *Die hebräisch-neuhebräische und hebr.-aramäische Sprachvergleichung des Abulwalid* (Vienna, 1885).

JONAS, JUSTUS (1493–1555), a German Protestant reformer, was born at Nordhausen, Thuringia, on June 5, 1493. His real name was Jodokus (Jobst) Koch. He studied law and the humanities at the university of Erfurt and at Wittenberg. His great admiration for Erasmus first led him to Greek and biblical studies, and his election in 1519 as rector of the university of Erfurt was regarded as a triumph for the partisans of the New Learning. After the Leipzig disputation with Eck Luther won his allegiance. He accompanied Luther to Worms in 1521, and was appointed by the elector of Saxony professor of canon law at Wittenberg. During Luther's stay in the Wartburg Jonas was one of the most active of the Wittenberg reformers. He became superintendent of the Halle churches in 1542; in 1546 he was at Luther's deathbed at Eisleben, and preached the funeral sermon; but in the same year was banished from the duchy by Maurice, duke (later elector) of Saxony. He died at Eisfeld on Oct. 9, 1555.

See *Briefwechsel des Justus Jonas*, ed. G. Kawerau (2 vols., Halle, 1884–85).

JONATHAN. Of the many Jewish bearers of this name, three are well known: (1) the grandson of Moses, who was priest at Dan (Judg. xviii. 30). (2) The eldest son of Saul, who, together with his father, freed Israel from the Philistines (1 Sam. xiii. *seq.*). Both are lauded in an elegy quoted from the Book of Jashar (2 Sam. i.) for their warm mutual love, their heroism, and their labours on behalf of the people. Jonathan's name is most familiar for the firm friendship which subsisted between him and David (*see* further DAVID; SAUL). (3) The Maccabee (*see* JEWS; MACCABEES).

JONCIÈRES, VICTORIN (1839–1903), French composer, was born in Paris on April 12, 1839. He entered the Conservatoire, but did not remain there long, because he had espoused too warmly the cause of Wagner against his professor. He composed the following operas: *Sardanapale* (1867), *Le Dernier jour de Pompéi* (1869), *Dimitri* (1876), *La Reine Berthe* (1878), *Le Chevalier Jean* (1885), *Lancelot* (1900), but these had more of Gounod in them than of Wagner. He died on Oct. 26, 1903.

JONES, ALFRED GILPIN (1824–1906), Canadian politician, was born at Weymouth, Nova Scotia, in Sept. 1824. In 1865 he opposed the federation of the British American provinces, and, in his anger at the refusal of the British Government to repeal such portions of the British North America Act as referred to Nova Scotia, made a speech which won for him the name of Haul-down-the-flag Jones. He was for many years a member of

the Federal parliament, and for a few months in 1878 was minister of militia under the Liberal Government. Largely owing to his influence the Liberal party refused in 1878 to abandon its Free Trade policy, an obstinacy which led to its defeat in that year. In 1900 he was appointed lieutenant-governor of his native province, and held this position till his death on March 15, 1906.

JONES, SIR ALFRED LEWIS (1845–1909), British shipowner, was born in Carmarthenshire, in 1845. At the age of 12 he was apprenticed to the managers of the African Steamship company at Liverpool, making several voyages to the west coast of Africa. About 1891 he entered the firm of Messrs. Elder, Dempster & Co., with a share in the undertaking. In 1901 he was knighted. Sir Alfred Jones took a keen interest in imperial affairs, and was one of the founders of the Liverpool School of Tropical Medicine. He acquired considerable territorial interests in west Africa, and financial interests in many of the companies engaged in opening up and developing that part of the world. He opened up a new line of communication with the West Indies, and stimulating the Jamaica fruit trade and tourist traffic. He died on Dec. 13, 1909, leaving large charitable bequests.

JONES, EBENEZER (1820–1860), British poet, was born in Islington, London, on Jan. 20, 1820. His father, who was of Welsh extraction, was a strict Calvinist, and Ebenezer was educated at a dull, middle-class school. The death of his father obliged him to become a clerk in the office of a tea merchant, where he worked for 72 hours a week. Shelley and Carlyle were his spiritual masters, and he spent his meagre spare time in reading and writing. The unkind reception of his *Studies of Sensation and Event* (1843) seemed to be the last drop in his bitter cup of life. Baffled and disheartened, he destroyed his manuscripts. In 1849 he wrote a pamphlet, *The Land Monopoly*, in which he anticipated Henry George in proposing land nationalization. He was rapidly dying of consumption when he wrote his three remarkable poems, "Winter Hymn to the Snow," "When the World is Burning" and "To Death." The fame that these and some of the pieces in the early volume brought to their author came too late. He died at Brentwood on Sept. 14, 1860.

It was not till 1870 that Dante Gabriel Rossetti praised his work in *Notes and Queries*. Rossetti's example was followed by W. B. Scott, Theodore Watts-Dunton, who contributed some papers on the subject to the *Athenaeum* (Sept. and Oct. 1878), and R. H. Sheppard, who edited *Studies of Sensation and Event* in 1879.

JONES, EMILY ELISABETH CONSTANCE (1848–1922), English educator, was born at Langstone Court, Hereford, in 1848. She was educated in Cheltenham, and at Girton college, Cambridge, where she took a first-class in the moral sciences tripos in 1880. In 1884 she was appointed resident lecturer at Girton, vice-mistress in 1896, and mistress in 1903. She retired in 1916. She died on April 18, 1922, at Weston-Super-Mare.

Her works include *Elements of Logic as a Science of Propositions* (1890); *Primer of Logic* (1905); and *A New Law of Thought and its Logical Bearings* (1911). She also, with Miss E. Hamilton, translated Lotze's *Mikrokosmus* (1885), and has edited (1902) Henry Sidgwick's *Lectures on T. H. Green, Herbert Spencer and J. Martineau.*

JONES, ERNEST CHARLES (1819–1869), English Chartist, was born in Berlin on Jan. 26, 1819, and educated in Germany. His father, a British army officer, was then equerry to the duke of Cumberland, afterwards king of Hanover. In 1838 Jones came to England and in 1841 published anonymously *The Wood Spirit*, a romantic novel. In 1844 he was called to the bar at the Middle Temple, but from 1845 to 1854 he devoted time and energy to the Chartist movement, quickly becoming a leader much respected for his single-mindedness and steadfastness. In 1847 he wrote for the *Northern Star* and became joint editor with Feargus O'Connor of *The Labourer*. He advocated the formation of national guards, and in 1848, while trying to rally the breaking ranks of the Chartist movement, he was arrested for sedition and sent to prison for two years, where he was treated as a common felon until, after a protest in parliament, he was allowed to purchase exemption from prison tasks. While in prison he wrote *The Revolt of Hindostan*, an epic poem. In 1852 he started the *People's Paper* and later accepted the programme of Karl Marx. When the movement died he joined the advanced Radical party and devoted much time to the writing of novels and political songs, the most famous of which are *The Song of the Lower Classes* and *Songs of Democracy*. He died at Manchester on Jan. 26, 1869.

JONES, HENRY (1831–1899), English author, well known as a writer on whist under his *nom de guerre* "Cavendish," was born in London on Nov. 2, 1831, being the eldest son of Henry D. Jones, a medical practitioner. He adopted his father's profession, established himself in 1852 and continued for 16 years in practice in London. He was a member of several whist clubs, among them the "Cavendish," and in 1862 appeared his *Principles of Whist, stated and explained by "Cavendish,"* which became the leading authority as to the practice of the game. This work was followed by treatises on the laws of piquet and écarté. "Cavendish" also wrote on billiards, lawn tennis and croquet, and contributed articles on whist and other games to the ninth edition of the *Encyclopædia Britannica*. "'Cavendish' was not a law-maker, but he codified and commented upon the laws which had been made during many generations of card-playing." He died on Feb. 10, 1899.

JONES, HENRY ARTHUR (1851–1929), English dramatist, was born at Grandborough, Buckinghamshire, on Sept. 28, 1851 the son of Silvanus Jones, a farmer. His first piece, *Only Round the Corner*, was produced at the Exeter theatre, and within four years of his début as a dramatist he scored a great success by *The Silver King* (November 1882), written with Henry Herman, a melodrama produced by Wilson Barrett at the Princess's theatre. Its financial success enabled the author to write a play "to please himself." *Saints and Sinners* (1884), which ran for 200 nights, placed on the stage a picture of middle-class life and religion in a country town. His next serious piece was *The Middleman* (1889), followed by *Judah* (1890), both powerful plays, which established his reputation. Among his later plays were *The Dancing Girl* (1891), *The Crusaders* (1891), *The Bauble Shop* (1893), *The Tempter* (1893), *The Masqueraders* (1894), *The Case of Rebellious Susan* (1894), *The Liars* (1897), *Carnac Sahib* (1899), *The Manoeuvres of Jane* (1899), *Mrs. Dane's Defence* (1900), *The Princess's Nose* (1902), *Chance the Idol* (1902), *Whitewashing Julia* (1903), *Joseph Entangled* (1904), *The Chevalier* (1904), *Mary Goes First* (1913), *The Lie* (1914), *Cock o' the Walk* (1915). A uniform edition of his plays began to be issued in 1891. His own views of dramatic art have been expressed from time to time in *The Renascence of the English Drama* (1895), *Foundations of a National Drama* (1913), *Theatre of Ideas* (1915), and other works. He died at Hampstead, on Jan. 7, 1929.

JONES, INIGO (1573–1651), English architect, sometimes called the "English Palladio," the son of a cloth-worker, was born in London on July 15, 1573. It is stated that he was apprenticed to a joiner, but at any rate his talent for drawing attracted the attention of Thomas Howard, earl of Arundel (some say William, 3rd earl of Pembroke), through whose help he went to study landscape-painting in Italy. His preference soon transferred itself to architecture, and, following chiefly the style of Palladio, he acquired at Venice such a reputation that in 1604 he was invited by Christian IV. to Denmark, where he is said to have designed the two great royal palaces of Rosenborg and Frederiksborg. In the following year he accompanied Anne of Denmark to the court of James I. of England, where, besides being appointed architect to the queen and Prince Henry, he was employed in supplying the designs and decorations of the court masques. After a second visit to Italy in 1612, Jones was appointed surveyor-general of royal buildings by James I., and was engaged to prepare designs for a new palace at Whitehall. In 1620 he was employed by the king to investigate the origin of Stonehenge, when he came to the absurd conclusion that it had been a Roman temple. Shortly afterwards he was appointed one of the commissioners for the repair of St. Paul's, but the work was not begun till 1633. Under Charles I. he enjoyed the same offices as under his predecessor, and in the capacity of designer of the masques he came into collision with Ben Jonson, who frequently made him the butt of his satire. After the Civil War Jones was forced to pay heavy fines as a courtier and malignant. He died

in poverty on July 5, 1651.

A list of the principal buildings designed by Jones is given in Dallaway's edition of Walpole's *Anecdotes of Painting*, and for an estimate of him as an architect *see* Fergusson's *History of Modern Architecture*. *The Architecture of Palladio*, in 4 books, by Inigo Jones, appeared in 1715; *The Most Notable Antiquity of Great Britain, called Stonehenge, restored by Inigo Jones*, in 1655 (ed. with memoir, 1725); the *Designs of Inigo Jones*, by W. Kent, in 1727; and *The Designs of Inigo Jones*, by J. Ware, in 1757. *See* also G. H. Birch, *London Churches of the XVIIth and XVIIIth Centuries* (1896); W. J. Loftie, *Inigo Jones and Wren, or the Rise and Decline of Modern Architecture in England* (1893).

JONES, JACOB (1768–1850), United States naval officer, was born near Smyrna, Delaware, in March 1768, and studied medicine at the University of Pennsylvania. When his practice in Kent county, Delaware, proved none too lucrative, he turned to politics and became clerk of the Delaware supreme court. In 1799, at the age of 31, carried away by enthusiasm over the naval war against France, he entered the United States navy as a midshipman on the frigate "United States," captain, John Barry. At the close of the Quasi-War with France, Jones was retained in the navy and promoted to a lieutenancy. As second lieutenant of the "Philadelphia," he was taken prisoner with the rest of the officers and crew when that frigate ran on the rocks off the harbour of Tripoli. Jones was a prisoner for 19 months until the Barbary powers were subdued. In the War of 1812, he was commander of the first sloop of war "Wasp," which, on Oct. 18, 1812, off Cape Hatteras, took the British sloop of war "Frolic." Of equal armament, the two vessels engaged in a 40-minute gun duel, but Jones's gunners were so superior that when the "Wasp's" crew boarded the enemy there was no further resistance, the British having been literally swept from their own decks. Unfortunately for Jones, a British 74-gun ship happened upon the "Wasp" and "Frolic" as the battle ended, took the former and retook the latter. When exchanged a year later, Jones received a gold medal from congress, which also presented $25,000 to the officers and men. After the war, in command of the ex-British frigate "Macedonian," Jones was in Decatur's squadron which overawed the Barbary powers at Algiers in 1815. He commanded the Mediterranean squadron from 1821 to 1823, and the Pacific squadron from 1826 to 1829. After his retirement, he was appointed commander of the Philadelphia Naval asylum, where he died on Aug. 3, 1850.

See *Commodore Jacob Jones*, Papers of the Historical Society of Delaware, XLIV (Wilmington, 1906); and *Quasi War with France* and *Barbary War* documents, 11 vol. (Washington, 1935–43). (W.B.Ck.)

JONES, JOHN PAUL (1747–1792), American naval officer, was born in the parish of Kirkbean, county of Kirkcudbright, on Solway firth, Scotland, on July 6, 1747, the son of John Paul, a landscape gardener. Apprenticed to John Younger, a Kirkcudbright merchant-shipper, he sailed at the age of 12 as cabin boy on a ship to Virginia, there visiting his older brother William, a tailor at Fredericksburg. When Younger failed in 1766, the apprenticeship ended, and he received a warrant as acting midshipman in the British navy. That he ever served seems doubtful as that same year found him chief mate of a Jamaica-owned slaver brigantine. After two years he quitted the slave trade and took passage at Jamaica on a brigantine for Scotland. Master and chief mate died of fever on the passage, and he brought the ship safely home, to be appointed master. In April 1770, at Tobago, the ship's carpenter, whom he had had flogged for laziness, deserted, shipped on another vessel, and died a few months later. When John Paul reached Scotland, in Nov. 1770, he was arrested on a charge of murdering the carpenter, but was released on bail. He sailed for the West Indies, hunting evidence to disprove the murder charge. He purchased a vessel, in Sept. 1772, and made several voyages to Tobago, the final one culminating in "the great misfortune" of his life when, in Dec. 1773, he killed the ringleader of a mutinous crew. Upon advice of friends, he fled the island rather than await a future sitting of the admiralty court, and changed his name to John Paul Jones. While his movements are obscure for the next two years, it is apparent he sought his brother in Fredericksburg and, when the latter died in 1774, participated in his estate. Meanwhile he had met some of the southern leaders of the revolutionary movement, one of whom, Joseph Hewes, of North Carolina, a member of the Continental congress, induced him to go to Philadelphia. There, in the fall of 1775, he received a commission as senior lieutenant in the new Continental navy.

To Jones, on Dec. 3, 1775, fell the honour of first raising the Grand Union flag on the ship "Alfred," of twenty 9-pounders, flagship of the little fleet commanded by Esek Hopkins. When that fleet reached the Bahamas, in March 1776, Jones's knowledge of the topography of the islands contributed to the bloodless capture of New Providence with a great quantity of ordnance. Upon the return cruise, in command of the "Alfred's" main battery, he distinguished himself in the inconclusive engagement where the British ship "Glasgow" escaped from the whole Continental fleet. As the captain of the sloop "Providence" was court-martialed for cowardice during that engagement, Hopkins gave Jones command of that little vessel, of twelve 4-pounders and 70 men, with a temporary commission dated May 10, 1776. Convoying a coal ship from Boston to Philadelphia, he arrived in August at a time when the marine committee was investigating Commodore Hopkins's conduct. It approved Jones's appointment to a captaincy, but issued him a new commission dated Aug. 8. He sailed from the Delaware capes on Aug. 21, under orders to cruise as long as his provisions and water lasted. The cruise consumed six weeks and five days, and ranged from Bermuda to Nova Scotia. The "Providence" twice outwitted British frigates, the "Solebay" and "Milford"; manned and sent in eight prizes—six brigantines, a ship and a sloop; and sank or burned eight more—six schooners, a ship and a brigantine—some of which were cut out of Nova Scotian harbours. Jones brought the "Providence" safely into Rhode Island on Oct. 7, 1776. Transferred to the "Alfred" with his entire crew, Jones sailed, in Nov. 1776, for a cruise off Nova Scotia in company with the sloop "Providence" under Hoysteed Hacker. Off Louisburg they took a merchant ship and the valuable transport "Mellish," but on Nov. 18 the "Providence" parted in a light gale, which Hacker used as a pretext to return to port. Proceeding alone, Jones burned a large ship off Canso as well as the oil warehouses ashore, cut three ships out from under the nose of the British frigate "Flora" off Cape Breton and, on his return, cleverly fooled the "Milford" for a second time; he and his prizes reached Boston unmolested on Dec. 15. Meanwhile, congress had placed him 18th on the seniority list, preceding him by a number of captains who had entered the service after he had and performing an injustice which rankled in his mind for many years. Efforts to atone for the discrimination against him were attempted in congress, but most of them proved abortive.

On June 14, 1777, the same day the Stars and Stripes was selected as the national emblem, congress appointed Jones to the newly built ship "Ranger," of eighteen 6-pounders, at Portsmouth, New Hampshire. Delays in outfitting and manning held him in port until Nov. 1, when he sailed for France with official word of Burgoyne's surrender and the promise of a large frigate building at Amsterdam. But the news of Burgoyne's capitulation had preceded him and the frigate, to prevent British seizure, had to be sold to France. Disappointed on both counts, Jones secured permission from the U.S. commissioners at Paris for a cruise in European waters. Before sailing, he had the honour of receiving the first salute to the new U.S. flag from a French fleet in Quiberon bay, on Feb. 14, 1778. The subsequent cruise was a spectacular one through St. George's channel and the Irish sea, where a number of prizes were taken. Before dawn, on April 23, 1778, with 31 volunteers, Jones went ashore at Whitehaven, spiked the cannon in two forts, but was disappointed in efforts to burn the shipping. At noon the same day, he landed on St. Mary's Island, in Solway firth, intending to seize Lord Selkirk as a hostage. In the latter's absence from home, the "Ranger's" men insisted upon taking the Selkirk silver plate, which Jones later redeemed out of his own pocket and restored to the owners, with profuse apologies to Lady Selkirk. Off Carrickfergus, Ireland, the next day, he climaxed the cruise by taking the British ship of war "Drake," of twenty 4-pounders, in a sanguine hour's encounter in which Jones lost 8 killed and wounded, and the

"Drake" lost 42. When he returned to Brest, on May 8, he was hailed as a hero, and the French minister of marine asked that he be held in France to head a future naval expedition. Jones turned command of the "Ranger" over to an ungrateful and insubordinate lieutenant and cooled his heels, wild with frustration, for six months in French ports before the ministry acted.

When the expedition finally sailed from L'Orient, on Aug. 14, 1779, it consisted of the "Bon Homme Richard," an old French East Indiaman armed with forty-two 18-, 12- and 9-pounders; the "Alliance," of 36 guns, a new U.S. frigate recently arrived in France; two small French ships, the "Pallas" of 32 guns, and the "Vengeance," of 12; and three privateers which soon after abandoned the fleet. Proceeding around Ireland and Scotland, Jones had constant trouble with Peter Landais, the French captain of the "Alliance." A number of prizes were taken, but an attempt to attack the Scotch port of Leith was prevented by contrary winds. On Sept. 23, off Scarborough, England, on the return leg of the cruise, Jones won enduring fame in one of the most famous naval engagements of history. The little squadron intercepted the Baltic merchant fleet under convoy of the British ships "Serapis," of fifty-four 18-, 9- and 6-pounders, and "Countess of Scarborough," of 20 guns. Jones engaged the "Serapis" by moonlight, and for three and a half hours the vessels lay yard arm to yard arm, with the "Alliance" twice circling them and firing indiscriminately into both. When the "Serapis" struck, she was on fire, and the "Bon Homme Richard," which Jones had named in honour of Benjamin Franklin and his *Poor Richard's Almanack,* was in a sinking condition. "No action before was ever, in all respects," wrote Jones afterwards, "so bloody, so severe and so lasting." The carnage had been so great that neither Jones, nor his opponent, Richard Pearson, of the "Serapis," whether through inability or reluctance, ever issued a complete casualty list. One of Jones's junior officers estimated the killed and wounded on the "Bon Homme Richard" at 302. Jones transferred his crew to the "Serapis" and, after his own ship had foundered, the squadron, with the "Countess of Scarborough" taken by the "Pallas," sailed for the Texel. There Jones preferred charges against Landais and took command of the "Alliance." Disdaining the subterfuge of a French commission, he escaped a British blockading squadron in Dec. 1779, and cruised in the "Alliance" without much success for several months. For his great victory Louis XVI gave him a gold-hilted sword and made him a chevalier of France. Meanwhile, Landais seized the "Alliance" at L'Orient, in June 1780, while Jones was ashore, and sailed off in her. Finally, in 1781, Jones returned to the United States in the borrowed French ship "Ariel," to receive the grateful thanks of congress, on April 14, and be assigned to the 74-gun ship "America," building at Portsmouth, New Hampshire. But the "America" was shortly after given to France to replace a ship lost in Boston bay, and Jones's final service in the Revolution was as a volunteer on Vaudreuil's French fleet, which sailed to the West Indies but accomplished nothing before peace was declared.

Sent to France as prize agent, in Nov. 1783, Jones effected a partial settlement by 1786, and returned to the U.S. in 1787 to be awarded a gold medal by congress and again dispatched abroad to seek restitution from Denmark for two prizes that government had turned back to England. While in Copenhagen, in 1788, and on advice of Thomas Jefferson, then ambassador to France, he accepted an offer from Catherine the Great and entered the Russian navy as a rear admiral. Sent to the Black sea and promised supreme command in the campaign against the Turks, Jones was soon disillusioned. His victories were credited to others. His subordinates were encouraged to dispute his authority. As a finale, in St. Petersburg, in March 1789, he was falsely accused of criminal assault upon a young girl. Catherine had tired of him and, in lieu of dismissal, granted him leave of absence. He returned to France embittered and broken physically, and rapidly went into a decline. When he died, on July 18, 1792, he was buried in St. Louis cemetery for Protestants, but the grave was unmarked. More than a century later, the body having been found and identified through the efforts of Ambassador Horace Porter, an escort of U.S. warships brought Jones's remains back to the land of his adoption, where a crypt had been prepared in the naval chapel at Annapolis. His grave is a national shrine.

BIBLIOGRAPHY.—Countless volumes have been written about Jones, many of them highly imaginary. A definitive biography is that of Lincoln Lorenz, *John Paul Jones, Fighter for Freedom and Glory* (Annapolis, 1943). Second in importance is one of the earliest biographies, R. C. Sands, *The Life and Correspondence of John Paul Jones* (New York, 1930). A purported biography by A. C. Buell, *Paul Jones, Founder of the American Navy* (New York, 1905) is spurious. A bibliography of Jones literature was compiled by Don C. Seitz, *Paul Jones; His Exploits in English Seas* (New York, 1917). Jones's letters are largely in the Peter Force collection and the Continental congress papers, vols. 54, 58, 132, 147, 168, 193 and 639, in the Library of Congress. (W. B. CK.)

JONES, ROBERT EDMOND (1887–), U.S. theatrical designer, was born at Milton (N.H.), Dec. 12, 1887. He graduated from Harvard university in 1910 and began designing scenery for the theatre in New York city the following year. He attracted attention by the boldness of his conceptions and exerted a marked influence in American theatrical art. In 1933 he began designing for colour motion pictures.

Among the plays for which he designed the stage settings were *The Man Who Married a Dumb Wife,* for Granville Barker (1915); *The Jest* (1919); *Richard III* (1920), and *Macbeth* (1921), for Arthur Hopkins; *The Birthday of the Infanta,* for the Chicago Opera Association (1920); *Beyond* and *Desire Under the Elms* for the Provincetown Playhouse (1924); *Redemption; Hamlet;* and *The House of Women* (1927). He published, with K. MacGowan, *Continental Stagecraft* (1922) and *Drawings for the Theatre* (1925).

JONES, THOMAS RUPERT (1819–1911), English geologist and palaeontologist, was born in London on Oct. 1, 1819. While at school at Ilminster, his attention was attracted to geology by the fossils in the Lias quarries. He was apprenticed to a surgeon, first at Taunton, and then at Newbury, and practised in London until in 1849 he was appointed assistant secretary to the Geological society of London. In 1862 he was made professor of geology at the Royal Military college, Sandhurst. He devoted his attention to fossil microzoa, and became an authority on the Foraminifera and Entomostraca. He was specially interested in the geology of South Africa.

JONES, SIR WILLIAM (1746–1794), British orientalist and jurist, was born in London, Sept. 28, 1746. He studied oriental languages at Harrow, teaching himself the rudiments of Arabic, and reading Hebrew. In 1764 he entered University college, Oxford, where he studied oriental literature; he also studied Persian, Arabic, Hebrew, Chinese and various European languages. In 1766 he obtained a fellowship. When Christian VII of Denmark visited England in 1768, bringing a life of Nadir Shah in Persian, Jones was asked to translate the ms. into French. The translation appeared in 1770. In 1771 he published a *Dissertation sur la littérature orientale,* defending Oxford scholars against the criticisms made by Anquetil Du Perron in the introduction to his translation of the *Zend-Avesta.* In 1774 a treatise entitled *Poeseos Asiaticae commentatorium libri sex* definitely confirmed his authority as an oriental scholar. For financial reasons Jones began to study law, and was called to the bar in 1774. In 1776 he was appointed a commissioner in bankruptcy. Besides writing an *Essay on the Law of Bailments,* which enjoyed a high reputation both in England and America, Jones translated, in 1778, the speeches of Isaeus on the Athenian right of inheritance. In 1783 he was appointed judge of the supreme court of judicature at Calcutta, then "Fort William," and was knighted. He founded, in Jan. 1784, the Bengal Asiatic society, of which he remained president till his death. Convinced of the importance of consulting the Hindu legal authorities in the original, he began the study of Sanskrit. He planned (1788) a digest of Hindu and Mohammedan law, but did not live to complete it. Before his death he had published *Institutes of Hindu Law, or the Ordinances of Manu* (1794); his *Mohammedan Law of Succession to Property of Intestates;* and his *Mohammedan Law of Inheritance* (1792). His other publications include, *Traité sur la poésie orientale* (1770); a French metrical translation of the odes of Hafiz; *Grammar of the Persian Language* (1771); *Poems, Chiefly Translations from Asiatic Languages, etc.* (1772); a translation of the seven ancient Arabic poems called *Moallakât* (1783); a translation of Kālidāsa's famous drama, *Sakuntalā* (1789). He also translated the collec-

tion of fables entitled the *Hitopadesa,* the *Gītagovinda,* and considerable portions of the Vedas, besides editing the text of Kālidāsa's poem *Ritusamhara.* He died at Calcutta on April 27, 1794. As a pioneer in Sanskrit learning and as founder of the Asiatic Society he rendered the language and literature of the ancient Hindus accessible to European scholars, and thus became the indirect cause of later achievements in the field of Sanskrit and comparative philology.

JONESBORO, a city of northeast Arkansas, U.S.A., 69 mi. N.N.W. of Memphis, Tennessee; county seat of Craighead county. It is on federal highway 63 and state highways 18, 141, 1 and 39. Jonesboro is served by the St. Louis-San Francisco and the St. Louis Southwestern railways. The population in 1940 was 11,729 (5% Negro). It is in the centre of a lumbering and agricultural region and has cotton gins, compresses, various woodworking industries and rice mills. The city was founded in 1849 and incorporated in 1883. Arkansas State college, one of the finest institutions in the south, is in Jonesboro. An A-3 airport was (1941) under construction at the college.

JONESCU, TAKE (1858–1922), Rumanian statesman, was born at Ploesci on Oct. 26, 1858, and after studying law in Paris was in 1884 elected a deputy. He was minister of public instruction and finance in various Conservative cabinets until 1908 when he founded the Conservative-Democratic party. In 1912 his group formed a Coalition cabinet under Maiorescu, in which Jonescu was minister of the interior. He represented Rumania at the Peace Conference of Bucharest in 1913, and in 1914 he negotiated at Athens the peace between Greece and Turkey. When the World War broke out, Jonescu was, from the first, in favour of intervention on the side of the Allies. In 1918 he went to Paris, and as head of the Rumanian national committee he contributed greatly to the re-integration of Rumania in her rights as an ally when Germany was finally defeated. Jonescu was appointed foreign minister in April 1920, in the Averescu Government. His own original plan for solving the problems created by the Peace Settlement was that of an economic Danube Federation; but finding Czechoslovakia and Yugoslavia hostile to such an idea, he collaborated with their foreign ministers to create the Little Entente (*q.v.*). He died in Rome on June 21, 1922.

JONGKIND, JOHANN BARTHOLD (1819–1891), Dutch painter and engraver, was born at Lattrop, near Rotterdam, on June 3, 1819. He studied at The Hague in the studio of Steffens, and at the Academy under the landscape painter, A. Schelfhout. In 1846 he moved to Paris, and worked under Isabey and Picot. He exhibited at the Salon in 1848, and again in 1852, when he received a medal and worked much at Le Havre. After a stay in Holland (1855–60) he returned to Paris. His works were exhibited with those of Corot, Daubigny and Troyon at an exhibition arranged by Count Armand Doria, and by his style he belonged to the Fontainebleau group. He chose his subjects on the banks of the Seine, and in other picturesque old quarters of Paris on the sea coast of Normandy and on the Dutch canals. Refused at the Salon of 1863, he joined in the Salon des Refusés, and made the acquaintance of C. Monet. His rendering of atmosphere and his study of fleeting effects of light and of reflections make him a pioneer of impressionism—though his oil pictures were not painted direct from nature, and are carefully arranged compositions. His drawings and water colours on the other hand were done out of doors. In 1878 he settled at Côte-Saint-André (Isère) where he painted the simple landscape motives for which his art is famous. He died at Côte-Saint-André on Feb. 9, 1891.

See E. Moreau-Nelaton, *Jongkind, raconté par lui-même* (1918); Delteil, *Peintre-Graveur* (1906).

JÖNKÖPING, a town of Sweden, capital of the district (*län*) of Jönköping, 230 m. S.W. of Stockholm by rail. Pop. (1943) 37,950. Jönköping received the earliest extant Swedish charter in 1284 from Magnus I., and was the scene of parliaments in 1357, 1439 and 1599; of the meeting of the Danish and Swedish plenipotentiaries in 1448; and of the death of Sten Sture, the elder, in 1503. In 1612 Gustavus Adolphus caused the inhabitants to destroy their town lest it should fall into the hands of the Danes; but it was rebuilt soon after, and in 1620 received special privileges from the king. At this period a textile industry was started here, the first of any importance in Sweden, and it was from the Dutch and German workmen, introduced at this time, that the quarter Tyska Mad received its name. It stands at the southern end of Lake Vetter. Two quarters of the town, Svenska Mad and Tyska Mad, recall the time when the site was a marsh (*mad*), and buildings were constructed on piles. The church of St. Kristine (*c.* 1650), the court-houses, town-hall and Government buildings are noteworthy. The town is one of the leading industrial centres in Sweden. The match manufacture, for which it is principally famous, was founded in 1844. There are also textile manufactures, paper-factories and mechanical works.

JONQUIL, the name applied to several species of *Narcissus* (*q.v.*), especially the yellow flowered *N. jonquilla* of southern Europe and Africa, and the Campernelle jonquil (*N. odorus*).

JONSON, BEN (1573–1637), English dramatist, was born, probably in Westminster, in the beginning of the year 1573 (or possibly, if he reckoned by the unadopted modern calendar, 1572). By the poet's account his grandfather had been a gentleman who "came from" Carlisle, and originally, the grandson thought, from Annandale. His arms, "three spindles of rhombi," are the family device of the Johnstones of Annandale. Ben Jonson said that he was born a month after the death of his father, who, after suffering in estate and person under Queen Mary, had in the end "turned minister." Two years after the birth of her son the widow married again; her second husband was a master bricklayer, living in Hartshorn lane, near Charing Cross, who sent his stepson to a private school in St. Martin's lane. Jonson was then sent to Westminster school at the expense, it is said, of William Camden. His gratitude for an education to which in truth he owed an almost inestimable debt concentrated itself upon the "most reverend head" of his benefactor, then second and afterwards head master of the famous school, and the firm friend of his pupil in later life. He was put to his stepfather's trade immediately on leaving school, and the most learned of Elizabethan dramatists appears to have missed the university. Both Aubrey and Fuller, however, say that he went to Cambridge, but there is no record of his presence in the registers. He soon had enough of bricklaying. Either before or after his marriage—more probably before, as Sir Francis Vere's three English regiments were not removed from the Low Countries till 1592—he spent some time in that country soldiering.

Ben Jonson married not later than 1592. The registers of St. Martin's church state that his eldest daughter Maria died in Nov. 1593 when she was, Jonson tells us (epigram 22), only six months old. His eldest son Benjamin died of the plague ten years later (epigram 45). (A younger Benjamin died in 1635.) His wife Jonson characterized to Drummond as "a shrew, but honest"; and for a period (undated) of five years he preferred to live without her, enjoying the hospitality of Lord Albany (afterwards duke of Lennox). Long burnings of oil among his books, and long spells of recreation at the tavern, such as Jonson loved, are not the most favoured accompaniments of family life. But Jonson was no stranger to the tenderest of affections; two at least of the several children whom his wife bore to him he commemorated in touching little tributes of verse; nor in speaking of his lost eldest daughter did he forget "her mother's tears."

On July 28, 1597, there is an entry in Philip Henslowe's diary of a loan of £4 to "Bengemen Johnson player" and another of 3s. 6d. "received of Bengemenes Johnsones share." Henslowe advanced 20s. on Dec. 3, 1597, for a play to be completed before Christmas. This was the day on which the theatres were suppressed on account of the performance of the *Isle of Dogs.* A privy council minute of Oct. 8, 1597, records the "warrant for the releasing of Benjamin Johnson" on Oct. 3. Jonson therefore appears to have suffered for his part in this play the "bondage" for his "first error" of which he speaks in a letter to Salisbury in 1605. He is recorded to have borrowed 5s. from Henslowe on Jan. 5, 1598. His relation with Henslowe and the lord admiral's company was intermittent, and was, as we shall see, broken by a serious quarrel.

Early Comedies.—According to Aubrey, whose statement must be taken for what it is worth, "Jonson was never a good

actor, but an excellent instructor." His physique was certainly not well adapted to the histrionic conditions of his—perhaps of any—day; but, in any case, it was not long before he found his place in the organism of his company. In 1598 Jonson was mentioned by Meres in his *Palladis Tamia* as one of "the best for tragedy," without any reference to a connection on his part with the other branch of the drama. Whether this was a criticism based on material evidence or an unconscious slip, Ben Jonson in the same year 1598 (at some date before Sept. 20) produced one of the most famous of English comedies, *Every Man in his Humour,* which was first acted—probably in the earlier part of September—by the lord chamberlain's company at the Curtain. Shakespeare was one of the actors in this first production of Jonson's comedy, and it is in the character of Old Knowell in this very play that, according to a bold but ingenious guess, he is represented in the half-length portrait of him in the folio of 1623, beneath which were printed Jonson's lines concerning the picture. *Every Man in his Humour* was published in 1601; the critical prologue first appears in the folio of 1616, and there are other divergences. After the Restoration the play was revived in 1751 by Garrick (who acted Kitely) with alterations, and long continued to be known on the stage. *The Case is Altered,* acted by the children of the Blackfriars, which contains a satirical attack upon the pageant poet, Anthony Munday, has been generally assigned to the end of 1598, but E. K. Chambers gives reasons (*Elizabethan Stage,* iii. 357) suggesting the date as 1597. This comedy, which was not included in the folio editions, is one of intrigue rather than of character; it contains obvious reminiscences of Shylock and his daughter.

Before the year 1598 was out, however, Jonson found himself in prison and in danger of the gallows. In a duel, fought on Sept. 22, in Hogsden Fields, he had killed an actor of Henslowe's company named Gabriel Spenser. It seems clear that he acted in self-defence, and the attack may have had something to do with Jonson's work for a rival company. In prison Jonson was visited by a Roman Catholic priest, and the result (certainly strange, if Jonson's parentage is considered) was his conversion to the Church of Rome, to which he adhered for 12 years. He pleaded guilty to the charge of manslaughter brought against him, as the rolls of Middlesex sessions show; but, after a short imprisonment, he was released by benefit of clergy, forfeiting his "goods and chattels," and being branded on his left thumb.

The affair did not affect his reputation; in 1599, Henslowe, who had commercial sense, had made up the quarrel, and Jonson received (Sept. 27), together with Dekker, Chettle and "another gentleman," earnest-money for a tragedy (undiscovered) called *Robert II., King of Scots.* He had a share in other ephemeral pieces of the period. In 1599 he brought out through the lord chamberlain's company at the Globe the elaborate comedy of *Every Man out of his Humour* (quarto 1600; fol. 1616)—a play subsequently presented before Queen Elizabeth. In this play he opened battle, though not yet overtly, on contemporary writers. *Cynthia's Revels,* performed by the chapel children in 1600 and printed with the first title of *The Fountain of Self-Love* in 1601, though it was no doubt primarily designed as a compliment to the queen, contained attacks on his old friends and associates Dekker and Marston. According to Jonson, his quarrel with Marston had begun by the latter attacking his morals, and in the course of it they came to blows, and might have come to worse. In *Cynthia's Revels,* Dekker is generally held to be satirized as Hedon, and Marston as Anaides (Fleay, however, thinks Anaides is Dekker, and Hedon Daniel), while the character of Crites was assumed, perhaps unjustly, by Dekker to refer to Jonson himself. Learning the intention of the two writers whom he had satirized, or at all events of Dekker, to wreak literary vengeance upon him, he anticipated them in *The Poetaster* (1601), again played by the children of the queen's chapel at the Blackfriars and printed in 1602; Marston and Dekker are here ridiculed respectively as the aristocratic Crispinus and the vulgar Democritus. The play was completed 15 weeks after its plot was first conceived. Fleay's supposition that the "purge," said in the *Returne from Parnassus* (Pt. II. act iv. sc. iii.) to have been administered by Shakespeare to Jonson in return for Horace's "pill to the poets" in this piece, consisted of *Troilus and Cressida* is supremely ingenious, but cannot be examined here. Dekker retaliated on *The Poetaster* by the *Satiromastix, or The Untrussing of the Humorous Poet* (1602). Some more last words were indeed attempted on Jonson's part, but in the *Apologetic Dialogue* added to *The Poetaster* in the edition of 1616, though excluded from that of 1602, he says he intends to turn his attention to tragedy.

Tragedies and Masques.—This intention he apparently carried out at once, for in 1602 he received £10 from Henslowe for a play, entitled *Richard Crookbacke,* now lost—unfortunately so, for purposes of comparison in particular, even if it was only, as Fleay conjectures, "an alteration of Marlowe's play." According to a statement by Overbury, early in 1603, "Ben Jonson, the poet, now lives upon one Townesend," supposed to have been the poet and masque-writer Aurelian Townshend, at one time steward to the 1st earl of Salisbury, "and scornes the world." To his other early patron, Lord Albany, Jonson dedicated the first of his two extant tragedies, *Sejanus,* produced by the king's servants at the Globe late in 1603, Shakespeare once more taking a part in the performance. Either on its performance or on its appearing in print in 1605, Jonson was called before the privy council by the Earl of Northampton. But it is open to question whether this was the occasion on which, according to Jonson's statement to Drummond, Northampton "accused him both of popery and treason."

When the reign of James I. opened in England, Jonson's genius, which, far from being "ponderous" in its operations, was singularly swift and flexible in adapting itself to the demands made upon it, met the new taste for masques and entertainments—new of course in degree rather than in kind—introduced with the new reign and fostered by both the king and his consort. The pageant which on May 7, 1603, bade the king welcome to London was partly of Jonson's, partly of Dekker's, devising, and he was able to deepen and diversify the impression by the composition of masques presented to James I. when entertained at houses of the nobility. *The Satyr* (June 25, 1603) was produced on one of these occasions, Queen Anne's sojourn at Althorpe, the seat of Sir Robert Spencer, afterwards Lord Althorpe, who seems to have previously bestowed some patronage upon him. *The Penates* followed on May-day 1604 at the house of Sir William Cornwallis at Highgate. The queen herself with her ladies danced in Jonson's *Masque of Blackness* at Whitehall on Jan. 6, 1605. He was soon occasionally employed by the court itself—already in 1606 in conjunction with Inigo Jones, as responsible for the "painting and carpentry"—and thus speedily showed himself master in a species of composition for which, more than any other English poet before Milton, he secured an enduring place in the national poetic literature. Incidentally, joint employment in *The King's Entertainment* (1604) had reconciled him with Dekker; and with Marston also, who in 1604 dedicated to him his *Malcontent,* he was again on pleasant terms. When, therefore, in 1604–05 Marston and Chapman (who, Jonson told Drummond, was loved of him), produced the excellent comedy of *Eastward Ho,* it contained some contributions by Jonson. At all events, when the authors were arrested on account of passages deemed insulting to the Scots, he "voluntarily imprisoned himself" with them. They were soon released, and a banquet at his expense, attended by Camden and Selden, terminated the incident.

If Jonson is to be believed, the prisoners had been threatened with mutilation of their ears and noses, and, "at the midst of the feast his old mother drank to him, and showed him a paper which she had intended (if the sentence had taken execution) to have mixed in the prison among his drink, which was full of lusty strong poison; and that she was no churl, she told him, she minded first to have drunk of it herself." This incident can hardly be the imprisonment during which Jonson sought the good offices of the earl of Salisbury in a letter endorsed 1605, in which he explains that since his "first error" he has so "attempered" his style as to have "given no cause to any good man of grief." Some authorities have surmised that there were two imprisonments, and that the play which occasioned the trouble, in which both Chapman and

Jonson took part, was *Sir Gyles Goosecappe,* and that the last imprisonment of the two poets was shortly after the discovery of the Gunpowder Plot. In the mysterious history of the Gunpowder Plot Jonson certainly had some obscure part. On Nov. 7, very soon after the discovery of the conspiracy, the council appears to have sent for him and to have asked him, as a loyal Roman Catholic, to use his good offices in inducing the priests to do something required by the council. Jonson tried, and failed; he declares, in a letter to Lord Salisbury, that "they (the priests) are all so enweaved in it that it will make 500 gentlemen less of the religion within this week, if they carry their understanding about them." Jonson did not himself return to the Church of England until five years later, however much it might have been to his advantage to do so.

The Works of His Prime.—His powers as a dramatist were at their height during the earlier half of the reign of James I.; and by the year 1616 he had produced nearly all the plays which are worthy of his genius. They include the tragedy of *Catiline* (acted and printed 1611), which achieved only a doubtful success, and the comedies of *Volpone, or the Fox* (acted 1605 or 1606, and printed in 1607 with a dedication "from my house in the Blackfriars"), *Epicoene, or the Silent Woman* (1609; entered in the Stationers' Register 1610), the *Alchemist* (1610; printed in 1610), *Bartholomew Fair* and *The Devil is an Ass* (acted respectively in 1614 and 1616). During the same period he produced several masques, usually in connection with Inigo Jones, with whom, however, he seems to have quarrelled already, though it is very doubtful whether the architect is really intended to be ridiculed in *Bartholomew Fair* under the character of Lanthorn Leatherhead. Littlewit, according to Fleay, is Daniel. The masques of this period are: the *Masque of Blackness* (1605) already mentioned; *Hymenaei* (1606), written for the wedding of Robert, earl of Essex; the *Masque of Beauty* (1608); *The Hue and Cry after Cupid* (1608), written for Lord Haddington's wedding; the *Masque of Queens* (1609), described by Swinburne as "the most splendid of all masques" and as "one of the typically splendid monuments or trophies of English literature"; *Oberm, the Faery Prince* (1611), a "masque of Prince Henries"; and five other court masques: *Love freed from Ignorance and Folly* (1611), *Love Restored* (1612), *The Irish Masque* (1613), *Mercury vindicated from the Alchemists* (1615), and *The Golden Age Restored* (1616). In 1616 a modest pension of 100 marks a year was conferred upon him, and Jonson published the first volume of the folio collected edition of his works.

He had other patrons more bountiful than the Crown, and (in 1613) had travelled to France as governor to the eldest son of Sir Walter Raleigh, then a State prisoner in the Tower, for whose society Jonson probably gained a liking at the Mermaid Tavern in Brest street, Cheapside. After 1616 Jonson continued to produce masques and entertainments when called upon; but he was attracted by many other literary pursuits. He was already entitled to lord it at the Mermaid, where his quick antagonist in earlier wit-combats (if Fuller's famous description be authentic) no longer apeared even on a visit from his comfortable retreat at Stratford. That on the other hand Ben carried his wicked town habits into Warwickshire, and there, together with Drayton, made Shakespeare drink so hard with them as to bring upon himself the fatal fever which ended his days, is a scandal with which we may fairly refuse to load Jonson's memory. That he had a share in the preparing for the press of the first folio of Shakespeare, or in the composition of its preface, is of course a mere conjecture.

In the year 1618, like Samuel Johnson a century and a half afterwards, Ben resolved to have a real holiday for once, and about midsummer started for his ancestral country, Scotland. He had determined to make the journey on foot; and he was followed by John Taylor, the water-poet, who proposed to accomplish his pilgrimage without a penny in his pocket. Jonson, who put money in his good friend's purse when he came up with him at Leith, spent more than a year and a half in Scotland, being elected a burgess in Edinburgh. The best-remembered hospitality which he enjoyed was that of the learned Scottish poet, William Drummond of Hawthornden, to which we owe the so-called *Conversations.* In these famous jottings, the work of no extenuating hand, Jonson lives for us to this day, delivering his censures, terse as they are, in an expansive mood whether of praise or of blame; he is ungenerously described in the postscript added by his fatigued and at times irritated host as "a great lover and praiser of himself, a contemner and scorner of others." A poetical account of his journey, "with all the adventures," which Jonson had intended to entitle *The Discoverie,* was burnt with Jonson's library, a calamity which befell him probably in 1623–24.

After his return to London early in May 1619, Jonson visited Oxford to receive the degree of M.A. Among his noble patrons and patronesses were the countess of Rutland (Sidney's daughter) and her cousin Lady Wroth. The extremely spirited *Gipsies Metamorphosed* (1621) was thrice presented before the king, who granted the poet the reversion of the office of master of the revels, besides proposing to confer upon him the honour of knighthood. This honour Jonson (hardly in deference to the memory of Sir Petronel Flash) declined; but there was no reason why he should not gratefully accept the increase of his pension in the same year (1621) to £200—a temporary increase only, inasmuch as it still stood at 100 marks when afterwards augmented by Charles I.

Last Plays.—The close of King James I.'s reign found the foremost of its poets in anything but a prosperous condition. Disease had weakened Jonson's strength, and the burning of his library and of his own mss., as his *Execration upon Vulcan* sufficiently shows, must have been no mere transitory trouble to a poor poet and scholar. Moreover, from the time of the accession of Charles I. early in 1625 onwards, royal patronage would no longer be due in part to intellectual sympathy. Jonson therefore returned to writing for the stage, and in 1625 produced, with no faint heart, but with a very clear anticipation of the comments which would be made upon the reappearance of the "huge, overgrown play-maker," *The Staple of News* (pr. 1631), a comedy excellent in some respects, but little calculated to become popular. Jonson, whose habit of body was not more conducive than were his ways of life to a healthy old age, had a paralytic stroke in 1626, and a second in 1628. In the latter year, on the death of Middleton, the appointment of city chronologer, with a salary of 100 nobles a year, was bestowed upon him. He appears to have considered the duties of his office as purely ornamental; but in 1631 his salary was suspended until he should have presented some fruits of his labours in his place, or—as he more succinctly phrased it—"yesterday the barbarous court of aldermen have withdrawn their chandlerly pension for verjuice and mustard, £33, 6s. 8d." Arrested in 1628 by mistake on the false charge of having eulogized the assassin of Buckingham, he was soon released, and apology was made for the error. In 1629 he once more essayed the stage with the comedy of *The New Inn,* which was damned on the first performance. It was printed in 1631, "as it was never acted but most negligently played"; and Jonson defended himself against his critics in his spirited *Ode to Himself.* The epilogue to *The New Inn* having dwelt not without dignity upon the neglect which the poet had experienced, King Charles sent the unlucky author a gift of £100, and then increased his standing salary to the same sum, with the addition of an annual tierce of canary—the poet-laureate's customary royal gift, though this designation of an office, of which Jonson discharged some of what became the ordinary functions, is not mentioned in the warrant dated March 26, 1630. In 1634, by the king's desire, Jonson's salary as chronologer to the city was again paid. To his later years belong the comedies, *The Magnetic Lady* (1632) and *The Tale of a Tub* (1633), both printed in 1640, and some masques. Jonson had quarrelled with Inigo Jones, and mocked him as Vitruvius Hoop in his last comedy.

The patronage of liberal-minded men, such as the earl, afterwards duke, of Newcastle—by whom he must have been commissioned to write his last two masques *Love's Welcome at Welbeck* (1633) and *Love's Welcome at Bolsover* (1634)—and Viscount Falkland, was not wanting. Jonson was the acknowledged chief of the English world of letters, both at the festive meetings where he ruled the roast among the younger authors whose pride it was to be "sealed of the tribe of Ben," and by the

avowal of grave writers, old or young, not one of whom would have ventured to dispute his titular pre-eminence. Nor was he to the last unconscious of the claims upon him which his position brought with it. When, nearly two years after he had lost his surviving son, death came upon the sick old man on Aug. 6, 1637, he left behind him an unfinished work of great beauty, the pastoral drama of *The Sad Shepherd* (printed in 1641). For 40 years, he said in the prologue, he had feasted the public; at first he could scarce hit its taste, but patience had at last enabled it to identify itself with the working of his pen.

Jonson was buried on the north side of the nave in Westminster Abbey, and the inscription, "O Rare Ben Jonson," was cut in the slab over his grave. In the beginning of the 18th century a portrait bust was put up to his memory in the Poets' Corner by Harley, earl of Oxford. Of Honthorst's portrait of Jonson at Knole Park there is a copy in the National Portrait Gallery; another was engraved by W. Marshall for the 1640 edition of his *Poems*.

We are so accustomed to think of Ben Jonson presiding, attentive to his own applause, over a circle of younger followers and admirers that we are apt to forget the hard struggle which he had passed through before gaining the crown now universally acknowledged to be his. Howell records, in the year before Ben's death, that a solemn supper at the poet's own house, where the host had almost spoiled the relish of the feast by vilifying others and magnifying himself, "T. Ca." (Thomas Carew) buzzed in the writer's ear "that, though Ben had barrelled up a great deal of knowledge, yet it seemed he had not read the *Ethics*, which, among other precepts of morality, forbid self-commendation." Jonson's quarrels do not appear to have entered deeply into his soul, or indeed usually to have lasted long. He was too exuberant in his vituperations to be bitter, and too outspoken to be malicious. He loved of all things to be called "honest," and there is every reason to suppose that he deserved the epithet. The old superstition that Jonson was filled with malignant envy of the greatest of his fellow-dramatists, and lost no opportunity of giving expression to it, hardly needs notice. Those who consider that Shakespeare was beyond criticism may find blasphemy in the saying of Jonson that Shakespeare "wanted art." Occasional jesting allusions to particular plays of Shakespeare may be found in Jonson, among which should hardly be included the sneer at "mouldy" Pericles in his *Ode to Himself*. But these amount to nothing collectively, and to very little individually; and against them have to be set, not only the many pleasant traditions concerning the long intimacy between the pair, but also the lines, prefixed to the first Shakespeare folio, as noble as they are judicious, dedicated by the survivor to "the star of poets," and the adaptation, clearly sympathetic notwithstanding all its buts, *de Shakespeare nostrat.* in the *Discoveries*.

Non-dramatic Works.—Jonson's learning and industry, which were alike exceptional, by no means exhausted themselves in furnishing and elaborating the materials of his dramatic works. His classical scholarship shows itself in other directions besides his translations from the Latin poets (the *Ars poetica* in particular), in addition to which he appears to have written a version of Barclay's *Argenis;* it was likewise the basis of his *English Grammar*, of which nothing but the rough draft remains (the ms. itself having perished in the fire in his library). And its effects are very visible in some of the most pleasing of his non-dramatic poems, which often display that combination of polish and simplicity hardly to be reached—or even to be appreciated—without some measure of classical training.

Exclusively of the few lyrics in Jonson's dramas his non-dramatic works are comprised in the *Epigrams* (published in the first folio of 1616), the lyrics and epistles of *The Forest* (also in the first folio); and the miscellaneous poems in *Underwoods* (published collectively in the 2nd folio). To these pieces in verse should be added the *Discoveries—Timber, or Discoveries made upon Men and Matters*, a commonplace book of aphorisms noted by the poet in his daily readings—thoughts adopted and adapted in more tranquil and perhaps more sober moods than those which gave rise to the outpourings of the *Conversations at Hawthornden*. As to the critical value of these *Conversations* it is far from being only negative; he knew how to admire as well as how to disdain. For these thoughts, though abounding with biographical as well as general interest, Jonson was almost entirely indebted to ancient writers, or to the humanists of the Renaissance.

His Dramatic Genius.—The extant dramatic works of Ben Jonson fall into three or, if his fragmentary pastoral drama be considered to stand by itself, into four distinct divisions. The tragedies are only two in number—*Sejanus his Fall* and *Catiline his Conspiracy*. Of these the earlier, as is worth noting, was produced at Shakespeare's theatre, in all probability before the first of Shakespeare's Roman dramas, and still contains a considerable admixture of rhyme in the dialogue. In both plays the action is powerfully conducted, and the care bestowed by the dramatist upon the great variety of characters introduced cannot, as in some of his comedies, be said to distract the interest of the reader. Both these tragedies are noble works, but both were alike too manifestly intended by their author to court the goodwill of what he calls the "extraordinary" reader. It is difficult to imagine that (with the aid of judicious shortenings) either could altogether miss its effect on the stage; but, while Shakespeare causes us to forget, Jonson seems to wish us to remember, his authorities. He has had to pay the penalty incurred by too obvious a desire to underline the learning of the author.

The strength of Jonson's dramatic genius lay in the power of depicting a great variety of characters, and in comedy alone he succeeded in finding a wide field for the exercise of this power. There may have been no very original or very profound discovery in the idea which he illustrated in *Every Man in his Humour*, and, as it were, technically elaborated in *Every Man out of his Humour* —that in many men one quality is observable which so possesses them as to draw the whole of their individualities one way, and that this phenomenon "may be truly said to be a humour." By refusing to apply the term "humour" (*q.v.*) to a mere peculiarity or affectation of manners, and restricting its use to actual or implied differences or distinctions of character, he broadened the whole basis of English comedy after his fashion, as Molière at a later date, keeping in closer touch with the common experience of human life, with a lighter hand broadened the basis of French and of modern Western comedy at large. It is a futile criticism to condemn Jonson's characters as a mere series of types of general ideas; on the other hand, it is a very sound criticism to object, with Barry Cornwall, to the "multitude of characters who throw no light upon the story, and lend no interest to it, occupying space that had better have been bestowed upon the principal agents of the plot."

Dryden, when criticizing Ben Jonson's comedies, thought fit, while allowing the old master humour and incontestable "pleasantness," to deny him wit and those ornaments thereof which Quintilian reckons up under the terms *urbana, salsa, faceta* and so forth. Such wit as Dryden has in view is the mere outward fashion or style of the day, the euphuism or "sheerwit" or *chic* which is the creed of Fastidious Brisks and of their astute purveyors at any given moment. In this Ben Jonson was no doubt defective; but it would be an error to suppose him, as a comic dramatist, to have maintained towards the world around him the attitude of a philosopher, careless of mere transient externalisms. It is said that the scene of his *Every Man in his Humour* was originally laid near Florence; and his *Volpone*, which is perhaps the darkest social picture ever drawn by him, plays at Venice. But the real atmosphere of his comedies is that of London town; and Ben Jonson's times live for us in his men and women, his country gulls and town gulls, his alchemists and exorcists, his "skeldring" captains and whining Puritans, and the whole ragamuffin rout of his *Bartholomew Fair*, the comedy *par excellence* of Elizabethan low life. He described the pastimes, fashionable and unfashionable, of his age, its feeble superstitions and its flaunting naughtinesses, its vapouring affectations and its lying effronteries, with an odour as of "divine tobacco" pervading the whole.

The richness and versatility of Jonson's genius cannot be fully appreciated without the study of what is preserved to us of his

"masques" and cognate entertainments. He was conscious enough of his success in this direction—"next himself," he said, "only Fletcher and Chapman could write a masque." He introduced, or at least established, the ingenious innovation of the anti-masque, which Schlegel has described as a species of "parody added by the poet to his device, and usually prefixed to the serious entry," and which accordingly supplies a grotesque antidote to the often extravagantly imaginative main conception. Jonson's learning, creative power and humorous ingenuity—combined, it should not be forgotten, with lyrical genius—all found abundant opportunities in these productions. The masque was by him thoroughly domesticated in the high places of English literature. He lived long enough to see its poetic masterpiece in *Comus*.

The Sad Shepherd, of which Jonson left behind him three acts and a prologue, is distinguished among English pastoral dramas by its freshness of tone; it breathes something of the spirit of the greenwood, and is not unnatural even in its supernatural element. The piece, with its charming love-scenes between Robin Hood and Maid Marion, unhappily, remains a fragment.

Though Ben Jonson never altogether recognized the truth of the maxim that the dramatic art has properly speaking no didactic purpose, his long and laborious life was not wasted upon a barren endeavour. In tragedy he added two works of uncommon merit to our dramatic literature. In comedy his aim was higher, his effort more sustained, and his success more solid than were those of any of his fellows. In the subsidiary and hybrid species of the masque, he helped to open a new and attractive though undoubtedly devious path in the field of dramatic literature. His intellectual endowments surpassed those of most of the great English dramatists in richness and breadth; and in energy of application he probably left them all behind. Inferior to more than one of his fellow-dramatists in the power of imaginative sympathy, he was first among the Elizabethans in the power of observation; and there is point in Barrett Wendell's paradox, that as a dramatist he was not really a poet but a painter. Yet it is less by these gifts, or even by his unexcelled capacity for hard work, than by the true ring of manliness that he will always remain distinguished among his peers.

BIBLIOGRAPHY.—The first folio volume of Jonson's *Works* (of which title his novel but characteristic use in applying it to plays was at the time much ridiculed) appeared in 1616; the second, professedly published in 1640, is described by Gifford as "a wretched continuation of the first, printed from mss. surreptitiously obtained during his life, or ignorantly hurried through the press after his death, and bearing a variety of dates from 1631 to 1641 inclusive." The works were reprinted in a single folio volume in 1692, in which *The New Inn* and *The Case is Altered* were included for the first time, and again in 6 vols. 8vo in 1715. Modern editions are by William Gifford (9 vols., 1816; often reprinted); a complete critical edition in preparation for the Clarendon Press by C. H. Herford and P. Simpson; selections in the Mermaid Series (3 vols., 1893–95), ed. B. Nicholson (re-issue, with pref. by C. H. Herford, 1904). There are numerous critical editions of individual plays, for particulars of which the reader may be referred to the articles on the separate plays in E. K. Chambers, *The Elizabethan Stage* (1923), vol. iii.; among these may be mentioned the editions of *Every Man in his Humour* and *Everyman out of his Humour* in Nos. 16 and 17 (1905 and 1907) of Bang's *Materialien zur Kunde des alten englischen Dramas*, by W. Bang and W. W. Greg; some by American scholars in the *Yale Studies in English*, ed. by A. S. Cook—*The Poetaster*, ed. H. S. Mallory (1905); *The Alchemist*, ed. C. M. Hathaway (1903); *The Devil is an Ass*, ed. W. S. Johnson (1905); *The Staple of News*, ed. De Winter (1905); *The New Inn*, ed. by G. Bremner (1908); *The Sad Shepherd* (with Waldron's continuation) has been edited by W. W. Greg for Bang's *Materialien zur Kunde des alten englischen Dramas* (Louvain, 1905).

The criticisms of Ben Jonson are too numerous for cataloguing here; among those by eminent Englishmen should be specially mentioned John Dryden's, particularly those in his *Essay on Dramatic Poësy* (1667–68; revised 1684), and in the preface to *An Evening's Love, or the Mock Astrologer* (1668), and A. C. Swinburne's *Study of Ben Jonson* (1889), in which, however, the significance of the *Discoveries* is misapprehended. *See* also F. G. Fleay, *Biographical Chronicle of the English Drama* (1891), i. 311–387, ii. 1–18; C. H. Herford, "Ben Jonson" (art. in *Dict. Nat. Biog.*, vol. xxx., 1802); A. W. Ward, *History of English Dramatic Literature* (2nd ed., 1899), ii. 296–407; and for a list of early impressions, W. W. Greg, *List of English Plays written before 1643 and printed before 1700* (Bibliographical Society, 1900), pp. 55–58 and supplement 11–15. An important French work on Ben Jonson, both biographical and critical, and containing, besides many translations of scenes and passages, some valuable appendices, to more than one of which reference has been made above, is Maurice Castelain's *Ben Johnson, l'homme et l'oeuvre* (1907). Among treatises or essays on particular aspects of his literary work may be mentioned Emil Koeppel's *Quellenstudien zu den Dramen Ben Jonson's*, etc. (1895); the same writer's "Ben Jonson's Wirkung auf zeitgenössische Dramatiker," etc., in *Anglicistische Forschungen*, 20 (1906); F. E. Schelling's *Ben Jonson and the Classical School* (1898); and as to his masques, A. Soergel, *Die englischen Maskenspiele* (1882) and J. Schmidt, "Über Ben Jonson's Maskenspiele," in Herrig's *Archiv*, etc., xxvii. 51–91. *See* also H. Reinsch, "Ben Jonson's Poetik und seine Beziehungen zu Horaz," in *Münchener Beiträge*, 16 (1899), and G. Gregory Smith, *Ben Jonson* (1910) in the English Men of Letters Series. (A. W. WA.; X.)

JONSON (JOHNSON, JANSON, JANSSENS), **CORNELIS VAN CEULEN** (Cologne) (1593–1662), Flemish painter, was apparently born in London and baptized on Oct. 14, 1593. His family derived originally from Cologne and emigrated from Antwerp to England about 1568. He worked in England from 1618 to 1643, and afterwards retired to Holland, working at Middelburg, Amsterdam, The Hague and Utrecht. In England he was patronized by James I. and the court, and under Charles I. he continued to paint the numerous portraits which adorn many English mansions and collections. Janssen's pictures, chiefly portraits, are distinguished by clear colouring, delicate touch, good taste and careful finish. He generally painted upon panel, and often worked on a small scale, sometimes producing replicas of his larger works. In all probability his earliest portrait (1618) was that of John Milton as a boy of ten.

JOOS VAN CLEVE (*c.* 1480–1540), Flemish painter. His full name was Joos van der Beke van Cleve. He is now commonly accepted as the author of the pictures, formerly grouped under the name of the Master of the Death of the Virgin, and it is suggested that he was the pupil of Jan Joest of Haarlem, sometimes called of Calcar, the painter of the great altarpiece at Calcar. The earliest work ascribed to Joos, the two wings with Adam and Eve, dated 1507, in the Louvre, show marked affinities with Joest's style. Joos is first mentioned in 1511, when he entered the Antwerp guild as a master painter. He soon received commissions from Cologne. The date 1515 is on one of the two well-known triptychs which he painted for the Hackeney family of Cologne, representing the "Death of the Virgin" on the central panel and the portraits of the male and female members of the family grouped on the wings. The larger picture is in the Munich Pinakothek, and the smaller is in the Cologne museum. These two pictures, which gave the artist the provisional name of "the Master of the Death of the Virgin," brought the Flemish tradition to Cologne, and exercised a far-reaching influence on the local school. Another picture painted for Cologne is "the Pieta" at Frankfurt (1524), commissioned by the senator J. Schmitgen for the church of Sancta Maria in Lyskirchen.

In 1520 Joos was appointed dean of his guild in Antwerp. In that year Dürer visited the city, and Joos must have admired his work for he copied the German master's "St. Jerome." It seems to have been his custom to copy other masters. "The Virgin" in the Spiridon collection in Paris recalls Van Eyck; "The Deposition" in the Johnson collection at Philadelphia is founded on Roger van der Weyden; the saviour in the Louvre on Quentin Massys; the "Two Children Embracing," of which there are many replicas, on Leonardo. He must have felt drawn to the great Italian by his delight in delicate modelling, and he may have seen some of Leonardo's work in France; for we know on the authority of Guicciardini that when Francis I. of France sent to Flanders for a good portrait painter, Joos van Cleve was chosen among others; he was rightly described as a good colourist. The originals of the portraits which he painted of the king, and of his wife, Eleanor of Austria, are no longer extant; but it is thought that the portraits of the king at Hampton Court and in the Johnson collection at Philadelphia, and of the queen at the Vienna museum, are replicas of his work. An attractive portrait by his hand, of Henry VIII. when young, at Hampton Court, suggests that the artist visited England. He also painted the emperor Maximilian (André collection, Paris). In the Louvre is a large altarpiece with a "Pieta" in the central panel, a "St. Francis" in the lunette and a "Last Supper" on the predella, which came from a church in Genoa. The "Last Supper" is founded on

the famous fresco of Leonardo da Vinci at Milan. Three more altarpieces were painted by Joos for Genoa; one of these is still in the church of San Donato; another is "The Crucifixion," now in the Blumenthal collection at New York; and the third is the larger version of the two "Adorations of the Magi," by the master, in the Dresden gallery. It is therefore probable that he visited Italy some time after 1530. He died at Antwerp in 1540.

Besides the pictures mentioned the following may be noted:—"The Crucifixion" in the Gardner collection, Boston; and "The Crucifixion" in the Naples museum; "The Annunciation" in the Friedsam collection, New York. Joos is at his best when painting the "Virgin and Child." His fame rests on "The Madonna" at Ince Hall and on "The Madonna" at the Vienna museum. The heads are delicately modelled, with pretty complexions and sweet expressions. There is much to remind us of Mabuse. Characteristic of his work are the accessories which he introduced in the foreground, such as a bowl of fruit, a knife, a lily in a glass, an open manuscript carefully finished—as in "The Madonna" in the Fitzwilliam museum at Cambridge, and one belonging to Mme. Nielson in Paris, and as in the "Virgin and Child and St. Anne" at Modena. The landscape backgrounds often recall the style of Joachim Patinir, who settled at Antwerp in 1515. The landscape in "St. John at Patmos" in the Kahn collection, New York, seems certainly to be by Patinir. Joos Van Cleve is sometimes called the Elder to distinguish him from his son, Cornelis van Cleve (1520–67), a distinguished portrait painter commonly known as Sotte Cleve, because he lost his reason.

See Max Friedländer, *Von Van Eyck bis Brueghel* (1921); Martin Conway, *The Van Eycks and their Followers* (1921); Ludwig Baldass, *Joos van Cleve* (Vienna, 1925).

JOPLIN, a city of Jasper county, Mo., U.S.A., on Joplin creek, 14om. S. of Kansas City. It is on Federal highways 66 and 71, and is served by the Frisco, the Kansas City Southern, the Missouri and Arkansas, the Missouri-Kansas-Texas, the Missouri Pacific and the Santa Fe railways, and by motor truck and bus lines. The population was 33,454 in 1930 (95% native white) and was 37,144 in 1940 by the federal census. Joplin is the shipping point for a rich farming, fruit-growing and stock-breeding district, and is the commercial centre of the most productive zinc and lead region of the country, which to the end of 1938 produced ores of an annual average value of $17,780,279. The coal mines of southeastern Kansas are within a short distance, and natural gas is piped in from the Kansas fields. There are important manufacturing industries (including lead smelters) with an output in 1937 valued at $6,719,389. The first settlement in this neighbourhood was made in 1838. Joplin was laid out and incorporated as a town in 1871. In 1872 it united with a rival town across the creek to form Union City, which in 1873 was chartered as a city under the name of Joplin. The name was first applied to the creek, in honour of the Rev. G. Joplin, a native of Tennessee. The city's period of greatest growth was the decade 1890–1900, when the population increased 162%.

JOPPA, an ancient city on the sea-coast of Palestine, and port for Jerusalem. Mod. *Yāfā,* Jaffa. It was taken in 1472 B.C. by the general of Thutmose III. by a clever stratagem. It is twice mentioned (Ya-pu) in the Tell-Amarna letters; and in the Papyrus Anastasi I. (13th century B.C.) the travelling "mohar" found here excellent workers in wood, metal and leather. In the Old Testament it is ascribed to Dan, and is mentioned as a seaport for the importation of Lebanon timber floated down the coast (1 Ki. ix. 26). In 701 B.C. Sinaherib besieged Joppa, then a fief of Askalon. The inscriptions of Eshmunazar (*c.* 400 B.C.) record that Jaffa was given to the Sidonians by the Persian monarch, but 50 years later it is recorded as independent. The conquest of Alexander, who established here a mint, changed its name to Joppe. Ptolemy I. garrisoned it (318 B.C.) and it was besieged and taken by Antigonus (315 B.C.). A den of pirates (*see* STRABO), it was destroyed by Vespasian during the Jewish War (A.D. 68). St. Peter remained at Joppa for a season, restored there Tabitha to life, and had his remarkable vision. The legend of Andromeda and the sea monster is located here, and Pompey's captain, Scaurus, could display to the wondering eyes of Rome the carcass of the monster which he had transported from Joppa.

In Christian times it became the see of a bishop. The Crusaders captured it (1126) and lost it to Saladin (1187). It was recaptured by Richard Lionheart (1191) and finally lost in 1196. Joppa was razed to the ground and its harbour choked by Sultan Nasir ed-Din Muhammad in 1345, because of a threatened new crusade. Towards the end of the 17th century, it began afresh to develop as a seaport. Napoleon took possession of the town in 1799. On Nov. 16, 1917, it was entered by British troops without opposition.

The population of Jaffa in 1939 was 77,400 (52,700 Muslims, 24,700 Jews). It is a great pilgrim port for Jerusalem. About 400 steamers call there annually. The chief exports are fruit (especially oranges), corn, sesame, cotton and leather. The imports include cotton and woollen manufactures, colonial requisites, iron, bricks, wood and building materials generally. One mile away is the thriving Jewish colony of Tel-Aviv, which dates from 1909. Its population has grown rapidly and was (1939) 130,300. Jaffa gives its name to one of the seven official districts into which the Mandated Territory has been divided for administrative purposes. It has no proper harbour. Plans for a harbour have been prepared, but their execution has been delayed owing to cost. Haifa is now proving a formidable rival to Jaffa. The industries of the town include soap-making, milling, cement-making, building and the manufacture of furniture. The streets and the buildings have little to commend them. Electricity has recently been introduced. Jaffa has daily rail and post communication with Egypt and Haifa; it has several monasteries and four hospitals.

See S. Tolkowsky, *The Gateway of Palestine: A History of Jaffa* (1924); *ibid.*, "New Light on the History of Jaffa," *Journ. Pal. Orient. Soc.* 5 (1925) 82 *seq.* (E. Ro.)

JORDAENS, JACOB (1593–1678), Flemish historical, genre and portrait painter, was born at Antwerp on May 19, 1593, and died there on Oct. 18, 1678. He studied, like Rubens, under Adam van Noort, and he married his master's daughter in 1616, the year after his admission to the gild of painters as a painter in water colours, though he painted mostly in oil. He never went to Italy as did the other Flemish artists of his time and his work is essentially Flemish in its exaggerated treatment of form and crude humour. His colour is warm and glowing, his figures incline to corpulency, his faces are red and healthy. He was a prolific painter, and employed a large number of pupils in his studio. Although he was a Calvinist he received numerous commissions for Catholic churches, and after the death of Rubens he was considered the greatest painter in his country. He is represented in almost all important European galleries and in the Metropolitan museum of art in New York. In 1652 he decorated the "Huis ten Bosch" near The Hague with mural paintings representing "the Triumph of Frederick Henry of Orange, Stadtholder of Holland," and "The Victory of Time."

He also executed designs for tapestries. A large number of his drawings and water colours are still extant; and nine engravings are ascribed to him.

See Max Rooses, *J. Jordaens, his Life and Work* (English trans., 1908).

JORDAN, CAMILLE (1838–1922), French mathematician, was born at Lyons on Jan. 5, 1838. He was educated at Paris, and was professor of mathematics in the École polytechnique from 1876 until he retired in 1912; at the same time he was "suppléant" in the Collège de France. Jordan edited the *Journal de Mathématiques* from 1885 until he died at Milan on Jan. 20, 1922.

Jordan's early researches were on geometry. In 1870 he was awarded the Poncelet prize for his *Traité des substitutions et des équations algébriques.* This book contains a comprehensive account of Galois' theory of groups of substitutions, and Jordan applied it to algebraic equations. He extended the work on to primitive transitive and composite groups and was able to solve a problem suggested by Abel as to whether a given algebraic equation is soluble by radicals. Jordan published his lectures, together with

most of his researches on analysis, in his *Cours d'Analyse de l'École Polytechnique* (3 vols., 1882). The 2nd edition (1893–1900) of this notable work contained a good deal more of Jordan's own work than the first. He treated the theory of functions from the modern point of view. He dealt with the function of bounded variation, and applied it to the curve known as Jordan's curve.

JORDAN, CAMILLE (1771–1821), French politician, was born at Lyons on Jan. 11, 1771. He took part in the resistance offered by Lyons to the Convention, and after the fall of the city in Oct. 1793, went into exile. In 1796 he returned to France, and in 1797 was returned by Lyons to the Council of the Five Hundred, where he advocated religious toleration; his appeal on behalf of church bells, in his *Rapport sur la Liberté des Cultes* won for him the sobriquet of Jordan-Cloche. Proscribed at the *coup d'état* on the 18th Fructidor (Sept. 4, 1797), he fled to Basle, and then to Germany. He returned to France in 1800 and, in spite of a pamphlet written against Bonaparte, was unmolested. Jordan became a leader of the constitutional opposition after the Restoration. He died in Paris on May 19, 1821.

His works include *Histoire de la conversion d'une dame parisienne* (1792); *Le vrai Sens du Vote national pour le Consulat à vie* (1802); *Sur les troubles de Lyon* (1818); other political pamphlets; and some translations from the German. His *Discours politiques* were collected in 1818.

JORDAN, DAVID STARR (1851–1931), American educator and naturalist, was born at Gainesville (N.Y.), on Jan. 19, 1851. He studied at Cornell university, at the Indiana Medical college and at Butler university. He was instructor in botany at Cornell (1871–72) and professor of natural history at Lombard university (Ill.) (1872–73). He was principal of the Appleton (Wis.) collegiate institute (1873–74) and taught in the Indianapolis high school from 1874 to 1875, when he was appointed professor of biology at Butler university. In 1879 he became professor of zoology at Indiana university, of which institution he was made president in 1885. In 1891 he was appointed president of Leland Stanford Jr. university, becoming its chancellor in 1913 and retiring in 1916.

Dr. Jordan was a member of the U.S. fish commission (1877–91, 1894–1909), U.S. commissioner in charge of fur, seal and salmon investigations for Alaska, and international commissioner of fisheries for Canada and the United States (1908–10). He was active in promoting the cause of international peace, being chief director of the World Peace Foundation (1910–14), president of the World's Peace Congress in 1915, and vice president of the American Peace Society. He also held many offices in learned societies. He was the author of a large number of books, among which are *Fishes of North and Middle America* (with B. W. Evermann, 4 vols., 1896); *Evolution and Animal Life* (with V. L. Kellogg, 1907); *World Peace and the College Man* (1914); *Democracy and World Relations* (1918); *Classification of Fishes* (1922); and *The Days of a Man* (autobiography in 2 vols., 1922).

JORDAN, DOROTHEA (1762–1816), Irish actress, was born near Waterford, Ireland, in 1762. Her mother, Grace Phillips, at one time known as Mrs. Frances, was a Dublin actress. Her father, whose name was Bland, was according to one account an army captain, but more probably a stage hand. Dorothy Jordan made her first appearance on the stage in 1777 in Dublin as Phoebe in *As You Like It*. In 1785 she made her first London appearance at Drury Lane as Peggy in *A Country Girl*. Before the end of her first season she had become an established public favourite, her acting in comedy being declared second only to that of Kitty Clive. Her engagement at Drury Lane lasted till 1809, and she played a large variety of parts. Among her most successful parts were Lady Teazle, Rosalind and Imogen, and such "breeches" parts as William in *Rosina*. During the rebuilding of Drury Lane she played at the Haymarket; she transferred her services in 1811 to Covent Garden. Here, in 1814, she made her last appearance on the London stage, and the following year, at Margate, retired altogether. Mrs. Jordan had a daughter by her first manager, in Ireland, and four children by Sir Richard Ford, whose name she bore for some years. In 1790 she became the mistress of the duke of Clarence (afterwards William IV.), and bore him ten children, who were ennobled under the name of Fitz Clarence, the eldest being created earl of Munster. In 1811 they separated by mutual consent, Mrs. Jordan being granted a liberal allowance. In 1815 she went abroad. She is generally understood to have died at St. Cloud, near Paris, on July 3, 1816, but the story that under an assumed name she lived for seven years after that date in England finds some credence.

See James Boaden, *Life of Mrs. Jordan* (1831).

JORDAN, THOMAS (1612?–1685), English poet and pamphleteer, was born in London and started life as an actor at the Red Bull theatre in Clerkenwell. He published in 1637 his first volume of poems, entitled *Poeticall Varieties*, and in the same year appeared *A Pill to Purge Melancholy*. In 1639 he recited one of his poems before King Charles I. He was a prolific Royalist pamphleteer, wrote many volumes of verse, and after the Restoration many plays, in at least one of which, *Money is an Ass* (1668), he acted. In 1671 he was appointed laureate to the city of London; from this date till his death in 1685 he annually composed a panegyric on the lord mayor, and arranged the pageantry of the lord mayor's shows, which he celebrated in verse. Many volumes of these curious productions are preserved in the British Museum. In addition to his numerous printed works, of which perhaps *A Royal Arbour of Loyall Poesie* (1664) and *A Nursery of Novelties in Variety of Poetry* are most deserving of mention, several volumes of his poems exist in manuscript.

See F. W. Fairholt, *Lord Mayor's Pageants* (Percy Society, 1843), containing a memoir of Thomas Jordan.

JORDAN, WILHELM (1819–1904), German poet and novelist, was born at Insterburg in East Prussia on Feb. 8, 1819. After studying at the Universities of Königsberg and Berlin, he settled in Leipzig as a journalist; but the democratic views expressed in some essays and the volumes of poems *Glocke und Kanone* (1841) and *Irdische Phantasien* (1842) led to his expulsion from Saxony in 1846. After the revolution of 1848 he was elected member for Freienwalde, in the first German parliament at Frankfort-on-Main. For a short while he sided with the Left, but soon joined the party of von Gagern. He was made ministerial councillor (*Ministerialrat*) in the naval department of the Government. When the project of the establishment of a German navy was abandoned, Jordan was pensioned and afterwards resided at Frankfort-on-Main until his death on June 25, 1904, devoting himself to literary work.

Among his best known works are: *Demiurgos* (3 vols., 1852–54), a "Mysterium," *Nibelunge*, an epic poem in alliterative verse, in two parts, (1) *Sigfriedsage* (1867–68; 13th ed. 1889) and (2) *Hildebrants Heimkehr* (1874; 10th ed., 1892); a tragedy, *Die Wittwe des Agis* (1858); the comedies, *Die Liebesleugner* (1855) and *Durchs Ohr* (1870; 6th ed. 1885); and the novels *Die Sebalds* (1885) and *Zwei Wiegen* (1887).

JORDAN (the down-comer; Arab. *esh-Sheri'a*, the watering-place), a river of Palestine flowing from north to south in one of the most remarkable depressions of the earth's crust. It was the Aulon of the Greeks and the Ghōr of the Arabs.

The Jordan valley is considered to be a great rift valley, in which a large section of the earth's crust has been let down between a series of faults. This line of weakness can be traced north of the Jordan valley proper between Lebanon and Hermon and southwards through the Dead sea, Wel Jeib, the Gulf of 'Akaba, the Red sea and into East Africa. The valley of Jordan proper has Cretaceous material on both its banks, with patches of Eocene on the north-west of the Sea of Galilee and on the west bank near the mouth of the Brook Cherith. The northern reaches of the valley, particularly in the neighbourhood of the Sea of Galilee has much volcanic material, perhaps in part responsible for the formation of the lake. River terraces are very marked throughout the course. For two-thirds of its length the river lies below the level of the sea; navigation is impossible.

Throughout history it has roughly divided the settled from the nomadic populations; and the crossing of Jordan, one way or the other, was always an event in the history of Israel. In Hebrew times its valley was regarded as a "wilderness" and, except in the Roman era, seems always to have been as sparsely inhabited as now.

Such human life as may be found in the valley is mainly

migratory. The villagers use it in winter as pasture-ground, and cultivate plots here and there. They retire on the approach of summer. Jericho is the only considerable settlement in the lower valley, and it lies some distance west of the stream on the lower slopes of the Judaean heights.

From its sources to the Dead sea the Jordan flows down a continuous inclined plane, broken here and there by rapids and small falls; between the Sea of Galilee and the Dead sea it meanders to such an extent that in a direct distance of 65 m. it traverses at least 200 m. The mean fall is about 9 ft. in the mile. The Jordan has two great sources, one in Tell el-Kadi (Dan) whence springs the Nahr Leddan, the other at Banias (anc. Paneas, Caesarea-Philippi), some 4 m. N., where the Nahr Banias issues from a cave in the Cretaceous rock. Two longer streams with less water may be included among the sources—the Nahr Barrighit and the Nahr Hasbany; the latter occupies a portion of the northward continuation of the Jordan structural depression. The four streams unite below Banias, once the gateway of the valley, and flow into a marshy tract now called Huleh (Semechonitis, and perhaps Merom of Joshua). There the Jordan begins to fall below sea-level, rushing down 680 ft. in 9 m. to a delta, which opens in to the Sea of Galilee.

Thereafter it follows a valley which is usually not above 4 m. broad, but opens out twice into the small plains of Bethshan and Jericho. The river actually flows in a depression, the Zor, which it has hollowed out for itself in the bed of the Ghor. During the rainy season (January and February), when the Jordan overflows its banks, the Zor is flooded, but when the water falls it produces rich crops. The floor of the Ghor falls gently to the Zor, and is intersected by deep channels, which have been cut by the small streams and winter torrents that traverse it on their way to the Jordan. As far south as Kurn Surtabeh most of the valley is fertile, and even between that point and the Dead sea there are several well-watered oases. In summer the heat in the Ghor is intense, 110° F in the shade, but in winter the temperature falls to 40°, and sometimes to 32° at night. During the seasons of rain and melting snow the river is very full. On leaving the Sea of Galilee the water is clear, but it soon becomes laden with soft marl which it washes away from its banks and deposits in the Dead sea. On the whole it is an unpleasant foul stream running between poisonous banks, and as such it seems to have been regarded by the Jews and other Syrians.

The Hebrew poets did not sing its praises, and others compared it unfavourably with the clear rivers of Damascus. The clay of the valley was used for brickmaking, and Solomon established brass foundries there. In Roman times it had extensive palm-groves and some small villages, and there were bridges on all the great lines of communication between eastern and western Palestine, and ferries at other places. The natural products of the Jordan valley—a tropical oasis sunk in the temperate zone, and overhung by Alpine Hermon—are unique. Papyrus grows in Lake Huleh, and rice and cereals thrive on its shores, whilst below the Sea of Galilee the vegetation is almost tropical. Sugar-cane has been grown since the days of the Crusades. The flora and fauna present a large infusion of Ethiopian types; and the fish have a great affinity with those of the rivers and lakes of east Africa. The neighbourhood of the Dead sea is very barren. It reaches the lake at 1,290 ft. below the level of the Mediterranean, the depression continuing downwards to twice that depth in the bed of the Dead sea. From the left the Jordan receives the Yarmuk (Hieromax) which flows in from the volcanic water bearing Jaulan a little south of the Sea of Galilee, and the Jabbok (Zerka) which comes from the Belka district to a point more than half-way down the lower course. On the right the Jalud descends from the plain of Esdraelon to near Beisan, and the Fara from near Nablus. Various salt springs rise in the lower valley. The rest of the tributaries are wadis, dry except after rains.

JORDANES (*fl. c.* 550), the historian of the Gothic nation. In his history of the Goths (cap. 50), he tells us that his grandfather Paria was notary to Candac, the chief of a confederation of Alans and other tribes settled during the latter half of the 5th century on the south of the Danube, and that he himself was the notary of Candac's nephew, the Gothic chief Gunthigis, until he became a monk. He belonged to a confederation of Germanic tribes, embracing Alans and Scyrians, which had come under the influence of the Ostrogoths settled on the lower Danube. He is accordingly friendly to the Goths, even apart from the influence of Cassiodorus, to whom he is largely indebted for his material; but he is also prepossessed in favour of the eastern emperors in whose territories this confederation lived. This makes him an impartial authority on the last days of the Ostrogoths. His interests lie, as Mommsen says, within a triangle of which the three points are Sirmium, Larissa and Constantinople.

We pass from the shadowy personality of Jordanes to his works.

1. The *Romana,* or, as he himself calls it, *De summa temporum vel origine actibusque gentis Romanorum,* was composed in 551. It was begun before, but published after, the *Getica.* It is a sketch of the history of the world from the creation, based on Jerome, the epitome of Florus, Orosius and the ecclesiastical history of Socrates, but it is valuable only for Jordanes's own period.

2. The other work commonly called *De rebus Geticis* or *Getica,* was styled by its author, *De origine actibusque Getarum.* He informs us that while he was engaged upon the *Romana* a friend named Castalius invited him to compress the twelve books—now lost—of the senator Cassiodorus, on *The Origin and Actions of the Goths.* Jordanes professes to have had this work for but three days, and to reproduce the sense not the words; but his book evidently contains long verbatim extracts. The preface is also taken almost word for word from Rufinus's translation of Origen's commentary on the epistle to the Romans. In the 18 years which elapsed between 533, the date when Cassiodorus finished his work, and the composition of the *Getica* of Jordanes, great events, most disastrous for the Romano-Gothic monarchy of Theodoric, had taken place. It was no longer possible to write as if the whole civilization of the Western world would sit down contentedly under the shadow of East Gothic dominion and Amal sovereignty. And, moreover, the instincts of Jordanes, as a subject of the Eastern Empire, predisposed him to flatter Justinian who had overthrown the barbarian kingdom in Italy. Hence we perceive two currents in the *Getica.* On the one hand, as a transcriber of the philo-Goth Cassiodorus, he magnifies the race of Alaric and Theodoric, and on the other hand he speaks of the great anti-Teuton emperor Justinian, and of his reversal of the German conquests of the 5th century, in language which would have grated on the ears of Totila and his heroes.

The *Getica* falls naturally into four parts. The first (chs. i.–xiii.) gives a geographical description of the three-quarters of the world, and in more detail of Britain and Scanzia (Sweden), from which the Goths under their king Berig migrated to the southern coast of the Baltic. Their migration across what has since been called Lithuania, and their differentiation into Visigoths and Ostrogoths, are next described. The second section (chs. xiv.–xxiv.) sets forth the genealogy of the Amal kings, and describes the inroads of the Goths into the Roman Empire in the 3rd century, with the foundation and the overthrow of the kingdom of Hermanric. The third section (chs. xxv.–xlvii.) traces the history of the West Goths from the Hunnish invasion to the downfall of the Gothic kingdom in Gaul under Alaric II. (376–507), the best part being the seven chapters devoted to Attila's invasion of Gaul and the battle of the Mauriac plains. The fourth section (chs. xlviii.–lx.) traces the history of the East Goths from the same Hunnish invasion to the first overthrow of the Gothic monarchy in Italy (376–539).

Jordanes has preserved extremely precious information. The Teutonic tribes whose dim origins he records have in the course of centuries attained to world-wide dominion. The battle in the Mauriac plains of which he is really the sole historian, is now seen to have had important bearings on the destinies of the world. Thus the hasty pamphlet of a half-educated Gothic monk has been forced into prominence, almost into rivalry with finished classical productions.

The classical edition of the above works is that of Mommsen (in

Mon. Germ. hist. auct. antiq., v., 1882), which supersedes the older editions, such as that in Muratori's *Scriptt. rer. Ital.*, vol. i. *See* Von Sybel, *De fontibus Jordanis* (1838); Schirren, *De ratione quae inter Jordanem et Cassiodorum intercedat Commentatio* (Dorpat, 1858); Kopke's *Die Anfänge des Königthums bei den Gothen* (1859); Dahn's *Die Könige der Germanen*, vol. ii. (Munich, 1861); Ebert's *Geschichte der Christlich-Lateinischen Literatur* (Leipzig, 1874); Wattenbach's *Deutschlands Geschichtsquellen im Mittelalter* (1877); and the introduction of Mommsen to his edition.

JORDANUS (JORDAN CATALANI) (*fl.* 1321–1330), French Dominican missionary and explorer in Asia, was born at Séverac in Aveyron, north-east of Toulouse. In 1302 he accompanied Thomas of Tolentino, via Negropont, to the East; in 1321 he was in western India, in the company of the same Thomas and certain other Franciscan missionaries on their way to China. Ill-luck detained them at Tana in Salsette island, near Bombay; and here Jordanus' companions ("the four martyrs of Tana") fell victims to Muslim fanaticism (April 7, 1321). Jordanus, escaping, worked some time at Baruch in Gujarat, near the Nerbudda estuary, and at Suali, near Surat. The *Epistles* of Jordanus, like the contemporary *Secreta* of Marino Sanuto (1306–1321), urge the pope to establish a Christian fleet upon the Indian seas. Jordanus, between 1324 and 1328 (if not earlier), probably visited Kulam and selected it as the best centre for his future work.

He probably revisited Europe about 1328, passing through Persia, and perhaps touching at the great Crimean port of Soldaia or Sudak. He was appointed a bishop in 1328 and nominated by Pope John XXII. to the see of Columbum in 1330. Together with the new bishop of Samarkand, Thomas of Mancasola, Jordanus was commissioned to take the pall to John de Cora, archbishop of Sultaniyah in Persia, within whose province Kulam was reckoned; he was also commended to the Christians of south India by Pope John. Either before going out to Malabar as bishop, or during a later visit to the west, Jordanus wrote his *Mirabilia*, which from internal evidence can only be fixed within the period 1329–1338; in this work he furnished the best account of Indian regions, products, climate, manners, customs, fauna and flora given by any European in the Middle Ages. We have no more knowledge of Jordanus after April 8, 1330.

Of Jordanus' *Epistles* there is only one MS., viz. Paris, National Library, 5006 Lat., fol. 182, r. and v.; of the *Mirabilia* also one MS. only, viz., London, British Museum, *Additional MSS.*, 19,513, fols. 3, r.–12 r. The text of the *Epistles* is in Quétif and Echard, *Scriptores ordinis praedicatorum*, i. 549–550 (Epistle I.); and in Wadding, *Annales minorum*, vi. 359–361 (Epistle II.); the text of the *Mirabilia* in the Paris Geog. Soc.'s *Recueil de voyages*, iv. 1–68 (1839). The Papal letters referring to Jordanus are in Raynaldus, *Annales ecclesiastici, 1330*, §§ lv. and lvii. (April 8; Feb. 14). *See* also Sir H. Yule's *Jordanus*, a version of the *Mirabilia* with a commentary (Hakluyt Soc., 1863) and the same editor's *Cathay*, giving a version of the *Epistles*, with a commentary, etc. (Hak. Soc., 1866).

JORGA, NICOLAS (1871–), Rumanian historian and statesman, was born at Botosani on June 17, 1871, and studied in Jassy, Paris, Berlin and Leipzig. In 1894 he was appointed professor of universal history at the University of Bucharest. Jorga made extensive researches in libraries and archives abroad and collected notes referring to the history of the Rumanian nation. As a result of his researches, he published over 20,000 documents in the *Annals* of the Rumanian Academy, of which he became one of the most prominent members. He was also associate professor at the Sorbonne, and holder of many foreign distinctions.

Jorga produced innumerable biographical and historical works, as well as many volumes on Rumanian art, towns, monasteries and historical monuments. He wrote several plays (historical dramas and comedies) which form part of the repertory of the Rumanian national theatres. He became also the director of *Neamul Românesc*, the official organ of the National Rumanian party. Jorga was for many years the chief of the nationalist party, which later combined with other political groups to form the National Rumanian party. He was prime minister from April 1931 to May 1932. Among his best known works are: *Geschichte des rumänischen Volkes* (1905); *Geschichte des osmanischen Reiches* (5 vol., 1908, etc.); *The Byzantine Empire* (Eng. trans. by A. H. Powles, 1907); *Histoire des états balcaniques jusqu'à 1924* (1925), and a *History of Rumania* (Eng. trans. 1925, bibl.). He also wrote numerous historical works in French, Italian and Swedish.

JORIS, DAVID, the common name of JAN JORISZ or JORISZOON (*c.* 1501–1556), Anabaptist heresiarch who called himself later JAN VAN BRUGGE; was the son of Georgius Joris de Koman, otherwise Joris van Amersfoordt, of Delft. In the year 1524 he began to issue appeals in prose and verse against the Mass and against the pope as antichrist. On Ascension Day 1528 he committed an outrage on the Eucharist carried in procession; he was placed in the pillory, had his tongue bored, and was banished from Delft for three years. He turned to the Anabaptists, was rebaptized in 1533, and for some years led a wandering life. He came into relations with Jan Laski, and with Menno Simons. Much influenced by Melchior Hofmann, he had no sympathy with the fanatic violence of the Münster faction. At the Buckholdt conference in August 1536 he played a mediating part. His mother, in 1537, suffered martyrdom as an Anabaptist. Soon after he took up the rôle of a new Messiah. From April 1, 1544, bringing with him some of his followers, he lived in Basel, which was to be the New Jerusalem, under the name of Jan van Brugge. His writings all in Dutch amounted to over 200 in number. His *magnum opus* was *'T Wonder Boeck* (*n.d.* 1542, 2 pts.; 1551, 4 pts.; both edns. anonymous). He died on Aug. 25, 1556, and was buried, with all religious honours, in the church of St. Leonard, Basel. Three years later, Nicolas Blesdijk denounced the dead man to the authorities of Basel. An investigation took place in 1559, a conviction for heresy followed, and the exhumed body of Jorisz was burned, together with his portrait.

See P. Burckhardt, *Basler Biographien* (1900); Hegler, in Hauck's *Realencyklopädie* (1901), and the bibliography by A. van der Linde, 1867, supplemented by E. Weller, 1869.

JOSEPH, in the Old Testament, the son of the patriarch Jacob by Rachel; the name of a tribe of Israel. Unlike the other "sons" of Jacob, Joseph is usually reckoned as two tribes (viz. his "sons" Ephraim and Manasseh), and closely associated with them is the small tribe of Benjamin (*q.v.*), which lay immediately to the south. These three constituted the "sons" of Rachel (the ewe), and with the "sons" of Leah (the antelope?) are thus on a higher level than the "sons" of Jacob's concubines. The "house of Joseph" and its offshoots occupied the centre of Palestine from the plain of Esdraelon to the mountain country of Benjamin, with dependencies in Bashan and northern Gilead (*see* MANASSEH). Practically it comprised the northern kingdom, and the name is used in this sense in 2 Sam. xix. 20; Amos v. 6; vi. 6; the extension of the term being parallel to the development of the name Jacob. The story of the tribal ancestor is recounted in Gen. xxxvii.–l. (*see* GENESIS). Joseph, the younger and envied son, is seized by his brothers at Dothan and is sold to a party of Ishmaelites or Midianites, who carry him down to Egypt. After various vicissitudes he gains the favour of the king of Egypt by the interpretation of a dream, and obtains a high place in the kingdom. Forced by a famine his brothers come to buy food, and in the incidents that follow Joseph shows his preference for his young brother Benjamin (*cf.* the tribal data above). His father Jacob is invited to come to Goshen, where a settlement is provided for the family and their flocks. This is followed many years later by the exodus, the conquest of Palestine, and the burial of Joseph's body in the grave at Shechem which his father had bought. (T. H. R.)

JOSEPH, in the New Testament the husband of Mary. His genealogy appears in Matt. i., 1–17 and Luke iii., 23–38. The former, obviously artificial in structure (notice 3×14 generations), traces the Davidic descent through Kings to prove the Messianic claim. The facts concerning Joseph, common to the birth-narratives (Matt. i.–ii., Luke i.–ii.), are (*a*) that he was a descendant of David; (*b*) that Mary was already betrothed to him at the birth of Jesus; and (*c*) that after the birth he lived at Nazareth; but these facts are handled differently, Joseph being prominent in Matt. but completely subordinated in Luke. At Nazareth Joseph followed the trade of a carpenter or builder (Matt. xiii., 55), and probably died before the public ministry of Christ began (*cf.* John xix, 26). Against Cerinthus and the modern rationalist

school, Christian tradition as a whole testifies to Joseph's virginity before and after his marriage with Mary. The statement of the *Protoevangel of James*, hesitantly accepted by Origen and a few Fathers, that "the brethren of Jesus" were sons of Joseph by a former marriage, is quite untenable. In the Roman Catholic Church, March 19 is a Feast in Joseph's honour, as well as the Third Sunday after Easter (the patronage, St. Joseph being the patron of the whole Church); Jan. 23 commemorates the betrothal of Mary and Joseph. *See* further JOHN THE BAPTIST for Birth-Narratives.

JOSEPH I. (1678–1711), Roman emperor, elder son of the emperor Leopold I. and his third wife, Eleanora, was born in Vienna on July 26, 1678. In 1687 he received the crown of Hungary, and he was elected king of the Romans in 1690. In 1699 he married Wilhelmina Amalia of Brunswick-Lüneburg, by whom he had two daughters. In 1702, on the outbreak of the War of the Spanish Succession, he joined the imperial general Louis of Baden in the siege of Landau. He succeeded his father as emperor in 1705, and during his reign the imperial general Prince Eugène, either acting alone in Italy or with the duke of Marlborough in Germany and Flanders, defeated the armies of Louis XIV. Hungary was disturbed by the conflict with Francis Rákóczy II., who eventually took refuge in France. The conflict was ended by the peace of Szatmar (1711). The emperor reversed many of the pedantically authoritative measures of his father, but he fought stoutly for what he believed to be his rights. Joseph showed himself hostile to the Jesuits, by whom his father had been much influenced. He began the attempts to settle the question of the Austrian inheritance by a pragmatic sanction (*see* HABSBURG [HAPSBURG]), which were continued by his brother Charles VI. Joseph died in Vienna on April 17, 1711, of small-pox. He was a good musician; his musical works, with those of Ferdinand III. and Leopold I. were edited in 1892–93 by G. Adler.

See F. Krones von Marchland, *Grundriss der Oesterreichischen Geschichte* (1882); F. Wagner, *Historia Josephi Caesaris* (1746); J. C. Herchenhahn, *Geschichte der Regierung Kaiser Josephs I.* (1786–89); C. van Noorden, *Europäische Geschichte im 18. Jahrhundert* (1870–82).

JOSEPH II. (1741–1790), Roman emperor, eldest son of the empress Maria Theresa and her husband Francis I., was born on March 13, 1741, in the first stress of the War of the Austrian Succession. Maria Theresa gave orders that he was only to be taught as if he were amusing himself; the result was that he acquired a habit of crude and superficial study. He derived his real education from the writings of Voltaire and the encyclopaedists and from the example of Frederick the Great. Government officials instructed him in the mechanical details of the administration of the Austrian hereditary lands. In 1761 he was made a member of the newly constituted council of State (*Staatsrath*) and began to draw up memoranda (*Reveries*) for his mother to read. These papers contain the germs of his later policy. He was a friend to religious toleration, anxious to reduce the power of the church, to relieve the peasantry of feudal burdens, and to remove restrictions on trade and on knowledge. So far he did not differ from Frederick, Catherine of Russia or his own brother and successor Leopold II., all enlightened rulers of the 18th-century stamp. Where Joseph differed from great contemporary rulers was in the fanatical intensity of his belief in the power of the State when directed by reason, of his right to speak for the State uncontrolled by laws, and of the reasonableness of his own reasons.

After the death of his father in 1765 he became emperor and was made co-regent by his mother in the Austrian dominions, but until his mother's death his activity was limited to the army, foreign affairs, and a limited jurisdiction in the administration of justice. Maria Theresa was resolved that neither husband nor son should ever deprive her of sovereign control in her hereditary dominions. Joseph, by threatening to resign his place as co-regent, could induce his mother to abate her dislike to religious toleration. He could, and he did, place a great strain on her patience and temper, as in the case of the first partition of Poland and the Bavarian War of 1778, but in the last resort the empress spoke the final word. During these wars Joseph met Frederick the Great privately at Neisse in 1769, and again at Mährisch-Neustadt in 1770. On the second occasion he was accompanied by Prince Kaunitz, whose conversation with Frederick may be said to mark the starting-point of the first partition of Poland. To this and to every other measure which promised to extend the dominions of his house Joseph gave hearty approval. Thus he was eager to enforce its claim on Bavaria upon the death of the elector Maximilian Joseph in 1777. In April of that year he paid a visit to his sister the queen of France (*see* MARIE ANTOINETTE), travelling under the name of Count Falkenstein. His observations led him to predict the approaching downfall of the French monarchy, and he was not impressed favourably by the army or navy. In April 1780 he paid a visit to Catherine of Russia, against the wish of his mother.

The death of Maria Theresa on Nov. 27, 1780, left Joseph free. He immediately directed his Government on a new course, full speed ahead. He proceeded to attempt to realize his ideal of a paternal despotism acting on a definite system for the good of all. He completed the emancipation of the serfs begun by his mother. Other changes were the spread of education, the secularization of church lands, the reduction of the religious orders and the clergy to complete submission to the lay State, and the promotion of unity by the compulsory use of the German language. He established asylums, hospitals, orphanages, and training institutions. He settled German colonists in Hungary and on the Slav lands of the Empire. Joseph also sought to realize large reforms in taxation and in the administration of justice. His anti-clerical innovations (*Josephiomus*) induced Pope Pius VI. to pay him a visit in July 1782. Joseph received the pope politely, and showed himself a good Catholic, but refused to be influenced.

Joseph's anti-clerical policy and his interference with ancient custom caused unrest in the hereditary lands of the empire. Meanwhile he adopted a succession of foreign policies all aimed at aggrandisement, and all equally calculated to offend his neighbours—all taken up with zeal, and dropped in discouragement. He endeavoured to get rid of the Barrier Treaty, which debarred his Flemish subjects from the navigation of the Scheldt; when he was opposed by France he turned to other schemes of alliance with Russia for the partition of Turkey and Venice. They also had to be given up in the face of the opposition of neighbours, and in particular of France. Then he resumed his attempts to obtain Bavaria—this time by exchanging it for Belgium—and only provoked the formation of the *Fürstenbund* organized by the king of Prussia. Finally he joined Russia in an attempt to pillage Turkey, beginning with an unsuccessful attempt to surprise Belgrade in time of peace. In the Turkish campaign of 1788 he accompanied his army, but showed no capacity for war. In November he returned to Vienna with ruined health, and during 1789 was a dying man. The concentration of his troops in the east gave the malcontents of Belgium an opportunity to revolt. In Hungary the nobles were all but in open rebellion, and in his other States there were peasant risings, and a revival of particularist sentiments. Joseph was left entirely alone. His minister Kaunitz refused to visit his sick-room, and did not see him for two years. His brother Leopold remained at Florence. At last Joseph, worn out and broken-hearted, recognized that his servants could not, or would not, carry out his plans. On Jan. 30, 1790, he formally withdrew all his reforms, and he died on Feb. 20.

Joseph II. was twice married, first to Isabella (d. 1763), daughter of Philip, duke of Parma, to whom he was attached. After her death, a political marriage was arranged with Josepha (d. 1767), daughter of Charles Albert, elector of Bavaria (the emperor Charles VII.). It proved extremely unhappy. Joseph left no children, and was succeeded by his brother Leopold II.

Many volumes of the emperor's correspondence have been published. Among them are *Maria Theresia und Joseph II. Ihre Korrespondenz samt Briefen Josephs an seinen Bruder Leopold* (1867–68); *Joseph II. und Leopold von Toskana. Ihr Briefwechsel 1781–1790* (1872); *Joseph II. und Katharina von Russland. Ihr Briefwechsel* (1869); and *Maria Antoinette, Joseph II. und Leopold II. Ihr Briefwechsel* (1866); all edit. by A. Ritter von Arneth. Other collections are: *Joseph II., Leopold II. und Kaunitz. Ihr Briefwechsel*, edit. by A. Beer (1873); *Correspondances intimes de l'empereur Joseph II. avec son ami, le comte de*

Cobenzl et son premier ministre, le prince de Kaunitz, edit. by S. Brunner (1871); *Joseph II. und Graf Ludwig Cobenzl. Ihr Briefwechsel*, edit. by A. Beer and J. von Fiedler (1901); and the *Geheime Korrespondenz Josephs II. mit seinem Minister in den Oesterreichischen Niederlanden Ferdinand Graf Trauttmannsdorff 1787–1789*, edit. by H. Schlitter (1902). Among the lives of Joseph may be mentioned: A. J. Gross-Hoffinger, *Geschichte Josephs II.* (1847); A. Fournier, *Joseph II.* (1885); and J. Wendrinski, *Kaiser Joseph II.* (1880). There is a useful small volume on the emperor by J. Franck Bright (1897). Other books which may be consulted are: G. Wolf, *Das Unterrichtswesen in Oesterreich unter Joseph II.* (1880), and *Oesterreich und Preussen 1780–1790* (1880), A. Wolf, and H. von Zwiedeneck-Südenhorst, *Oesterreich unter Maria Theresia, Joseph II. und Leopold II.* (1882–84); H. Schlitter, *Die Regierung Josephs II. in den Oesterreichischen Niederlanden* (1900); and *Pius VI. und Joseph II. 1782–1784* (1894); O. Lorenz, *Joseph II. und die Belgische Revolution* (1862); and L. Delplace, *Joseph II. et la révolution brabançonne* (1890); P. P. Mitrofanov, *Joseph II., seine politische und kulturelle Tätigkeit* (Wien, 1910); J. Walter, *Kaiser Josef II. der Volksfreund auf dem Throne* (Budweis, 1913).

JOSEPH, former Archduke of Austria (1872–), Austro-Hungarian field-marshal, was born at the chateau of Alcsuth in Hungary on August 9, 1872, the son of the Archduke Joseph and Marie Clotilde of Saxe-Coburg. The prince belongs to the "Hungarian branch" of the House of Habsburg-Lorraine, and is a nephew of the last Palatine of Hungary, the Archduke Stephen. Joseph took over at the outbreak of the World War the post of commander of the VII. Army corps and fought against Serbia, then in the Carpathians, and in Poland against Russia; subsequently he commanded the IX. Corps in nine battles on the Isonzo, then commanded on the Russian front, extending from the south-east corner of Transylvania along the ridges of the Carpathians as far as the Upper Theiss, and finally was leader of the V. Army against Italy. He displayed most conspicuous personal bravery, and understood in a remarkable degree how to attach the troops to his person. At the outbreak of the revolution he conducted negotiations, as *homo regius*, between King Charles and the Karolyi party (*see* HUNGARY). After the fall of the Soviet Republic he was at first made Regent of Hungary (Aug.–Sept. 1919), but was compelled to retire owing to the intervention of the Entente Powers, who would not permit any Habsburg to hold a commanding position in Hungary. He married in 1893 the Princess Augusta of Bavaria.

JOSEPH, FATHER (FRANÇOIS LECLERC DU TREMBLAY) (1577–1638), French Capuchin monk, the confidant of Richelieu, eldest son of Jean Leclerc du Tremblay, president of the chamber of requests of the parlement of Paris, served in the army and in diplomacy until 1599, when he entered the Capuchin monastery of Orleans, and became a notable preacher and reformer. In 1606 he aided Antoinette d'Orléans, a nun of Fontevrault, to found the reformed order of the Filles du Calvaire, and wrote a manual of devotion for the nuns. His proselytizing zeal led him to send missionaries throughout the Huguenot centres—he had become provincial of Touraine in 1613. At the conferences of Loudun he opposed the Gallican claims advanced by the parlement, which the princes were upholding. In 1612 he began close personal relations with Richelieu which have indissolubly joined in history and legend the cardinal and the "Eminence grise." As Richelieu's agent he manoeuvred at the diet of Regensburg (1630) to thwart the aggression of the emperor, and then advised the intervention of Gustavus Adolphus, reconciling himself to the use of Protestant armies by the theory that one poison would counteract another. He died in 1638, just as the cardinalate was to be conferred upon him.

See Fagniez, *Le Père Joseph et Richelieu* (1894).

JOSEPH OF ARIMATHAEA (presumably the Ramathaim of 1 Macc. xi. 34 and the Ramathaim-Zophim of 1 Sam. i. 1, in the hill country of Ephraim), according to all four Gospels buried Jesus Christ. According to Mark he was an honourable councillor (εὐσχήμων βουλευτής), who was waiting for the Kingdom of God. The Sabbath was approaching, *i.e.*, it was nightfall on Friday afternoon, and had he not intervened the body would have been left for more than 24 hours. The law of Deut. xxi. 23 ordered that the body of a malefactor hung on a tree should not remain there all night. Joseph went to Pilate and got leave to bury the body. He did this with reverence and laid it in a rock-hewn tomb, rolling a stone in front of the entrance. There is no reason to think that he was a disciple of Jesus. Respect for the law is sufficient motive. His approach to Pilate is more intelligible if he was a member of the Sanhedrin or acting on their instructions. He used the nearest tomb; to search for a suitable one at a distance might have entailed breaking the Sabbath.

Such is Mark's story (xv. 42–46), which it is excessive scepticism to doubt. The later narratives add nothing of historical value. Luke and John have access to good Jerusalem tradition for the closing scenes of the Gospel story, but neither they nor Matthew seem to have any other source than Mark for the burial. Their additions and variations must therefore be attributed to the natural growth of Christian tradition. Matthew makes Joseph a rich man and a disciple of Jesus, and the tomb his own new one. Luke makes it clear that he was a member of the Sanhedrin, who had not consented to the condemnation. John says that he was a secret disciple and that Nicodemus was associated with him in the burial. In a later tradition, "the Gospel of Peter," Joseph is a friend of Pilate and arranges with him for the burial before the Crucifixion.

In a picturesque legend Joseph is said to have come to Britain and constructed the first Christian church in the land on an island in Somerset, afterwards Glastonbury. The passages in William of Malmesbury which contain the legend are said by J. A. Robinson in his *Two Glastonbury Legends* to be interpolations. In any case they belong to the realm of poetry rather than genuine tradition.

(W. K. L. C.)

JOSEPHINE (MARIE ROSE JOSEPHINE TASCHER DE LA PAGERIE) (1763–1814), empress of the French, was born in the island of Martinique June 23, 1763, being the eldest of three daughters of Joseph Tascher de la Pagerie, lieutenant of marines. She married in 1779 Viscount Alexandre Beauharnais. There were two children of the marriage, Eugène and Hortense Eugénie (*see* BEAUHARNAIS). After a visit to her native island Josephine returned to Paris and made some sensation in society. As the Revolution ran its course her husband, as an ex-noble, incurred the suspicion and hostility of the Jacobins; and his ill-success at the head of a French army on the Rhine led to his arrest and execution. Josephine was left in a position of much perplexity and some hardship, but Paul Barras and Madame Tallien assisted her, and she was one of the queens of Parisian society in the year 1795, when Napoleon Bonaparte's fame was beginning. His nomination to the command of the army of Italy appears to have decided her to marry him. The civil marriage took place March 8, 1796, two days before the bridegroom set out for his command. Josephine declined to accompany him to Nice and Italy.

Bonaparte's letters to Josephine during the campaign reveal the ardour of his love, while she rarely answered them. During his absence in Egypt in 1798–99, her relations to an officer, Hippolyte Charles, were most compromising; and Bonaparte on his return thought of divorcing her. Her tears and the entreaties of Eugène and Hortense brought about a reconciliation; and during the period of the consulate (1799–1804) their relations were on the whole happy, though Napoleon's conduct now gave his consort grave cause for concern. His brothers and sisters more than once begged him to divorce Josephine, and from the time when he became first consul for life (August 1802) with large powers over the choice of a successor, he kept open the alternative of a divorce. Josephine's anxieties increased on the proclamation of the Empire (May 18, 1804); and on the 1st of December 1804, the eve of the coronation at Notre Dame, she gained her wish that she should be married anew to Napoleon with religious rites. Despite Josephine's care, Napoleon procured omission of one formality, the presence of the parish priest; but at the coronation scene Josephine appeared radiant with triumph over her envious relatives. The august marriages contracted by her children Eugène and Hortense seemed to establish her position; but her ceaseless extravagance and, above all, the impossibility that she should bear a son strained the relations between Napoleon and Josephine. She complained of his infidelities and growing callousness. The end came in sight after the campaign of 1809, when Napoleon caused the announcement to be made to her that reasons of state compelled him to divorce her. Despite all her pleadings he held to his

resolve. The most was made of the slight technical irregularity at the marriage ceremony of Dec. 1, 1804; and the marriage was declared null and void. At her private retreat, La Malmaison, near Paris, which she had beautified with curios and rare plants and flowers, Josephine closed her life in dignified retirement. Napoleon more than once came to consult her upon matters in which he valued her tact and good sense. She died May 29, 1814.

See M. A. Le Normand, *Mémoires historiques et secrets de Joséphine* (2 vols., 1820); *Lettres de Napoléon à Joséphine* (1833); J. A. Aubenas, *Hist. de l'impératrice Joséphine* (2 vols., 1858–59); J. Turquan, *L'Impératrice Joséphine* (2 vols., 1895–96); F. Masson, *Joséphine* (3 vols., 1899–1902); *Napoleon's Letters to Josephine* (1796–1812), translated and edited by H. F. Hall (1903); P. W. Sergeant, *The Empress Josephine* (1908); Gérard d'Houville, *La vie amoureuse de l'impératrice Joséphine* (1925); Walter Geer, *Napoleon and Josephine, The Rise of the Empire* (1924); Ida M. Tarbell, *A Life of Napoleon Bonaparte, with a Sketch of Josephine, Empress of the French,* 2nd ed. (1926).

JOSEPHUS, FLAVIUS (A.D. 37–95?), Jewish historian and military commander, born in the first year of Caligula (37–38). A precocious student of the Law, he made trial of the three sects of Judaism—Pharisees, Sadducees and Essenes—before he reached the age of nineteen. Then, having spent three years in the desert with the hermit Banus, who was presumably an Essene, he became a Pharisee. In 64 he went to Rome to intercede on behalf of some priests, his friends, whom the procurator Felix had sent to render account to Caesar for some insignificant offense. Making friends with Alityrus, a Jewish actor, who was a favourite of Nero, Josephus obtained an introduction to the empress Poppaea and effected his purpose by her help. His visit to Rome enabled him to speak from personal experience of the power of the Empire, when he expostulated with the revolutionary Jews on his return to Palestine. But they refused to listen; and he, with all the Jews who did not fly the country, was dragged into the great rebellion of 66. In company with two other priests, Josephus was sent to Galilee under orders (he says) to persuade the ill-affected to lay down their arms and return to the Roman allegiance, which the Jewish aristocracy had not yet renounced. Having sent his two companions back to Jerusalem, he organized the forces at his disposal, and made arrangements for the government of his province. His obvious desire to preserve law and order excited the hostility of John of Giscala, who endeavoured vainly to remove him as a traitor to the national cause by inciting the Galileans to kill him and by persuading the Sanhedrin at Jerusalem to recall him. In the spring of 67 the Jewish troops, whom Josephus had drilled so sedulously, fled before the Roman forces of Vespasian and Titus. He sent to Jerusalem for reinforcements, but none came. With the stragglers who remained, he held a stronghold against the Romans by dint of his native cunning, and finally, when the place was taken, persuaded forty men, who shared his hiding-place, to kill one another in turn rather than commit suicide. They agreed to cast lots, on the understanding that the second should kill the first and so on. Josephus providentially drew the last lot and prevailed upon his destined victim to live. Their companions were all dead in accordance with the compact; but Josephus at any rate survived and surrendered. Being led before Vespasian, he was inspired to prophesy that Vespasian would become emperor. When his prophecy was fulfilled he was liberated, assumed the name of Flavius, the family name of Vespasian, and accompanied his patron to Alexandria. He returned to Rome, was awarded a pension, and was made a Roman citizen, receiving an estate in Judaea.

WORKS.—1. *The Jewish War* (Περὶ τοῦ Ἰουδαϊκοῦ πολέμου), the oldest of Josephus' extant writings, was written towards the end of Vespasian's reign (69–79).

2. *The Jewish Antiquities* (Ἰουδαϊκὴ Ἀρχαιολογία) covers in twenty books the history of the Jews from the creation of the world to the outbreak of the war with Rome. It was finished in the thirteenth year of Domitian (93).

3. Josephus wrote a narrative of his own *Life* in order to defend himself against the accusation brought by his enemy Justus of Tiberias to the effect that he had caused the Jewish rebellion.

4. The two books *Against Apion* are a defence or apology directed against current misrepresentations of the Jews. Earlier titles are *Concerning the Antiquity of the Jews* or *Against the Greeks.*

The Greek text of Josephus was edited by B. Niese (Berlin, 1885–95), S. A. Naber (Leipzig, 1888–96), and H. St. John Thackeray and R. Marcus (*Loeb Classical Library,* with a new translation to supersede the standard English version by W. Whiston [1737]). For bibliography, *see* Schürer's *History of the Jewish People* and the *Universal Jewish Encyclopedia.* (J. H. A. H.; X.)

JOSHUA, BOOK OF, the sixth book of the Old Testament, and the first of the group known as the "Former Prophets." It takes its name from Joshua the son of Nūn, an Ephraimite who, on the death of Moses, assumed the leadership to which he had previously been designated by his chief (Deut. xxxi. 14 *seq.,* 23), and proceeded to the conquest of the land of Canaan. The book differs from the Pentateuch in the absence of legal matter, and in its intimate connection with the narrative in the books which follow. It is, however, the proper sequel to the origins of the people as related in Genesis, to the exodus of the Israelite tribes from Egypt, and their journeyings in the wilderness. On these and also on literary grounds it is often convenient to class the first six books of the Bible as a unit under the term "Hexateuch" (*q.v.*), for an exhaustive detailed study has revealed many signs of diversity of authorship which combine to show that the book is due to the incorporation of older material in two main redactions; one deeply imbued with the language and thought of Deuteronomy itself (D), the other of the post-exilic priestly circle (P) which gave the Pentateuch its present form. That the older sources (which often prove to be composite) are actually identical with the Yahwist or Judaean (J) and the Elohist or Ephraimite (E) narratives (on which *see* BIBLE: *Old Testament*) is not impossible, though still uncertain.

The book falls naturally into two main parts, of which the first, the crossing of the Jordan and the conquest of Palestine (i.–xii.), is mainly due to Deuteronomic compilers. It opens with the preparations for the crossing of the Jordan and the capture of the powerful city, Jericho. Ai, near Bethel, is taken after a temporary repulse, and Joshua proceeds to erect an altar upon Mt. Ebal (north of Shechem). The erection of the altar, not at the scene of battle (*cf.* 1 Sam. xiv. 35) but on Mt. Ebal (viii. 30–35, D), presupposes the conquest of central Palestine and the removal of the ark from Gilgal. These, however, are not narrated, and, unless some account of them has been replaced by the present passage, this portion of the conquest was ignored. Possibly the passage is not in its original position: in the Septuagint it appears after ix. 2, while Josephus (*Ant.* v. 1, 19) and the Samaritan Book of Joshua read it before ch. xiii.; Dillmann, however, would place it after xi. 23. The capture of Jericho and Ai is followed by the successful stratagem of the Gibeonites to make peace with Israel (ix.). This involved them in a war with a south Canaanite coalition and Joshua obtains a crowning victory. In x. 16–24 the kings of the south are pursued to Makkedah and slain, in *v.* 11 they are smitten by a great hailstorm in their flight to Azekah (*cf.* 1 Sam. vii. 10, xiv. 15, in the same district). Redactional links have been added, apparently by D, to whom is possibly due the stanza quoted from the Book of Jashar (*v.* 12 *seq.*), a poetical address to the sun and moon, of the nature of a prayer or spell for their aid (*cf.* Judges v. 20, and *see* Ecclus. xlvi. 4). The literal interpretation of this picturesque quotation has been influenced by the prosaic comments at the end of *v.* 13 and beginning of *v.* 14. The description of the conquest of the northern Canaanites is very similar to that of the south. The main part is from an older source (xi. 1, 4–9; *see* DEBORAH), the amplifications (*v.* 2 *seq.*) are due to D, as also are the summary (*vv.* 10–23, *cf.* style of x. 28–43), and the enumeration of the total results of the invasion (xii.), which includes names not previously mentioned.

The result of the events narrated in the first part of the book is to ascribe the entire subjugation of Canaan to Joshua, whose centre was at Gilgal (x. 15, 43). He is now "old and advanced in years," and although much outlying land remained to be possessed, he is instructed to divide the conquered districts among the western tribes (xiii. 1 *sqq.*). This is detailed at length in the second part of the book. With the completion of the division his mission is accomplished. The main body of this part (xiii. 15–xiv. 5; xv.–xvii.; xviii. 11–xxi. 42; xxii. 7–34) is in its present form almost entirely due to P. As regards details, P's account of the altar beyond the Jordan (*see* xxii. 34) is apparently a late re-writing of some now obscure incident to emphasize the unity of worship. The

account of the distribution of land among the *nine and a half* tribes by Eleazar and Joshua (from xiv. 1–5 to xix. 51) appears to have been on the lines laid down in Num. xxxiv. (P). The scene, according to xviii. 1, is Shiloh, and this verse, which does not belong to the context, should apparently precede P's narrative in xiv. 1. But of the occupation of Shiloh, the famous Ephraimite sanctuary and the seat of the ark, we have no information. The older source, however, presupposes that Judah and the two Joseph tribes have acquired their territory; the remaining seven are blamed for their indifference (xviii. 2–10), and receive their lot conjointly at the camp at *Shiloh*. But if the location is an attempt to harmonize with xviii. 1, *Gilgal* should probably be restored. The section xviii. 2–10 is followed by xxi. 43 *seq.* and may have been preceded originally by xiii. 1, 7 (where read: inheritance for the *seven* tribes); in its present form it appears to be due to D. Another account of the exploits of Judah and Joseph can be traced here and there; *e.g.*, in xiv. 6–15 (where Caleb receives Hebron as his inheritance and the "land had rest from war"), and xvii. 14–18 (where Joseph receives an additional lot); but where these traditions have not been worked into later narratives, they exist only in fragmentary form. They are characterized by the view that the conquest was neither the work of a single man nor at his instigation, but due entirely to individual or tribal achievements. This view can be traced in xiii. 13, xv. 63 (*cf.* the parallel Judges i. 21 in contrast to *v.* 8), xvi. 10 (Judges i. 29), xvii. 11–13 (Judges i. 27 *seq.*), and in the references to separate tribal or family exploits: xv. 13–19, xix. 47 (*cf.* Judges i. 34 *seq.*, xviii.).

Two closing addresses are ascribed to Joshua, one an exhortation similar to the homilies in secondary portions of Deuteronomy (xxiii.; *cf.* Moses in Deut. xxviii. *seq.*, and Samuel's last address in 1 Sam. xii.), which virtually excludes the other (xxiv.), where Joshua assembles the tribes at Shechem (Shiloh, in the Septuagint) and passes under review the history of Israel from the days of heathenism (before Abraham was brought into Canaan) down through the oppression in Egypt, the exodus, the conquest in East Jordan and the occupation of Canaan. A few otherwise unknown details are to be found (xxiv. 2, 11 *seq.* 14). The address (which is extremely important for its representation of the religious conditions) presupposes the complete subjugation of the Canaanites. A solemn covenant, whereby the people agree to cleave to Yahweh alone, is commemorated by the erection of a stone under the oak by the sanctuary of Yahweh (for the tree with its sacred pillar, *see* Gen. xxxv. 4; Judges ix. 6). The people are then dismissed, and the book closes in ordinary narrative style with the death of Joshua and his burial in his inheritance at Timnath-serah in Mt. Ephraim (*cf.* xix. 49 *seq.*); the burial of Joseph in Shechem; and the death and burial of Eleazar the son of Aaron in the "hill of Phinehas."

Both Joshua xxiii. and xxiv. are closely connected with the very complicated introduction to the era of the "judges" in Judges ii. 6 *seq.*, and ii. 6–9 actually resume Joshua xxiv. 28 *seq.*, while the Septuagint appends to the close of Joshua the beginning of the story of Ehud (Judges iii. 12 *seq.*). Both Judges i.–ii. 5 and chap. xvii.–xxi. are of post-Deuteronomic insertion, and they represent conditions analogous to the older notices embedded in the later work of P (Judges i. 21, xix. 10–12, *cf.* Joshua, xv. 63). Moreover, P in its turn shows elsewhere definite indications of different periods and standpoints, and the fluid state of the book at a late age is shown by the presence of Deuteronomic elements in Joshua xx., not found in the Septuagint, and by the numerous and often striking readings which the latter recension presents.

The value of the book of Joshua is primarily religious; its conviction of the destiny of Israel and its inculcation of the unity and greatness of the God of Israel give expression to the philosophy of Israelite historians. As an historical record its value must depend upon a careful criticism of its contents in the light of biblical history and external information. Its description of the conquest of Canaan comes from an age when the event was a shadow of the past. It is an ideal view of the manner in which a Divinely appointed leader guided a united people into the promised land of their ancestors, and, after a few brief wars of extermination (x.–xii.), died leaving the people in quiet possession of their new inheritance (xi. 23; xxi. 44 *seq.*; xxiii. 1). To this there is, as Moore points out (*Ency. Bib.* col. 2608 n.2), an instructive parallel in the Greek legends of the Dorian invasion of the Peloponnesus (the "return" of the Heracleidae, the partition of the land by lot, etc.). On the other hand the earlier inhabitants were not finally subjugated until Solomon's reign (1 Kings ix. 20); Jerusalem was taken by David from the Jebusites (2 Sam. v.), and several sites in its neighbourhood (including Gibeon, 2 Sam. xxi. 2), together with important fortresses like Gezer, Megiddo and Taanach, were not held by Israel at the first. There are traces of other conflicting traditions representing independent tribal efforts which were not successful, and the Israelites are even said to live in the midst of Canaanites, intermarrying with them and adopting their cult (Judges i.–iii. 6). From a careful consideration of all the evidence, both internal and external, biblical scholars are now almost unanimous that the more finished picture of the Israelite invasion and settlement cannot be accepted as a historical record for the age. It accords with this that the elaborate tribal-lists and boundaries prove to be of greater value for the geography than for the history of Palestine, and the attempts to use them as evidence for the early history of Israel have involved numerous additional difficulties and confusion.

The prominence of Joshua as military and religious leader, and especially his connection with Shechem and Shiloh, have suggested that he was a hero of the Joseph tribes of central Palestine (viz. Ephraim and Manasseh). But he probably had no place in the oldest narratives of the exodus; and only later sources add him to Caleb (Num. xiv. 30; the reference in Deut. i. 38 is part of an insertion), or regard him as the leader of all the tribes (Deut. iii. 21, 28). As an attendant of Moses at the tent of meeting he appears in quite secondary passages (Exod. xxxiii. 7–11; Num. xi. 28). His defeat of the Amalekites is in a narrative (Exod. xvii. 8–16) which belongs more naturally to the wilderness of Shur, and it associates him with traditions of a movement direct into south Palestine which finds its counterpart when the clan Caleb (*q.v.*) is artificially treated as possessing its seats with Joshua's permission.

BIBLIOGRAPHY.—*See* the commentaries or articles on Joshua by G. A. Smith, *Hastings's D.B.;* G. F. Moore, *Ency. Bib.;* H. W. Robinson, *Century Bible;* G. A. Cooke, *Cambridge Bible;* and Carpenter and Harford-Battersby, *Hexateuch,* ch. xvii. (S. A. C.)

JOSHUA THE STYLITE, the reputed author of a chronicle which narrates the history of the war between the Greeks and Persians in 502–506, and which is one of the earliest and best historical documents preserved to us in Syriac. The author was an eyewitness of many of the events which he describes, and must have been living at Edessa during the years when it suffered so severely from the Persian War.

The chronicle was first made known by Assemani's abridged Latin version (*B.O.* i. 260–283), and was edited in 1876 by the abbé Martin, and (with an English translation) by W. Wright, in 1882. After an elaborate dedication to a friend—the "priest and abbot" Sergius—a brief recapitulation of events from the death of Julian in 363, and a fuller account of the reigns of the Persian kings Pērōz (457–484) and Balāsh (484–488), the writer enters upon his main theme—the history of the disturbed relations between the Persian and Greek Empires from the beginning of the reign of Kawād I. (489–531), which culminated in the great war of 502–506.

JOSIAH, was the grandson of Manasseh, king of Judah (II Kings xxii. 1–xxiii. 30). He was born in 647 B.C., and ascended the throne after the assassination of his father Amon in 639. His reign witnessed the collapse of the Assyrian empire, whose last great king, Asshur-bani-pal, died in 626, and the final destruction of Nineveh. Egypt also was weak, and few kings of Judah since the days of Solomon can have been as independent as Josiah. It was, perhaps, this freedom from interference which enabled him to carry out in 621 a thorough religious reform, based on a book of law discovered in the Temple during some repairs, and commonly (though not now universally) identified with Deuteronomy or a part of it. The Temple at Jerusalem was purged of all foreign

cults, and dedicated wholly to the worship of Yahweh, and all local sanctuaries were abolished, sacrifice being concentrated at Jerusalem. (*See* DEUTERONOMY, JEREMIAH.)

Egypt, meanwhile, had revived, and the young king Necho made an effort to save the falling Assyrian empire. Josiah seems to have taken the opposite side, either secretly or openly. He met Necho during one of the latter's expeditions to Mesopotamia, and was put to death at Megiddo. The Chronicler (II Chron. xxxv. 20–24) speaks of a battle in which Josiah was killed by the Egyptian archers, but this may be a much later exaggeration of a slight skirmish in which his attendants were involved, and the Book of Kings does not in the least suggest an armed expedition.

Josiah was long remembered as approaching the Israelite ideal of monarchy, kindly, open and democratic in ways and spirit, and scrupulously fair in judicial procedure. (T. H. R.)

JÓSIKA, MIKLOS, BARON (1794–1865), Hungarian novelist, born on April 28, 1794, at Torda, Transylvania, served in the army until 1818. He then settled on his estate at Szurdok, Transylvania, and he took part in the famous diet of 1834. He made his literary reputation by his *Abafi,* a romance of Transylvanian life in the days of Sigismund Bathory. Jósika became a member of the Hungarian Academy of Sciences and of the Kisfaludy Society. As deputy for Sznolnok in the Transylvania diet of 1847 he supported the proposal for the union of Transylvania with Hungary. Both as a magnate of the Hungarian upper house and by his writings Jósika aided the revolutionary movement, and after the capitulation of Világos (Aug. 13, 1849) he fled the country. He died at Dresden on Feb. 27, 1865. The romances of Jósika, written somewhat after the style of Sir Walter Scott, are chiefly of an historical and social-political character, his materials being drawn almost entirely from the annals of his own country. Among his more important works may be specially mentioned, besides *Abafi, The Poet Zrinyi* (1843); *The Last of the Bátoris* (1837); *The Bohemians in Hungary* (1839); *Esther* (1853); *Francis Rákóczy II.* (1861); and *A Végváriak,* a tale of the time of the Transylvanian prince Bethlen Gábor, 1864. Many of the Jósika novels have been translated into German.

See K. Moenich and S. Vutkovich, *Magyar Irók Névtára* (1876); M. Jókai, "Jósika Miklós Emlékezete," *A Kisfaludy-Társaság Evlapjai, Új folyam,* vol. iii. (1869); G. W. Steinacker, *Ungarische Lyriker* (1874). *Cf.* also Jósika's autobiography—*Emlékirat,* vol. iv. (1865).

JOSIPPON, the name of a chronicle of Jewish history from Adam to Titus attributed to "Josippon" or Joseph ben Gorion (*see* Josephus, *Bell. Jud.,* ii. 20. 3, with Whiston's notes). The name, once identified with Josephus, is perhaps a corruption of Hegesippus on whom (according to Tricher) the author drew largely. The chronicle was probably compiled in Hebrew early in the 10th century, by a Jew of south Italy. It was first printed at Mantua in 1476, and subsequently appeared in many forms, abridged or interpolated, one of the most popular being in Yiddish, with quaint illustrations. Though the chronicle is mainly legendary, the author probably used some good and ancient sources. Peter Morvyn in 1558 translated an abbreviated version into English, and many editions were asked for. Lucien Wolf has shown that the English translations of the Bible roused much interest among the Jews, and led to this wide circulation of *Josippon,* which thus bore a part in the chain of events that ended in the readmission of the Jews to England under Cromwell.

JOSQUIN DES PRÉS: *see* DES PRÉS, JOSQUIN.

JOSS, in the pidgin-English of the Chinese seaports, the name given to idols and deities. It is used adjectivally in regard to many things connected with religious rites, such as "joss-house," a temple; "joss-stick," a stick which is burned as incense; "joss-paper," paper cut to resemble money (and sometimes with prayers written upon it) burned in funeral and other ceremonies. "Joss" is possibly a corruption of Port. *deos,* god, applied by Portuguese navigators in the 16th century to the idols worshipped in the East Indies.

JOTA, a Spanish national dance. It is a form of waltz in three time danced in couples and is usually accompanied with guitars, castanets and other instruments. The Jota takes many forms, each town having its own variation.

JOTUNHEIM or **JOTUN FJELDE,** a mountainous region of southern Norway, lying between Gudbrandsdal and Jostedalsbrae. Within an area of about 950 sq.m. it contains the highest mountain in the Scandinavian Peninsula—Galdhöpiggen (8,399 ft.)—and several others but little inferior. Such are Glittertind (8,380), and Memurutind (7,966), which face Galdhöpiggen across the northward-sloping Visdal; Knutshultind (7,812) and several other peaks exceeding 7,000 ft., to the south, between lakes Gjende and Bygdin, and Skagastölstind (7,723) in the west of the region, above the Utladal, the chief summit of the magnificent Horunger. The upper parts of the main valleys are of characteristic form, not ending in lofty mountain-walls but comparatively low and level, and bearing lakes.

JOUBERT, BARTHÉLEMY CATHERINE (1769–1799), French general, was born at Pont de Vaux (Ain) on April 14, 1769. He joined the revolutionary army in 1791, and fought with the army in Italy in 1793. By the end of 1796 he was a general of division. He was in charge of the retaining force at the battle of Rivoli, and in the campaign of 1799 (invasion of Austria) he commanded the detached left wing of Bonaparte's army in Tirol, and fought his way through the mountains to rejoin his chief in Styria. He held various commands in Holland, on the Rhine and in Italy, where up to January 1799 he commanded in chief. Resigning the post in consequence of a dispute with the civil authorities, Joubert returned to France. He was almost immediately summoned to take over the command in Italy from Moreau; but he persuaded his predecessor to remain at the front and was largely guided by his advice. The odds against the French troops in the disastrous campaign of 1799 (*see* FRENCH REVOLUTIONARY WARS) were too heavy. Joubert and Moreau were compelled to give battle by Suvorov, and Joubert fell at the battle of Novi (Aug. 15, 1799). Joubert died before it could be shown whether his genius was of the first rank, but he was marked out as a future great captain by Napoleon, and his countrymen associated him with Hoche and Marceau as a great leader.

See Guilbert, *Notice sur la vie de B. C. Joubert;* Chevrier, *Le Général Joubert d'après sa correspondance* (2nd ed. 1884).

JOUBERT, JOSEPH (1754–1824), French moralist, born at Montignac (Corrèze) on May 6, 1754, is famous for the luminous criticism of literature and morals contained in the posthumous *Pensées, essais, maximes et correspondance* (2 vols., 1842), edited by his nephew, Paul de Raynal. Some part of this work was already known, for Chateaubriand, to whose charge Joubert had left his mss., had issued a selection for private circulation in 1838. He died May 3, 1824.

See Matthew Arnold, *Essays in Criticism* (1st series); Sainte-Beuve, *Causeries du Lundi* vol. i., and *Portraits littéraires* vol. ii.

JOUBERT, PETRUS JACOBUS (1834–1900), commandant-general of the South African republic from 1880 to 1900, was born at Cango, in the district of Oudtshoorn, Cape Colony, on Jan. 20, 1834, of a family of Huguenot origin. Left an orphan at an early age, Joubert migrated to the Transvaal, where he settled in the Wakkerstroom district near Laing's Nek and the north-east angle of Natal. There he farmed with great success, and studied law. He was elected to the *volksraad* as member for Wakkerstroom early in the sixties, Marthinus Pretorius being then in his second term of office as president. In 1870 Joubert was again elected, he became attorney-general of the republic, and in 1875 was acting president.

During the first British annexation of the Transvaal, Joubert was a consistent irreconcilable. In the war of 1880–81, he was commandant-general of the Boer forces and a member of the triumvirate that administered the provisional Boer Government set up in Dec. 1880 at Heidelberg. He was in command of the Boer forces at Laing's Nek, Ingogo, and Majuba Hill, and he conducted the earlier peace negotiations that led to the conclusion of the Pretoria convention.

In 1883 he was a candidate for the presidency of the Transvaal, but received only 1,171 votes as against 3,431 cast for Kruger. In 1893 he again opposed Kruger in the contest for the presidency, representing the progressive Boer elements. He was defeated by a small majority, 7,911 votes being cast for Kruger and 7,246 for

Joubert. He stood again in 1898, but the Jameson raid had made Kruger's position impregnable. When war broke out with Great Britain Joubert assumed nominal command of the operations, but he gave up to others the chief share in the direction of the war. His cautious nature had in early life gained him the sobriquet of "Slim Piet." He died at Pretoria on March 28, 1900.

JOUFFROY, THÉODORE SIMON (1796–1842), French philosopher, was born at Pontets, near Mouthe. At the normal school, Paris, he came under the influence of Victor Cousin, and in 1817 was appointed assistant professor of philosophy at the normal and Bourbon schools. Attracted to the philosophical system of Reid and Stewart, he wrote in 1826 a preface to a translation of the *Moral Philosophy* of Stewart, demonstrating the possibility of a scientific statement of the laws of consciousness. In 1828 he began a translation of the works of Reid, and in his preface estimated the influence of Scottish criticism upon philosophy. He was appointed professor of Greek and Roman philosophy at the college of France in 1833, and shortly afterwards published the *Mélanges philosophiques* (4th ed. 1866; Eng. trans., Boston, 1835). Following a visit to Italy in search of health in 1835, he became librarian to the University of Paris, and took the chair of philosophy at the faculty of letters. He died in Paris on Feb. 4, 1842, having done much to arouse in France an interest in the Scottish school. After his death were published *Nouveaux mélanges philosophiques* (3rd ed. 1872) and *Cours d'esthétique* (3rd ed. 1875). His correspondence was edited by A. Lair (Paris, 1901). His claim to distinction rests upon his ability as an expositor of other men's ideas.

See L. Lévy Bruhl, *Hist. of Modern Philos. in France* (1899); C. J. Tissot, *Th. Jouffroy: sa vie et ses écrits* (1876); J. P. Damiron, *Essai sur l'histoire de la philos. en France au xixe siècle* (1846).

JOUGS, JUGGS or **JOGGS,** an instrument of punishment formerly in use in Scotland, Holland and possibly other countries. It was an iron collar fastened by a short chain to a wall, often of the parish church, or to a tree. The collar was placed round the offender's neck and fastened by a padlock. It was used for ecclesiastical as well as civil offences. (*See* PILLORY.)

JOUHAUX, LÉON (1878–), French labour leader, was before the World War one of the chief propagandists of revolutionary syndicalism, his chief organ being *La Bataille Syndicaliste* which he edited 1911–21. During the war his views changed; he advocated co-operation with the Socialist Party and also with the Government. As secretary and most influential leader of the Confederation Général du Travail (C.G.T.; the federation of French trade unions), he secured the adoption of this policy by that body. He was French labour representative till 1928 at the International Labour Office. His *Le Syndicalisme et la C.G.T.* (1920) expounds the policy of the C.G.T. under his direction.

JOULE, JAMES PRESCOTT (1818–89), English physicist, was born on Dec. 24, 1818, at Salford, near Manchester. He owned a large brewery but devoted himself to scientific research. From the first he appreciated the importance of accurate measurement, and all through his life the attainment of exact quantitative data was one of his chief considerations. In 1840 Joule gave a quantitative statement of the law according to which heat is produced in a conductor by the passage of an electric current. He continued to study the relations between electrical, mechanical and chemical effects and was led to the discovery of the first law of thermodynamics. He determined the mechanical equivalent of heat in four ways. He found that to raise one pound of water 1°F (heat unit), 772 foot-pounds of mechanical work were required. In the C.G.S. system the mechanical equivalent, often called Joule's equivalent, is $4{\cdot}184\times10^7$ ergs per gram-degree Centigrade (see *Brit. Assoc. Report,* 1845). In 1849 he presented to the Royal Society a memoir which, together with a history of the subject, contained details and results of a long series of determinations. In addition, numerous other researches stand to Joule's credit—the work done in compressing gases and the thermal changes they undergo when forced under pressure through small apertures (with Lord Kelvin), known as the Joule-Thomson porous plug experiment the change of volume on solution, the change of temperature produced by the longitudinal extension and compression of solids, etc. Joule died at Sale on Oct. 11, 1889.

His scientific papers were collected and published by the Physical Society of London: the first volume appeared in 1884.

JOURDAN, JEAN BAPTISTE, COUNT (1762–1833), marshal of France, was born at Limoges on April 29, 1762. He was apprenticed to a silk merchant of Lyons, but served in a volunteer regiment in the American War of Independence. Invalided from the army in 1784, he set up business in Limoges, but at the outbreak of the Revolution he volunteered for the army and rose rapidly in the service. In 1793 Carnot appointed him commander-in-chief of the army of the North, and he won the victory of Wattignies (Oct. 15–16, 1793). Suspected of moderation in politics and of pessimism as to the military outlook, he then spent some months in retirement, but was re-instated and appointed (1794) to the command of the army operating on the Sambre. His victory at Fleurus (June 26, 1794) was followed by a campaign on the Rhine in 1795.

In 1796 his army formed the left wing of the advance into Bavaria. The whole of the French forces were ordered to advance on Vienna, Jourdan on the extreme left and Moreau in the centre by the Danube valley, Bonaparte on the right by Italy and Styria. The Austrians were at first driven back by Moreau and Jourdan almost to the Austrian frontier. But the archduke Charles threw his whole weight on Jourdan, who was defeated at Amberg and Würzburg, and forced over the Rhine after a severe rearguard action. Apart from Bonaparte's marvellous campaign in Italy, the operations of the year were disastrous, chiefly owing to the vicious plan of campaign imposed by the government. Jourdan was made the scapegoat of the government's mistakes and was not employed for two years. He occupied himself with politics, and framed the famous conscription law of 1798. In 1799 Jourdan was placed at the head of the army on the Rhine, but again underwent defeat at the hands of the archduke Charles at Stockach (March 25), and, disappointed and broken in health, handed over the command to Masséna. He resumed his political duties, and opposed the *coup d'état* of 18 Brumaire, after which he was expelled from the Council of the Five Hundred. He accepted from Napoleon fresh military and civil employment and in 1804 was made a marshal of France. In 1806, Joseph Bonaparte, king of Naples, selected him as his military adviser, and he followed Joseph into Spain (1808). After the battle of Vittoria he held no important command under the Empire. Jourdan gave in his adhesion to the restoration government of 1814, and though he rejoined Napoleon in the Hundred Days, he submitted to the Bourbons again after Waterloo. He refused, however, to be a member of the court which tried Marshal Ney. He was made a count, a peer of France (1819), and governor of Grenoble (1816). In politics he was a prominent opponent of the royalist reactionaries and supported the revolution of 1830. Marshal Jourdan died on Nov. 23, 1833, and was buried in the Invalides.

He wrote *Opérations de l'armée du Danube* (1799); *Mémoires pour servir à l'histoire sur la campagne de 1796* (1819); and unpublished personal memoirs. *See* Gachot, *La campagne de 1799; Jourdan en Allemagne et Brune en Hollande* (1906).

JOURNAL, a daily record of events, a diary, a daily newspaper (late Lat. *diurnalis,* daily). A journalist is one who writes for the public press. (*See* NEWSPAPERS and BOOKKEEPING.) "Journal" is also applied to the record, day by day, of the business and proceedings of a public body or learned society, *e.g.,* the journals of the British houses of parliament. The journals of the House of Commons begin in the first year of the reign of Edward VI. (1547), and are complete, except for a short interval under Elizabeth. Those of the House of Lords date from the first year of Henry VIII. (1509). Before that date the proceedings in parliament were entered in the rolls of parliament. The U.S. Constitution directs that each house of congress keep a "journal of its proceedings" and the constitutions of the various States contain similar enactments. In maritime law the word journal is used synonymously for log-book.

JOURNAL, that part of a shaft or axle which makes circumferential contact in the bearing, as distinguished from an end or thrust bearing. An axle-box is often called a journal-box. Ball

and roller bearings have to a remarkable extent displaced the solid plain bearings in many classes of machinery. *See* BEARINGS.

JOURNALISM AND JOURNALISTS. Though the qualifications and status of Clergymen, Physicians and members of many other professions are definite, the Journalist continues to follow an indeterminate calling with neither qualifications nor status precisely defined. The editor of a great metropolitan newspaper is equally a Journalist with the humblest police court reporter; and there are many persons who style themselves Journalists who supplement incomes by writing for newspapers and periodicals.

Several efforts have been made by the Institute of Journalists to create a standard in Great Britain that would result in every working journalist having to undergo such training and pass such examinations as are necessary in the recognized professions. Courses of journalism at the University of London following a series of lectures organized by Sir Sidney Lee during the World War were established in 1922 and have been well supported. In America there have been established a number of schools of journalism (*see* JOURNALISM, SCHOOLS OF) to train future newspaper editors and writers.

Generally speaking, the staff of a national daily newspaper consists of an editor-in-chief, an assistant editor (called managing editor in America), a day editor, a night editor, a news editor, with his staff of reporters, a Sunday editor, a foreign editor, the chief sub-editor with a staff of sub-editors, in addition to leader or editorial writers, a literary editor, sporting editor, aviation editor, dramatic, film and music critics, and experts on such subjects as motoring, wireless, racing and golf. That is the internal journalistic organization, as distinguished from the managerial, advertising and other departments. The outside organization includes a chain of correspondents all over the world.

The legal relations of the Press to the public are dealt with elsewhere (*see* PRESS LAWS, LIBEL, COPYRIGHT, CONTEMPT OF COURT). So far as the relations of a newspaper staff and its employers are concerned, journalists in Great Britain are subject to the law of contract of service the same as other persons, subject to a custom by which, in the absence of any contract, the following periods of notice must as a general rule be given; editors and assistant editors, from six to twelve months, according to the relative standing of the newspaper; sub-editors, from three to six months; reporters, from one to three months. In America there is no stipulated length of notice due the members of the newspaper staff. Only a very few have contracts which protect them from immediate dismissal. The length of notice given others depends entirely on the policy of the individual newspaper. The editor is responsible for everything that goes into his paper, in Great Britain (but not in the United States) including even the advertisement columns.

Subordination of the Editor.—Compared with 50 years ago, the most marked change in the personal side of British journalism has been the ascendancy of the proprietor and the subordination of the editor. In recent years, there have been only a few well-known editors whose personalities are impressed on the public mind. In Great Britain may be mentioned C. P. Scott, the veteran editor of *The Manchester Guardian,* who retired as active Editor in 1929, and was one of the proprietors of his paper. He represented the finest type of editor-proprietor in England, while his journal, distinguished for its honesty and consistency, stands for the highest ideals of journalism and has acquired a great international reputation and influence.

The last great personality in English journalism is J. L. Garvin, editor of *The Observer,* who is pre-eminent as a writing editor, brilliant and independent. He is a recognized authority on foreign affairs, and has exercised an influence on world politics for many years. In 1926 he took on new responsibilities, becoming editor of the *Encyclopædia Britannica* and chairman of the Empire Press Union.

The Times has reverted to its traditional policy, as the first newspaper, occupying its place with easy dignity. Its scholarly editor, Geoffrey Dawson, maintains anonymity, while the controlling proprietor, Hon. J. J. Astor, M.P., maintains the reserved tradition of the Walters. The change has, however, assured to *The Times* its position of independence as a national newspaper.

In America in times past the outstanding editors of newspapers were also the owners. Charles Anderson Dana purchased *The Sun* and edited it. James Gordon Bennett was the editor and publisher of *The New York Herald,* and Horace Greeley was the editor and one of the owners of the *New York Tribune.* Joseph Pulitzer directed *The World* and *The St. Louis Post-Dispatch.* Today one hears more of the owners than of the editors of newspapers. For example *The World* has been associated with the Pulitzer name, *The New York Times* with Adolph S. Ochs, *The Public Ledger* (Philadelphia), with Cyrus H. K. Curtis, *The New York Journal-American* with William Randolph Hearst, *The Chicago Daily News* with Victor F. Lawson.

JOURNALISM, SCHOOLS OF. Though at least one private school of journalism was founded in Great Britain before 1900 no wide or recognized movement towards journalistic education was undertaken till after the World War. The year 1919 marked the establishment at London University of a course in journalism. Students of the course, which takes two years, must receive instruction in English composition and practical journalism and are given their choice of three subjects from such fields as the History and Development of Science, of Political Ideas, the Principles of Criticism, Economics, Philosophy and Psychology.

There is also a course in journalism at Bristol University, and instruction is given by the London School of Journalism. The latter, a private body, was founded in 1919 at the inspiration of Lord Northcliffe and with the support of the chief newspaper proprietors. Instruction is largely by correspondence. (X.)

In the United States.—Probably the first prominent advocate of schools of journalism was General Robert E. Lee. As president of Washington college (afterwards Washington and Lee university) he began in 1869 some classes in journalism; but his death the following year and the general disfavour with which the idea was received resulted in their speedy discontinuance.

The idea of education for journalism was put on a different footing by the announcement in 1903 of Joseph Pulitzer's agreement to give two million dollars to Columbia university for the foundation of a school of journalism. The suggestions he made are, in the main, still in force, not only in the Columbia school, which was opened in 1912, but in other schools.

In the meantime a beginning had been made elsewhere. In 1908 the Missouri school of journalism was established, equal in rank with the other schools of the university. At the universities of Illinois, Indiana, Kansas, Virginia, Washington and Wisconsin, courses of journalism were established. The graduating classes in 1926–27 numbered nearly 1,000.

The strongest schools and departments of journalism were organized in the American Association of Schools and Departments of Journalism, which includes the following universities, schools being marked S:—Missouri (S), Syracuse, Kansas State agricultural college, Indiana, Illinois (S), Kansas, Columbia (S), Northwestern (S), Oklahoma (S), Ohio (S), Oregon (S), Texas, Washington (S), Iowa (S), Montana (S), Nebraska (S), Wisconsin (S), Minnesota, Louisiana and Michigan. Instruction in journalism in about 30 other universities might also be granted first class standing. In addition to these, journalism is taught in nearly 200 other colleges and universities, and in many high schools.

The university authorities have been somewhat divided from the beginning as to whether instruction in journalism should rest upon a high school education or upon four years of college. The general plan has been to require two years of college and to make the other two years required for the degree partly or wholly professional in character. In all the schools and departments of journalism connected with the American Association of Schools and Departments of Journalism, courses are given in reporting, copy reading, editorial writing, feature writing, history of journalism, and the law of libel, varying from about half to nearly all of the student's total work. The other courses include psychology, sociology, political science, economics, history, literature, languages and similar subjects. (J. W. CUN.)

JOURNEY, originally a day's work or travel, and the distance covered in a day, usually reckoned in the middle ages as 20 miles. The early use of "journey" for a day's work, or the amount produced by a day's work, is still found in glassmaking, and also at the British Mint, where a "journey" is taken as equivalent to the coinage of 15 lb. of standard gold, 701 sovereigns, or of 60 lb. of silver. The term "journeyman" distinguishes a qualified workman or mechanic from an "apprentice" on the one hand and a "master" on the other, and is applied to one who is employed by the day.

JOUVENEL, HENRI DE (1876–1935), French politician, was born in Paris on April 2, 1876. Secretary of the committee of democratic conferences in 1900, he was made *chef de cabinet* in the ministry of justice in 1902, and *directeur de cabinet* in the ministry of commerce in 1905. He entered journalism shortly afterwards as chief correspondent on *Le Matin.* In Jan. 1921 de Jouvenel was elected Senator for the Corrèze, and became a member of the foreign affairs commission. He was a French delegate on the Assembly of the League of Nations in 1922, and was instrumental in admitting Abyssinia to the League, and took an active part in the work of the commission of intellectual cooperation. He again represented his country in the League in 1924, and became minister of public instruction in the second Poincaré cabinet in the same year. In 1925 he was appointed French high commissioner in Syria in succession to General Sarrail (*q.v.*). De Jouvenel at once set himself to the task of pacification, and early in 1926 visited Angora to prepare a treaty with Turkey. As French Ambassador in Rome from January to June 1933, he did much to improve Franco-Italian relations.

JOUVENET, JEAN (1644–1717), French painter, born at Rouen. He was the most celebrated of a family of artists; and was the son and pupil of Laurent Jouvenet. On arriving in Paris in 1661 he attracted the attention of Le Brun, by whom he was employed at Versailles, and under whose auspices, in 1675, he became a member of the Académie Royale, of which he was elected professor in 1681, and one of the four perpetual rectors in 1707. Four large paintings at the Louvre include the celebrated "Miraculous Draft of Fish." He was the greatest religious painter of his time. Jouvenet died on April 5, 1717.

See *Mém. inéd. acad. roy. de p. et de sc.* (1854), D'Argenville, *Vies des peintres* (1762).

JOUY, VICTOR JOSEPH ÉTIENNE DE (1764–1846), French dramatist, was born at Jouy, near Versailles. He served in the army in Guiana and in India before the Revolution. He then returned to France and served with distinction in the early campaigns, attaining the rank of adjutant-general. He fled under the terror. In 1821 his tragedy of *Sylla* gained a triumph due in part to the genius of Talma, who had studied the title-rôle from Napoleon. Under the Restoration Jouy consistently fought for the cause of freedom, and if his work was overrated by his contemporaries, they were probably influenced by their respect for the author himself. He died in the palace of St. Germain-en-Laye on Sept. 4, 1846.

JOVANOVIĆ, LJUBA (1865–1928), Yugoslav politician, was born at Cattaro, then Austrian territory, on Feb. 2, 1865. Owing to his activities in favour of Yugoslav unity, he was forced to emigrate to Montenegro, then to Serbia, where, after fighting as a volunteer in the Serbo-Bulgar war of 1885, he became a teacher, librarian to the National Library (1901), and professor of history at Belgrade University (1903). He had previously joined the Serb radical party as a strong Nationalist, and on entering the Skupština in 1905, became president of the chamber, then minister of the interior (1909), of education (1911) and again of the interior (1914–8). From 1919–20 he was a councillor of State, then again minister of education, and 1923–24 president of the chamber. His attempts to reconcile the Serb radicals with the Croats and alleged federalist inclinations involved him in a quarrel with Nikola Pašić (*q.v.*). In 1924, then, Jovanović published in an annual called *Krv Slovenstva* (Slav Blood) an article entitled "After Vidov Den 1914" alleging that he, Pašić and others had had foreknowledge of the plot against the Archduke Francis Ferdinand in 1914. The British Institute of International Affairs reprinted the article in 1925 as "The Murder of Sarajevo" (*see* also the Belgrade *Politika,* April 7, 1925). After a furious quarrel, Jovanović was, by a majority, excluded from the radical party in 1926. With his adherents, he formed an independent anti-Pašić party, but rejoined the radicals after Pašić's death. He died on Feb. 10, 1928.

JOVELLANOS (Jove Llanos), **GASPAR MELCHOR DE** (1744–1811), Spanish statesman and author, born at Gijon (Asturias) on Jan. 5, 1744. Criminal judge at Seville in 1767, judge in Madrid (1778) and a member of the council of military orders (1780), he was involved in the fall of Cabarrus, and banished (1790–97) to Gijon. Recalled in 1797, he was named minister of grace and justice under Godoy, whose policy and conduct so offended his proud integrity that he combined with his colleague Saavedra to procure Godoy's dismissal. On the latter's return to power (1798), Jovellanos was banished to Gijon and imprisoned (1801) in Majorca. The revolution of 1808 set him at liberty. Disdaining the most brilliant offers from Joseph Bonaparte, Jovellanos joined the central junta and contributed to reorganize the cortes. This accomplished, the junta at once fell under suspicion, and Jovellanos was involved in its fall. He died at Vega (Asturias) on Nov. 27, 1811.

The poetical works of Jovellanos comprise a tragedy, *El Pelayo,* a comedy, *El delincuente honrado,* satires, miscellaneous pieces and a translation of the first book of *Paradise Lost.* His prose works, especially those on political and legislative economy, constitute his real title to literary fame. In them depth of thought and clear-sighted sagacity are couched in a certain Ciceronian elegance and classical purity of style. Perhaps the *Informe sobre un proyecto de ley agraria* (1787) is his most valuable work.

See *Obras publicadas é inéditas,* ed. C. Nocedal, 1858–1859, 2 vol. (Bib. de Autores Esp., xlvi., l.); *Memorias politicas* (1801 Fr. trs., 1825); J. Somoza de Montsoriu, *Jovellanos; nuevos datos para su biografía* (Habana-Madrid, 1885); E. González Blanco, *Jovellanos . . .* (1911); J. Somoza García-Sala, *Documentos para . . . la biografía de Jovellanos* (1911, 2 vol.).

JOVELLAR Y SOLER, JOAQUÍN (1819–1892), captain-general of Spain, was born at Palma de Mallorca on Dec. 28, 1819. He went to Cuba as captain (1842–51); promoted major in 1853, he accompanied O'Donnell as private secretary to Morocco. Colonel in 1860, brigadier-general in 1863, and in 1864 under-secretary for war, Jovellar was made general of division in 1866, and lieutenant-general in 1872 by King Amadeus. He left Spain when the federal republic was proclaimed. In 1873 Castelar sent him to Cuba as governor-general. He commanded the army of the centre against the Carlists when Martinez Campos went to Sagunto to proclaim Alfonso XII. (1874). War minister under Cánovas, he was sent to Cuba as governor-general until the peace of Zaujon (June 18, 1878). Alfonso XII. made him a captain-general, president of the council, life-senator and governor-general of the Philippines. Jovellar died in Madrid on April 17, 1892.

JOVIAN (Flavius Iovianus) (331–364), Roman emperor from June 363 to February 364, was born in 331. As captain of the imperial bodyguard he accompanied Julian in his Persian expedition; and on the day after that emperor's death Jovian was unexpectedly chosen emperor by the army to succeed him. He at once continued the retreat begun by Julian, and, continually harassed by the Persians, succeeded in reaching the banks of the Tigris, where a humiliating treaty was concluded with the Persian king, Shapur II. (*q.v.*). Five provinces which had been conquered by Galerius in 298 were surrendered, together with Nisibis and other cities. The Romans also gave up all their interests in the kingdom of Armenia, and abandoned its Christian prince Arsaces to the Persians. During his return to Constantinople Jovian was found dead in his bed at Dadastana, halfway between Ancyra and Nicaea. Under Jovian, Christianity was established as the state religion and Athanasius was once more reinstated on the archiepiscopal throne of Alexandria. Paganism, however, seems to have been tolerated. In Syriac literature Jovian became the hero of a Christian romance (G. Hoffmann, *Julianus der Abtrünnige,* 1880).

See Ammianus Marcellinus, xxv. 5–10; Tillemont, *Histoire des*

empereurs, vol. iv.; Gibbon, *Decline and Fall,* chs. xxiv., xxv.; J. Wordsworth in Smith and Wace's *Dictionary of Christian Biography;* H. Schiller, *Geschichte der römischen Kaiserzeit,* vol. ii. (1887); A. de Broglie, *L'Église et l'empire romain au ive siècle* (4th ed. 1882); Seek, *Gesch. des Untergangs der antiken Welt* (iv., 338); and art. in Pauly-Wissowa, *Realencyclopädie.* For the relations of Rome and Persia *see* PERSIA: *History.*

JOVIUS, PAULUS, or **PAOLO GIOVIO** (1483–1552), Italian historian and biographer, was born at Como on April 19, 1483. After studying the humanities, he applied himself to medicine and philosophy at Padua and Pavia. But instead of practising as a physician he settled at Rome under the patronage of the Cardinal Giulio de' Medici (afterwards Clement VII.), to write the history of his time. He enjoyed the favour of successive popes and held many benefices, including in 1528, the bishopric of Nocera.

After Clement's death Giovio found himself out of favour with the next pope, Paul III. He retired to his villa on the lake of Como, where he spent the wealth he had acquired from donations and benefices in adorning his villa with curiosities, antiquities and pictures. He died upon a visit to Florence in 1552.

Giovio's principal work was the *Historiarum sui temporis libri XLV.* (2 vols. 1551–53; Ital. trans., Florence, 1551), from the invasion of Charles VIII. to the year 1547. His first published work, printed in 1524 at Rome, was a treatise *De piscibus romanis.* After his retirement to Como he produced a valuable series of biographies, entitled *Elogia virorum illustrium* (7 vols. 1549–57), and many miscellaneous works. A complete list of Giovio's works is given in Cicogna, *Delle inscrizioni Veneziane raccolta* (Venice, 1830).

JOWETT, BENJAMIN (1817–1893), English scholar and theologian, master of Balliol college, Oxford, was born in Camberwell on April 15, 1817. His father was one of a Yorkshire family who, for three generations, had been supporters of the Evangelical movement in the Church of England. His mother was a Langhorne, in some way related to the poet and translator of Plutarch. At 12 the boy was placed on the foundation of St. Paul's school (then in St. Paul's Churchyard), and in his 19th year he obtained an open scholarship at Balliol. In 1838 he gained a fellowship, and graduated with first-class honours in 1839. He came to Oxford at the height of the Tractarian movement, and through the friendship of W. G. Ward was drawn for a time in the direction of High Anglicanism; but a stronger and more lasting influence was that of the Arnold school, represented by A. P. Stanley. In the summers of 1845 and 1846, spent in Germany with Stanley, he became an eager student of German criticism and speculation; and came under the influence of the writings of F. C. Baur (*q.v.*). He was appointed to the Greek professorship at Oxford in the autumn of 1855. He had been a tutor of Balliol and a clergyman since 1842.

His pupils became his friends for life. He discerned their capabilities, studied their characters, and sought to remedy their defects by frank and searching criticism. Like another Socrates, he taught them to know themselves, repressing vanity, encouraging the despondent, and attaching all alike by his unobtrusive sympathy. He had the reputation of "the great tutor." From 1846 onwards Jowett threw himself into the movement for university reform, which took effect in the commission of 1850 and the act of 1854. Jowett served on the commission which led to the opening of the Indian Civil Service to competition. A great disappointment, his repulse for the mastership of Balliol, also in 1854, appears to have roused him into the completion of his book on *The Epistles of St. Paul.* This work is original and suggestive, but its publication aroused theological prejudice, which followed him more or less through life. Undeterred by this criticism, he joined with Henry Bristowe Wilson and Rowland Williams, who had been similarly attacked, in the production of *Essays and Reviews* (1860), a book which was the signal for an outbreak of fanaticism. Jowett's influence at Oxford steadily increased. It culminated in 1864, when the country clergy, provoked by the final acquittal of the essayists, had voted in convocation against the endowment of the Greek chair. Jowett's pupils, who were now drawn from the university at large, supported him with enthusiasm.

In the meantime Jowett had been quietly exerting his influence so as to conciliate all shades of liberal opinion, and secure the abolition of the theological test, which was still required for the M.A. and other degrees, and for university and college offices. He spoke at a meeting upon this question in London (June 10, 1864), which prepared the ground for the University Tests act of 1871.

In connection with the Greek professorship Jowett had undertaken a work on Plato which grew into a complete translation of the *Dialogues* with introductory essays. At this he worked in the vacations for at least ten years. But his interest in theology had not abated. The university pulpit, indeed, was closed to him, but from 1866 until the year of his death he preached annually in Westminster Abbey, where Stanley had become dean in 1863. In 1870, by an arrangement which he attributed to his friend Robert Lowe, afterwards Lord Sherbrooke (at that time a member of Gladstone's ministry), Scott was promoted to the deanery of Rochester and Jowett was elected to the vacant mastership by the fellows of Balliol. From the vantage-ground of this long-coveted position the *Plato* was published in 1871. While scholars criticized particular renderings, it was generally agreed that he had provided a version of Plato which is an English classic.

If ever there was a beneficent despotism, it was Jowett's rule as master. Since 1866 his authority in Balliol had been really paramount, and various reforms in college had been due to his initiative. The opposing minority were now powerless, and the younger fellows who had been his pupils were more inclined to follow him than others would have been. There was no obstacle to the continued exercise of his firm and reasonable will. He still knew the undergraduates individually, and watched their progress with a vigilant eye. His influence in the university was less assured. The pulpit of St. Mary's was no longer closed to him, but the success of Balliol in the schools gave rise to jealousy in other colleges, and old prejudices did not suddenly give way; while a new movement in favour of "the endowment of research" ran counter to his immediate purposes. Meanwhile, the tutorships in other colleges, and some of the headships also, were being filled with Balliol men, and Jowett's former pupils were prominent in both houses of parliament and at the bar. He continued the practice, which he had commenced in 1848, of taking with him a small party of undergraduates in vacation time, and working with them in one of his favourite haunts, at Askrigg in Wensleydale, or Tummel Bridge, or later at West Malvern. The new hall (1876), the organ there, entirely his gift (1885) and the cricket ground (1889), remain as external monuments of the master's activity. Neither business nor the many claims of friendship interrupted literary work. The six or seven weeks of the long vacation, during which he had pupils with him, were mainly employed in writing. The translation of Aristotle's *Politics,* the revision of Plato, and, above all, the translation of Thucydides many times revised, occupied several years. The edition of the *Republic,* undertaken in 1856, remained unfinished, but was continued with the help of Lewis Campbell.

In 1882 Jowett accepted the vice-chancellorship of the university, in the hope of securing various reforms. The exhausting labours of the vice-chancellorship were followed by an illness (1887); and after this he relinquished the hope of producing any great original writing, contenting himself with his commentary on the *Republic* of Plato, and some essays on Aristotle which were to have formed a companion volume to the translation of the *Politics.* Jowett died on Oct. 1, 1893.

Theologian, tutor, university reformer, a great master of a college, Jowett's best claim to the remembrance of succeeding generations was his greatness as a moral teacher. Many of the most prominent Englishmen of the day were his pupils, and owed much of what they were to his precept and example, his penetrative sympathy, his insistent criticism, and his unwearying friendship. Seldom have ideal aims been so steadily pursued with so clear a recognition of practical limitations. Jowett's theological work was transitional, and yet has an element of permanence. In earlier life he had been a zealous student of Kant and Hegel, and to the end he never ceased to cultivate the philosophic spirit; but he had little confidence in metaphysical systems, and sought rather to translate philosophy into the wisdom of life. His place in literature rests really on the essays in his Plato.

See *The Life and Letters of Benjamin Jowett,* by E. A. Abbott and Lewis Campbell (1897); *Benjamin Jowett,* by Lionel Tollemache (1895). (L. CAM.; X.)

JOYCE, JAMES (1882–1941), Irish author, was born in Rathgar, Dublin, on Feb. 2, 1882, to John Stanislaus Joyce, a witty but improvident Corkonian, and Mary Jane Murray, originally of Longford. Educated at Clongowes Wood college, Belvedere college, and at University college, Dublin, Jesuit institutions, Joyce gradually changed from a devout Catholic to a fierce anti-Catholic. In 1904 he left Ireland for the continent to work out his destiny as an artist independently of family, country, and religion. Living in Italy, Switzerland and France, he earned a meagre livelihood at various occupations until subsidized by friends. Though he left Dublin permanently, he devoted himself to a lifelong treatment of his native city.

Besides coming under the influence of the tradition of English letters, Joyce, at University college, specialized in modern languages. A gifted tenor, he amassed an encyclopaedic knowledge of music; he

began the study of medicine; he considered founding a great Irish daily; he opened a motion-picture theatre in Dublin, and in Zurich he engaged in the legitimate theatre. This variety of interests does much to explain the extraordinary combination, in his writings, of tradition and experiment.

In 1914, after years of delay caused by publishers' objections to Joyce's candour, *Dubliners* appeared—15 stories of which the author said: "My intention was to write a chapter of the moral history of my country and I chose Dublin for the scene because that city seemed to me the centre of paralysis. I have tried to present it to the indifferent public under four of its aspects: childhood, adolescence, maturity and public life. The stories are arranged in this order. I have written it for the most part in a style of scrupulous meanness . . ." In 1916 appeared *A Portrait of the Artist as a Young Man,* a superb autobiographical novel chronicling the development of Stephen Dedalus and his shift from religion to art. Written from the point of view of the central character, the book is Joyce's first full-length essay in the stream-of-consciousness technique. In 1918, Joyce published an Ibsenesque play, *Exiles.*

On Joyce's 40th birthday, after interrupted and partial serialization in *The Little Review, Ulysses* came out in Paris—the story, chiefly, of a day in the lives of three Dubliners: Stephen Dedalus, Leopold Bloom, and the latter's wife, Molly. The title points to a detailed, if not always accessible, parallel with the *Odyssey* which implies an unflattering view of both the modern world and the classical and expands the significance of the novel by projecting it against the history of western civilization. Divided into 18 episodes, each with a special technique, the work is closely knit by an elaborate network of subtly recurring motifs. The stream of inchoate, fragmentary thoughts and feelings of each of the main characters is vividly and distinctively rendered by the use of the internal monologue, a device which Joyce borrowed from Édouard Dujardin's *Les lauriers sont coupés* (1887) and, under the influence of modern psychology, considerably developed. *Collected Poems* (1937) added a single poem to *Chamber Music* (1907), a slender volume of lucid, delicate lyrics in the Elizabethan tradition, and *Pomes Penyeach* (1927), a handful of less derivative pieces.

Ulysses closes fittingly with Molly Bloom's famous monologue between waking and sleeping, for from the waking mind Joyce moved on to treat, in his last work, *Finnegans Wake* (1939), the sleeping. The title, taken from an Irish comic song, announces the theme: the death and resurrection, the fall and regeneration of man. Humphrey Chimpden Earwicker, Anna Livia Plurabelle, Shem and Shaun move about in a dream-world in which any characters, events, times and places may dissolve into one another. Joyce divided his work to accord with Vico's philosophy of history as a four-part cycle: theocracy, aristocracy, democracy and chaos. While the permutations of dream and myth give unity to all human experience, and sound and rhythm are employed with extraordinary success, Joyce's word-technique, endlessly blending meaning with meaning and allusion with allusion, not only in English but in other languages, leaves the reader floundering in a welter of possible interpretations.

If *Finnegans Wake* alienated some readers of Joyce, the posthumous publication of *Stephen Hero* (1944), a part of the first draft of *A Portrait of the Artist as a Young Man,* may serve to remind them of two things. First, Joyce's earlier works—including the bulk of *Ulysses,* for people brought up on a literature produced largely under its influence—are eminently readable. Secondly, Joyce, who typifies the artist in exile, was paradoxically destined, as this youthful work intimates, to develop into one of the most significant spokesmen of his time.

Against the odds of poverty, illness and British and U.S. publishing conventions, Joyce saw his immense self-confidence justified by a steadily rising reputation. With *Dubliners* he joined the ranks of the foremost writers of the short story. *A Portrait of the Artist as a Young Man* established him as a notable novelist. *Ulysses* placed him squarely in the van of those who, after World War I, reflecting in literature the chaos of society, experimented in various directions upon English and other languages. He became the centre of a cult and of a controversy; and his book, banned in English-speaking countries for years, exerted an ever widening influence upon his contemporaries. The internal monologue in particular seemed to them vividly to reflect the fragmentation of the modern mind into a whirl of atoms so heterogeneous that only some such device as the Homeric parallel could impose the order of art upon it. With *Finnegans Wake* bewildering even his votaries, it is understandable that at the time of Joyce's death his work should have come to stand for the extreme of obscurity in modern literature. A measure of his total achievement, however, may well be T. S. Eliot's remark that Joyce was the greatest master of the English language since Milton.

BIBLIOGRAPHY.—Herbert Gorman, *James Joyce* (1939); Harry Levin, *James Joyce: A Critical Introduction* (1941); Stuart Gilbert, *James Joyce's Ulysses: A Study* (1931); Joseph Campbell and H. M. Robinson, *A Skeleton Key to Finnegans Wake* (1944). (J. PT.)

JOYEUSE, town in Ardèche, France, from which the family of Joyeuse derives its name. Anne de Joyeuse (1561–1587) was a favourite of Henry III of France, who created him duke and peer (1581), admiral of France (1582), and governor of Normandy (1586), and married him to Marguerite de Lorraine-Vaudémont, younger sister of the queen. He had three brothers: François de Joyeuse (d. 1615), cardinal archbishop of Rouen, who brought about the reconciliation of Henry IV with the pope; Henri, count of Bouchage, and later duke of Joyeuse, who was a Capuchin friar, then a soldier, became a marshal of France, and finally re-entered the church, dying in 1608; Antoine Scipion, grand prior of Toulouse in the order of the Knights of Malta, who was one of the leaders in the League, and died in the retreat of Villemur (1592). Henriette Catherine de Joyeuse, daughter of Henri, married in 1611 Charles of Lorraine, duke of Guise, to whom she brought the duchy of Joyeuse. On the death of her great-grandson, François Joseph de Lorraine, duke of Guise, in 1675, without issue, the duchy of Joyeuse was declared extinct, but it was revived in 1714, in favour of Louis de Melun, prince of Épinoy. Pop. (1936) 1,183.

JOYEUSE ENTRÉE, a famous charter of liberty granted to Brabant by Duke John III in 1354. John summoned the representatives of the cities of the duchy to Louvain to announce to them the marriage of his daughter and heiress Jeanne of Brabant to Wenzel duke of Luxembourg, and he offered them liberal concessions in order to secure their assent to the change of dynasty. John III died in 1355, and Wenzel and Jeanne, on the occasion of their state entry into Brussels, solemnly swore to observe all the provisions of the charter which had been drawn up. From the occasion on which it was first proclaimed this charter has since been known in history as *La Joyeuse Entrée.* By this document the dukes of Brabant undertook to maintain the integrity of the duchy, and not to wage war, make treaties or impose taxes without the consent of their subjects, as represented by the municipalities. All members of the duke's council were to be native-born Brabanters. This charter became the model for other provinces and the bulwark of the liberties of the Netherlands. Its provisions remained practically unchanged from the reign of Charles V onwards. The ill-advised attempt of the emperor Joseph II in his reforming zeal to abrogate the *Joyeuse Entrée* caused a Brabançon revolt under Henry van der Noot, before which he had to yield (1789–90).

See E. Poullet, *La Joyeuse entrée, ou constitution Brabançonne* (1862).

JUAN FERNÁNDEZ ISLANDS, a small group in the South Pacific ocean, between 33° and 34° S. lat. and 80° W. long., which belongs to Chile. The principal island is called *Más-a-Tierra* (Span. "nearer land") to distinguish it from a smaller island, *Más-a-Fuera* ("farther out"), 100 mi. farther west. Off the southwest of Más-a-Tierra lies the islet of Santa Clara. The aspect of Más-a-Tierra is beautiful; only 13 mi. in length by 4 mi. in width, it consists of a series of precipitous volcanic rocks which are rudely piled into irregular blocks and pinnacles, and strongly contrasting with a rich vegetation. The highest of these, 3,225 ft., is called, from its massive form, El Yunque (the anvil). Cumberland bay on the north side is the only fair anchorage, and even there, from the great depth of water, there is some risk. A wide valley collecting streams from several of the ravines on the north side of the island opens into Cumberland bay, and is partially enclosed and cultivated. The inhabitants number only some 300.

The flora and fauna of Juan Fernández are in most respects Chilean. There are few trees on the island, for most of the valuable indigenous trees have been practically exterminated, such as the sandalwood, which the earlier navigators found one of the most valuable products of the island. Ferns are prominent among the flora, about one-third of which consists of endemic species. There are no indigenous land mammals. Pigs and goats, however, with cattle, horses, asses and dogs, have been introduced, have multiplied, and in considerable numbers run wild. Sea elephants and fur seals were formerly plentiful. Of birds, a tyrant and a humming-bird (*Eustephanus fernandensis*) are peculiar to the group, while another humming-bird (*E. galerites*), a thrush, and some birds of prey also occur in Chile. *E. fernandensis* has the peculiarity that the male is of a bright cinnamon colour, while the female is green. Both sexes are green in *E. galerites.*

Juan Fernández was discovered in 1563 by a Spanish pilot of

that name, who obtained from the Spanish Government a grant of the islands, where he resided for some time, stocking them with goats and pigs. He soon, however, appears to have abandoned his possessions, which were afterwards for many years only visited occasionally by fishermen from the coasts of Chile and Peru. In 1616 Jacob le Maire and Willem Cornelis Schouten called at Juan Fernández for water and fresh provisions. Pigs and goats were then abundant on the islands. In Feb. 1700, Dampier called at Juan Fernández and while there Capt. Straddling of the "Cinque Porte" galley quarrelled with his men, 42 of whom deserted but were afterwards taken on board by Dampier; five seamen, however, remained on shore. Other parties had previously colonized the islands but none had remained permanently. In Oct. 1704 the "Cinque Porte" returned and found two of the men, the others having been apparently captured by the French. Straddling was marooned on Más-a-Tierra; one of his crew, Alexander Selkirk (*q.v.*), became the island's most famous colonist, for his adventures are commonly believed to have inspired Daniel Defoe's *Robinson Crusoe*. Among later visits, that of Commodore Anson, in the "Centurion" (June 1741) led, on his return home, to a proposal to form an English settlement on Juan Fernández; but the Spaniards, hearing that the matter had been mooted in England, gave orders to occupy the island, and it was garrisoned accordingly in 1750. Philip Carteret first observed this settlement in May 1767, and on account of the hostility of the Spaniards preferred to put in at Más-a-Fuera. After the establishment of the independence of Chile at the beginning of the 19th century, Juan Fernández passed into the possession of that country. On more than one occasion Más-a-Tierra has been used as a State prison by the Chilean Government, particularly for political prisoners.

JUANGS (Patuas, literally "leaf-wearers"), a jungle tribe of Orissa, India, found only in two of the tributary states, Dhenkanal and Keonjhar. They are said to be aborigines. Their language belongs to the Munda family. They live on the game they kill or on snakes and vermin. Their huts measure about 6 ft. by 8 ft., with low doorways. The interior has two compartments. In the first of these the father and all the females of a family huddle; the second is used as a store-room. The boys have a separate hut at the village entrance which serves as a guest-house and general assembly place where the village musical instruments are kept. The Juangs are small and weak-looking, of a reddish-brown colour, with flat faces, broad noses, large mouths and thick lips. The women used to wear nothing but girdles of leaves, the men, a bandage of cloth. The Juangs declare that the river goddess, emerging for the first time from the Gonasika rock, surprised a party of naked Juangs dancing and ordered them to wear leaves, with the threat that they should die if they gave up the custom. The Juangs' weapons are the bow and arrow and a primitive sling. Their religion is a vague belief in forest spirits. They offer fowls to the sun. Polygamy is rare. They burn their dead and throw the ashes into any running stream. The most sacred oaths a Juang takes are those on an ant-hill or a tiger-skin.

JUAN MANUEL, DON (1282–1349), infante of Castile, son of the infante Don Manuel and Beatrix of Savoy and grandson of St. Ferdinand, born at Escalona, May 5, 1282. A favourite of Sancho IV., he served in his twelfth year as *adelantado mayor* of Murcia against the Moors at Granada. In 1304 he successfully conducted political negotiations with James II. of Aragon on behalf of Ferdinand IV., then under age; his marriage with James II.'s daughter, Constantina, added to his prestige. Regent until the proclamation of Alphonso XI.'s majority (1325), his ambitious designs of continuing in power were defeated by the king, who married Constanza, his daughter, and removed Juan Manuel from the scene by nominating him *adelantado mayor de la frontera*. Alphonso XI.'s repudiation of Constanza led to civil war. Don Juan Manuel (whose wife Constantina died in 1327) married Doña Blanca de la Cerda, secured the support of Juan Nuñez, *alférez* of Castile, won over Portugal by promising the hand of the ex-queen Constanza to its infante, and entered into alliance with Mahomet III. of Granada. Faced by this formidable coalition, Alphonso XI. sued for terms in 1328. War speedily broke out anew, and lasted till 1331, when Alphonso XI. invited Juan Manuel and Juan Nuñez to a banquet with the intention, it was believed, of assassinating them; the plot failed and Juan Manuel joined forces with Peter IV. of Aragon. Besieged by Alphonso XI. at Garci-Nuñez, he escaped on July 30, 1336, fled into exile, and kept the rebellion alive till 1338, when he made his peace with the king. He proved his loyalty by serving in further expeditions against the Moors of Granada and Africa, and died a tranquil death in 1349.

Distinguished as an astute politician, Don Juan Manuel is an author of the highest eminence and, considering the circumstances of his stormy life, his voluminousness is remarkable. Setting aside the works that have disappeared—*Libro de los Sabios, Libro de Engeños, Reglas de como se debe trobar, Libro de los Cantares* (all written before 1329), *Libro de la Caballeria* (*c.* 1320–1322)—there remain the *Cronica abreviada* (*c.* 1320–1324), the *Libro de la Caza* (*c.* 1325–1326), the *Libro del Caballero et del Escudero*, the *Libro de los Estados* (1330), *El Conde Lucanor* (1328–1335), a devout *Tractado* on the Virgin (dedicated to the prior of Peñafiel Monastery, to which Juan Manuel bequeathed his manuscripts), the *Libro de los Castigos, Libro infenido* (*c.* 1334), *Las Maneras de Amor* and the *Libro de las Armas*, both about 1334–1337.

The historical summaries, pious dissertations and miscellaneous writings are of secondary interest. The *Libro del Caballero et del Escudero* is on another plane; it is no doubt suggested by Lull's *Libre del orde de Cavalleria*, but the morbid mysticism of Lull is rejected and the carefully finished style justifies the special pride which the author took in this performance. The influence of Lull's *Blanquerna* is likewise visible in the *Libro de los Estados*, but the marked divergences of substance prove Juan Manuel's acquaintance with some version of the Barlaam and Josaphat legend. Nothing is more striking than the curious and varied erudition of the turbulent prince who weaves his personal experiences with historical or legendary incidents, with reminiscences of Aesop and Phaedrus, with the *Disciplina clericalis*, with *Kalilah and Dimnah*, with countless oriental traditions and with all the material of anecdotic literature which he embodies in *El Conde Lucanor* (or *Libro de Patronio*). This work, printed in 1575, revealed Juan Manuel as a master of prose composition, and as the predecessor of Boccaccio in the province of romantic narrative.

A conscious artist, deliberative and selective in his methods, Juan Manuel has not Boccaccio's festive fancy nor his constructive skill; he is too persistently didactic; but he excels in knowledge of human nature, in the faculty of ironical presentation, in tolerant wisdom and in luminous conciseness. He naturalizes the eastern apologue in Spain, and by the laconic picturesqueness of his expression imparts a new quality into Spanish prose. Lope de Vega, Ruiz de Alarcon and Calderon drew on his themes for dramatic purposes, and there is an evident, though remote, relation between *Exemplo.* xxxv. and *The Taming of the Shrew;* and a more direct connection exists between some of the *exemplos* and some of Andersen's fairy tales.

See *Obras*, ed. P. de Gayangos (1857); *El Conde Lucanor*, ed. H. Knust and A. Birch-Hirschfeld (Leipzig, 1900); *El Libro de la Caza*, ed. G. Baist (Halle, 1880); *El Libro del Caballero y del Escudero*, ed. S. Gräfenberg (*Romanische Forschungen*, vii., 1893); J. B. Trend, Introd. to *Count Lucanor* . . . trans. J. York, 1868 (1924).

JUÁREZ, BENITO (PABLO) (1806–1872), was born at Guelatao, near the city of Oaxaca, Mexico, March 21, 1806, of full-blooded Zapotec parents. He was educated for the church by a charitable merchant of Oaxaca, but in 1827 entered the Institute of Arts and Sciences to study law. In 1832 he received his degree of bachelor of law, and two years later was appointed advocate of the Supreme Court of the republic. He was governor of Oaxaca, 1847–52, and in this post showed himself so ardent a partisan of liberal ideas that, when Santa Anna seized the Government in 1853, he was imprisoned. Escaping to New Orleans, he returned to Mexico in 1855 to assist in a successful revolt against Santa Anna led by Álvarez and Comonfort, and held the portfolio of justice in Comonfort's Government. In this capacity he issued the first of his great reform measures restricting the privileges of the military and the clergy (1855, 1856, 1857), which, culminating in the famous anti-clerical Constitution of 1857, caused a

nation-wide rebellion and precipitated the War of the Reform. In Jan. 1858, Comonfort fled the country and Zuloaga, supported by the clericals and the army, declared himself *de facto* president and seized the capital. Juárez, as constitutional successor to Comonfort, declared himself the *de jure* head of the nation and established himself at Veracruz (May 1858). His Government was recognized by the United States in April 1859, and in July he felt himself strong enough to issue the Reform Laws of 1859, which completely nationalized and secularized the church. By the beginning of 1861 the clericals had been everywhere defeated, and on Jan. 11, 1861, Juárez entered Mexico City, and was constitutionally elected president. But his Government was without funds, foreign creditors were clamouring for satisfaction, and the country, after five years of civil war, was in a state of economic chaos; so that in July 1861 he issued a decree suspending for two years payment on the national debt. This embroiled him immediately in a new conflict. Napoleon III., who had for some time been contemplating intervention in Mexico, promptly seized upon Juárez's decree as a pretext, and induced England and Spain (Convention of London, Oct. 1861) to join him in the ostensible purpose of enforcing the payment of foreign creditors. Armed forces appeared at Veracruz in Dec. 1861. Juárez showed himself conciliatory and in Feb. 1862 commissioners of the four Governments ratified the peace treaty of La Soledad. In March Gen. Lorencez landed with large French reinforcements; the English and Spanish commissioners withdrew their co-operation, and on April 12, 1862, Juárez declared war upon France. In June 1863 Gen. Bazaine entered Mexico City and on July 8 declared a monarchy. Maximilian arrived on May 28, 1864, and was crowned in the capital in July. By the spring of 1865 there were 30,000 French soldiers in the country, Juárez had been driven northward to the Paso del Norte, almost to the U.S. border, his armies were shattered, his Government almost penniless. But he refused to relinquish his stand as constitutional president. The end of the year saw a great change. Maximilian was bankrupt; Napoleon saw the futility of his imperial project and the United States, now that the Civil War was over, insistently demanded the withdrawal of the French troops. In Feb. 1867, the last French troops sailed from Veracruz. Maximilian was captured at Querétaro on May 15 and executed on June 19, and on July 15 Juárez returned to Mexico City. He was re-elected president in August. But his genius was not equal to the appalling problem of reconstruction which confronted him. Insurrections and revolts harassed his entire term. In the election of 1870 Porfirio Díaz and Lerdo de Tejada appeared as rival candidates, and Díaz, when congress announced that Juárez had been again re-elected, immediately headed a revolt. The movement failed, but in the midst of it, on July 18, 1872, Juárez died of apoplexy in Mexico City. With his death ends one stage of Mexican history. He did not, as Díaz was to do, wholly dominate his epoch, but during the most momentous period of Mexico's history he was the guiding genius, and is by many called Mexico's national hero.

For a comprehensive bibliography of the life and career of Juárez, *see* H. I. Priestley, *The Mexican Nation—a History* (New York, 1923).

JUBA, the name of two kings of Numidia.

JUBA I. (1st century B.C.), son and successor of Hiempsal, king of Numidia. During the civil wars at Rome he sided with Pompey, partly from gratitude because he had reinstated his father on his throne (Appian, *B.C.*, i. 80), and partly from enmity to Caesar, who had insulted him at Rome by pulling his beard (Suet., *Caesar*, 71). Further, C. Scribonius Curio, Caesar's general in Africa, had proposed, 50 B.C., when tribune of the plebs, that Numidia should be sold to colonists, and the king reduced to a private station. In 49 Juba heavily defeated the Caesarean army, in which Curio was slain (Vell. Pat. ii. 54; Caesar, *B.C.* ii. 40). Juba's attention was distracted by a counter invasion of his territories by Bocchus the younger and Sittius; but he rejoined the Pompeians with a large force, and shared the defeat at Thapsus. Fleeing from the field with the Roman general M. Petreius, he wandered about as a fugitive. At length, in despair, Juba killed Petreius, and sought the aid of a slave in despatching himself (46). Juba was a thorough savage; brave, treacherous, insolent and cruel. (*See* NUMIDIA.)

JUBA II., son of the above. On the death of his father in 46 B.C. he was carried to Rome to grace Caesar's triumph. Augustus in 29, after Mark Antony's death, gave him the hand of Cleopatra Selene, daughter of Antony and Cleopatra, and placed him on his father's throne. In 25, however, he transferred him from Numidia to Mauretania, to which was added a part of Gaetulia. (*See* NUMIDIA.) In A.D. 6 the Gaetulians rose in a revolt, which was suppressed by Cornelius Lentulus Cossus. The date of Juba's death has been put between A.D. 19 and 24. Juba, according to Pliny, is mainly memorable for his writings. He has been called the African Varro.

He wrote many historical and geographical works, of which some seem to have been voluminous and of considerable value on account of the sources to which their author had access: (1) Ῥωμαϊκὴ ἱστορία: (2) Ἀσσυριακά: (3) Λιβυκά: (4) *De Arabia sive De expeditione arabica;* (5) *Physiologa;* (6) *De Euphorbia herba;* (7) Περὶ ὄπου: (8) Περὶ γραφικῆς (Περὶ ζωγράφων): (9) Θεατρικὴ ἱστορία: (10) Ὁμοιότητες: (11) Περὶ φθορᾶς λέξεως: (12) Ἐπίγραμμα.

Fragments and life in Müller, *Frag. Hist. Graec.*, vol. iii.; *see* also Sevin, *Mém. de l'Acad. des Inscriptions*, vol. iv.; Hullemann, *De vita et scriptis Jubae* (1846). For the denarii of Juba II. found in 1908 at El Ksar on the coast of Morocco *see* Dieudonné in *Revue Numism.* (1908), pp. 350 *seq.* They are interesting mainly as throwing light on the chronology of the reign.

JUBA or **JUB,** a river of east Africa, exceeding 1,000 m. in length, rising on the south-east border of the Abyssinian highlands and flowing south, leaving Abyssinia at Dolo and then flowing through Italian Somaliland. It is formed by the junction of three streams, all having their source in the mountain range north-east of Lake Rudolf which is the water-parting between the Nile basin and the rivers flowing to the Indian ocean.

Of the three headstreams, the Web, the Ganale and the Daua, the Ganale is the central river. It has two chief branches, the Black and the Great Ganale. The last-named, the most remote source of the river, rises in 7° 30′ N., 38° E. at an altitude of about 7,500 ft. The banks are clothed with dense jungle and the hills beyond with thorn-bush. Lower down the river has formed a narrow valley, 1,500 to 2,000 ft. below the general level of the country, after which it enters a large slightly undulating grass plain which extends south of the valley of the Daua and occupies all the country eastward to the junction of the two rivers. The Web, which near its source passes through a cañon 500 ft. deep and then underground for some distance, joins the Ganale (left) above its junction with the Daua (right). The latter is similar to the Ganale and their courses are parallel.

Below the Daua the river, now known as the Juba, receives no tributary of importance. It first flows in a valley bounded, especially towards the west, by the escarpments of a high plateau, and containing the towns of Lugh (in 3° 50′ N., the centre of active trade), Bardera, with Serenli opposite to it 387 m. above the mouth at a crossing-place for caravans. Beyond 1° 45′ N. the country becomes more level and the course of the river very tortuous. Just south of the equator channels from the long, branching Lake Deshekwama, fed by the Lakdera river, enter from the west, and in 0° 15′ S. the Juba enters the sea across a dangerous bar, which has only one fathom of water at high tide. From its mouth to 20 m. above Bardera, where at 2° 35′ N. rapids occur, the Juba is navigable by shallow-draught steamers. Just above its mouth it is a fine stream 250 yd. wide, with a current of 2½ knots.

The hills in which the river rises are formed of Archean rocks (schists, gneisses, granites, etc.). In its middle course it crosses Triassic rocks and lower down passes over the Jurassic formations which disappear beneath the coastal alluvium near Sarori. Below the mountainous region of the headstreams the Juba and its tributaries flow through a country generally arid away from the banks of the streams. The soil is sandy, covered either with thorn-scrub or rank grass, which in the rainy season affords herbage for the herds of cattle, sheep and camels owned by the Boran Gallas and the Somali who inhabit the district. But by the banks of the lower river the character of the country changes. The soils of the Gosha district of the Lower Juba are clayey, but remarkably rich in lime and magnesia and with adequate amounts of potash and

phosphoric acid. Here are considerable tracts of forest, and the level of flood water is higher than much of the surrounding land. This low-lying fertile belt stretches for about 300 m., but is not more than a mile or two wide. In the river valley maize, rice, cotton and other crops are cultivated.

JUBALAND, East Africa, formerly a province of Kenya Colony. In 1925 the greater part of the province, some 36,000 sq.m. (including the port of Kismayu), was transferred from Great Britain to Italy. Trans-Juba (Oltre Giuba) the ceded territory, after being administered as a separate colony for exactly a year, was incorporated into Italian Somaliland (*q.v.*). Before the transfer the river Juba formed the frontier. The valley of the Juba is fertile, the rest of the area is semi-arid. The inhabitants (some 130,000) are Somalis whose chief wealth is in cattle and camels.

The British White Paper *Treaty Series No. 29* (1925) gives the text of the Anglo-Italian treaty and a map. *See* also R. Cani, *Il Giubaland* (Naples, 1921); *La Vallata del Guiba* (ed. G. de Agostini, Turin, 1928) and papers on Jubaland by L. N. King and E. H. Clifford in *Geog. Jnl.*, Nov. 1928.

JUBBULPORE or **JABALPUR,** a city district and division of British India in the Central Provinces. The city is 616 miles N.E. of Bombay by rail and 220 miles S.W. of Allahabad. The numerous gorges in the neighbouring rocks have been taken advantage of to surround the city with a series of small lakes which, shaded by fine trees and bordered by fantastic crags, add much beauty to the suburbs. The city itself is modern and is laid out in wide and regular streets. The cantonment and civil station have largely expanded and the total population was 178,339 by the census of 1941.

Jubbulpore is a large military station with a government gun-carriage factory, a railway centre on the Bombay-Calcutta route via Allahabad, and it is also the educational and missionary centre of the Hindi-speaking districts of the Central Provinces. A narrow gauge line connects it with the Satpura districts and the south of the province. It has a large cotton mill, a glass factory and pottery works and carries on an important trade, being the collecting and distributing centre for a considerable area of country. The population includes 67,158 Muslims and 5,989 Christians.

The DISTRICT OF JUBBULPORE has an area of 3,919 sq.mi. and a population of 910,603. The northern and eastern tracts drain into the Jumna and Ganges, but the southern and southwestern portions lie in the Narbada valley and this area is a fertile plain with rich black soil and embanked fields producing a splendid wheat crop. There are deposits of iron ore which are smelted in small charcoal furnaces in the jungle. There is manganese ore of low grade and very valuable limestone, as well as clays and earths specially suitable for bricks, pottery and glassware. The Narbada, 11 mi. from Jubbulpore, after a fall of 30 ft., forces its way through the famous "Marble Rocks" gorge. The district is a beautiful one, well wooded, with hills always in view, and there are many sacred spots on the Narbada river. The rich country is almost immune from famine, but the light soil areas producing rice and small millets have suffered very severely from recurring droughts. Of the population, 72% are Hindus, Mohammedans 7%, Christians under 1%, Animists (chiefly Gonds and Kols) and others 20%. The principal cultivating castes are Kurmis and Lodhis, while the Brahmans (62,000) are more numerous than in any other district of the province. Murwara on the East Indian railway, 57 mi. N. of Jubbulpore, has grown from a village of 2,000 to a busy town of 21,959 and is the centre of the lime and cement industry.

JUBÉ, the French architectural term (taken from the imperative of Lat. *iubere,* to order) for the chancel or choir screen, which in England is known as the rood-screen.

Above screen was a gallery or loft, from which the words *Iube Domine benedicere* were spoken by the deacon before the reading of the Gospel, and hence probably the name. One of the loveliest in France is that of the church of the Madeleine at Troyes, in rich flamboyant Gothic. There is a lavish jubé of the Renaissance period, *c.* 1600, in the church of St. Étienne du Mont, Paris. A magnificent example of the Marble jubés of the Low Countries is that from Bois-le-Duc, now in the Victoria and Albert museum, London.

JUBILEE or **JUBILE,** YEAR OF, in the Bible the name applied in the Holiness section of the Priestly Code of the Hexateuch (Lev. xxv.) to the observance of every fiftieth year (determined by the lapse of seven seven-year periods) as a year of perfect rest, when there was to be no sowing, nor even gathering of the natural products of the field and the vine. At the beginning of the jubilee-year the liberation of all Israelitish slaves and the restoration of ancestral possessions was to be proclaimed. Modern scholars are agreed that the name (Heb. *yōbēl*) signifies "ram" or "ram's horn"; "Year of Jubilee" would mean, therefore, the year that is inaugurated by the blowing of the ram's horn (Lev. xxv. 9).

According to Lev. xxv. 8–12 at the completion of seven sabbaths of years (*i.e.,* $7\times7=49$ years) the trumpet of the Jubilee is to be sounded "through the land" on the 10th day of the seventh month (Tisri 10), the great Day of Atonement. The fiftieth year thus announced is to be "hallowed," *i.e.,* liberty is to be proclaimed everywhere to everyone, and the people are to return "every man unto his possession and unto his family." The conditions of the Sabbatical year are repeated as regards the law of real property in relation to the Jubilee (*cf.* Lev. xxv. 13–34).

The tendency to impose checks upon the alienation of landed property was exceptionally strong in Israel. The fundamental principle is that the land is a sacred possession belonging to Yahweh, and as such it is not to be alienated from Yahweh's people, to whom it was originally assigned. For the law as to property in slaves, especially as this affected Hebrews who had sold themselves into slavery, *see* Lev. xxv. 35–55. It should be noted that these enactments are found only in the latest legal code of the Hexateuch. They can only be understood in the light of the previous enactments regarding the Sabbatical year (*cf.* Exod. xxi. 2 *seq.,* xxiii. 10 *seq.;* Deut. xv.).

The Book of the Covenant enjoined that the land should lie fallow and Hebrew slaves be liberated in the seventh year; Deuteronomy required also the remission of debts (*see* Benzinger). It is evident that these enactments proved impracticable (*cf.* Jer. xxxiv. 8 *seq.*), and so it became necessary in the later legislation of P., represented in the present form of Lev. xxv., to relegate them to the fiftieth year, the year of Jubilee. This, however, was a purely theoretical development, which never could have been actually carried out. Further, according to Rabbinical tradition the Jubilee years though reckoned were not observed.

The conjecture of Kuenen that originally Lev. xxv. 8 *seq.* had reference to the seventh year is a highly probable one. This may also be the case with Ezek. xlvi. 16–18 (*cf.* Jer. xxxiv. 14). A later Rabbinical device for evading the provisions of the law was the *prosbul* (ascribed to Hillel).

Further enactments regarding the Jubilee are found in Lev. xxvii. 17–25 and Num. xxxvi. 4. (G. H. B.)

JUBILEES, BOOK OF, an apocryphal work of the Old Testament. It is the most advanced pre-Christian representative of the Midrashic tendency, which had already been at work in the Old Testament Chronicles. As the chronicler had rewritten the history of Israel and Judah from the standpoint of the Priests' Code, so our author re-edited from the Pharisaic standpoint of his time the history of the world from the creation to the publication of the Law on Sinai. His work constitutes the oldest commentary in the world on Genesis and part of Exodus, an enlarged Targum on these books, in which difficulties in the biblical narration are solved, gaps supplied, dogmatically offensive elements removed and the genuine spirit of later Judaism infused into the primitive history of the world.

Titles of the Book.—"Jubilees" is an admirable title as the book divides into jubilee periods of forty-nine years each the history of the world from the creation to the legislation on Sinai. It is also frequently designated "The Little Genesis," a title which may have arisen from its dealing more fully with details and minutiae than the biblical work. For the other names by which it is referred to, see Charles's *The Book of Jubilees,* pp. xvii.–xx.

Object.—The object of our author is the defence and exposi-

tion of Judaism from the Pharisaic standpoint of the 2nd century B.C. against the disintegrating effects of Hellenism. In his elaborate defence of Judaism our author glorifies circumcision and the sabbath, the bulwarks of Judaism, as heavenly ordinances, the sphere of which was so far extended as to embrace Israel on earth. The Law, as a whole, was to our author the realization in time of what was in a sense timeless and eternal. Though revealed in time it was superior to time. Before it had been made known in sundry portions to the fathers, it had been kept in heaven by the angels, and to its observance there was no limit in time or in eternity. Our author next defends Judaism by his glorification of Israel. Whereas the various nations of the Gentiles were subject to angels, Israel was subject to God alone. Israel was God's son, and not only did the nation stand in this relation to God, but also its individual members. Israel received circumcision as a sign that they were the Lord's, and this privilege of circumcision they enjoyed in common with the two highest orders of angels. Hence Israel was to unite with God and these two orders in the observance of the sabbath. Finally the destinies of the world were bound up with Israel. The world was renewed in the creation of the true man Jacob, and its final renewal was to synchronize with the setting-up of God's sanctuary in Zion and the establishment of the Messianic kingdom. In this kingdom the Gentiles had neither part nor lot.

Date.—(1) The book was written during the pontificate of the Maccabean family, and not earlier than 135 B.C. For in xxxii. 1, Levi is called a "priest of the Most High God." Now the only high priests who bore this title were the Maccabean, who appear to have assumed it as reviving the order of Melchizedek when they displaced the Zadokite order of Aaron. Jewish tradition ascribes the assumption of this title to John Hyrcanus. It was retained by his successors down to Hyrcanus II. (2) It was written before 96 B.C. or some years earlier in the reign of John Hyrcanus; for since our author is of the strictest sect, a Pharisee, and at the same time an upholder of the Maccabean pontificate, Jubilees cannot have been written after 96 when the Pharisees and Alexander Jannaeus came to open strife. Nay more, it cannot have been written after the open breach between Hyrcanus and the Pharisees, when the former joined the Sadducean party. We may, however, observe that our book points to the period already past—of stress and persecution that preceded the recovery of national independence under the Maccabees, and presupposes as its historical background the most flourishing period of the Maccabean hegemony.

Author.—The author was a Pharisee of the straitest sect. He maintained the everlasting validity of the law, he held the strictest views on circumcision, the sabbath, and the duty of shunning all intercourse with the Gentiles; he believed in angels, and in a blessed immortality. He was an upholder of the Maccabean pontificate. He glorifies Levi's successors as high-priests and civil rulers, and applies to them the title assumed by the Maccabean princes, though he does not, like the author of the Testaments of the Twelve Patriarchs, expect the Messiah to come forth from among them. He may have been a priest.

The Views of the Author on the Messianic Kingdom and the Future Life.—According to our author the Messianic kingdom was to be brought about gradually by the progressive spiritual development of man and a corresponding transformation of nature. Its members were to reach the limit of 1,000 years in happiness and peace. During its continuance the powers of evil were to be restrained, and the last judgment was apparently to take place at its close. As regards the doctrine of a future life, our author adopts a position novel for a Palestinian writer. He abandons the hope of a resurrection of the body. The souls of the righteous are to enjoy a blessed immortality after death. This is the earliest attested instance of this expectation in the last two centuries B.C.

LITERATURE.—*See* the commentaries by R. H. Charles, *The Book of Jubilees or the Little Genesis* (1902), which deals exhaustively with all the questions treated in this article; his edition in *Apocrypha and Pseudepigrapha* (vol. ii. 1913); and his English translation the S.P.C.K. *Translations of Early Documents* (1917).

(R. H. CH.; W. O. E. O.)

JUBILEE YEAR, an institution in the Roman Catholic Church, observed every twenty-fifth year, from Christmas to Christmas. During its continuance plenary indulgence is obtainable by all the faithful, on condition of their penitently confessing their sins and visiting certain churches a stated number of times, or doing an equivalent amount of meritorious work. The institution dates from the time of Boniface VIII., whose bull *Antiquorum habet fidem* is dated the 22nd of February 1300. According to contemporary statements, a rumour spread through Rome at the close of 1299 that every one visiting St. Peter's on the 1st of January 1300 would receive full absolution. The result was an enormous influx of pilgrims to Rome, which stirred the pope's attention. Nothing was found in the archives, but an old peasant 107 years of age avowed that his father had been similarly benefited a century previously. The bull was then issued, and the pilgrims became even more numerous, to the profit of both clergy and citizens. At the request of the Roman people, which was supported by St. Bridget of Sweden and by Petrarch, Clement VI. in 1343 appointed, by the bull *Unigenitus Dei filius,* that the jubilee should recur every fifty years instead of every hundred years as had been originally contemplated in the constitution of Boniface; Urban VI., who was badly in need of money, by the bull *Salvator noster* in 1389 reduced the interval still further to thirty-three years (the supposed duration of the earthly life of Christ); and Paul II. by the bull *Ineffabilis* (April 19, 1470) finally fixed it at twenty-five years.

See H. Thurston, art. "Jubilee" in the *Catholic Encyclopaedia.*

JÚCAR, a river of eastern Spain. It rises in the north of the province of Cuenca, at the foot of the Cerro de San Felipe (5,906 ft.), and flows south past Cuenca to the borders of Albacete; here it bends towards the east, and maintains this direction for the greater part of its remaining course. On the right it is connected with the city of Albacete by the Maria Cristina canal. It enters the Mediterranean Sea at Cullera, after a course of 314 miles.

JUD, LEO (1482–1542), known to his contemporaries as Meister Leu, Swiss reformer, was born in Alsace and educated at Basel, where he came under the influence of Zwingli. After serving for four years (1518–22) as pastor of Einsiedeln Jud became Zwingli's colleague at Zürich. He had a share in the translation of the Zürich Bible and also made a Latin version of the Old Testament. He died at Zürich on June 19, 1542.

See *Life* by C. Pestalozzi, *Leo Jud* (1860).

JUDAEA, the southern part of Palestine, occupied by the Jewish community in post-exilic days under Persian, Greek and Roman overlordship. In Luke and Acts the term is sometimes used loosely to denote the whole of western Palestine. The limits of Judaea were never precisely defined and varied from time to time. After the death of Herod, Archelaus became ethnarch of Samaria, Idumaea and Judaea, and when he was deposed Judaea was merged in Syria, being governed by a procurator whose headquarters were in Caesarea.

For a description of the natural features of the country *see* PALESTINE; for its history *see* JEWS and JUDAH. *See* also T. Mommsen, *The Provinces of the Roman Empire,* ch. xi.

JUDAH, a district of ancient Palestine to the south of the kingdom of Israel, between the Dead sea and the Philistine plain. It falls physically into three parts: the hill-country from Hebron northwards through Jerusalem; the lowland (Heb. *Shĕphelah*) on the west; and the steppes or "dry land" (Heb. *Negeb*) on the south. The district is one of striking contrasts, with a lofty and stony table-land in the centre (which reaches a height of 3,300 ft. just north of Hebron), with a strategically important valley dividing the central mountains from the lowland, and with the most desolate of tracts to the east (by the Dead sea) and south. Some parts, especially around Hebron, are extremely fertile, but the land as a whole has the characteristics of the southern wilderness and was more fitted for pastoral occupations; *see* further G. A. Smith, *Hist. Geog. Holy Land,* chs. x.–xv.

Life in ancient Judah is frequently depicted in the Bible, but much of the Judaean history is obscure. In the days of the old Hebrew monarchy there were periods of conflict and rivalry between Judah and Israel—and times when the latter incorporated, or at least claimed supremacy over, the former. Later, from the 5th

century B.C., there was a long and serious breach between the Jews (the name is derived from Judah) and the Samaritans (*q.v.*). Judah's stormy history, continued under Greek and Roman domination, reached its climax in the birth of Christianity, and ended with the fall of Jerusalem in A.D. 70. *See* JEWS, PALESTINE.

JUDAISM. The English word Judaism is derived immediately from a similar Latin word which signified the Jewish quarter of a town[1] or the Jewish community,[2] and ultimately from the name of Jacob's fourth son, *Yehūdhāh* or Judah, whose descendants, later called *Yehūdhīm* or Jews, together with those of his half-brother Benjamin, formed the Jewish, as opposed to the Israelite, kingdom, the capital of which was Jerusalem whence the religion known as Judaism spread over the world. It is in the last sense that the word is generally used; the others are archaic. Judaism, then, denotes a religion maintained by the Jews and offered to the world. It may be defined as the belief in absolute monotheism and the practical effect of that belief on life. By emphasizing the difference between the human and divine natures (without, however, thereby succumbing to impersonal transcendentalism), Judaism differs from other creeds which also stress the Unity of God, *e.g.*, from Unitarianism and Islam, for these faiths assign to Jesus and Mohammed respectively a higher grade than that which Judaism concedes to Moses. On the other hand, Judaism differs from theoretical systems of ethics by reason of its historical, ceremonial and racial elements. Judaism is not a mere intellectual conception or a dogmatic confession; it is a course of life lived under discipline. One of its cardinal principles is the belief in the Divine choice of the Jews to preach God's message. This principle is not particularist: it is nothing but the declaration of the function of the Jew and the duty assigned to Judaism; it is another form of the doctrine of the Remnant.

ORIGIN

Abraham is considered to have been the first adherent of Judaism. He is said to have reached, by thought and by revelation, the conclusion that one Supreme God ruled the world and that idols were of no account. Critically considered, this is by no means impossible. The recognition by Judaism of Abraham as its founder, even the Midrashic allegories of his contests with Nimrod (*e.g.*, the Midrash of Abraham's childhood, contained in vol. i. of A. Jellinck's *Bet ha-Midrasch*, Leipzig, 1853) are not now deemed as fantastic as they would have been half a century ago, when the very existence of Abraham was generally denied. The spirit if not the letter of Jewish views about Abraham and his age is supported by archaeology. At the International Congress of Orientalists in Oxford (1928) the lectures of Prof. Langdon and Mr. Woolley showed that at Abraham's city Ur, in Abraham's day and earlier, monotheistic speculations conflicted with crass idolatry and wholesale human sacrifices with purer worship. This is but another way of saying that the idea of One God was gradually evolved in Mesopotamia amid prevalent polytheism and that by the time assigned to Abraham monotheism had secured a group of believers. Nor is the personality of Abraham now categorically repudiated: it is recognised that stories referring to other times and people have been added to the account preserved in Genesis, but this does not eliminate Abraham. "Even in the delineation of the character of Abraham there is an absence of idealism, which makes against the theory that the traditions of Israel were dealing with a purely imaginary person."[3]

From Abraham's days the ideals of monotheism were transmitted by his descendants. The varieties of belief and cult which prevailed in Assyria are mirrored in Abraham's family. According to the Bible story, he left his kindred, who remained pagans, moved about preaching his faith and finally died in exile. To become a missionary involved sacrifice, and the history of Judaism shows a continuous process of testing and sifting. Birth alone is ineffective, for readiness to serve and to suffer is not necessarily hereditary. This is illustrated by subsequent events. Abraham reared and trained Lot, who was his nephew. Lot, preferring the rich pastureland of the plains to the hardships of a nomad, gave up the calling of the wandering preacher and quitted his uncle. Isaac and Ishmael, sons of one father but of different mothers, had to be separated. Jacob and Esau, twin brothers in birth but fundamentally differing in outlook, were driven asunder by the inevitable force of this difference. Thus in three successive generations the lesson that birth alone does not avail was driven home with increasing force, starting with uncle and nephew and culminating with uterine brothers.

The winnowing process is regularly repeated throughout the Bible. It is exemplified in the stories of Gideon and Elijah and it is constantly taught until, in prophetical times, the "Survival of the Remnant"[4] became a recognized axiom of Judaism. The "Remnant" or the "Suffering Servant" (Isaiah, liii.) was imperishable, but this ability to withstand time and attack was no free gift arbitrarily bestowed by God on a favoured nation. It was open to all who cared to pay the price. At times this price was even martyrdom; it was always a severe discipline. But the followers of Judaism did not count the cost. They gave their lives and sometimes even more. For when, in Nehemiah's days, wholesale intermarriage threatened to engulf Judaism in barbarism, the people, conscious of their backsliding, were content to sacrifice their homes and to leave their wives in order to save their faith. History can furnish few parallels to this corporate act of renunciation. It was an exceptional expedient. Those who break the laws of God have no more immunity from the consequences than those who violate the laws of nature. The Eurasian problem in India is an example of unhappiness produced in this way. Through the heroism of Nehemiah's contemporaries Judaism was secured from analogous results.

PROSELYTES

The Doctrine of the Remnant corresponds to the scientific theory of the survival of the fittest. Judaism is the religion of a minority but of a minority ever conscious of its duty to the majority. It is the religion of a minority at present, but it aims at being the only religion of the majority at the end. The Jew has endeavoured to influence the world in two ways. When confronted with paganism, omnipotent and universal, he has engaged in active proselytization. The Pharisees compassed land and sea to make one proselyte (Matthew, xxiii., 15) and classical authors testify to the vigour of the Jewish missionary enterprise. When Paganism persecuted, Judaism countered with martyrdom. Revolts against Roman rule were never supported by Rabbis until Hadrian determined to suppress Judaism; the fight for liberty under Barcocheba (*q.v.*) was a religious rather than a political war. Judaism, according to the famous saying, admitted the righteous of all peoples to the world to come. This saying is exceptional in wording but normal in spirit, in spite of others, of a contrary tendency, which, viewing gentile sinfulness at its worst, doubted the possibility of regeneration. Since Judaism made salvation dependent on conduct and regarded those who abstained from sin but did not accept the whole of Judaism as "Proselytes of the Gate," the attitude towards the environment changed when Paganism gave place to Christianity and to Islam.

Henceforth Judaism was propagated by example: martyrdom was endured when necessary. Proselytes, whose genuineness was proven, were received, but missionary organizations have not been maintained. The reason for this is not indifference to the environment but a recognition that the daughter faiths, though incapable of so true a vision of God, are yet teaching truth.[5] The improvement must come in God's own time. The Liturgy often expresses this hope. Thus the central portion of the *'Amidāh* for New Year

[1]Thus, in Cambridge, the Church of All Saints in the Jewry was called All Saints in the Judaism (*in iudaismo*): at Ramsay, Emma the upholstress lived *in iudaismo*. *See* H. P. Stokes, *Studies in Angl.-Jew. Hist.* (1913), pp. 118, 116, etc.

[2]Cf. *In nomine iudaismi* (=in the name of the Jewish Community) in Brit. Mus. Harl. Chart. 43 A, Cat. (Margoliouth) No. 1182, ed. trans. on pp. 30 *seq.* of H. P. Stokes, I. Abrahams, H. Loewe, *Anglo-Jewish Starrs* (1929).

[3]F. J. Foakes Jackson, *Biblical Hist. of Hebrews* (1921), p. 24; *see* also J. Pedersen, *Israel* (1926), pp. 12 *seq.*, and article ABRAHAM.

[4]Isaiah, vi., 9–13: x., 21. *Cf.* J. Skinner, *Isaiah*, in Camb. Bible series (1900), pp. xxiv. *seq.*

[5]See *Jewish Encyclopaedia*, iv., 56.

and Atonement contains three famous paragraphs[6] of great antiquity in which Israel, the proselytes and the ultimate conversion of mankind are prayed for. From an early date Judaism differentiated mankind into those who did and those who did not obey the seven Noachian laws, that is to say seven fundamental principles which can be expected of any stage in civilization: the sons of Noah are said to have abstained from idolatry, adultery, murder, robbery, eating limbs severed from living animals, emasculation of animals and breeding of monstrosities.[7] Towards those who had reached a higher stage than mere neutrality or negation of barbarism, *e.g.*, to Christians and Muslims, Judaism adopted a pragmatic relation. Since salvation, in the Christian sense, depended on works and morals, Judaism felt no impulse to continue missionary propaganda in order to promote a system of theology which it deemed more accurate, but it accepted those who preferred this system to their own.

JUDAISM AND CHRISTIANITY

As Jewish and Christian conceptions of morals are identical, truth or chastity being neither Jewish nor Christian monopolies, and as the reader may be expected to be acquainted with the evolution of Judaism in the Bible, attention may now be directed to the development of post-biblical Judaism and to the points wherein it differs from the Christian religion.

Judaism, rejecting alike the Trinity and the Incarnation, believes in a single universal God, Who is immanent as well as transcendent: man, made in the Divine image, has direct access to his Heavenly Father, without the intervention or mediation of a Son. Judaism further denies the Christian doctrine of the Atonement and teaches that there is no original sin needing a superhuman counterweight, but only the freedom to sin, an inevitable concomitant of free will. Man can therefore, unaided, achieve his own redemption by penitence. Prayer having replaced the sacrifices of the Temple, no extra substitute for them is needed. Hence nothing analogous to the Mass as a propitiatory offering exists in Judaism. This world is not regarded as inherently bad and Judaism consequently repudiates those Gospel sayings and teachings which, inspired by the conviction that the end of the world was imminent (the so-called *interimsethik*), maintained that the pious should abandon the ordinary conditions of settled social life and concentrate on the approaching change in the order of things. Therefore wealth was essentially bad and marriage unnecessary (Luke, vi., 24; xviii., 24–5; James, i. 10; Matthew, xix., 23). Thus while a monk must be a celibate, a Rabbi ought to have a wife, since marriage is the first command in the Bible (Gen. i., 28). Even the *Yēcer ha-raʿ* or evil inclination is from God[8]: it is called *Ṭōbh mĕ'ōdh*, exceedingly good, in Genesis Rabba[9] and God instituted it "for His Glory." This phrase is used in the second benediction of the Jewish marriage service.[10] On the other hand in the Book of Common Prayer, the Form of Solemnization of Matrimony not only declares matrimony to be an "honourable estate instituted of God" but continues to add that it was "ordained for a remedy against sin and to avoid fornication." The latter sentiment is entirely unjewish.

It will be noted that among the proposed revisions of the Church of England prayer book the deletion of this view of marriage was advocated. In this, as in certain other matters, Christianity is approximating to the Jewish view from which it diverged under the influence of *Interimsethik* and through the agency of St. Paul. Judaism differs also from Christianity in rejecting asceticism. Family ties are not an impediment to the service of God. Elijah sent Elisha back to kiss his father and mother (1 Ki., xix., 20) before following his call, whereas Jesus, in similar circumstances, demanded the renunciation of kith and kin: "If any man cometh unto me and hateth not his own father and mother and wife and children . . . he cannot be my disciple."[11] Again Jesus declares that he comes to set a man at variance with his father, whereas Judaism says, "Ye shall fear every man his mother and his father and ye shall keep my Sabbaths" or "Ye shall keep my statutes, which, if a man do, he shall live by them."[12] The Nazarite had to bring a sin offering because he had abstained from boons with which God had endowed him, and the great authority Samuel stated "he that fasts for self-affliction is called a sinner."[13]

Judaism does not recognize Jesus as divine, as a Son of God or as born of a Virgin. It denies the possibility of his vicarious atonement for the sins of humanity and maintains conversely the doctrine of personal responsibility to God direct. It denies that Jesus was the Messiah and places the Messianic age in the future, some authorities holding that this consummation will be non-catastrophic, but the outcome of the gradual development of the human race, Judaism believing essentially in progressive evolution, while others hold that a personal Messiah, sent by God, will bring the Golden Age to pass. Judaism, as the guide to perfection, will be centralized in Zion, whence the Word of the Lord will go forth. As regards the immortality of the soul, Judaism and Christianity have the same beliefs, both having tacitly dropped the belief in the resurrection of the body. Judaism has no sacraments, only ceremonies and symbols, and no creed, in the sense of an obligatory confession to which adherents are required to subscribe. Not using the term salvation in the Christian sense, it does not require belief in a Jewish doctrine as a condition for enjoying the life to come. It is doubtful whether an atheist who kept the Torah or Jewish ideals of righteousness could be called a Jew,[14] but he would certainly not be damned. Faced with the dilemma of condoning sin (by excluding the possibility of any sin being unforgivable) and the alternative of eternal punishment, the Rabbis usually admitted the latter in theory but took care to examine each notorious sinner, *e.g.*, Jeroboam and Elisha ben Abuya, and then managed to find extenuating circumstances or overlooked virtues in each case.

THE MOSAIC LAW

But in addition to these philosophical or theoretical differences between Judaism and Christianity, there was another group, of equal, if not of greater importance. This group comprises the observances of the Mosaic law. This law was two-fold, the Written law (*Torāh shĕ-bĕ-Khĕthābh*) and the Oral law (*Torāh shĕ-bĕ-ʿal Pèh*). The law revealed on Sinai gives general commands, *e.g.*, to make fringes on the garments as reminders of God, and prohibitions, *e.g.*, to abstain from work on Sabbath. But these general commands are not defined. According to Exodus xxiv., 12–18, Moses remained on the Mount for 40 days, receiving instructions which amplified the Written law, and these instructions are called the Oral law, each command being styled a *halakhāh lĕ-Moshèh miṣ-Ṣināi*, a law given to Moses on Sinai. (*See* HAGGĀDAH; TALMUD.) It used to be the fashion to call the Oral law a mere innovation of the later Rabbis: only in a limited sense is this judgment accurate. In point of fact a great mass of the Oral law is merely ancient Jewish tradition, some part indeed being Semitic and taken over by the Jews from the common law and custom of the Semites. Before the days of Jesus there were two parties in Judaism, the Sadducees and the Pharisees (*q.v.*), who differed very much on the law. The former were mostly priests and conservative aristocrats corresponding roughly to the English Church and nobility in the 18th century: the latter, laymen, scholars and revivalists, many of them artisans, may be compared with the Wesleyans. The former took their stand on the letter, the latter on the spirit. Wholesale verdicts must be avoided in Judaism no

[6]*See* S. Singer's *Authorized Daily Prayer Book*, p. 239 and p. cxcvi. of I. Abraham's annotated ed. *See* also pp. 140 *seq.* of I. Elbogen's *Jüdischer Gottesdienst*, Frankfurt-a-M. (1924).

[7]*See Jewish Encyclopaedia, s.v.* Laws, Noachian.

[8]*See* F. C. Porter, *Yale Bicent. Bib. and Sem. Stud.*, Lond. (1901), p. 122.

[9]P. 71 in J. Theodor's ed., Berl. (1903); *see* his note *in loc.*

[10]Singer, *op. cit.*, p. 299.

[11]Luke, xiv., 26. It must, however, be noted that the verse adds "Yea, and his own life also," which suggests that willingness to suffer martyrdom is implied. But monastic Christianity has always taken this verse as a command to break with the family and this interpretation seems the more natural.

[12]Matthew, x., 35: Leviticus, xix., 3 (*see* Rashi's note *in loc.*); *ib.* xviii., 5.

[13]F. B. Ta'anith, 11a, *see* p. 77 of H. Malter's text and Eng. trans., Phil. (1928).

[14]*See* Hastings, *E.R.E., s.v. Atheism, Jewish.*

less than in Christianity. Not all the churchmen and not all the Sadducees were worldly wise; not all Wesleyans and not all the Pharisees were saints. Unfortunately the information which has come down is one-sided. After the destruction of the Temple the Sadducees vanished: Jewish sources give the Pharisaic side in nearly every instance.

Moreover, Christian sources, *i.e.,* New Testament evidence, being later than the Sadducees and having no interest in Jewish differences, not only are frequently in error about the Sadducees but also make mistakes about their opponents. An example in point will be found with reference to CORBAN. For centuries the average Christian estimate of the ethical teaching of the Pharisees has been prejudiced: Pharisee and hypocrite have been treated as synonyms among lettered and unlettered alike. The cause of this misconception is not far to seek. Hitherto the Pharisees have not been studied for their own sake: they have been used as a foil to the Gospels. Their faults have been stressed and their virtues ignored. The present generation, which not only contains learned upholders of the older view, *e.g.,* Schürer, Bousset and Charles, has witnessed the rise of a newer and more correct school of thought, including Jewish and Christian scholars, *e.g.,* Moore, Lake, Foakes-Jackson, Strack, Billerbeck, Travers Herford, Box, Oesterley, Burkitt and many others among Christian theologians and Montefiore and Abrahams among their Jewish colleagues. The most recent recruit is Prof. D. W. Riddle, whose *Jesus and the Pharisees* (Chicago and Cambridge, 1928) deserves the careful attention of every student.

PHARISAIC ORDINANCES

The Pharisees strove to give the Oral law the authority enjoyed by the Written law. As the Sadducees demanded biblical sanction for the Oral law, various hermeneutical devices were invented, and it is these that sometimes appear far-fetched. But their purpose was not to introduce some new enactment on slender grounds. It was to support some traditional practice by the rules of logic as then understood. There were, however, cases where the Pharisees were almost innovators. An instance is the substitution of compensation for the *Lex Talionis.* In primitive times, when there was no State judicature and no centralized executive of justice, it was the duty of every man to put down wrongdoing and punish the criminal. Abstention was apathy and contrary to public spirit. When, however, institutions developed, it became wrong for the private citizen to take the law into his own hands. Before, it was necessary to check punishment, and the law laid down that no more than measure for measure was to be exacted. Now that a trained and impartial tribunal had charge of the administration of justice, different conditions prevailed. The older alternative of compensation for injury, well known among primitive Semites, was now made general by the efforts of the Pharisees, and in this type of legislation they may be termed innovators.

JESUS AND THE LAW

The Oral and Written law took cognizance of every phase of life. The distinction between sacred and secular spheres is a development in society of relatively modern growth. Judaism legislated for hygiene, inheritance, property, agriculture, dress, diet and business, and for many other matters. It was not only a creed but a course of life. It was on the question of the law that the first clash with Christianity came about. Jesus came "to fulfil the law." It is true that he sometimes seemed to annul it but he was merely an advanced Pharisee, who went further than the rest in deciding that obsolete practices needed revising. "The Sabbath is made for Man" was a Pharisaic adage as well as his. Like the Pharisees he insisted that conformity to the law must not be taken as a substitute for moral conduct, but he went further than the Pharisees.[15] He was prepared to jettison ceremonial. His followers went to still greater lengths: they were ready to give up the entire law. Missionary enterprise was hampered by the law. Rabbis had won countless converts in the Diaspora, but the Apostles found that they could not win adherents if, in addition to the observance of the law, they required the acceptance of Jesus as Messiah. The law had to go and Christianity parted from Judaism.

The Jewish belief that the parting of the ways came not at Stephen's martyrdom but after Barcocheba's war against Hadrian is now gaining ground. Previously there had been no event sufficiently striking to sever the ties. Christians frequented the synagogues: they were still a Jewish sect. But Barcocheba was hailed by Aqiba as the Messiah. This the Christians could not condone and they stood aside. Jerusalem fell amid torrents of blood: the Temple-site was desecrated and Jews were debarred from visiting it, while Christians could come and go as they wished. To the Jews they seemed traitors who had profited by their treachery. If we would envisage the situation we need only imagine that a victorious enemy had sacked Westminster Abbey and forbidden access to all Englishmen save conscientious objectors who had refused to bear arms. Here we have the cause of the cleft. The Jews regarded the Christians as renegades: the Christians would not fight for Aqiba's Messiah. The die had fallen and there was no recalling the past.

But the law was not originally the obstacle. A simple example will show this. The *Shema* ("Hear, O Israel, the Lord our God is One": Deut., vi., 4–9) has from time immemorial been the *credo* and daily prayer of Judaism. Jesus, as a faithful Jew, repeated this as well as other Jewish prayers.[16] Why was the *Shema* dropped from the Christian liturgy by his followers? Intrinsically the declaration is as Christian as it is Jewish. The reason is to be found in the antinomian movement. The recital of the *Shema* has the following technical names. To say the first part is "to take upon oneself the yoke of the Kingdom of Heaven"[17] and to say the latter is "to take upon oneself the yoke of the Commandments (the law)."[18] For this reason the *Shema,* which Jesus recited, was abandoned by his followers. To them, but not to him, the yoke of the law was anathema.[19]

THE SABBATH

It is not possible here to particularise the laws of Judaism: it must suffice to generalize and to say that they moulded the life of the Jew in every detail. Christianity leaves more to the individual: Judaism deems a system of discipline essential. Yet neither faith adheres exclusively to one point of view, Christianity has certain prescriptions and Judaism assigns certain things to the conscience. A typical instance is the list, incorporated in the opening paragraphs of Morning Prayer,[20] of duties, the maximum performance of which is left to man's generous impulse.

This list is old, being derived from the beginning of Mishnah *Pe'ah.* For the development of the law *see* TALMUD. Life under the law is often regarded as dreary by those who view it from without. A more intimate knowledge of Judaism disposes of this mistaken notion. One example will serve as an illustration. There is no subject more governed by law in Judaism than the Sabbath rest. The popular belief is that this day is one of gloom and restriction, hampering natural gaiety and fettering the soul in the shackles of formalism. If this belief were correct, we should expect to find Jewish secular literature saturated with the revolt against the Sabbath. But in secular literature, the Sabbath is universally regarded as Israel's greatest boon. This affection for the day may be seen in any of the *Zemirōth* or carols for Sabbath, of which innumerable specimens exist. One such group containing *inter alia* a song by a Jewish troubadour wherein the Sabbath princess is the heroine, has been rendered into English verse (H. Loewe, *Mediaeval Hebrew Minstrelsy,* Lond. (1926), *see* p. 57). The songs are not ecclesiastical, they are *carmina pauperum,* and reflect the mind of the people. To all, rich and poor alike, Sabbath was the great paraclete. Heine, who became a Christian, hymned the Sabbath: in the present year (1928) the

[15]*See* p. 9 of A. H. Hillel's *Hist. of Messianic Speculation in Israel* (1927).

[16]Thus, he uses the daily *'Amidāh* to demonstrate immortality: on this *see* pp. 69 *seq.* of *The Expository Times,* Nov., 1927, vol. xxxix., No. 2, where this question is more fully discussed.

[17]*See* Singer, *op. cit.,* p. 38, line 2 from below.

[18]*Ib.,* annotated ed., p. l.

[19]On the yoke *see* the second essay in I. Abrahams, *Studies in Pharisaism,* 2nd series (1924).

[20]Singer, *op. cit.,* p. 5 and annotated ed. p. xii.

town council of Tel Abib (Jaffa), a secular body, prosecuted a shopkeeper for violating the Sabbath publicly and has carried the case to the appeal court. As with the Sabbath, so with other ceremonial: the Jew found the law a delight. Just because there is no penal sanction to it, does it command allegiance. The more pecuniary sacrifices it entails the greater is it enjoyed.

Sects have not been unknown in Judaism, as the articles on Samaritans, Essenes, Gnostics and Karaites will show. The apocrypha, especially the great *corpus* of R. H. Charles,[21] contains much sectarian material. The *Minim* or sectaries[22] were varied including Jewish-Christians and Gnostics. But sects have never been of great consequence. The number of Karaites is insignificant. In later times the mystic movement almost threatened to become a sect, but Kabbalists, *Ḥasidim* and *Mithnaggedim* (the opponents of the *Ḥasidim*) have remained within the fold. Judaism has gained more than it has lost by congregationalism. Centralization of authority terminated with the Gaonate. (*See* GAON.) The last legal code, the *Shulḥan ʿArūkh* of Joseph Caro (published in 1565), being the first to appear after the invention of printing, has never been followed by another and has standardised Judaism. Nevertheless development has not been arrested. The advent of political emancipation and the ensuing Mendelssohnian and reform movements can be paralleled on the more strictly conservative side.

Whether the Zionist movement (*see* ZIONISM) will, as the Zionists believe, affect Judaism as well as individual Jews, is another matter of debate. It is not impossible that a nucleus of Jews may produce fresh religious results, but Judaism as a whole is quite independent of any material or nationalist enterprises and quite competent to develop without them, *urbi et orbi*. The return to Zion, which is the hope of Judaism, is essentially (though not exclusively) spiritual. Judaism looks forward to the day when its teaching will be accepted universally. In this hope it embraces varieties of conception, ranging from Zionism to modern Liberal Judaism, which lays more stress on universalism than on the law. All these aspects belong to Judaism, one and indivisible. Parallel in purpose though differing in plane, they move forward to the same goal, the bringing of the Kingdom of God within the hearts of every one of his children. (*See* also JEWS, JEWISH PHILOSOPHY.)

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JUDAS ISCARIOT or **SCARIOT.** Ἰούδας Ἰσκαριώτης, Ἰσκαριώθ or Σκαριώθ. The twelfth apostle and the traitor (Matt. x. 4). The term Iscariot or Scariot is used also of his father, Simon (John vi. 71; 1 xiii. 26). The usual explanation of "Iscariot" is a "a man of Kerioth" (*Ish Kerioth*). If this was the Kerioth in Judah (Josh. xv. 25), it implies only that he alone of the twelve was not a Galilean. If the Kerioth in Moab (Jer. xlviii. 24), it suggests also that he was of heathen environment, or even origin, as was the last of the Seven Deacons (Acts vi. 5), who presumably became the founder of the Nicolaitans (Rev. ii. 6). There is one parallel case to this transliteration of *Ish* in II Sam. x. 6, 8, where *Ish Tob* ("a man, or 'men' of Tob") is represented in the Septuagint by Ἰστώβ or Ἐιστώβ and in Josephus (*Antt.* vii. 6, 1 § 121) by Ἴστοβος. Jerome, however, prefers the meaning "of Isachar." "For Isachar is interpreted 'gain,' to signify the reward of the traitor" (on Matt. x. 4, Vallarsi, vii. 57).

There is, however, no little evidence for the reading "Scariot." So the Palestinian Syriac always, the Old Syriac generally, and the Peshitta Syriac and Aphrahat as often as "Iscariot." In Syriac tradition therefore no stress was laid on the first syllable, and the meaning of "man" was not given to it. In view of the facts that it is very rare for the first syllable of words beginning with a vowel and an "s" which is followed by another consonant to be omitted (*Israel* is shortened to *Srahel* once in *Crom.* and to *Srhl* once in T.Z. of the Vulgate MSS. of the N.T.), whereas there is an universal tendency to prefix a vowel to words beginning with "s" especially with "sk" (*e.g.*, Shekaniah becomes Ἰσχανία, I Chr. xxiv. 11. *See* also further Albrecht, *Neuhebr. Gram. auf. Grund der Mishna*, 1913 § 10), it seems probable that the Syriac writers thought primarily not of "Iscariot" but of "Scariot." This indeed is read by D in most places in the Synoptic Gospels, and once in the Fourth (John vi. 71), and is a very common reading in other Greek MSS. and the Latin MSS.

What then does "Scariot" mean? The Tosephta (2nd cent.) of *Nedarim* iv. 3 has *Iscortya* (var. lect. *Scortya*), and the Jerusalem Talmud of *Nedarim* vii. 3 p. 40c has *Scortya* without explanation. But in the parallel passage in the Babylonian Talmud (*Nedarim* 55 b) both forms occur, and the explanation given by Rabba bar BarChanah (*c.* A.D. 300) is "a coat of leather." It is, in fact, the Latin *scorteus*, the feminine of which, *scortea*, is used especially of a leathern garment. Hence John Lightfoot remarks "Now in such aprons they had purses sewn, in which they were wont to carry their money" (*Exercit.* on Matt. x. 4, Pitman xi. 172). Judas, however, held not a bag but a box (γλωσσόκομον) for the money (John xii. 6; xiii. 29), but a portable box would certainly have been covered with leather to preserve it from the Eastern sun. Thus "Scariot" ("Iscariot") may refer to Judas as the one who kept the money-box. If, however, Westcott and Hort's text of John vi. 71; xiii. 26 is really right, in applying the term to the father of Judas it may be that the family were workers in leather.

Judas' object in betraying his Master is regarded in the Gospels as due to selfishness based on avarice. De Quincey thinks that it was rather to compel our Lord to display His Messianic power in saving Himself and delivering the nation (*Judas Iscariot*, 1857, Masson, viii. 177–206).

There are two accounts of what was done with the money that Judas received. Acts i. 18 says that he bought a field; Matt. xxviii. 3–8 that he threw down the money into the temple and the High Priests bought a field for a cemetery. This may be due to different traditions. But if his money was used ultimately to buy Akeldama it might well be said that he himself bought it.

It is difficult, still more difficult, to reconcile the statement of Matt. xxvii. 5 that Judas hanged himself, with that of Acts i. 18, that he became so swollen (πρηνής) that he burst asunder.

Many worthless tales were written in the Middle Ages about the history of Judas before the time he associated himself with our Lord. The popular hatred of Judas has sometimes been strangely expressed. In Corfu the people on Easter Eve throw down quantities of crockery into the streets, thus executing an imaginary stoning of the traitor.

(*See* Lord Kirkwall, *Ionian Islands*, 1864. ii. 47 *sq.*) *Cf.* the detestation of Haman expressed by Jews at Purim. (A. L. W.)

JUDASTREE, the *Cercis siliquastrum* of botanists, belonging to the family Leguminosae. It is a native of southern Europe and Asia Minor, and forms a handsome low tree with a flat spreading head. In spring it is covered with a profusion of purplish-pink flowers, which appear before the leaves. The flowers have an agreeable acid taste, and are eaten mixed with salad or made into fritters. The tree was frequently figured by the older herbalists. One woodcut by Castor Durante has the figure of Judas Iscariot suspended from one of the branches, illustrating the popular tradition regarding this tree. Another species, *C. canadensis*, the American Judastree, called also redbud, is found in North America from southern Ontario to eastern Nebraska and southward to Florida, Texas and Mexico, and differs from the European species in its smaller size and pointed leaves. The still smaller Texas redbud (*C. reniformis*), with kidney-shaped leaves, occurs in eastern Texas and adjacent Mexico; and the shrubby California redbud (*C. occidentalis*) is found chiefly in foothills and mountains in the interior parts of the state. The Chinese Judastree (*C. chinensis*), native to eastern Asia, with large, whitish-margined leaves, is planted as an ornamental shrub.

[21] *Apocrypha and Pseudepigrapha* (1913).

[22] R. Travers Herford, *Christ in Talm. and Midr.* (1903).

JUDD, CHARLES HUBBARD (1873–1946), U.S. psychologist, was born at Bareilly, India, on Feb. 20, 1873. He came to the United States in 1879, and graduated from Wesleyan university, continuing his studies at the University of Leipzig (Ph.D., 1896). He taught philosophy and psychology at Wesleyan university, New York university and the University of Cincinnati, 1896–1902. From 1902 to 1909 he was a member of the faculty of Yale university, becoming in 1907 professor of psychology and director of the psychological laboratory. From 1909 to 1938 he was professor and head of the department of education and director of the school of education at the University of Chicago, where he served also for a period as chairman of the department of psychology. He took part in numerous educational surveys and edited various monographs and periodicals, including the *Elementary School Journal* and the *School Review*. Among his published works are: *Psychology, General Introduction* (1907); *Introduction to the Scientific Study of Education* (1918); *Psychology of Social Institutions* (1926); and *Education and Social Progress* (1934). He died at Santa Barbara, Calif., on July 18, 1946.

JUDE, EPISTLE OF, a book of the New Testament. As with the epistle of James (*q.v.*) it is uncertain whether the epistle is by one of the "brethren" of Jesus or whether it is pseudonymous. Hegesippus (*ap.* Philip Sidetes) has it that the only survivors of the family, late in the reign of Domitian (81-96), were two grandsons of this same Jude, named James and Zoker (Zacharias). An authentic letter of Jude would therefore belong to an early date. To this both external and internal evidence are decidedly opposed. The language is not that of an unschooled Galilean, nor is it translated from Aramaic. As F. H. Chase has pointed out: (1) the terms *κλητοί, πίστις, σωτηρία,* have attained their later, technical sense; (2) "the writer is steeped in the language of the LXX.," employing its phraseology independently of other N.T. writers, and quoting not only from the canonical books but from the broader Alexandrian canon; (3) "he has at his command a large stock of stately, sonorous, sometimes poetical words," which prove him to be a "man of some culture, and, as it would seem, not without acquaintance with Greek writers." Moreover, the avowed object is to defend the purity of the "deposit of the faith (*v.* 3) against the demoralizing perversions of the false teachers who have "crept in privily" to corrupt the Church. These have diverted the writer from addressing his readers (the Church catholic) on the general subject of "our common salvation," and compelled him to undertake his apologetic.

The statement explains why so obscure a name as that of Judas "the brother of James" should be chosen, inasmuch as the writer clearly aims at following the example set in the larger "general" epistle, while making the aim more specific. The series is continued by II Peter (*q.v.*), which incorporates the substance of Jude in its middle chapter. II Peter directs the denunciation still more specifically against those who (according to Polycarp's complaint) "denied the resurrection and judgment." Thus James, Jude and II Peter form a group of post-apostolic writings which use the authority of apostolic names against (1) "vain talk," (2) "lawlessness," and (3) Hellenizing opposition to the apocalyptic type of eschatology which the Church had inherited from Judaism. These are the three forms of error which were regarded by Church leaders of the first half of the 2nd century as most dangerous. If this late date is correct, the entire group must be regarded as pseudonymous.

This relatively late date (100–120?) is confirmed in the case of Jude by the literary connections, which are remarkably abundant for so brief a writing. The references to *Enoch* (*v.* 14=*Eth. En.* i. 9, but *cf.* F. H. Chase in Hastings' *Dict. Bible, s.v.* "Jude") and the *Assumption of Moses* (*v.* 9) have a certain bearing on the place of origin, since the stricter canon of the Palestinian synagogue excluded these apocryphal books of 90 B.C. to A.D. 40. A relatively late date is implied by the free use of the Pauline Epistles, especially 1 Cor. x. 1–13, Rom. xvi. 25 *seq.*, and probably both Eph. and Col. Moreover, the writer explicitly refers to the apostolic age as already past, and to the fulfilment of the Pauline prediction (1 Tim. iv. 1 *seq.*) of the advent of heresy (*v.* 17 *seq.*). The Pauline doctrine of "grace" has been perverted to lasciviousness, as by the heretics whom Polycarp opposes (*Ep.* Polyc. vii.), and this doctrine is taught for "hire" (*vv.* 11, 12, 16; *cf.* 1 Tim. vi. 5). The unworthy "shepherds" (*v.* 12; *cf.* Ezek. xxxiv. 8; Joh. x. 12 *seq.*) live at the expense of their flocks, polluting the "love-feasts," corrupting the true disciples. Clement of Alexandria sees in this a portrait (written prophetically) of the Carpocratians, an antinomian Gnostic sect of *c.* 150. We too may recognize the portrait, but should not limit it too closely to the Carpocratians, for Rev. ii. 14, 20 shows that as early as A.D. 93 ultra-Paulinists had already given rise to similar scandals in the Church. It is clear, however, that for our author both Pauline teaching and its perversion lie in the past, as is apparent also in Jas. ii. 1–14.

A terminus *ad quem* is furnished by the fact that practically the whole of Jude is taken up into II Peter, the later author merely avoiding, so far as he observes them, the quotations from apocryphal writings. The erratic attempt of Spitta (*Zur Gesch. u. Lit. d. Urchristenthums* ii., 409–411) to ascribe priority in this case to II Peter has been sufficiently refuted by F. H. Chase, *loc. cit.* p. 803. Unfortunately the date of II Peter is itself so difficult to fix that the employment only indicates a date prior to *c.* A.D. 150.

The history of the reception of the epistle into Church canons is similar to that of James. It is quoted as the work of Jude by Clement of Alexandria (*Paed.* iii. 8), referred to by Tertullian (*De cult. fem.* i. 3), and endorsed more or less hesitantly by Origen ("if one might adduce the epistle of Jude," *In Matt.* tom. xvii. 30). Unlike James, Jude is admitted by the *Muratorian Canon* (180–200). Eusebius classed the epistle among the "disputed" books, declaring that "not many of the ancients have mentioned it" (*H.E.* ii. 23, 25).

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(B. W. BA.; X.)

JUDGE, in the widest legal sense an officer appointed by the sovereign power in a State to administer the law; in English practice, however, justices of the peace and magistrates are not usually regarded as "judges" in the titular sense. The duties of the judge, whether in a civil or a criminal matter, are to hear the statements on both sides in open court, to arrive at a conclusion as to the truth of the facts submitted to him or, when a jury is engaged, to direct the jury to find such a conclusion, to apply to the facts so found the appropriate rules of law, and to certify by his judgment the relief to which the parties are entitled or the obligations or penalties which they have incurred. With the judgment the office of the judge terminates, but the judgment sets in motion the executive whose duty it is to carry it into execution.

The following are points more specially characteristic of the Anglo-Saxon system: (1) Judges of the supreme court are absolutely protected from action for anything that they may do in the discharge of their judicial duties. "It is a principle of English law that no action will lie against a judge of one of the superior courts for a judicial act, though it be alleged to have been done maliciously and corruptly." Other judicial officers are also protected, though not to the same extent. (2) They are irremovable except by a resolution passed by both houses and assented to by the sovereign. The inferior judges and magistrates are removable for misconduct by the lord chancellor. (3) The judiciary in England is not a separate profession. The judges are chosen from the bar. (4) Judges of the supreme court (except the lord chief justice) and county court are in England nominated by the lord chancellor. In a few cases municipal corporations may appoint their own judicial officer.

See also LORD HIGH CHANCELLOR; LORD CHIEF JUSTICE OF ENGLAND; MASTER OF THE ROLLS, etc., etc. and the accounts of judicial systems under country headings.

The titles of "judge" and "justice" are applied in the United States to the members of courts of record of both original and appellate jurisdiction in both the Federal and State systems, the statute creating the court indicating which is the proper appellation. Courts not of record have "justices of the peace" and

"magistrates" and frequently the individuals holding these positions are popularly addressed as "judge." Members of the Federal judiciary and of a few of the State courts, such as New Jersey and Minnesota, are appointed by executive authority. In most of the States, such officials are elected by popular vote, although often the governors may make temporary appointments to fill vacancies.

JUDGE-ADVOCATE-GENERAL, an officer appointed in England to assist the Crown with advice in matters relating to military law, and more particularly as to courts-martial. In the army the administration of justice as pertaining to discipline is carried out in accordance with the provisions of military law, and it is the function of the judge-advocate-general to ensure that these disciplinary powers are exercised in strict conformity with that law. Until 1793 the judge-advocate-general acted as secretary and legal adviser to the board of general officers, but on the reconstitution of the office of commander-in-chief in that year he ceased to perform secretarial duties, but remained chief legal adviser. He retained his seat in parliament, and in 1806 he was made a member of the government and a privy councillor. The office ceased to be political in 1892, and in 1905 its terms and conditions were rearranged as follows: (1) A salary of £2,000 a year; (2) the holder to give his whole time; (3) retirement at the age of 70, with claim to gratuity or pension; (4) the holder to be subordinate to the secretary of State for war, without direct access to the sovereign. The appointment is conferred by letters-patent, which prescribe the review of all field-general, general and district courts-martial held in Great Britain and the duty of advising the sovereign as to the confirmation of the finding and sentence. The deputy judge-advocate is a salaried official in the department of the judge-advocate-general and acts under his letters-patent. A separate judge-advocate-general's department is maintained in India. The judge-advocate-general and his deputy, being judges in the last resort of the validity of the proceedings of courts-martial, take no part in their conduct; but the deputy judge-advocates frame and revise charges and attend at courts-martial, swear the court, advise both sides on law, look after the interests of the prisoner and record the proceedings.

In the United States there is also a judge-advocate-general's department in the army. In addition to being a bureau of military justice, and keeping the records of courts-martial, courts of inquiry and military commissions, it has the custody of all papers relating to the title of lands under the control of the War Department. The judge-advocate-general has the rank of major-general. The officers who serve as judge-advocates, act as prosecutors, not as judges, in all military trials, and occasionally are associated with counsel for the government in cases in the civil courts. There is also a judge-advocate-general in the navy who has the rank of rear admiral.

See further MILITARY LAW, and consult C. M. Clode, *Administration of Justice under Military and Martial Law* (1872); *Military Forces of the Crown* (1869).

JUDGE-ADVOCATE OF THE FLEET. In England, a practising barrister whose function it is to advise the Admiralty on all matters connected with courts-martial. Though s. 61 of the Naval Discipline Act 1866 recognizes the possibility of his presence at a court-martial, he does not nowadays attend, but is represented by his deputy or by an officiating deputy judge-advocate appointed *ad hoc* by the Admiralty, the commander-in-chief of the fleet or squadron, who convenes the court-martial, or, if no such appointment is made, by the president of the court-martial. But though the judge-advocate of the fleet does not actually attend the courts-martial very responsible duties are imposed upon him. By a minute of the Board passed in 1884 (which is still in force) all proceedings of courts-martial on officers and men of the royal navy, excepting those where the prisoner pleads guilty and no evidence is taken, are to be referred to him, with a view to the consideration of (*a*) the charge, (*b*) the evidence on which the finding is based, and (*c*) the legality of the sentence, and he writes a minute on each case for the information of the lords commissioners of the Admiralty with regard to these points. He has no power to modify a sentence, a power which is reserved to the Admiralty by s. 53 (1) of the Naval Discipline Act 1866, except in the case of a death sentence, which can only be remitted by the Crown. All cases where the prisoner has pleaded guilty are examined in the Admiralty, and if in any case there is any reason to think that there has been any informality or that the prisoner has not understood the effect of his plea, such case is submitted to the judge-advocate of the fleet for his opinion.

The existence of a deputy judge of the fleet appointed by the Admiralty has been recognized by the King's Regulations.

In accordance with the provisions of s. 61 of the Naval Discipline Act 1866, in the absence of the judge-advocate of the fleet and his deputy, an officiating judge-advocate is appointed for each court-martial. His duties are described in detail by the King's Regulations, but may be summed up as consisting of seeing that the charges are in order, pointing out any informalities or defects in the charges or in the constitution of the court, seeing that any witness required by prosecutor or prisoner is summoned, keeping the minutes of the proceedings, advising on matters of law which arise at any time after the warrant for the court-martial is issued, drawing up the findings and sentence, and forwarding the minutes when completed to the Admiralty. The officiating judge-advocate is usually the secretary of the flag-officer convening the court-martial or some other officer of the accountancy branch. He is remunerated for his services by a fixed fee for each day the court sits.

(P.)

JUDGES, THE BOOK OF. This book of the Old Testament constitutes a sequel to the book of Joshua, covering the period of history between the death of this conqueror and the birth of Samuel. It is so called because it contains the history of the Israelites before the establishment of the monarchy, when the government was in the hands of certain leaders who appear to have formed a continuous succession, although the office was not hereditary. The only other biblical source ascribed to this period is Ruth, whose present position as an appendix to Judges is not original. (*See* BIBLE: *Old Testament;* RUTH, BOOK OF.)

It is now generally agreed that the present adjustment of the older historical books of the Old Testament to form a continuous record of events from the creation to the Babylonian exile is due to an editor, or rather to successive redactors, who pieced together and reduced to a certain unity older memoirs of very different dates; and closer examination shows that the continuity of many parts of the narrative is more apparent than real. This is very clearly the case in the book of Judges. It consists of three main portions: (1) an introduction, presenting one view of the occupation of Palestine by the Israelites (i. 1–ii. 5); (2) the history of the several judges (ii. 6–xvi.); and (3) an appendix containing two narratives of the period.

1. The first section relates events which are said to have taken place after the death of Joshua, but in reality it covers the same ground with the book of Joshua, giving a brief account of the occupation of Canaan, which in some particulars repeats the statements of the previous book, while in others it is quite independent. (*See* JOSHUA, BOOK OF.) It is impossible to regard the warlike expeditions described in this section as supplementary campaigns undertaken after Joshua's death; they are represented as the first efforts of the Israelites to gain a firm footing in the land (at Hebron, Debir, Bethel) in the very cities which Joshua is related to have subdued (Josh. x. 39). Here then we have an account of the settlement of Israel west of the Jordan which is parallel to the book of Joshua, but makes no mention of Joshua himself, and places the tribe of Judah in the front. The author of the chapter cannot have had Joshua or his history in his eye at all, and the words "and it came to pass after the death of Joshua" in Judges i. 1 are from the hand of the last editor, who desired to make the whole book of Judges, including ch. i., read continuously with that which now precedes it in the canon of the earlier prophets.

2. The second and main section (ii. 6–xvi.) stands on quite another footing. According to Josh. xxiv. 31 the people "served Yahweh" during the lifetime of the great conqueror and his contemporaries. In Judges ii. 7 this statement is repeated, and the writer proceeds to explain that subsequent generations fell away from the faith and served the gods of the nations among which they dwelt (ii. 6–iii. 6). The worship of other gods is represented,

not as something which went on side by side with Yahweh-worship (*cf.* x. 6), but as a revolt against Yahweh, periodically repeated and regularly chastised by foreign invasion. The history, therefore, falls into recurring cycles, each of which begins with religious corruption, followed by chastisement, which continues until Yahweh, in answer to the groans of his oppressed people, raises up a "judge" to deliver Israel, and recall them to the true faith. On the death of the "judge," if not sooner, the corruption spreads anew and the same vicissitudes follow. This religious explanation of the course of the history, formally expounded at the outset and repeated in more or less detail from chapter to chapter (especially vi. 1–10, x. 6–18), determines the form of the whole narrative. It is in general agreement with the spirit as also with the language of Deuteronomy, and on this account this section may be conveniently called "the Deuteronomic Book of Judges." The sources of the narrative are older than the theological exposition of its lessons, and herein lies the value and interest of Judges. The importance of such documents for the historian lies not so much in the events they record as in the unconscious witness they bear to the state of society in which the narrator poet lived.

To the unity of religious pragmatism in the main stock of the book of Judges corresponds a unity of chronological scheme. Although most of the "judges" had no more than a local influence, they are represented as successive rulers in Israel, and the history is dated by the years of each judgeship and those of the intervening periods of oppression. But it is impossible to reconcile the numbers with the statement elsewhere, that the fourth year of Solomon was the 480th from the exodus (1 Ki. vi. 1). (*See* BIBLE: *Old Testament: Chronology.*)

3. The last section of the book (chs. xvii.–xxi.) appears to owe its position to the latest redactor (akin to the latest stratum in the Hexateuch). It consists of two narratives: (*a*) That of Micah and the Danites (xvii. *seq.*) is of value both as a record of the state of religion and for the picture it gives of the way in which one clan passed from the condition of an invading band into settled possession of land and city. Its interest lies in the foundation of the Ephraimite sanctuary by Micah as also in that of Dan. (*b*) The history of the Levite and the Benjamites (xix.–xxi.) presupposes a degree of unity of feeling and action among the tribes of Israel which it is not easy to reconcile with the rest of the book. It resembles Ruth in giving a good deal of curious archaeological detail (the feast at Shiloh) in a form which suggests that the usages referred to were already obsolete when the narrative was composed. The older portions include: The story of the Levite (xix.), the vengeance taken by Israel (*e.g.*, xx. 3–8, 14, 19, 29, 36–41, 47), and the reconstruction of the tribe by intermarriage with the women of Shiloh (xxi. 1, 15, 17–19, 21–23). The post-exilic expansions (found chiefly in xx., xxi. 2–14, 16, 24, *seq.*) describe the punishment of Benjamin by the religious assembly and the massacre of Jabesh-Gilead for its refusal to join Israel, 400 virgins of the Gileadites being saved for Benjamin. It is noteworthy that whilst Gibeah and Jabesh-Gilead, which appear here in a bad light, are known to be associated with Saul, the sufferer is a Levite of Bethlehem, the traditional home of David. The account of the great fight in xx. is reminiscent of Joshua's battle at Ai (Josh. vii.–viii.).

The Book of Judges consists of a number of narratives collected by Deuteronomic editors; and to the same circles are due accounts of the invasions of Palestine and settlement in Joshua, and of the foundation of the monarchy in 1 Samuel. The connection has been broken by the later insertion of matter (not necessarily of late origin itself), and the whole was finally formed into a distinct book by a post-exilic hand. The older stories preserved in ii. 6–xvi. 6 reflect tribal rivalry and jealousy (*cf.* Isa. ix. 21, and the successors of Jeroboam 2), attacks by nomads and wars with Ammon and Moab; conflicts between newly settled Israelites and indigenous Canaanites have been suspected in the story of Abimelech (*q.v.*). A striking exception to the lack of unity among the tribes is afforded by the account of the defeat of Sisera, and here the old poem represents a combined effort to throw off the yoke of a foreign oppressor, while the later prose version approximates the standpoint of Josh. xi. 1–15 with its defeat of the Canaanites. (*See* DEBORAH.) The general standpoint of the stories (especially Judges v.) is that of central Palestine; the exceptions are Othniel and Samson—the latter interrupting the introduction in x., and its sequel, the former now entirely due to the Deuteronomic editor. Of the narratives which precede and follow, ch. i. represents central Palestine separated by Canaanite cities from tribes to the south and north; it is the situation recognized in Judges xix. 10–12, as well as in passages embedded in the latest portions of the book of Joshua, though it is in contradiction to the older traditions of that book. Chapters xvii. *seq.* (like the preceding story of Samson) deal with Danites, and xix.–xxi., by describing the extermination of Benjamin, form a link between the presence of the tribe in the late narratives of the exodus and its new prominence in the traditions of Saul (*q.v.*). As an historical source, therefore, the value of Judges will depend largely upon the question whether the editor (about 600 B.C.) had access to trustworthy documents relating to a period some six or seven centuries previously. (*See* further JEWS, and SAMUEL, BOOKS OF.)

BIBLIOGRAPHY.—*See* G. F. Moore, *Ency. Bib.* art. "Judges," and his commentary in the *Internat. Crit. Comm.* (1895); Lagrange, *Livres des juges* (1903); Cooke, *Camb. Bible* (1913), and C. F. Burney (1918).

(W. R. S.; S. A. C.)

JUDGMENT, in logic and psychology, means an act of thought by which something is interpreted with the aid of some idea or concept already acquired. (Sometimes the term judgment is also used to denote the result of such an act of judging or thinking, and sometimes it is used to denote the capacity to judge.) Judgment is the unit of thought, and the most complicated thinking consists of a synthesis of many judgments connected by rational ties. To understand the nature of judgment it is perhaps best to regard it as intellectual orientation based on what has already been learned from past experience. There is an inferior kind of orientation and learning from experience which is more or less blind, merely instinctive, such as is found among the lower animals. At the intellectual level it becomes more or less clear-sighted and articulate. The lessons of past experience are retained in the form of ideas or concepts which can be applied to the interpretation of new situations, which thereby become intelligible, and perhaps manageable. The object or situation which needs interpretation is called the *subject* of the judgment; the idea or concept by means of which it is interpreted is called the *predicate;* and the two, subject and predicate, are called the *terms* of the judgment. When thinking proceeds systematically so that one judgment, or group of judgments, is made the ground (*q.v.*) of another, then we are said to reason, and the derived judgment is called an inference or a conclusion. The verbal expression of a judgment is called a proposition. There are many different kinds of judgments, but as judgments can only be discussed by expressing them first in language, that is in the form of propositions, the subject is dealt with more fully under LOGIC.

Here the only other matter that need be referred to is the relation of judgment to belief and disbelief. Judgment, as distinguished from mere phantasy or doubt, is our real interpretation of things, an interpretation therefore which we accept, that is believe. Indeed to judge and to believe are really the same thing, if we are clear about the relation of belief to knowledge and to disbelief, to the elucidation of which a few words may be devoted. There is such a thing as "mere belief," namely, when one does not know, that is, is not quite sure about something and yet believes it. Popularly the term belief is often used for such "mere belief" and is then contrasted with knowledge. But in the wider and more correct sense the term "belief" includes both "knowledge" and "mere belief," for if one can believe what he is not sure about, he certainly believes what he knows for certain. In this wider sense belief may be equated with judgment; the former term stresses the element of acceptance, the latter that of interpretation. Again "disbelief" is really the same kind of attitude as "belief" when both are compared with "doubt" or incapacity to judge. The difference between belief and disbelief is mainly one of content. It comes to the same thing whether one disbelieves that Pilate cared about truth, or believes that he did not care about it. For this reason "belief"

may be said to include the attitude of "disbelief" so far as psychology is concerned. (*See* LOGIC, PSYCHOLOGY, and the bibliographies given there. For judgment in law *see* PRACTICE AND PROCEDURE.)

JUDGMENT DEBTOR, in English law, a person against whom a judgment ordering him to pay a sum of money has been obtained and remains unsatisfied. The term is used similarly in the United States.

JUDGMENT SUMMONS: *see* PRACTICE AND PROCEDURE.

JUDICATURE ACTS: *see* PRACTICE AND PROCEDURE.

JUDICIAL REFORM. By judicial reform is here meant changes in municipal law which have for their object the classification and simplification of law or improvement in the administration of justice. It includes, therefore, the more orderly expression of the law as well as changes in the training and qualifications required of members of the bar in the organization of courts and in judicial procedure. On the other hand, the term does not include those changes in municipal law induced by changes in political, social or economic conditions. The article deals only with the United States.

A member of the bar in the United States is one who has a right to practise in one or more courts of record. The bar in the United States or in any State is not a legally organized body. While each member of the bar of a court has, as such, rights and duties, the members as a group are not a corporation and do not as a body have any privileges or duties. They have not the right to exclude others from being admitted to practise, or even to determine the standards which must be complied with by those seeking the right to practise. They have not the right to establish rules for the regulation of the fees to be charged clients nor to prescribe the conduct to be followed by members of the bar in the practise of law, and they cannot disbar any member of the bar for unethical conduct.

Judicial reform in the United States, therefore, has come, not through an officially organized bar with definite legal powers, but rather as the result of the action of voluntary associations of members of the legal profession—judges, practitioners and law teachers.

These voluntary law associations are of two kinds—jurisdictional and scientific. There are over 400 jurisdictional bar associations. These admit their members from the lawyers within a definite territory rather than from the practitioners at a particular court, though, practically, they never admit a person who is not a member of the bar of some court. Thus, there is a national bar association known as the American Bar Association, founded in 1878, and a State bar association in each of the States, as well as local bar associations in all the large cities and in many of the counties. There has been no integration of these associations. A lawyer may be a member of the American Bar Association, his State association and his local county or city association.

With the exception of a few local associations which date from the first part of the 19th century nearly all the local, as well as all the State bar associations, and also the American Bar Association have come into existence since the close of the Civil War. The several scientific legal societies are the American Institute of Criminal Law and Criminology, the American Society of International Law, the American Judicature Society and the American Law Institute. All are of comparatively recent origin. They are all nation-wide in membership and each has been founded to carry on investigation and promote improvement in law, either generally or with reference to particular subjects. Besides these associations the Association of American Law schools, composed of some 60 schools conforming to certain standards of admission, organization and conduct, has done much to promote improvement in legal education.

The American Bar Association and practically all the State and nearly all the local bar associations have committees which from time to time submit to their respective associations drafts of proposed legislation relating to the organization of the courts or to procedure and other matters pertaining to judicial reform. If the association approves the draft, the committee will be authorized to submit it to the legislature of the State and urge its adoption. Rules of court, as well as legislative changes in procedure and cognate matters, usually have their origin in the action of these bar associations.

20TH CENTURY REFORMS

Since 1900 such judicial reforms as have taken place in the United States may be classified as follows:—1. Those designed to elevate the character and improve the efficiency of the members of the bar. 2. Those designed to improve court organization. 3. Those designed to unify, clarify or simplify existing law. 4. Those designed to improve procedure.

Reforms Designed to Improve the Efficiency of the Bar.—The existing requirements for admission to the bar are usually a general education equivalent to graduation from a high-school (the school in which students prepare for college or university), followed by three years of legal study either in a law school, or in a lawyer's office. Two States require at least a year in a lawyer's office irrespective of the amount of law school training received, and in some of the Southern States the required period of legal study is still only two years. Comparing the present requirements with those of the last quarter of the 19th century a decided elevation of standards and improvements in the methods of examination is observed. This has been due in the main to two factors: the development of good law schools in the majority of the States, especially the schools connected with the great State universities where the tuition is practically free, and the activities of the bar associations. Nearly all of these associations have committees on legal education and admission to the bar and in many States these committees have been active in urging on courts and legislatures the necessity for more stringent requirements. In this movement for the elevation of educational standards the American Bar Association has taken the lead.

The legal training of the would-be practitioner being left, especially in the larger centres of population, almost exclusively to the law schools, the law associations are taking a constantly increasing interest in the ethics of members of the bar.

Reform in the Organization of State and Federal Courts.—The unit of State court organization in the United States was, and largely still is, the county or a unit called the judicial district composed of one or more counties. The principal trial court of each county or district is independent of similar courts in other counties or districts of the State. From each of these county or district courts there is an appeal on questions of law to an appellate court of State-wide jurisdiction. In some States there are two appellate courts, one for cases involving comparatively small amounts, and in some other States a system of intermediate appellate courts, the case on appeal going from the trial court first to the intermediate appellate and finally to the highest court.

The striking feature of the State court organization in the United States is the absence of any co-ordination of the various State courts for the efficient carrying on of judicial business. Some progress has been made toward better co-ordination. There still remains, though in varying degree in the several States, much to be desired in the way of greater unification of court organization. While little definite progress toward this goal has been made in the last 25 years, there now exists a general recognition of its importance. Perhaps on account of the difficulties involved, the initial steps toward better court organization have come, not so much through the bar associations as through a single scientific legal association—the American Judicature Society, organized in 1913. Though the record of the attempts to adjust court organization to the needs of modern America is significantly small, there is every sign that the coming years will witness considerable progress, and this because there has already been adopted in several important States acts which create judicial councils with power to collect data concerning judicial administration and the operation of the rules of procedure.

The Federal courts, other than the U.S. Supreme Court, were reorganized by the act of Congress of March 3, 1911. Prior to the act, while continental America was nominally divided into nine judicial circuits, the real division for all practical purposes was the district, a much smaller unit. In each district there was a

district court and a circuit court, the district court having Federal criminal jurisdiction and jurisdiction in a few classes of civil cases. The circuit courts were the principal Federal civil courts of first instance. There was an appeal directly from the district and circuit courts to the U.S. Supreme Court. The act referred to abolished the circuit courts, made the district court a court of first instance in practically all Federal civil and criminal matters and divided the United States into nine circuits, with a circuit court of appeal in each circuit to act as an intermediate appellate court on questions of law. The reorganization of the lower Federal courts has proved of very considerable practical advantage while the establishment of the circuit courts of appeal has greatly relieved the Supreme Court. Had such relief not been given, the great increase in the number of Federal cases, owing partly to the natural growth of the country and more especially to the adoption of prohibition and its enforcement by Federal statute, would have created a congestion of cases in the Supreme Court which would have indefinitely delayed all appeals.

Reforms Tending to Unify Existing Law.—The existence of 48 separate State jurisdictions naturally leads in practice to a wide diversity in legislation. Again, while all the States, except Louisiana, have the English common law as modified to meet local conditions, there is no Federal supreme tribunal to reconcile conflicting interpretations of the common law by the highest courts of the several States, and therefore there exists a very considerable diversity in the law. The fact that land law, or the law of inheritance, or even the criminal law varies from State to State causes little or no inconvenience. The United States, however, has attained a remarkable degree of uniformity in economic and social conditions. Economically and socially it is one nation. Diversity in commercial law, therefore, or the law of personal property, or the law of marriage and divorce is a source of much inconvenience and considerable injustice. One of the objects of the formation of the American Bar Association was to promote uniformity of legislation and of judicial decision throughout the United States. The group, who in 1878 founded this association, began to take steps as early as 1881 to achieve this purpose.

The principal outcome of their efforts was the establishment in 1892 of the National Conference of Commissioners on Uniform State laws. This conference is composed of delegates appointed by the governors of the several States, usually under State acts authorizing the appointment. As its name indicates, its object is to draft statutes which it recommends to the State legislatures for adoption. In 1925 the conference had drafted during the 33 years of its existence 34 acts. Many of these acts which deal with commercial subjects have been widely adopted not only by the States but by Alaska and the island possessions of the United States—the Negotiable Instruments Act by 54 jurisdictions; the Warehouse Receipt Act by 48; the Bills of Lading Act by 26. The experience of the conference would seem to show that it takes from 20 to 25 years from the adoption of a uniform commercial act by the conference before it is generally adopted in all the more important States. The conference is not confining its activities to the preparation of commercial acts. Its Desertion and Non-Support Act has been adopted in 21 States. On the other hand, its draft act relative to judicial procedure in divorce and its draft acts dealing with social legislation have met with little acceptation, though many of the provisions of such an act as the Child Labour Act have been incorporated into subsequently adopted State statutes on the subject.

The Clarification and Simplification of the Common Law.—Perhaps the most important of the legal institutions which the United States owes to England is the common law system of expressing and developing law. The fundamental feature of the system is the general judicial recognition that a decision of a court in one case has a degree of binding force when later a case arises which presents similar or analogous facts. The common law is the law developed and expressed by judicial decisions. As a whole the decisions of the English and American courts form one of the two great systems of law in force in the world to-day, the Roman law, the ultimate principal source of the codes of continental Europe and Central and South America, being the other.

The characteristic difference between a principle of law founded on decisions of the courts and a principle expressed in a statute is that the former, or common law principle, is never absolutely binding on a court. The power that makes can always modify if the strict application of the prior rule to the instant case would, in the opinion of the court, produce injustice. The common law, therefore, has a flexibility which the law of statutes and codes does not possess. This flexibility often prevents injustice. Systems of law, however, like human beings, have the defects of their qualities. There is an element of uncertainty in the common law from which law expressed in properly drawn statutes is free. This uncertainty has not often proved a serious defect when the law is expressed and developed by one court or group of courts organized in a unified system. But in the United States with 48 separate State jurisdictions and a large number of Federal courts distinct from the State courts, the conflict between the decisions in different States and between the States and the Federal courts, as well as the uncertainty as to the law in any one State, produces the most unfortunate consequences.

The reported decisions in the United States already number (1928) approximately 800,000 cases recorded in about 11,200 vols., and to this mass there is being added annually some 153,000 printed pages. To this accumulation of American precedent must be added the decisions of the English courts and the courts of other parts of the British empire in *pari materia*, any one of which may be cited as persuasive authority in an appropriate case. It has become manifest that the whole common-law system threatens to fall through the accumulation of an undigestible amount of authority.

The conditions described have given rise to an attempt on the part of the American legal profession to preserve the common-law system by producing an orderly expression of the common law, which, though it will not have the binding force of statute law, will at least be regarded as having an authority far superior to that accorded any existing legal treatise.

The organization undertaking the execution of this work is the American Law Institute, founded in 1923. The institute is a voluntary organization with two classes of members—life members and official members. The number of life members is limited to 750, the membership being confined to the leading judges and lawyers in the several States. The official members are the members of the U.S. Supreme Court, the chief judge of the court of last resort in each State, the senior judge of each of the nine circuit courts of appeal, the deans of the law schools belonging to the Association of American Law schools, the president and principal officials of the American Bar Association, the presidents of the State bar associations and the presidents of the principal scientific legal societies. The orderly expression of the common law on which the institute is engaged is called the Restatement of the Law.

Whether regarded from the point of view of expenditure of money, time or skilled professional labour, no work of equal importance or magnitude has ever been undertaken by the members of any legal profession. Indeed, the only work to which it can be compared is the work on the Code, the Digest and the Institutes of the Roman law by Tribonian and his associates undertaken at the direction of the Emperor Justinian. That work, however, as well as the modern Code Napoléon and the more recent codes of the nations of continental Europe and South America have had behind them the sanction of the State. The analogous work on the common law, on the other hand, is being undertaken by the lawyers of America as a voluntary enterprise, though they have turned to one of the great public foundations—the Carnegie Corporation—for the necessary financial assistance.

(W. D. L.)

The Reform of Procedure.—Inheriting it from the Colonies, which in turn had copied and adapted it from familiar English sources, the early courts of the several sovereign States followed the system of procedure in lawsuits known as English common-law pleading, a system based upon writs or forms of action, through which certain rights could be enforced in formal manner. The rapid territorial extension of jurisdiction and the growth of cities

soon began to cause gradual modification in each State by statutes passed from time to time, as shortcomings in the simple legal machinery of formerly rural communities were apprehended. During the first half of the 19th century, the chief result of these improvements was to permit some fusion of the forms of equity with common law.

However, in 1848, New York adopted a Code of Civil Procedure introducing a system of procedure and pleading which was rapidly copied by other, and adopted by new States until it is in use in well over half of all. This was the culmination of an agitation and effort for procedural reform largely led by David Dudley Field, based upon earlier writings of Jeremy Bentham in England, Edward Livingston in Louisiana and Napoleon's Code of Civil Procedure. The objects of the New York Code whose provisions can be found almost verbatim in most other American procedural codes, were to consolidate all forms, writs and causes of action into one simple universally applicable form, to remove all distinctions between law and equity, to permit free joinder of parties and causes of action, and to substitute for the previously highly technical and formal language used in the written statements required of parties, a simple, cogent and natural style of expression more in accord with the practice of daily life.

With regard to all but the last of these objects, the code has been successful. Its benefits were felt even in England, where its example was persuasive in forwarding the reforms introduced by the Common Law Procedure Acts of 1852 and 1860, and later the great Judicature Acts of 1873 and 1875. These, in turn, influenced the American Codes, which, since their first enactment, have not remained static but have, just as has the procedure in the so-called common-law States, been frequently amended and, in some cases, improved, by legislative act. In many non-code States most of the procedural reforms of the codes have been adopted without wholly abandoning distinctions and formulas traditionally dear to practitioners trained to revere them.

While the Federal courts in each State are required by the Conformity Act to follow the procedure of the State in actions at law, they are free of such restriction in proceedings in equity, and on that side their practice is uniform throughout the country. The Federal Equity Rules of 1912, promulgated by the Supreme Court in that year, are another landmark in the struggle for reform of procedure, simplifying and modernizing, as they did, a technical but important class of litigations, not only locally but in every State in the Union.

GROWTH OF OUTSIDE TRIBUNALS

Since the great period of commercial expansion which culminated in the Spanish-American War, the best minds at the American bar have more and more had forced upon them an appreciation of the inadequacy of the courts to dispose efficiently of the volume of work being brought into them. Inspired by the delays and uncertainties which marred the work of the regular courts of law, two strong movements away from the courts have manifested themselves. First is the tendency to create administrative quasi-judicial tribunals, manned presumably by experts and unhampered by the traditions and rules of evidence and procedure which strike the average layman and legislator as being responsible for the clumsiness of the courts. In Federal matters instances are the Inter-State Commerce Commission, the Federal Trade Commission, the appeal boards for taxes and customs, and numerous minor bodies in Government departments; in the individual States the Workmen's Compensation Boards and the Public Utility Commissions show a similar drift. In so far as such bodies relieve the courts of difficult and technical questions of fact, they are an unmixed blessing; at the same time they are unavoidably creating, each in its peculiar field, bodies of precedent and law which are making ever more difficult and multifarious the science of jurisprudence. The second tendency away from the courts is the reaction of the business man rather than the legislator, impatient of the ignorance of juries and the stump speeches of eloquent counsel. This induces the growth of arbitration of commercial disputes by trade bodies or organizations on behalf of their members. Large classes of commercial differences are thus kept out of the courts and, as knowledge of the benefits to be gained by this method, and confidence in it, spreads, it will be more and more resorted to. To suppose, however, that there is satisfaction with the results so far accomplished is an error, for many influences are at work to negative the value of these improvements.

The greatest promise for reform in methods of procedure lies in the spread of admiration in the United States for the success achieved by the English courts in simplifying procedure, under the system introduced in the Judicature Acts, by which procedure is regulated not by statutory enactment but by flexible rules made by the courts themselves. A strong movement has developed for the adoption of this system both in the Federal and in the State courts in the United States, forwarded by the writings and utterances of Chief Justice William H. Taft and Elihu Root among public men, Dean Roscoe Pound of Harvard, Dean John H. Wigmore of Northwestern and Prof. Edson R. Sunderland of Michigan among scholars, Thomas W. Shelton of Virginia, Moorfield Story of Massachusetts and others among practising lawyers, and most of all, by the American Judicature Society and its secretary, Herbert Harley, under the munificent endowment of Charles F. Ruggles of Michigan. The nation-wide improvement in Federal equity practice under the rules of 1912 has demonstrated the efficacy of this line of approach.

BIBLIOGRAPHY.—Roscoe Pound has prepared a complete bibliography of procedural reform which he has brought down to 1920 in the form in which it is printed in 5 Mass. *Law Quarterly*, 332. *See* also Hepburn, *Development of Code Pleading* (1897); Rosenbaum, *The Rule-making Authority in the English Supreme Court* (1917); *Bulletins of American Judicature Society;* and Annual Reports of American Bar Association. (S. R. R.)

JUDICIAL SEPARATION: *see* DIVORCE.

JUDITH, THE BOOK OF, one of the apocryphal books of the Old Testament, of which the argument is as follows:—In the 12th year of his reign Nebuchadrezzar, who is described as king of Assyria, having his capital in Nineveh, makes war against Arphaxad, king of Media, and overcomes him in his 17th year. He despatches his chief general Holofernes to take vengeance on the nations of the west who had withheld their assistance. The children of Israel, newly returned from captivity, are apprehensive of a desecration of their sanctuary and resolve on resistance. The inhabitants of Bethulia (Betylūa) and Betomestham in particular, directed by Joachim the high priest, guard the mountain passes near Dothaim and place their trust in God. Holofernes enquires of the chiefs who are with him about the Israelites, and Achior, the leader of the Ammonites, tells how the Israelites are invincible except when they have offended God. Achior is thereupon punished by being handed over to the Israelites, who lead him to Bethulia. Next day the siege begins, and after 40 days the famished inhabitants urge the governor Ozias (Uzziah) to surrender, which he consents to do unless relieved in five days. Judith, a beautiful widow of the tribe of Simeon, now appears on the scene with a plan of deliverance. Wearing rich attire, and accompanied by her maid, she goes over to the hostile camp, where she is conducted to the general, whose suspicions are disarmed by the tales she invents. After four days Holofernes, smitten with her charms, at the close of a sumptuous entertainment invites her to remain within his tent. No sooner is he overcome with sleep than Judith, seizing his sword, strikes off his head and gives it to her maid; both now leave the camp (as they had previously been accustomed to do, ostensibly for prayer) and return to Bethulia where the trophy is displayed amid great rejoicings and thanksgivings. Achior now publicly professes Judaism, and at the instance of Judith the Israelites make a sudden victorious onslaught on the enemy. Judith now sings a song of praise, and all go up to Jerusalem to worship with sacrifice and rejoicing.

The book in its fuller form was most probably written in the 2nd century B.C. The writer places his romance two centuries earlier, in the time of Ochus, as we may reasonably infer from the attack made by Holofernes and Bagoas on Judea; for Artaxerxes Ochus made an expedition against Phoenicia and Egypt in 350 B.C., in which his chief generals were Holofernes and Bagoas.

See Ball, *Speaker's Apocrypha* (1888, bibl.) and Cowley in Charles's *Apocrypha and Pseudepigrapha.* (R. H. CH.; W. O. E. O.)

JUDSON, ADONIRAM (1788–1850), American missionary, was born at Malden, Mass., on Aug. 9, 1788, the son of a Congregational minister. He graduated at Brown university in 1807, was successively a school teacher and an actor, completed a course at the Andover Theological seminary in Sept. 1810, and was at once licensed to preach as a Congregational clergyman. A petition to the general association of ministers that he and several of his fellow students be sent to Asiatic missionary fields, resulted in the establishment of the American board of commissioners for foreign missions. Judson was sent to England to secure, if possible, the co-operation of the London Missionary Society, was captured by a French privateer but completed his mission. On his return he found the American board ready to act independently. His appointment to Burma followed, and in 1812, accompanied by his wife, Ann Hasseltine Judson (1789–1826), he went to Calcutta. Having become advocates of baptism by immersion, and being thus cut off from Congregationalism, they began independent work, although they met with much opposition from the East India Company. In 1814 they began to receive support from the American Baptist Missionary Union, which had been founded with the primary object of keeping them in the field. After a short period at Madras they settled at Rangoon. There Judson mastered Burmese, into which he translated part of the Gospels with his wife's help. In 1824 he removed to Ava, where, during the war between the British and Burma, he was imprisoned for almost two years. In 1827 Judson removed his headquarters to Moulmein, where school buildings and a church were erected, and where in 1834 he married Sarah Hall Boardman (1803–45). In 1834 he completed his translation of the Bible; in succeeding years he compiled a Burmese grammar, a Burmese dictionary and a Pali dictionary. In 1845 his wife's failing health decided Judson to return to America, but she died during the voyage, and was buried at St. Helena. In the United States Judson married Emily Chubbuck (1817–54), a minor poet and novelist, who was one of the earliest advocates in America of the higher education of women. She returned with him in 1846 to Burma, where the rest of his life was devoted largely to the rewriting of his Burmese dictionary. He died at sea on April 12, 1850, while on his way to Martinique, in search of health. Judson was perhaps the greatest, as he was practically the first, of the many missionaries sent from the United States into foreign fields; his fervour, his devotion to duty and his fortitude in the face of danger mark him as the prototype of the American missionary.

A son, Edward, pastor of the Judson Memorial church, in New York city, which was erected largely through his efforts, prepared a biography of Dr. Judson (1883). Others are by Francis Wayland (1854) and R. T. Middleditch (1859). For the three Mrs. Judsons, *see* J. D. Knowles, *Memoir of Ann Hasseltine Judson* (1829), and Ethel D. Hubbard, *Ann of Ava* (1913); Emily C. Judson, *Life of Sarah Hall Boardman Judson* (1849), and A. C. Kendrick, *Life and Letters of Emily Chubbuck Judson* (1861), also monographs by W. N. Wyeth on each of the Mrs. Judsons.

JUEL, NIELS (1629–1697), Danish admiral, was born of a distinguished family on May 8, 1629, at Christiania. He served his naval apprenticeship under Van Tromp and De Ruyter, taking part in all the chief engagements of the war of 1652–54 between England and Holland. During a long indisposition at Amsterdam in 1655–1656 he acquired an excellent knowledge of ship-building, and returned to Denmark in 1656 a thoroughly equipped seaman. He served with distinction during the Swedo-Danish wars of 1658–60 and took a prominent part in the defence of Copenhagen against Charles X. During fifteen years of peace, Juel, as admiral of the fleet, improved the Danish navy, though he bitterly resented the setting over his head in 1663 of Cort Adelaar on his return from the Turkish wars. On the outbreak of the Scanian War he served at first under Adelaar, but on the death of the latter in November 1675 was appointed to the supreme command. He raised Danish sea-power to unprecedented eminence, by the system of naval tactics, afterwards perfected by Nelson, which consists in cutting off a part of the enemy's force and concentrating the whole attack on it. He first employed this manoeuvre at the battle of Jasmund off Rügen (May 25, 1676) when he broke through the enemy's line in close column and cut off five of their ships. A few days after the battle of Jasmund, Cornelius Van Tromp the younger, with 17 fresh Danish and Dutch ships of the line, superseded Juel in the supreme command.

Juel took a leading part in Van Tromp's great victory off Öland (June 1, 1676), which enabled the Danes to invade Scania unopposed. On June 1, 1677 Juel defeated the Swedish admiral Sjöblad off Möen; on June 30, 1677 he won his greatest victory, in the Bay of Kjöge, where, with 25 ships of the line and 1,267 guns, he routed the Swedish admiral Evert Horn with 36 ships of the line and 1,800 guns. For this great triumph he was made lieutenant admiral general and a privy councillor. This victory, besides permanently crippling the Swedish navy, gave the Danes a self-confidence which enabled them to keep their Dutch allies in their proper place. In the following year Van Tromp, whose high-handedness had become unbearable, was discharged by Christian V., who gave the supreme command to Juel. In the spring of 1678 Juel put to sea with 84 ships carrying 2,400 cannon, but as the Swedes did not venture out to sea, his operations were limited to blockading the Swedish ports and transporting troops to Rügen. After the peace of Lund Juel devoted himself to the development of the fleet. He died on April 8, 1697.

See Garde, *Niels Juel* (1842), and *Den dansk. norske Sömagts Historie, 1535–1700* (1861).

JUGGERNAUT, a cult-title of the Hindu god Vishnu at Puri in Orissa (Sanskrit, Jagannātha, "Lord of the World"). Legend says that a Savara hillman worshipped a blue-stone idol in the wilds, and that Indradyumna, King of Mālwa, who was conquered by Krishna, sent Brahmans to find it. Removed to Puri, a temple was set up in its honour at a cost of some £500,000, on a site long associated with Buddhism. Indeed the famous festival of the god's car may be the Buddha's Tooth festival, but the celebration merely consists in the thousands of pilgrims taking several days to drag the god's car through deep sand to his country-house, less than a mile from Puri, in the rains. Begun in 1174 and completed 14 years later, the temple is pyramidal in form, 192ft. high, and crowned with Vishnu's wheel and flag. The main enclosure, 400 by 300ft., contains several smaller shrines, besides that of Vishnu (80ft. square). The chief images, roughly hewn in wood, are those of Vishnu and his brother and sister. The god's attendants form 36 orders and 97 classes; and special servants put the god to bed, dress and bathe him. The rent-roll is about £68,000; but to this sum must be added the pilgrims' offerings, estimated at £100,000 a year. To Jagannāth the Koh-i-Nūr is said to have been bequeathed by Ranjīt Singh on his death-bed, despite the fact that he was a Sikh—but apparently the bequest was revoked. Being sacred to Vishnu, a death within the temple would defile it, and the tales of pilgrims being crushed to death during the procession in vast numbers are untrue, though accidents are frequent and occasionally a frenzied pilgrim will throw himself under the car.

JUGGLER, in the modern sense a performer of sleight-of-hand tricks and dexterous feats of skill in tossing balls, plates, knives, etc. (*see* CONJURING). The *joculatores* (jesters) were the mimes of the middle ages (*see* DRAMA: *Mediaeval*); the French word *jongleurs* included the singers known as TROUBADOURS (*q.v.*), and English minstrels of the same type gradually became strolling jugglers.

JUGOSLAVIA: *see* YUGOSLAVIA.

JUGURTHA (Gr. Ἰογόρθας), king of Numidia, an illegitimate son of Mastanabal, and grandson of Massinissa. After his father's death he was brought up by his uncle Micipsa together with his cousins Adherbal and Hiempsal. Jugurtha inherited much of Massinissa's political ability. Micipsa, naturally afraid of him, sent him to Spain (134 B.C.) in command of a Numidian force, to serve under P. Cornelius Scipio Africanus Minor. He became a favourite with Scipio and the Roman nobles, some of whom put into his head the idea of making himself sole king of Numidia.

In 118 B.C. Micipsa died. By his will, Jugurtha was associated with Adherbal and Hiempsal in the government of Numidia. Scipio had written to Micipsa a strong letter of recommendation in favour of Jugurtha; and to Scipio, accordingly, Micipsa entrusted the execution of his will. His testamentary arrangements

utterly failed. The princes soon quarrelled, and Jugurtha claimed the entire kingdom. Hiempsal he contrived to have assassinated; Adherbal he quickly drove out of Numidia. He then sent envoys to Rome to defend his usurpation on the ground that he was the injured party. The senate decided that Numidia was to be divided, and gave the western, the richer and more populous half, to Jugurtha, while the sands and deserts of the eastern half were left to Adherbal. Jugurtha's envoys appear to have bribed several Roman nobles and senators. Jugurtha at once began to provoke Adherbal to a war of self-defence. He defeated him near the modern Philippeville, and Adherbal sought safety in the fortress of Cirta (Constantine). Here he was besieged by Jugurtha, who forced the place to capitulate, and treacherously massacred all the inhabitants, among them his cousin Adherbal and a number of Italian merchants.

The Roman senate, a majority of which still clung to Jugurtha, were persuaded in the same year (111) to declare war. An army was despatched to Africa under the consul L. Calpurnius Bestia, several of the Numidian towns voluntarily surrendered, and Bocchus, the king of Mauretania, and Jugurtha's father-in-law, offered the Romans his alliance. Jugurtha having at his command the accumulated treasures of Massinissa, succeeded in arranging with the Roman general a peace which left him in possession of the whole of Numidia. But the tribune Memmius insisted that Jugurtha should appear in person and be questioned as to the negotiations. Jugurtha appeared under a safe conduct, but his partisans took care that his mouth should be closed. Soon afterwards he caused his cousin Massiva, then resident at Rome and a claimant to the throne of Numidia, to be assassinated. The treaty was thereupon set aside, and Jugurtha was ordered to quit Rome. On this occasion he uttered the well-known words, "A city for sale, and doomed to perish as soon as it finds a purchaser!" (Livy, *Epit.* 64.)

The war was renewed, and the consul Spurius Albinus entrusted with the command. The Roman army in Africa was thoroughly demoralized. An unsuccessful attempt was made on a fortified town, Suthul, in which the royal treasures were deposited. The army was surprised by the enemy in a night attack, and the camp was taken and plundered. Every Roman was driven out of Numidia, and a disgraceful peace was concluded (109).

The war was now entrusted to Quintus Metellus, an able soldier and stern disciplinarian, and from the year 109 to its close in 106 the contest was carried on with credit to the Roman arms. Jugurtha was defeated on the river Muthul, after an obstinate and skilful resistance. Once again, however, he succeeded in surprising the Roman camp and forcing Metellus into winter quarters. There were fresh negotiations, but Metellus insisted on the surrender of the king's person, and this Jugurtha refused. In 106, Marius was called on by the vote of the Roman people to supersede Metellus, but it was through the perfidy of Bocchus and the diplomacy of L. Cornelius Sulla, Marius's quaestor, that the war was ended. Jugurtha fell into an ambush, and was conveyed a prisoner to Rome. Two years afterwards, in 104, he figured with his two sons in Marius's triumph, and in the subterranean prison beneath the Capitol he was either strangled or starved to death.

Jugurtha mainly owes his historical importance to the full and minute account of him which we have from the hand of Sallust, himself afterwards governor of Numidia.

See A. H. J. Greenidge, *Hist. of Rome* (1904); T. Mommsen, *Hist. of Rome* (1854, etc.), book iv. ch. v.; the chief ancient authorities (besides Sallust) are Livy, *Epit.*, lxii.–lxvii.; Plutarch, *Marius and Sulla;* Velleius Paterculus, ii.; Diod. Sic., *Excerpta,* xxxiv.; Florus, iii. 1. *See* also MARIUS, GAIUS; SULLA, LUCIUS CORNELIUS; NUMIDIA.

JUILLIARD, AUGUSTUS D. (1840–1919), American capitalist, was born in Canton, O. His parents were French Huguenots, natives of Burgundy, France, who emigrated to America in 1836. He was for many years head of a dry goods commission house in New York city, which bore his name, and a notable figure in banking and insurance circles. In his will, provision was made for the founding of the Juilliard Musical Foundation in New York city, which was incorporated under a special act of the legislature on March 30, 1920, and to which he bequeathed the residue of his estate, estimated at $12,000,000. The purposes of the foundation are: to aid worthy students of music in securing an adequate musical education; to promote enterprises for the education and instruction of the general public in musical arts; to afford facilities for the encouragement of a deeper interest in music in the United States. Juilliard died in New York city on April 25, 1919.

JUJU, a West African word derived from Fr. *joujou,* a toy or plaything. The word was originally applied to the objects which it was supposed the negroes worshipped, and was transferred from the objects themselves to the spirits or gods who dwelt in them, and includes a range from minor deities to inferior spirits, such as gnomes and fairies (*see* FETISHISM and TABU).

See P. A. Talbot, *Peoples of Southern Nigeria* (vol. II., 1926).

JUJUBE. While this name is often applied to variously-flavoured confections of gum arabic, gelatin, etc., it belongs to the fruits of two species of *Ziziphus,* plants of the buckthorn family, Rhamnaceae. The best jujubes are produced by Chinese varieties of *Z. jujuba,* the native home of which is obscure. It has been cultivated extensively in China for at least 4,000 years, and Pliny wrote that it was brought from Syria to Rome by the consul Sextus Papinius during the reign of Augustus.

Though first introduced into the United States in 1837, it attracted little attention until superior varieties were obtained in China by Frank N. Meyer of the U.S. department of agriculture about 1906. This species, a small spiny tree reaching to 25 or 30 ft., has alternate three-nerved elliptic to ovate leaves 1 to 3 in. in length. The small greenish flowers are followed by round to oblong fruits the size of small plums, each containing a single large pointed stone. When processed in syrup they make an excellent confection, much resembling Persian dates—hence the name "Chinese dates" by which they are sometimes known. The best varieties are *Mu shing hong, Yu* and *Lang.*

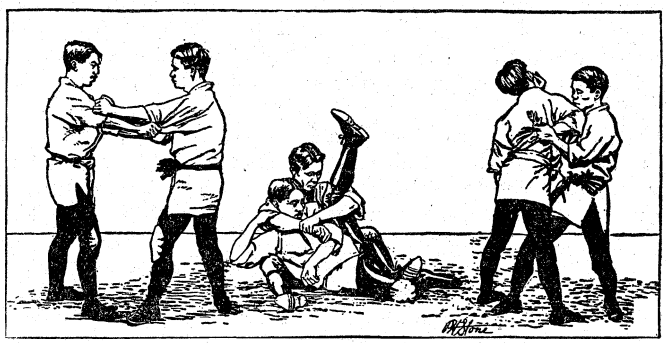
Z. mauritiana, the Indian jujube or *ber,* differs botanically from *Z. jujuba* in having the leaves tomentose beneath instead of glabrous. The fruit is commonly smaller and of poor quality.

Both species are subtropical in character, thriving in hot dry climates where winter temperatures do not go below +15° F. They are well adapted to cultivation in the southwestern U.S. where they are occasionally seen as dooryard trees but they have not been planted commercially to any extent. Propagation is by means of seed, though the named Chinese varieties must be propagated vegetatively. Suckers, root cuttings and grafting are used in China; in California whip-grafting on two-year-old rootstocks is recommended. The trees are precocious and prolific in fruiting, rarely failing to yield good crops. (W. Po.)

JU-JUTSU or **JIU-JITSU,** a method of offense and defense without weapons in personal encounter, upon which is founded the system of physical culture universal in Japan (Sinico-Japanese, muscle-culture). While it has been known principally as a Japanese activity, the sport, with modifications and adaptations, has been used in World War II as a training device by practically all nations. The Lama monks of China developed the ju-jutsu form of combat to protect themselves, though unarmed, from the armed robbers on the desolate roads of old China. The Japanese, impressed by its effectiveness, adopted ju-jutsu but have made many changes in it in the course of centuries. Originally it was an art practised solely by the nobility and particularly by the samurai who, possessing the right, denied to commoners, of carrying swords, were thus enabled to show their superiority over common people even when without weapons. It was a secret art, jealously guarded from those not privileged to use it, until the feudal system was abandoned in Japan, and now ju-jutsu is taught in the schools, as well as in public and private gymnasiums. In the army, navy and police it receives particular attention. About the beginning of the 20th century, masters of the art began to attract attention in Europe and America, and schools were established in Great Britain and the U.S. as well as on the continent of Europe. Since 1940 there has been some tendency to confuse the term "ju-jutsu" with the expression "hand-to-hand combat." The latter activity encompasses, in addition to ju-jutsu, some of the manoeuvres of wrestling, savate, boxing and football. Ju-jutsu may be briefly described as

"an application of anatomical knowledge to the purpose of offense and defense. . . . Its feat consists of clutching or striking such part of an enemy's body as will make him numb and incapable of resistance. Its object is not to kill, but to incapacitate one for action for the time being" (Inazo Nitobe, *Bushido: the Soul of Japan*).

It is supposedly mysterious and endowed with a so-called power of overcoming any type of opponent. Actually, it is neither. A



BY COURTESY OF A. G. SPALDING

FROM LEFT TO RIGHT, UPRIGHT POSITION AT OPENING OF THE BOUT, FALL AND PUNISHMENT, COMBINATION NECK, WRIST AND ARM TWIST

good American catch-as-catch-can wrestler in the majority of cases can overcome a ju-jutsu expert in a "free-for-all" or rough and tumble fight. The aura of mystery which surrounds the term "ju-jutsu" stems from the fact that Japanese expressions are used to describe certain parts of the body and various manoeuvres. These terms can be explained in simple English. The black belt (ju-jutsu) men spend years learning manoeuvres and are impressed by the overpowering results which they obtain.

Many writers translate the term ju-jutsu "to conquer by yielding" (Jap. *ju,* pliant), and this phrase well expresses a salient characteristic of the art, since the weight and strength of the opponent are employed to his own undoing. When, for example, a big man rushes at a smaller opponent, the smaller man, instead of seeking to oppose strength to strength, falls backwards or sidewise, pulling his heavy adversary after him and taking advantage of his loss of balance to gain some lock or hold known to the science. This element of yielding in order to conquer is thus referred to in Lafcadio Hearn's *Out of the East:* "In ju-jutsu there is a sort of counter for every twist, wrench, pull, push or bend: only the ju-jutsu expert does not oppose such movements. No; he yields to them. But he does much more than that. He aids them with a wicked sleight that causes the assailant to put out his own shoulder, to fracture his own arm, or, in a desperate case, even to break his own neck or back."

Great emphasis is placed on leverage, foot action and body movement to overcome the superior weight of an adversary.

In employing ju-jutsu as a training device for war, those who have been taught the sport have learned how to carry through so that they may go further than to incapacitate, and may even kill an opponent if the holds are applied to their fullest extent.

The knowledge of anatomy mentioned by Nitobe is acquired in order that the combatant may know the weak parts of his adversary's body and attack them. Several of these sensitive places, for instance the partially exposed nerve in the elbow popularly known as the "funny-bone" and the complex of nerves over the stomach called the solar plexus, are familiar to the European, but the ju-jutsu expert is acquainted with many others which, when compressed, struck, or pinched, cause temporary paralysis of a more or less complete nature. Such places are the arm-pit, the ankle and wrist bones, the liver, the groin, the "tail bone" or coccyx, the tendon running downward from the ear, the "Adam's apple," and the nerves of the upper arm. In serious fighting any hold or attack is resorted to, and a broken or badly sprained limb is the least that can befall the victim; but in the practice of the art as a means of physical culture, the knowledge of the different grips is assumed on both sides, as well as the danger of resisting too long. For this reason the combatant, when he feels himself on the point of being disabled, is instructed to signal his acknowledgment of defeat by striking the floor with hand or foot. The bout then ends and both combatants rise and begin afresh. It will be seen that a victory in ju-jutsu does not mean that the opponent shall be placed in some particular position, as in wrestling, but in any position in which his judgment or knowledge tells him that, unless he yields, he will suffer a disabling injury. This difference existed between the wrestling and the *pancratium* of the Olympic games. In the *pancratium* the fight went on until one combatant acknowledged defeat, but, although many a man allowed himself to be beaten into insensibility rather than suffer this humiliation, it was nevertheless held to be a disgrace to kill an opponent.

A modern bout at ju-jutsu usually begins by the combatants taking hold with both hands upon the collars of each other's jackets or kimonos, after which, upon the word to start being given, the manoeuvring for an advantageous grip begins by pushes, pulls, jerks, falls, grips, or other movements. Once the wrist, ankle, neck, arm or leg of an assailant is firmly grasped so that added force will dislocate it, there is nothing for the seized man to do, in case he is still on his feet, but go to the floor, often being thrown clean over his opponent's head. A fall of this kind does not necessarily mean defeat, for the struggle proceeds upon the floor, where indeed most of the combat takes place, and the ju-jutsu expert receives a long training in the art of falling without injury. Blows are delivered, not with the fist, but with the open hand, the exterior edge of which is hardened by exercises.

During World War II the market was flooded with books on ju-jutsu. Since 1940 more books have been written on the subject than in the previous decade.

See H. Irving Hancock's *Japanese Physical Training* (1904); *Physical Training for Women by Japanese Methods* (1904); *The Complete Kano Jiu-Jitsu (Jiudo)* (1905); M. Ohashi, *Japanese Physical Culture* (1904); K. Saito, *Jiu-Jitsu Tricks* (1905); J. Murdoch, *History of Japan,* Vol. iii (1926); United States Naval Institute, *Hand to Hand Combat* (1943).

JUJUY, a province of Argentina, in the northwesternmost part of the country. Area, prior to the official decree of Sept. 23, 1943, which awarded the department of Susques in the former territory of Los Andes to Jujuy, 16,859 sq.mi.; pop. (1914 census) 76,631; 1943 est. (excluding pop. of the department of Susques) 124,996. Although it is the smallest province in the republic, the relief is perhaps the most varied, with elevations ranging from less than 1,000 ft. in the eastern valleys to more than 10,000 ft. in the Puna of the north and northwest. Variations in climate and vegetation are closely correlated with variations in altitude, the exuberant vegetation of the warm, humid valleys of the central and eastern parts of the province standing in sharp contrast to the treeless wastes of the cold, arid Puna. The province is traversed by the *Central Norte Argentino* railroad, the northern junction of which is at La Quiaca on the Bolivian border. A branch line follows the valley of the San Francisco into the province of Salta. The alternate route of the Pan-American highway which leads from Peru through Bolivia also passes through the province.

Mining is the principal enterprise and Jujuy leads the country in the production of metallic minerals (96% in 1940). Besides supplying virtually all of the zinc, lead, tin, silver and antimony that figures in national production, significant quantities of salt, borates and gold are produced. Studies indicate the presence of a large reserve of iron ore (est. at 40,000,000 tons) in the vicinity of the provincial capital. With the exception of the fertile valleys in the central and eastern parts of the province, the land is generally unsuitable for agriculture. The total area under cultivation is about 123,500 ac., a large part of which is devoted to sugar cane. Jujuy ranks fourth among the Argentine states in the number of mules and asses (64,100 in 1937), which, together with llamas, are used extensively as pack animals. Sheep, cattle and goats are also raised in considerable numbers. The capital, Jujuy (pop. 1940, 17,840), is in the extreme southern part of the Humahuaca gorge, 4,127 ft. above sea level and 1,020 mi. by rail from Buenos Aires. Ledesma (pop. 8,000) is the second largest town in the province. (R. W. Rd.)

JUKES, JOSEPH BEETE (1811–1869), English geologist, was born at Summer Hill, near Birmingham, on Oct. 10, 1811. He was naturalist to H.M.S. "Fly" on the expedition (1842) to survey Torres strait, New Guinea and the east coast of Australia. After his return home he served on the geological surveys of Great Britain and of Ireland. He was professor of geology at

the Royal college of Science in Dublin. Jukes died on July 29, 1869.

Jukes wrote many papers for London and Dublin geological journals and he was also the author of *Excursions in and about Newfoundland* (2 vols., 1842); *Narrative of the Surveying Voyage of H.M.S. "Fly"* (2 vols., 1847); *A Sketch of the Physical Structure of Australia* (1850); *Popular Physical Geology* (1853); *Student's Manual of Geology* (1857; 2nd ed. 1862; a later edition was revised by A. Geikie, 1872); the article "Geology" in the *Ency. Brit.* 8th ed. (1858) and *School Manual of Geology* (1863). See *Letters, &c., of J. Beete Jukes, edited, with Connecting Memorial Notes, by his Sister* (C. A. Browne) (1871), to which is added a chronological list of Jukes's writings.

JULIAN (FLAVIUS CLAUDIUS JULIANUS) (*c.* 331–363), commonly called JULIAN THE APOSTATE, Roman emperor, was born in Constantinople in 332 (probably), the son of Julius Constantius and his wife Baslina, and nephew of Constantine the Great. Julian lost his mother not many months after he was born. In 337 Constantine died, and the whole of Julian's family, except his half-brother, Gallus, was murdered by the soldiers to ensure the undisputed succession of the sons of Constantine. Gallus was banished, but Julian was allowed to remain in Constantinople, where he was carefully educated under the supervision of the family eunuch, Mardonius, and of Eusebius, bishop of Nicomedia. About 341 Gallus was recalled, and the two brothers were removed to Macellum, a remote and lonely castle in Cappadocia. Julian was trained to the profession of the Christian religion; but he became early attracted to the old faith, or rather to the idealized amalgam of paganism and philosophy which was current among his teachers, the rhetoricians. The old Hellenic world had an irresistible attraction for him. Love for its culture was, in Julian's mind, associated with loyalty to its religion.

Early Life and Campaigns.—A short visit to Constantinople was followed by exile to Nicomedia again, where he came under the influence of Libanius, though forbidden to attend his lectures, and at this stage probably became finally contracted to paganism. In 351 Gallus was made Caesar, and Julian liberated; but not for long. In 354 Gallus was executed for misgovernment, and Julian came under suspicion again. He was confined in Milan, released, recalled to Milan, and eventually, by the intercession of the empress Eusebia, allowed to return to Athens. Here he was initiated into Mithraism (355). The emperor Constantius and Julian were now the sole surviving male members of the family of Constantine; and, as the emperor again felt himself oppressed by the cares of government, there was no alternative but to call Julian to his assistance. At the instance of the empress he was summoned to Milan, where Constantius bestowed upon him the hand of his sister, Helena, together with the title of Caesar and the government of Gaul.

A task of extreme difficulty awaited him beyond the Alps. During recent troubles the Alamanni and other German tribes had crossed the Rhine; they had burned many flourishing cities, and extended their ravages far into the interior of Gaul. The internal government of the province had also fallen into great confusion. In his first campaign, in 356, he co-operated with Constantius, who advanced from Raetia, while Julian moved up the left bank of the Rhine. The only notable fighting was Julian's successful defence of Sens at the end of the year. The next year he was by himself; Barbatio, left to support him with a large force, deserted, and Julian extricated himself from great danger with a great victory at Strasbourg (357). This season saw the lower Rhine cleared as well. The year 358 was devoted to the recovery of the captures from Gaul beyond the Rhine and the re-organization of the frontier defences. In Gaul, Julian rebuilt the cities which had been laid waste, re-established the administration on a just and secure footing, and, as far as possible, lightened the taxes which weighed so heavily on the poor provincials. Paris was the usual residence of Julian during his government of Gaul, and his name has become inseparably associated with the early history of the city.

Meanwhile the inner circle of Constantius's court were doing their best to poison the emperor's mind against Julian. In 360 he received the emperor's orders withdrawing a number of troops for the renewed war with Persia, and putting them at once under a different command. Julian first objected, then submitted; the soldiers themselves halted at Paris on the way east and proclaimed him emperor. He accepted, and at once tried to negotiate with Constantius, who was campaigning in the East. The message being disregarded, both sides prepared for a decisive struggle. After a march of unexampled rapidity through the Black forest and down the Danube, Julian reached Sirmium, and he was on the way to Constantinople when he received news of the death of Constantius, who had set out from Syria to meet him, at Mopsucrene in Cilicia (Nov. 3, 361). Without further trouble Julian found himself everywhere acknowledged the sole ruler of the Roman empire; it is even asserted that Constantius himself, on his deathbed, had designated him his successor. Julian entered Constantinople on Dec. 11, 361.

His Reign.—Julian had already made a public avowal of paganism, of which he had been a secret adherent at the age of 20. His reign was too short to show what precise form the pagan revival might have taken, how far his feelings might have become embittered by his conflict with the Christian faith, whether persecution, violence and civil war might not have taken the place of moral suasion, which was the method he originally affected. He issued an edict of universal toleration; but in many respects he used his imperial influence to advance the work of restoration. Paganism was demanded of the teachers in the schools; without directly excluding Christians from the high offices of State, he held that the worshippers of the gods ought to have preference. In short, though there was no direct persecution, he exerted much more than a moral pressure to restore the power and prestige of the old faith. Julian himself became *pontifex maximus*, and the new cult was organized on more or less Christian lines as a State church.

Having spent the winter of 361–362 at Constantinople, Julian proceeded to Antioch, to prepare for his great expedition against Persia. His stay there was a curious episode in his life. It is doubtful whether his pagan convictions or ascetic life, after the fashion of an antique philosopher, gave most offence to the so-called Christians of the dissolute city. They soon grew heartily tired of each other, and Julian took up his winter quarters at Tarsus, from which, in the early spring, he marched against Persia. At the head of a powerful and well-appointed army, and accompanied down the Euphrates by a fleet, he advanced through Mesopotamia and Assyria as far as Ctesiphon, near which he crossed the Tigris, in face of a Persian army, which he defeated. Misled by the treacherous advice of a Persian nobleman, he desisted from the siege, and set out to seek the main army of the enemy under Shapur II. (*q.v.*). After a long, useless march he was forced to retreat, and found himself enveloped by the whole Persian army in a waterless and desolate country, at the hottest season of the year. The Romans repulsed the enemy in many an obstinate battle, but on June 26, 363, Julian, who was ever in the front, was mortally wounded. The same night he died in his tent. The story that he was murdered by a Christian is unauthenticated. But though *Vicisti, Galilaee* is a fabrication, it represents the facts. His work died with him.

From Julian's unique position as the last champion of a dying polytheism, his character has always excited interest. Taught from his youth to regard Christianity as a persecuting force, he found sympathy and intellectual companionship only among the pagan rhetoricians and philosophers, and was thus attracted to paganism. But the religion he attempted to foist on the world was not a paganism that had ever existed. The real pagans of the day, like Amnianus, were tolerant monotheists. Julian's creed was a curious mixture of active polytheism, combined with the emotional appeal of the mysteries, which had never in ancient times really coalesced with the formal public worship of gods, and held together by the Neoplatonist philosophy—surely the greatest feat of eclecticism ever performed, even by that eclectic system.

In other respects Julian was no unworthy successor of the Antonines. Though brought up in a studious solitude, he was no sooner called to the government of Gaul than he displayed all the energy, the hardihood and the practical sagacity of an old Roman. In temperance, self-control and zeal for the public good, as he understood it, he was unsurpassed. To these Roman qualities

he added the culture, literary instincts and speculative curiosity of a Greek. One of the most remarkable features of his public life was the perfect ease and mastery with which he associated the cares of war and statesmanship with the assiduous cultivation of literature and philosophy.

BIBLIOGRAPHY.—The works of Julian, of which there are complete editions by E. Spanheim (Leipzig, 1696) and F. C. Hertlein (Teubner series, 1875–76), consist of the following: (1) *Letters,* of which more than 80 have been preserved under his name, although the genuineness of several has been disputed. Six new letters were discovered in 1884 by A. Papadopulos Kerameus in a monastery on the island of Chalcis near Constantinople (see *Rheinisches Museum,* xliii., 1887). Separate edition of the letters by L. H. Heyler (1828); *see* also J. Bidez and F. Cumont, "Recherches sur la tradition ms. des lettres de l'empereur Julien" in *Mémoires couronnées . . . publiés par l'Acad. royale de Belgique,* lvii. (1898) and F. Cumont, *Sur l'authenticité de quelques lettres de Julien* (1889). (2) *Orations,* eight in number—two panegyrics on Constantius, one on the empress Eusebia, two theosophical declamations on King Helios and the Mother of the Gods, two essays on true and false cynicism, and a consolatory address to himself on the departure of his friend Salustius to the East. (3) *Caesares* or *Symposium,* a satirical composition after the manner of Seneca's *Apocolocyntosis.* (4) *Misopogon* (the beard-hater), written at Antioch, a satire on the licentiousness of its inhabitants. (5) Five epigrams, two of which (*Anth. Pal.,* ix. 365, 368) are of some interest. (6) Κατὰ Χριστιανων (*Adversus Christianos*) in three books, an attack on Christianity written during the Persian campaign, is lost. Theodosius II. ordered all copies of it to be destroyed, and our knowledge of its contents is derived almost entirely from the *Contra Julianum* of Cyril, bishop of Alexandria, written 60 years later (see *Juliani librorum contra Christianos quae supersunt,* edit. C. J. Neumann, 1880). *English Translations:* Select works by J. Duncombe (1784) containing all except the first seven orations (viii. and the fable from vii. are included): the theosophical addresses to King Helios and the Mother of the Gods by Thomas Taylor (1793) and C. W. King in Bohn's *Classical Library* (1888); complete edn. and trans. by W. C. Wright, 1913–23.

1. Ancient authorities: (*a*) Pagan writers. Ammianus Marcellinus (xv. 8–xxv.), a contemporary and in part an eye-witness of the events he describes (other historians are Zosimus and Eutropius); the sophist Libanius, and Claudius Mamertinus, the panegyrist, are less trustworthy. (*b*) Christian writers. Gregory of Nazianzus, the author of two violent invectives against Julian; Rufinus; Socrates; Sozomen; Theodoret; Philostorgius; the poems of Ephraem Syrus written in 363; Zonaras; Cedrenus; and later Byzantine chronographers. The impression which Julian produced on the Christians of the East is reflected in two Syriac romances published by J. G. E. Hoffmann, *Julianos der Abtrünnige* (1880; *see* also Th. Nöldeke in *Zeitschrift der deutschen morgenländischen Gesellschaft* [1874], xxviii. 263).

2. Modern: For works before 1878 *see* R. Engelmann, *Scriptores Graeci* (8th ed., by E. Preuss, 1880). Of later works the most important are G. H. Rendall, *The Emperor Julian, Paganism and Christianity* (1879); Alice Gardner, *Julian, Philosopher and Emperor* (1895); G. Negri, *Julian the Apostate* (Eng. trans., 1905); E. Müller, *Kaiser Flavius Claudius Julianus* (1901); P. Allard, *Julien l'apostat* (1900–03); G. Mau, *Die Religionsphilosophie Kaiser Julians in seinen Reden auf König Helios und die Göttermutter* (1907); J. E. Sandys, *Hist. of Classical Scholarship* (1906), p. 356; W. Christ, *Geschichte der griechischen Litteratur* (1898), sec. 603; J. Geffcken, "Kaiser Julianus und die Streitschriften seiner Gegner," in *Neue Jahrb. f. das klassische Altertum* (1908), pp. 161–195; J. Geffcken, *Kaiser Julianus* (1914). The sketch by Gibbon (*Decline and Fall,* chs. xix., xxii.–xxiv.) and the articles by J. Wordsworth in Smith's *Dictionary of Christian Biography* and A. Harnack in Herzog-Hauck's *Realencyklopädie für protestantische Theologie* ix. (1901) are valuable, the last especially for the bibliography. (T. KI.; J. H. F.)

JULIAN ALPS, the south-eastern extension of the Eastern Alps of Europe, extending from the north-eastern borders of Italy south-eastward through Carniola and Yugo-Slavia to the Karst plateau. The highest point is formed by the Triglav or Terglou (9,394 ft.) which offers one of the finest views in the whole of the Alps and bears on its northern declivity the only glacier in the province. (*See* ALPS; YUGOSLAVIA.)

JULIAN DAY, a device of chronological reckoning often used by astronomers in order to avoid the complication due to months and years of unequal length. The days are numbered consecutively starting from the "Julian era," Jan. 1, 4713 B.C. For example, Jan. 1, 1930, is Julian day 2,425,978. The Julian day begins at noon; thus the day above-mentioned terminates at noon on Jan. 2.

JÜLICH (Fr. *Juliers*), a town in the Prussian Rhine province, Germany, on the right bank of the Roer, 16 mi. N.E. of Aachen. Pop. (1939) 11,569. Jülich (formerly also Gülch, Guliche), the capital of the former duchy of that name, is the Juliacum of the *Antonini Itinerarium.* It became a fortress in the 17th century, and was captured by the Dutch under Maurice of Orange in 1610, and by the Spaniards in 1622. Till 1860, when its works were demolished, Jülich ranked as a fortress of the second class.

The Duchy of Jülich (or Juliers).—From the 11th to the 15th century Jülich was ruled by a line of hereditary counts. The county was raised to the rank of a duchy in 1356, but its importance in general history is due to its later association with the neighbouring duchies of Berg and Cleves. In 1423 Jülich passed to Adolph, duke of Berg (d. 1437), who belonged to a younger branch of the ruling family. Nearly a century later Mary (d. 1543) the heiress of these two duchies, married John, the heir of the duchy of Cleves. John died in 1539 and was succeeded by his son William who reigned until 1592.

At the beginning of the 17th century the reigning duke, John William, was childless and insane. Among the claimants to his lands the most important were two Protestant princes, Philip Louis, count palatine of Neuburg, husband of the duke's sister Anna, and John Sigismund, elector of Brandenburg, whose wife was the daughter of another sister. Moreover, by virtue of an imperial promise made in 1485 and renewed in 1495, the elector of Saxony claimed the duchies of Jülich and Berg, while the proximity of the coveted lands to the Netherlands made their fate a matter of great moment to the Dutch. The situation was made dangerous by the tension between the Roman Catholics and the Protestants who were fairly evenly matched in the duchies, and by the rivalry between France and the empire. In March 1609 Duke John William died. Having assured themselves of the support of Henry IV. of France and of the Evangelical Union, Brandenburg and Neuburg at once occupied the duchies. Thereupon the emperor Rudolph II. ordered some imperialist and Spanish troops to seize the disputed lands, and a great European war was narrowly avoided. The emperor adjudged the duchies to Saxony, while the Dutch captured the fortress of Jülich; but the "possessing princes," as Brandenburg and Neuburg were called, continued to occupy and administer the lands. These two princes had made a compact at Dortmund in 1609 to act together in defence of their rights, but differences soon arose between them which were increased by the conversion of the count palatine's heir, Wolfgang William of Neuburg, to Roman Catholicism, and his marriage with a daughter of the powerful Roman Catholic prince, Duke Maximilian of Bavaria. Each party then invited foreign aid, but through the intervention of England and France the treaty of Xanten was signed in Nov. 1614 by which Brandenburg obtained Kleves and Mark, the rest of the lands falling to the count palatine. In 1666 the great elector, Frederick William of Brandenburg, made with William, count palatine of Neuburg, a treaty providing that in case the male line of either house became extinct the other should inherit its lands.

When, early in the 18th century, the latter family was threatened with extinction, the emperor Charles VI. promised the succession to Jülich to the Prussian king, Frederick William I., in return for a guarantee of the pragmatic sanction. A little later, however, he promised the same duchy to the count palatine of Sulzbach, a kinsman of the count palatine of Neuburg. Then Frederick the Great, having secured Silesia, abandoned his claim to Jülich, which thus passed to Sulzbach when, in 1742, the family of Neuburg became extinct. From Sulzbach the duchy came to the electors palatine of the Rhine, and, when this family died out in 1799, to the elector of Bavaria, the head of the other branch of the house of Wittelsbach. In 1801 Jülich was seized by France, and by the settlement of 1815 it came into the hands of Prussia. Its area was just over 1,600 sq.m. and its population about 400,000.

During World War II the town of Jülich was bombed by the British several times.

See M. Ritter, *Sachsen und der jüliche Erbfolgestreit* (1873), and *Der jüliche Erbfolgekrieg, 1610 und 1611* (1877).

JULIUS, the name of three popes.

JULIUS I., pope from 337 to 352, was chosen as successor of Marcus after an interval of four months. He is chiefly known by

his action in the Arian controversy. After the Eusebians had, at a synod held in Antioch, renewed their deposition of Athanasius they resolved to send delegates to Constans, emperor of the West, and also to Julius, setting forth the grounds on which they had proceeded. Julius, after expressing an opinion favourable to Athanasius, invited both parties to lay the case before a synod to be presided over by himself. This proposal, however, the Eastern bishops declined to accept. On his second banishment from Alexandria, Athanasius came to Rome. Julius in 342 declared him to be innocent and his doctrine orthodox, and a little later he summoned the council of Sardica in Illyria, which was attended only by 76 Eastern bishops, who speedily withdrew to Philippopolis and deposed Julius, along with Athanasius and others. The Western bishops who remained confirmed the previous decisions of the Roman synod; and by its 3rd, 4th and 5th decrees relating to the rights of revision, the council of Sardica endeavoured to settle the procedure of ecclesiastical appeals. Julius on his death in April 352 was succeeded by Liberius.

JULIUS II. (Giuliano della Rovere), pope from Nov. 1, 1503, to Feb. 21, 1513, was born at Savona in 1443. He was sent by his uncle, subsequently Sixtus IV., to be educated among the Franciscans, although he does not appear to have joined that order. During his uncle's pontificate, he was made bishop of Carpentras, bishop of Bologna, bishop of Vercelli, archbishop of Avignon, cardinal-priest of S. Pietro in Vincoli and of Sti. Dodici Apostoli, and cardinal-bishop of Sabina, of Frascati, and finally of Ostia and Velletri. In 1480 he was made legate to France, mainly to settle the question of the Burgundian inheritance, and he acquired an influence in the college of cardinals which became paramount during the pontificate of Innocent VIII. Rivalry, however, growing up between him and Roderigo Borgia, he took refuge at Ostia after the latter's election as Alexander VI., and in 1494 went to France, where he was successful in inciting Charles VIII. to undertake the conquest of Naples. He accompanied the young king on his campaign.

During the pontificate of Alexander VI. Della Rovere remained in France, nominally in support of the pope, for whom he negotiated the treaty of 1498 with Louis XII., but in reality bitterly hostile to him. On the death of Alexander (1503) he returned to Italy and supported the election of Pius III., who died shortly afterwards. Della Rovere then won the support of Cesare Borgia and was unanimously elected pope. Julius II. repudiated the system of nepotism which had flourished under Sixtus IV., Innocent VIII. and Alexander VI., and set himself with courage and determination to restore, consolidate and extend the temporal possessions of the Church. By dexterous diplomacy he first succeeded (1504) in rendering it impossible for Cesare Borgia to remain in Italy. He then pacified the Romagna by reconciling the powerful houses of Orsini and Colonna.

In 1504 he concluded an alliance with France and Germany in order to oust the Venetians from Faenza, Rimini and other towns which they occupied. He freed Perugia and Bologna in the brilliant campaign of 1506. In 1508 he concluded against Venice the famous league of Cambray with the emperor Maximilian, Louis XII. of France and Ferdinand of Aragon, and in 1509 placed the city of Venice under an interdict. By the battle of Agnadello the Italian dominion of Venice was practically lost; but as the allies were not satisfied with merely effecting his purposes, the pope entered into a combination with the Venetians against those who immediately before had been engaged in his behalf. He absolved the Venetians in the beginning of 1510, and shortly afterwards placed the ban on France. At a synod convened by Louis XII. at Tours in September, the French bishops withdrew from the papal obedience and resolved, with Maximilian's co-operation, to seek the deposition of Julius. In Nov. 1511 a council met at Pisa for this object, but without success. Julius forthwith formed the Holy league with Ferdinand of Aragon and with Venice against France, in which both Henry VIII. and the emperor ultimately joined. The French were driven out of Italy in 1512, and papal authority was once more securely established in the States immediately around Rome.

Julius had already issued, on July 18, 1511, the summons for a general council to deal with France, with the reform of the church, and with a war against the Turks. This council, the Fifth Lateran, assembled on May 3, 1512, condemned the pragmatic sanction of the French church, and was still in session when Julius died. In the midst of his combats Julius never neglected his ecclesiastical duties. His bull of Jan. 14, 1505, against simony in papal elections was re-enacted by the Lateran council (Feb. 16, 1513). He condemned duelling by bull of Feb. 24, 1509. He effected some reforms in the monastic orders; urged the conversion of the sectaries in Bohemia; and sent missionaries to America, India, Abyssinia and the Congo. His government of the Papal States was excellent. Julius was a generous patron of art and literature. He laid the foundation-stone of St. Peter's (April 18, 1506); he founded the Vatican museum; and he was a friend and patron of Bramante, Raphael and Michelangelo. Julius was undoubtedly one of the greatest popes since Innocent III., and it is a misfortune of the church that his temporal policy eclipsed his spiritual office. He died of a fever on Feb. 21, 1513, and was succeeded by Leo X.

See L. Pastor, *History of the Popes,* vol. vi., trans. by F. I. Antrobus (1898); M. Creighton, *History of the Papacy,* vol. v. (1901); F. Gregorovius, *Rome in the Middle Ages,* vol. viii., trans. by Mrs. G. W. Hamilton (1900–02); Hefele-Hergenröther, *Conciliengeschichte* (2nd ed. 1873–79), vol. viii., 2nd ed.; J. Klaczko, *Rome et la renaissance . . . Jules II.* (1898), Eng. trans. by J. Dennie (1903); M. Brosch, *Papst Julius II. u. die Gründung des Kirchenstaates* (1878); A. J. Dumesnil, *Histoire de Jules II.* (1873); J. J. I. von Döllinger, *Beiträge zur polit., kirchl., u. Cultur-Geschichte der sechs letzten Jahrhunderte,* vol. iii. (1882); A. Schulte, *Die Fugger in Rom 1495–1523, mit Studien zur Gesch. des kirchlichen Finanzwesens jener Zeit* (1904).

JULIUS III. (Giovanni Maria del Monte), pope from 1550 to 1555, was born on Sept. 10, 1487. He was created cardinal by Paul III. in 1536, filled several important legations, and was elected pope on Feb. 7, 1550, despite the opposition of Charles V., whose enmity he had incurred as president of the council of Trent. As an adherent of the emperor he suffered in consequence of imperial reverses, and was forced to confirm Parma to Ottavio Farnese, the ally of France (1552). Julius then virtually abdicated the management of affairs, and gave himself up to enjoyment. What progress reform made during his pontificate was due to its acquired momentum, rather than to the zeal of the pope. Yet under Julius steps were taken to abolish plurality of benefices and to restore monastic discipline; the Collegium Germanicum, for the conversion of Germans, was established in Rome, 1552; and England was absolved by the cardinal-legate Pole, and received again into the Roman communion (1554). Julius died on March 23, 1555, and was succeeded by Marcellus II.

See Panvinio, continuator of Platina, *De Vitis Pontiff. Rom.;* Ciaconius, *Vitae et res gestae summorum Pontiff. Rom.* (Rome, 1601–02) (both contemporaries of Julius III.); Ranke, *Popes* (Eng. trans., Austin, 1840, etc.), i. 276 *seq.;* v. Reumont, *Gesch. der Stadt Rom.* (1867–70), iii. 2, 503 *seq.;* Brosch, *Gesch. des Kirchenstaates* (1880), i. 189 *seq.;* and extended bibliography in Herzog-Hauck, *Realencyklopädie, s.v.* "Julius III."

JULLIEN, LOUIS ANTOINE (1812–1860), musical conductor, was born at Sisteron, Basses Alpes, France, on the 23rd of April, 1812, and studied at the Paris conservatoire. He came to London where he formed a good orchestra and established promenade concerts. Subsequently he travelled to Scotland, Ireland and America with his orchestra. For many years he was a familiar figure in the world of popular music in England, and his portly form with its gorgeous waistcoats occurs very often in the early volumes of *Punch,* where he was dubbed "the Mons." He brought out an opera, *Pietro il Grande,* at Covent Garden (1852) on a scale of magnificence that ruined him, for the piece was a complete failure. He was in America until 1854, when he returned to London for a short time; ultimately he went back to Paris, where, in 1859, he was arrested for debt. He lost his reason soon afterwards, and died on March 14, 1860.

JULLUNDUR or **JALANDHAR,** a city of British India, giving its name to a district and a division in the Punjab. The city is 260 mi. by rail N.W. of Delhi. Pop. (1941) 135,283. It is the headquarters of a brigade.

The DISTRICT OF JULLUNDUR occupies the lower part of the tract known as the Jullundur Doab, between the rivers Sutlej and

Beas, except that it is separated from the Beas by the state of Kapurthala. Area, 1,334 sq.mi. Pop. (1941) 1,127,190; the average density of the rural population is about 500 persons per sq.mi., being one of the highest in the province. Cotton-weaving and sugar manufacture are the principal industries for export trade, and silk goods and wheat are also exported.

The Jullundur Doab in early times formed the Hindu kingdom of Katoch, ruled by a family of Rajputs whose descendants still exist among the petty princes of the Kangra hills. Under Mohammedan rule the Doab was generally attached to the province of Lahore. In 1766 the town of Jullundur fell into the hands of the Sikhs. It was annexed by Ranjit Singh in 1811 and became the capital of the Lahore possessions in the Doab until the British annexation at the close of the first Sikh war (1846).

JULY, the seventh month in the modern calendar, consisting of thirty-one days. It was originally the fifth month of the year, and as such was called by the Romans *Quintilis*. The later name of Julius was given in honour of Julius Caesar (who was born in the month); it came into use in the year of his death. The Anglo-Saxons called July *Heg-mônath,* "hay-month," or *Maed-mônath,* "mead-month," the meadows being then in bloom.

JUMALA, indicating rather godhead, than a divine being; the supreme god of the ancient Finns and Lapps, among some tribes called Num or Jilibeambaertje, as protector of the flocks.

JUMIÈGES, a village of north-western France, in the department of Seine-Inférieure, 17 m. W. of Rouen by road, on a peninsula formed by a bend of the Seine. Pop. (1936) 246. Jumièges was a great Benedictine establishment. Of the abbey-church (1040–67), there remain the façade with two towers, the walls of the nave, a wall and sustaining arch of the great central tower and débris of the choir (restored in the 13th century). A small museum in a 14th century building contains the grave-stone of Agnes Sorel, and two mysterious recumbent figures of the 13th century, commonly known as the *Énervés*. The church of St. Pierre (14th century), adjoining the south side of the abbey-church, is a continuation of a church of the time of Charlemagne, of which a fragment still survives. Ruins of the chapter-house (13th century) and refectory (12th and 15th centuries) also survive. The abbey was founded about the middle of the 7th century by St. Philibert, whose name may be read on gold and silver coins obtained from the site. It was destroyed by the Normans, but rebuilt in 928 by William Longsword, duke of Normandy; it continued to exist till 1790. Charles VII often resided there with Agnes Sorel, who had a manor at Mesnilsous-Jumièges, and died in the monastery in 1450.

JUMILLA, a town of eastern Spain, in the province of Murcia, 40 mi. N. by W. of Murcia by road, on the right bank of the Arroyo del Jua, a left-bank tributary of the Segura. Pop. (1940), 15,426 (mun., 21,165). The church of Santiago is noteworthy for its paintings and frescoes.

JUMNA, river, northern India. Rising in the Himalayas in Tehri state, about 5 m. N. of the Jamnotri hot springs, in 31° 3′ N. and 78° 30′ E., the stream first flows south, then south-west, and afterwards due south, receiving several small tributaries in its course. It afterwards turns sharply to the west and is joined by the large river Tons from the north. The Jumna here emerges from the Himalayas into the valley of the Dun, and flows south-west, dividing the Kiarda Dun on the west from the Dehra Dun on the east. It then, at the 95th mile of its course, forces its way through the Siwalik hills, and debouches upon the plains of India at Fyzabad in Saharanpur district. By this time a large river, it gives off, near Fyzabad, the eastern and western Jumna canals. From Fyzabad the river flows for 65 m. in a south-south-west direction, receiving the Maskarra stream from the east. Near Bidhauli, in Muzaffarnagar district, it turns due S. for 80 m. to Delhi city, thence south-east for 27 m. to near Dankaur, receiving the waters of the Hindan river on the east. From Dankaur it resumes its southerly course for 100 m. to Mahaban near Muttra, where it turns east for nearly 200 m., passing the towns of Agra, Ferozabad and Etawah, receiving on its left bank the Karwannadi, and on its right the Banganga (Utanghan). From Etawah it flows 140 m. S.E. to Hamirpur, being joined by the Sengar on its north bank, and on the south by the great river Chambal (650 m. long) from the west, and by the Sind. From Hamirpur, the Jumna flows nearly due east, until it enters Allahabad district and passes Allahabad city, below which it falls into the Ganges in 25° 25′ N. and 81° 55′ E. In this last part of its course it receives the waters of the Betwa and the Ken. Where the Jumna and the Ganges unite is the *prayag,* or place of pilgrimage for devout Hindus (*see* GANGES).

The Jumna, after issuing from the hills, has a longer course through the United Provinces than the Ganges, but is not so large nor so important; and above Agra in the hot season it dwindles to a small stream. This is no doubt partly caused by the eastern and western Jumna canals, of which the former irrigates nearly 400,000 acres in the United Provinces; while the latter serves 55,000 acres in the Punjab. The headworks of the two canals are situated near the point where the river issues from the Siwaliks.

The traffic on the Jumna, which is carried in barges, is not large. Its waters are clear and blue, while those of the Ganges are yellow and muddy; the difference between the streams can be discerned for some distance below the point at which they unite. Its banks are high and rugged, as it traverses the extreme edge of the alluvial plain of Hindustan, and in the latter part of its course almost touches the Bundelkhand offshoots of the Vindhya mountains.

The Jumna at its source near Jamnotri is 10,849 ft. above the sea-level; in the next 16 m. it falls at the rate of 314 ft. in a mile. The catchment area of the river is 118,000 sq.m. The Jumna is crossed by railway bridges at Delhi, Muttra, Agra and Allahabad, while bridges of boats are stationed at many places.

JUMPING, an athletic sport practised from the earliest times. Leaping to the music of lutes formed a part of the pentathlon, or quintuple games, at the ancient Olympic games. The Greek chroniclers record that the athlete Phayllus jumped a distance of 50 Olympian feet, but owing to the different conditions, it is impossible to institute comparisons with modern records. It must be remembered that the Greeks used *halteres* or weights to assist their jumping powers (*see* GAMES, CLASSICAL). The three kinds of jumping now standardized as championship events throughout the world, and which are included in the programme of the modern Olympic games, are the running long jump, the running high jump and the hop, step and jump. The technique of jumping has improved amazingly in the last 100 years. When Donald Walker wrote his classical book of *Manly Exercises* in 1834, he stated of the long jump that "on level ground 20ft. is a first-rate leap; 21ft. is extraordinary and 22ft. is very rarely accomplished." And of the high jump that "a good high leaper will clear 5ft., a first-rate one 5½ft., and an extraordinary one 6ft."

In 1874, J. Larne, Ireland, succeeded in jumping 23ft. 1½in., and he is believed to be the first man ever to pass the 23ft. mark. In 1893, C. B. Fry, Oxford university, created a world's record of 23ft. 6½in., the American championship of the same year being won by C. S. Reber, 23ft. 4½in. Five years later a veritable Irish giant, the late W. J. M. Newburn, was credited with 24ft. Newburn's record stood but a short time. In 1901 P. O'Connor cleared 24ft. 9in. in the Irish championship and 24ft. 11¾in. a few weeks later. His world's record was only once approached, when A. L. Gutterson, U.S.A., won the Olympic event at 24ft. 11¼in. at Stockholm in 1912. After the World War a new school of negro jumpers appeared, and E. O. Gourdin, Harvard, in 1921, jumped 25ft. 3in., and at Paris, 1924, R. Legendre, of Georgetown university, Washington, D.C., a white American, further increased the world's record to 25ft. 6in. In 1925, de Hart Hubbard, who is a very small negro, jumped 25ft. 10⅞in. In 1928 E. Hamm, United States, reached 25ft. 11⅛in. which was surpassed only a few months later by S. Cator, a coloured man from Haiti, who increased the figure to a jump of 26ft. ⅛in. In 1931 two amazing Japanese appeared and broke world's records: C. Nambu, long jump, 26ft. 2⅛in., and M. Oda, hop, step and jump, 51ft. 1⅛in. In 1932 Nambu, clearing 51ft. 7in., broke Oda's record. In 1935 Jesse Owens, an American negro, increased the world's long jump record to 26ft. 8¼in., and set the Olympic record at 26ft. 5·31in.

in 1936. The Japanese were small men. Up to 1936 no white athlete had succeeded in beating 26ft.

Despite Mr. Walker's opinion expressed in 1834 that an extraordinary high leaper could clear 6ft., no record can be found of any such feat ever having been accomplished until 1876, in which year M. J. Brooks (Rugby and Brasenose college, Oxford) achieved 6ft. 2½in. Even then many people refused to believe that which they had not actually seen, and the Scottish professional, Donald Dinnie, wrote to the press to show on *a priori* grounds that such an achievement was impossible. Other and even greater records followed very quickly. In 1880, P. Davin, Ireland, jumped 6ft. 2¾in., and in 1887, W. Byrd Page Jr., University of Pennsylvania, U.S.A., who stood only 5ft. 6¾in. high, cleared 6ft. 4in. G. W. Rowden, England, another small man, in 1890 jumped 6ft. 5¾in., although the record was never passed, and in 1895, M. F. Sweeney, U.S.A., achieved 6ft. 5⅝in. Sweeney's height was but 5ft. 8½in., and he has had his prototype in more recent times in R. W. Landon, Yale university, U.S.A., who in clearing 6ft. 4in., at the Antwerp Olympiad, 1920, jumped 6in. higher than the top of his own head. England has produced only one great jumper in modern times, B. Howard Baker, who jumped 6ft. 5in. in 1921. This is due to the fact that English athletes have not yet understood the fundamental principle of high jumping discovered by Sweeney. This principle is to change the position of the body from vertical to horizontal in its transit across the bar, so that no part is raised above the centre of gravity of the body. In the Sweeney style, and its variants, 6½ft. was accomplished but never exceeded. About 1912, George Horine, Leland Stanford university, U.S.A., evolved a revolutionary style which has since been widely adopted. In the Sweeney style the jumper's body lies out flat and at right angles to the bar as it is crossed, the spring having been made from the outer foot. In the Horine method, commonly called the "western roll," the athlete springs from the foot nearest to the bar, and gives the legs more momentum than the upper part of the body. Above the bar the body is flat out and parallel to the bar, over which it rolls forward. In this style Horine first cleared 6ft. 7in., to which E. Beeson, U.S.A., added ½in. a year later. But it was not until 1925 that H. M. Osborn, U.S.A., took the world's record to 6ft. 8¼in. In 1934 H. Spitz, U.S.A., using the Sweeney style, had beaten 6ft. 8in., and W. Marty, U.S.A., with the western roll, raised the world's record to 6ft. 9⅛in. In 1935 came the first of the great American negro high jumpers, all of whom use the western roll. Theadgill was said to have done 6ft. 10in. in training; C. Johnson was making his opening jumps at 6ft. 6in. in his sweat suit, and, at the U.S.A. Olympic trials, 1936, he tied with his fellow negro, D. Albritton, at the new world's record height of 6ft. 9¾in. At Berlin, 1936, Johnson made a new Olympic record of 6ft. 8in. By this time the world's record of twenty-five years back, 6ft. 7in., was considered as but little better than international standard.

The hop, step and jump is an event which, formerly, enjoyed its greatest popularity in Ireland. For many years the two Irish brothers, D. F. and T. J. Ahearne, held the world's and Olympic record, the former having accomplished 50ft. 11in. in 1911, and the latter 48ft. 11¼in. in 1908. At the Olympic games, Paris, 1924, the world's record was broken by A. W. Winter, Australia (50ft. 11 $\frac{3}{16}$ in.) while the next four men all surpassed the previous Olympic record; W. Peters, Holland, achieved (1927) 50ft. 9in., and C. Nambu, Japan, reached (1932) 51ft. 7in. The contestant first lands upon the foot from which his spring has been made, then takes a giant stride and lands upon the opposite foot, from which he makes his final jump, alighting on both feet. The records of Oda and Nambu have been given, but in the Olympics, at Berlin, in 1936, Naoto Tajima, of Japan, made a new world's and Olympic record of 52ft. 5¾in.; Masao Harada, of Japan, achieved 51ft. 4½in.; J. P. Metcalfe, of Australia, 51ft. 8⅜in.; while W. Woelnir, of Germany, also jumped more than 50ft.

(F. A. M. W.)

JUMPING BEAN, MEXICAN. The popular name of the seeds of certain Mexican shrubs, notably of the genus *Sebastiania.* A small moth, the *Carpocapsa saltitans,* infests the plant, and the movements of its larvae, spinning cocoons within the seeds, give them the familiar jumping movement.

JUMPING-HARE, a large leaping south and east African rodent, *Pedetes caffer,* typifying a family by itself, the Pedetidae. The colour of the creature is bright rufous fawn; the eyes are large; and the bristles round the muzzle very long. The front limbs are short, and the hind ones very long; and although the fore-feet have five toes, those of the hind feet are reduced to four. The bones of the lower part of the hind leg (tibia and fibula) are united for a great part of their length. The jumping-hare is found in open or mountainous districts. It is nocturnal, and dwells in composite burrows excavated and tenanted by several families. When feeding it progresses on all four legs, but if frightened takes gigantic leaps on the hind pair alone; the length of such leaps frequently reaches twenty feet. The young are generally three or four in number, and are born in the summer. It is represented by fossils in the African Lower Miocene. (*See* RODENTIA.)

(J. E. HL.)

JUMPING MOUSE, a small mouselike rodent of subfamily Zapodinae, related to the jerboas (*see* RODENTIA). They are found in North America and China and are distinguished by their hind limbs and tail, wide infraorbital foramen in the skull, grooved incisor teeth and usually four cheek-teeth in each jaw. These rodents inhabit grassy meadows and forests, but only rarely are they numerous. When disturbed they start off with great bounds, 8 to 10 feet in length, which soon diminish. The nest of grass and leaves is built underground or in a clump of shrubs a few inches above the ground. Jumping mice hibernate in the autumn. There may be three litters of three to six young in a season. *Zapus hudsonicus,* the meadow jumping mouse, is found from Hudson Bay to the mountains of North Carolina, west to Kansas. Its rather coarse pelage is yellowish brown, with a dark dorsal band. *Napaeozapus* has one less cheek-tooth in each jaw and a white-tipped tail.

(J. E. HL.)

JUMPING-SHREW, a name for the terrestrial Insectivora (*q.v.*) of the African family Macroscelididae, of which there is a number of species ranging over the African continent, representing the tree-shrews of Asia. They are small long-snouted animals, mainly nocturnal, feeding on insects, and with very long metatarsals, as an adaptation to their jumping habits. In some the muzzle is much prolonged, whence the name elephant-shrews is sometimes applied to the family.

JUNAGADH, native state of India (Western India States agency), Gujarat division of Bombay, extending inland from the southern coast of the peninsula of Kathiawar. Area, 3,337 sq.mi.; pop. (1941) 670,719; tribute to the British government and the gaekwar of Baroda, £4,100; a considerable sum is also received as tribute from minor states in Kathiawar. The chief products are cotton, millet, rice and sesame. The state is traversed by a railway from Rajkot, to the seaport of Verawal. It includes the sacred mountain of Girnar and the ruined temple of Somnath, and also the forest of Gir, the only place in India where the lion survives. Junagadh ranks as a first-class state among the many chiefships of Kathiawar, and its ruler first entered into engagements with the British in 1807. The present Nawab, born in 1900, was invested with full powers in 1920. The modern town of JUNAGADH (1941, 58,111) 60 mi. by rail S. of Rajkot, is handsomely laid out. It contains a college, a hospital, library and museum.

JUNCACEAE (rush family), a family of flowering plants belonging to the series Liliiflorae of the class Monocotyledones, containing about 800 species in seven genera, widely distributed in temperate and cold regions. The family is represented in Great Britain by the two out of the eight genera which comprise the whole family—*Juncus,* rush, and *Luzula,* wood-rush. The same two genera represent the family throughout North America. They are generally perennial herbs with a creeping underground stem and erect, unbranched, aerial stems, bearing slender leaves which are grass-like or cylindrical or reduced to membranous sheaths. The small inconspicuous flowers are generally more or less crowded in terminal or lateral clusters, the form of the inflorescence varying widely according to the manner of branching and the length of the pedicels. The flowers are her-

maphrodite and regular, with the same number and arrangement of parts as in the family Liliaceae, from which they differ in the inconspicuous membranous character of the perianth, the absence of honey or smell, and the brushlike stigmas with long papillae—adaptations to wind-pollination as contrasted with the methods of pollination by insect agency, which characterize the Liliaceae. Juncaceae are, in fact, a less elaborated group of the same series

GREAT HAIRY WOOD-RUSH

as Liliaceae, but adapted to a simpler and more uniform environment than that larger and much more highly developed family.

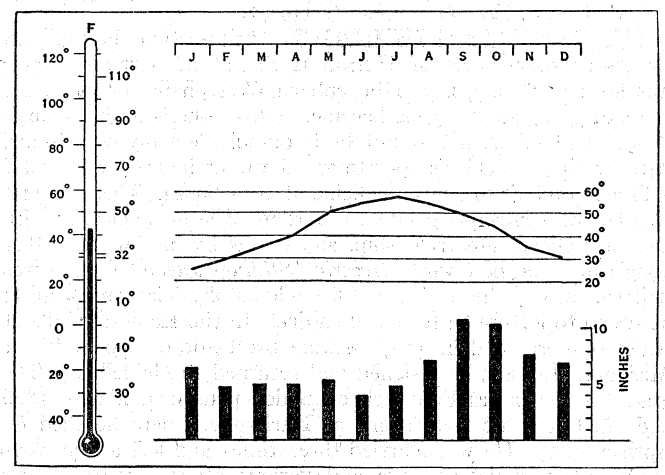
For a monographic treatment *see* F. Buchenau, *Juncaceae,* Pflanzenreich 25 (iv, 36): 1-284, fig. 1-121 (1906).

JUNCO, a genus of small American finches (Fringillidae), found from the Arctic Circle to Guatemala and Costa Rica. They are plain coloured, with ashy gray head and back, usually without streaks (back in some species rufescent or head black), plain grayish below, belly white, conspicuous white outer tail feathers, two narrow white wing-bars and usually a pink bill. They breed to the north or in mountainous regions. The commonest is the slate-coloured junco or snowbird (*J. hyemalis*) of Alaska, Canada and the Alleghenies to northern Georgia. The western junco (*J. oreganus*), darker head and breast and browner back, lives in the Rockies and coast ranges; the paler white-winged junco (*J. aikeni*) in the Black hills and nearby Wyoming and Nebraska; the gray-headed junco (*J. caniceps*), with bright reddish back, from Wyoming and Nevada to northern New Mexico and Arizona; other species range from the mountains of southern Arizona southward. (G. F. Ss.)

JUNCTION CITY, the county seat of Geary county, Kansas, U.S.A., so named because it lies between the Smoky Hill and the Republican rivers where they unite to form the Kansas; 140 mi. W. of Kansas City on federal highways 40 and 77, and state highways 18 and 57, and served by the Union Pacific and the Missouri-Kansas-Texas railroads. The pop. in 1940 was 8,507. Junction City is a division point on the Union Pacific railroad with a locomotive repair shop; is the trade centre of a stock-raising and farming area. Junction City industries are agricultural product processing plants. The Ft. Riley military reservation of 52,000 ac. adjoins the city on the northeast. This post, established in 1853, is used as the cavalry school, the cavalry replacement centre, station of the 2nd cavalry division (Camp Funston), and an air corps field (Marshall field). Adjoining the reservation (5 mi. N.E. of the city) is the site of the short-lived settlement of Pawnee, where the first territorial legislature of Kansas met (July 2–6, 1855). South of the city are a prehistoric Indian mound and the spot agreed upon as the most northerly point reached by Coronado, both marked by monuments. Junction City was founded in 1857 and incorporated in 1859.

JUNE, the sixth month in the modern calendar, consisting of 30 days. Ovid makes Juno assert that the name was expressly given in her honour, but also derives it from *iuniores,* as May had derived from *maiores,* which may be explained by the two months being dedicated respectively to youth and age. Others connect the term with the gentile name Junius, or with the consulate of Junius Brutus. In the old Latin calendar June was the fourth month, and is said to have had 30 days; but at the time of the Julian reform of the calendar its days were only 29. To these Caesar added the 30th day. The Anglo-Saxons called June "the dry month," "midsummer month," and, in contradistinction to July, "the earlier mild month." The summer solstice (*see* SOLSTICE) occurs in June.

JUNEAU, the capital city of Alaska, situated on the continental shore of Gastineau channel, 873 nautical miles from Seattle, Wash., in 58° 18′ N. and 134° 24′ W.; pop. in 1939, 5,729. In 1916 Juneau and vicinity had a population estimated at 7,000 to 8,000. The sudden and rapid decrease was due to the cave-in and consequent abandonment of the Treadwell mine on Douglas Island, across the channel, the failure of the Alaska gold mines or Gastineau property, owing to the increased cost of mining operations, making it impracticable to work the low-grade ores being produced. Besides being the seat of the territorial government, Juneau is the headquarters of the 1st division of the district court of Alaska, and of all federal activities in the territory. The climate of Juneau is temperate, with considerable rainfall. July is the warmest month, with an average of 57.6° above zero, and January the coldest, with an average of 27.3° above. Only 53 days of zero weather, or below, have been recorded in 33 years, the coldest of these being −15°. The principal industry is mining, now limited to one enterprise, the Alaska-



GRAPH OF THE AVERAGE TEMPERATURE IN JUNEAU, ALASKA

The mercury in the thermometer stands at the normal annual mean temperature. The curve shows the normal monthly mean temperature through the year. The columns below indicate the normal precipitation for each month. Temperatures are given in degrees Fahrenheit

Juneau gold mine. The federal and territorial pay rolls are, however, larger than those of the mine, and government service is the city's chief economic mainstay. (W. P. R.; X.)

JUNEBERRY, the name given in North America to several species of shrubs and small trees of the genus *Amelanchier,* which produce sweet edible fruits; called also serviceberry, sugarberry and shadbush. Botanically the genus belongs to the rose family (Rosaceae) and is closely allied to the apple. The dwarf Juneberry (*A. alnifolia pumila*), found from western Ontario to British Columbia and south to Michigan, New Mexico and California, is a small shrub, sometimes 10 ft. high, bearing thick roundish leaves, coarsely toothed around the blunt outer end, and

white flowers in terminal clusters which appear very early in the spring. The dark-purple, very sweet fruit, about ⅓ in. in diameter, was extensively eaten, both fresh and dried, by explorers and trappers in pioneer days and also by the Indians. A few choice varieties with larger fruits are in cultivation. Among closely related species in the eastern United States and Canada are the downy-leaved serviceberry or shadbush (*A. canadensis*), a tree 30 to 40 ft. high, with the leaves white-woolly when young and rather dry tasteless fruit, and the smooth-leaved serviceberry or Juneberry (*A. laevis*), a similar tree, with the foliage purplish-bronze or light-green when young, and the fruit dark-purple, sweet and juicy. All these are sparingly planted as ornamentals.

JUNG, CARL (1875–), Swiss psychologist, was born on July 26, 1875, at Basle. He was a disciple of Freud until 1911, when he founded with Maeder a new school at Zurich. The main points in Jung's system, which he prefers to call analytical psychology rather than psycho-analysis, are his subtle working-out of his classification of man into introverted and extroverted types, his distinction of the four primary functions of mind as thinking, feeling, sensation and intuition, his rejection of Freud's theory of the sexual aetiology of the psychoneurosis and his emphasis on the creative impulse in man. In his attempt at a synthetic psychology, he draws attention to the possibilities of co-operation between the conscious and the unconscious, the latter being for him that part of the mind which is undeveloped rather than repressed, and which includes both the personal factor and the collective factor or disposition inherited from ancestors.

Jung's chief works are: *Diagnostische Assoziationsstudien* (1906; 2nd ed., 1910); *Psychologie der Dementia praecox* (1907); *Wandlungen und Symbole der Libido* (1912; 2nd ed., 1925; Eng. trans. as *Psych. of the Unconscious,* 1916 and 1921); *Das Unbewusste im normalen und kranken Seelenleben* (1917; 3rd ed., 1926); *Collected Papers on Analytical Psychology* (Eng. trans., 1916 and 1917); *Studies in Word Association* (Eng. trans., 1918); *Psychologische Typen* (1921; 2nd ed., 1925; Eng. trans., 1923); and *Psychology and Religion* (1938).

See J. H. van der Hoop, *Character and the Unconscious; a critical Exposition of the Psychology of Freud and of Jung* (1923) and J. Corrie, *A.B.C. of Jung's Psychology* (1927).

JUNG, JOHANN HEINRICH (1740–1817), best known by his assumed name of HEINRICH STILLING, German author, was born at Grund, near Hilchenbach, Westphalia, on Sept. 12, 1740, of poor parents. Jung became, by his father's desire, schoolmaster and tailor, but found both pursuits equally wearisome. After various teaching appointments he went in 1768 with "half a French dollar" to study medicine at Strasbourg. There he met Goethe, who introduced him to Herder. The acquaintance with Goethe ripened into friendship, and it was by his influence that Jung's first and best work, *Heinrich Stillings Jugend* (1777) was written. In 1772 he settled at Elberfeld as physician and oculist; he began to lecture on technical subjects in the Kameralschule at Kaiserslautern, and in 1787 became professor of economics at Marburg. In 1803 he resigned and returned to Heidelberg. The grand duke Charles Frederick of Baden pensioned him in 1806 and his last years were spent at Karlsruhe, where he died on April 2, 1817. He was married three times and left a numerous family. His pietistic novels and various other mystical works had considerable influence in their day. But Stilling lives in the autobiography and in the charming picture of him in Goethe's *Dichtung und Wahrheit.*

A complete edition of Jung's works was published at Stuttgart (14 vols., 1835–38). His *Briefe* were published in 1905. There are English translations by Sam Jackson of the *Leben* (1835), of the *Theorie der Geisterkunde* (London, 1834, and New York, 1851); and of *Theobald, or the Fanatic,* a religious romance, by the Rev. Sam. Schaeffer (1846).

See biographies by F. W. Bodemann (1868), J. v. Ewald (1817), R. Peterson (1890), and a critical estimate by G. Stecher, *Jung-Stilling als Schriftsteller* (1913).

JUNG BAHADUR, SIR, MAHARAJA (1816–1877), prime minister of Nepal, was a grand-nephew of Bhimsena Thapa, the famous military minister of Nepal, who from 1804 to 1839 was *de facto* ruler of the state under the rani Tripuri and her successor. Bhimsena's supremacy was threatened by the Kala Pandry, and many of his relations, including Jung Bahadur, went into exile in 1838, thus escaping Bhimsena's fate. The Pandry leaders were in turn assassinated in 1843, and Matabar Singh, uncle of Jung Bahadur, was created prime minister. He appointed his nephew general and chief judge, but shortly afterwards he was himself put to death. Fateh Jung thereon formed a ministry, of which Jung Bahadur was made military member. In the following year, 1846, Fateh Jung and thirty-two other chiefs were assassinated, and the rani appointed Jung Bahadur sole minister. The rani quickly changed her mind, and planned the death of her new minister, who at once appealed to the maharaja. But the plot failed. The raja and the rani wisely sought safety in India, and Jung Bahadur firmly established his own position by the removal of all dangerous rivals. In 1850–51 he was in England. The reform of the penal code, and a desultory war with Tibet, occupied his attention until news of the Indian Mutiny reached Nepal. Jung Bahadur resisted all overtures from the rebels, and sent a column to Gorakpur in July 1857. In December he furnished a force of 8,000 Gurkhas, which reached Lucknow on March 11, 1858, and took part in the siege. The moral support of the Nepalese was exceedingly valuable. Jung Bahadur was made a G.C.B., and a tract of country annexed in 1815 was restored to Nepal. He received a visit from the Prince of Wales in 1876. On Feb. 25, 1877 he died. Three of his widows immolated themselves on his funeral pyre.

JUNG-BUNZLAU: *see* MLADÁ BOLESLAV.

JUNGFRAU, a well-known Swiss mountain (13,669 ft.), admirably seen from Interlaken. It rises on the frontier between the cantons of Bern and of the Valais, and is in the Bernese Oberland, two peaks of which (the Finsteraarhorn, 14,026 ft., and the Aletschhorn, 13,721 ft.) surpass it in height. It was first ascended in 1811 by the brothers Meyer, by the eastern or Valais side. It was not till 1865 that Sir George Young and the Rev. H. B. George made the first ascent from the west or Interlaken side. In 1927 an ascent was made by two guides on the south side from the Rotta. A railway (planned to reach the summit), the highest in Europe, was constructed between 1896 and 1912 to the Jungfraujoch (11,340 ft.) from Scheidegg. The line passes by a tunnel (4.4 mi. long) through the Eiger and Mönch to the Jungfrau. A hotel was built in 1925 near the upper terminus of the railway.

JUNGLE, an Anglo-Indian term for a forest, a tangled wilderness. The Hindustani word *jangal* means waste, uncultivated ground, which tends to become covered with trees or long grass.

JUNGLE FOWL, the name usually applied to wild members of the genus *Gallus,* from which our domestic fowls are derived. The four species are described in detail under FOWL.

JUNIATA, a former borough of Blair county, Pennsylvania, U.S.A., in the heart of the Allegheny mountains, on the Pennsylvania railroad. It was annexed to the city of Altoona (*q.v.*) in 1929. The Pennsylvania railroad has immense shops in this section of Altoona and there are silk and planing mills.

The borough of Juniata was settled about 1880 and was incorporated in 1893.

JUNÍN, a *sierra* department of central Peru, bounded on the north by Huánuco, east by Loreto and Cusco, south by Huancavelica and Ayacucho and west by Lima. Area, 22,814 sq.mi.; population (1940) 500,161. It includes *sierra* and forested eastern slopes of cordillera with their deep valleys (*see* PERU: *Sierra*). Most of the department consists of a desolate plain (Pampa of Junín) at a height of more than 13,000 ft., across which flows the Río Perené from its source in Lake Junín. The climate is raw and cold. On account of railway communication with the coast, Junín is the centre of mining developments and of the scientific livestock industry. Formerly noted for silver, copper now leads in mineral production (*see* CERRO DE PASCO) with vanadium (Minasragra), gold, silver, lead, zinc, bismuth, coal and other mines in active operation. Most of the mines are owned and operated by foreign interests. Agricultural products of the *sierra* include potatoes, cereals and livestock; the eastern valleys raise coffee, sugar, cacao, coca, fruits and other tropical crops.

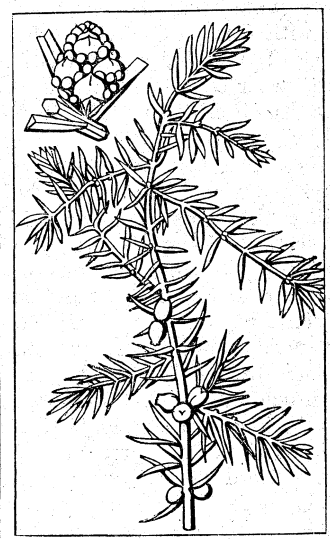
The Central railway from Callao runs south from Oroya to Huancayo and beyond, while a private line connects at Oroya for Cerro de Pasco, with branches to other mining centres. The department is crossed from north to south by a highway which runs from the department of Huánuco to the department of Huancavelica via such places as Cerro de Pasco, important mining centre and former capital of the department, Oroya, rail centre and site of important smelter and hydroelectric plants, Tarma, in the agriculturally productive Chancamayo valley, Jauja (11,000 ft.), a natural health resort for tubercular patients and Huancayo, capital (since 1931) of the department of Junín. Spurs of this highway lead to Lima, the eastern valleys of the *montaña* and to many other parts of the department. The Carnegie Magnetic observatory is in Junín a few miles south of Huancayo at a point which lies approximately on the earth's magnetic equator.

JUNIOR LEAGUES OF AMERICA, THE ASSOCIATION OF THE, is an organization of Junior leagues dedicated to the purpose of the "continued education of the members for intelligent citizen participation in shaping social programs, and participation of the League in activities adapted to community needs." The nucleus of the present association was the Junior League of the City of New York, organized in 1901. The first general conference was held in 1912 with seven existing leagues in attendance. In 1921 the 39 leagues then existing were organized into the present association. In 1940 there were 150 leagues with a total individual membership of 35,000 engaged in training volunteers for community service in welfare, children's theatre and civic arts programs. Association headquarters are maintained at the Waldorf-Astoria, New York city, where a professional staff gives advice on techniques in the three fields of activity. Lecture courses for provisional members and institutes for training members for specific work are conducted by the association's field representatives. The majority of leagues maintain some type of welfare work. Such projects may be financed by the leagues, or by the Community Chest and administered by the leagues. The official organ is the *Junior League Magazine.*

JUNIPER. The junipers, of which there are about 40 species, are aromatic, evergreen bushy shrubs or low columnar trees of the cedar family (*Cupressaceae*). They occur widespread throughout the cooler regions of the northern hemisphere but attain their maximum development in the Mediterranean region, the North Atlantic islands and the eastern United States. The leaves are usually articulated at the base, spreading, sharp-pointed and needle-like in form, destitute of oil-glands and arranged in pairs or in whorls of three. In some forms, however, the leaves are minute and scale-like, closely adhering to the branches, the apex only being free, and furnished with an oil-gland on the back. Sometimes the same plant produces both kinds of leaves on different branches, or the young plants produce acicular leaves, while those of the older plants are scale-like. The staminate and carpellate cones are usually produced on separate plants. The mature cone is fleshy, with the succulent scales fused together to form a berry-like structure. The berries are red or purple in colour, varying in size from $\frac{1}{8}$ in. to $\frac{1}{2}$ in. in diameter. They thus differ considerably from the cones of other conifers. The seeds are usually three in number, sometimes fewer (1), rarely more (8), and are marked with large glands containing oil. The genus occurs in a fossil state, four species having been described from Tertiary rocks.

The savin, *Juniperus sabina,* abundant on the mountains of central Europe, is an irregularly spreading much-branched shrub with scale-like glandular leaves and emitting a disagreeable odour when bruised. The plant is poisonous, acting as a powerful local and general stimulant, diaphoretic, emmenagogue and anthelmintic; it was formerly employed both internally and externally. The Bermuda redcedar, *J. bermudiana,* a tree about 49 or 50 ft. in height, yields a fragrant red wood, which was used for the manufacture of "cedar" pencils. The tree is still abundant in Bermuda, but the eastern redcedar, *J. virginiana,* of North America is employed instead for pencils and is also used for clothes chests, interior finish, fence posts and telegraph poles. The eastern redcedar, which is native to dry soil from Nova Scotia to North Dakota and south to Georgia and Texas, sometimes attains a height of 100 ft. and a trunk diameter of 5 ft., though usually it is much smaller. The galls produced at the ends of the branches have been used in medicine, and the wood yields cedar-camphor and oil of cedar-wood. *J. thurifera* is the incense-juniper of Spain and Portugal, and *J. phoenicea* from the Mediterranean district is stated by Loudon to have been burned as incense.

The common juniper, *J. communis,* is a very widely distributed circumpolar plant, occurring in the whole of northern Europe, central and northern Asia to Kamchatka, and east and west North America. It grows at considerable elevations in southern Europe, in the Alps, Apennines, Pyrenees and Sierra Nevada (4,000–8,000 ft.). It also grows in Asia Minor, Iran, and at great elevations on the Himalayas. In Great Britain it is usually a shrub with spreading branches, less frequently a low tree. The common juniper is official in the British pharmacopoeia and in that of the United States, yielding the oil of juniper, a powerful diuretic, distilled from the unripe fruits. The wood is very aromatic and is used for ornamental purposes. In Lapland the bark is made into ropes. The fruits are used for flavouring gin (a name derived from *juniper,* through Fr. *genièvre*). *J. oxycedrus,* from the Mediterranean district and Madeira, yields cedar-oil which is official in most of the European pharmacopoeias. This oil is used largely in microscopical work for "clearing" sections, etc.



BY COURTESY OF THE ROYAL BOTANIC GARDENS
JUNIPER (JUNIPERUS COMMUNIS). STAMINATE CONE SHOWN IN UPPER LEFT CORNER

Juniperus drupacea of Asia Minor has large and edible fruits; they are known in the east by the name *habhel.*

In North America about 15 native species of juniper occur, inclusive of the eastern redcedar and the common juniper. Among these are the Rocky Mountain juniper (*J. scopulorum*), which extends from the central Rocky mountains northwestward to British Columbia; the California juniper (*J. californica*), with reddish fruit, eaten by the Indians; the Mexican juniper (*J. mexicana*) of Texas and Mexico, with brown wood; the Sierra juniper (*J. occidentalis*) of the Pacific states; the alligator juniper (*J. pachyphloea*) of the southern Rockies, with a distinctly checkered trunk; the creeping juniper (*J. horizontalis*), found from Nova Scotia to British Columbia, with prostrate branches and the rare drooping juniper (*J. flaccida*) of the Mexican border, with weeping branches.

Many junipers are extensively grown as ornamentals, especially varieties of the savin, the common juniper and the eastern redcedar. (E. S. Hr.)

JUNÍPERO SERRA, MIGUEL JOSÉ: *see* SERRA JUNÍPERO, MIGUEL JOSÉ.

JUNIUS, the pseudonym of a writer who contributed a series of letters to the London *Public Advertiser,* from Jan. 21, 1769, to Jan. 21, 1772. The signature had been already used by him in a letter of Nov. 21, 1768, which he did not include in his collection of the *Letters of Junius* published in 1772. The name was chosen in all probability because he had already signed "Lucius" and "Brutus," and wished to exhaust the name of Lucius Junius Brutus the Roman patriot. Whoever the writer was, he wrote under other pseudonyms before, during and after the period between Jan. 1769 and Jan. 1772. He acknowledged that he had written as "Philo-Junius," and there is evidence that he was identical with "Veteran," "Nemesis" and other anonymous

correspondents of the *Public Advertiser*.

There is a marked distinction between the "letters of Junius" and his so-called miscellaneous letters. The second deal with a variety of subjects, some of a purely personal character, as for instance the alleged injustice of Viscount Barrington, the secretary at war, to the officials of his department. But the "letters of Junius" had a definite object—to discredit the ministry of the duke of Grafton. This administration had been formed in Oct. 1768, when the earl of Chatham was compelled by ill health to retire from office, and was a reconstruction of his cabinet of July 1766. Junius fought for the return to power of Chatham, who had recovered and was not on good terms with his successors. He communicated with Chatham, with George Grenville, with Wilkes, all enemies of the duke of Grafton, and also with Henry Sampson Woodfall, printer and part owner of the *Public Advertiser*. This private correspondence has been preserved. It is written in the disguised hand used by Junius.

The letters are of interest on three grounds—their political significance, their style, and the mystery which long surrounded their authorship. As political writings they possess no intrinsic value. Their matter is always invective. Junius began by a general attack on the ministry for their personal immorality or meanness. He then went on to pour acrimonious abuse on Grafton, on the duke of Bedford, on King George III himself in the letter of Dec. 19, 1769, and ended with a most malignant and ignorant assault on Lord Chief Justice Mansfield. The practical effect of the letters was insignificant. They provoked anger and retorts. But the letter to the king aroused indignation, and though Grafton's administration fell in Jan. 1770, it was succeeded by the long-lived cabinet of Lord North. Junius confessed himself beaten, in his private letter to Woodfall of Jan. 19, 1773. He had materially contributed to his own defeat by his brutal violence. He sinned indeed in a large company. The employment of personal abuse had been habitual in English political controversy for generations.

If, however, Junius was doing what others did, he did it better than anybody else—a fact which sufficiently explains his rapid popularity. His superiority lay in his style. At his best Junius attains to a high degree of artificial elegance and vigour. He shows the influence of Bolingbroke, of Swift and above all of Tacitus, who appears to have been his favourite author. The imitation is never slavish. Junius adapts, and does not only repeat. The white heat of his malignity animates the whole.

The pre-established harmony between Junius and his readers accounts for the rapidity of his success, and for the importance attributed to him by Burke and Johnson, far better writers than himself. Before 1772 there appeared at least 12 unauthorized republications of his letters, made by speculative printers. In that year he revised the collection named *"Junius: Stat nominis umbra,"* with a dedication to the English people and a preface. Other independent editions followed in quick succession. Junius himself had been early aware of the advantage he secured by concealment. "The mystery of Junius increases his importance" is his confession in a letter to Wilkes dated Sept. 18, 1771. The calculation was a sound one. For two generations after the appearance of the letter of Jan. 21, 1769, speculations as to the authorship of Junius were rife, and discussion had hardly ceased in 1929. Joseph Parkes, author with Herman Merivale of the *Memoirs of Sir Philip Francis* (1867), gives a list of more than 40 persons who had been supposed to be Junius.

The more plausible of these claims, such as those made for Lord Temple and Lord George Sackville, could not stand the test of examination. Indeed after 1816 the question was not so much "Who wrote Junius?" as "Was Junius Sir Philip Francis, or some undiscoverable man?" In that year John Taylor was led by a careful study of Woodfall's edition of 1812 to publish *The identity of Junius with a distinguished living character established,* in which he claimed the letters for Sir Philip Francis. He had at first been inclined to attribute them to Sir Philip's father, Dr. Francis, the author of translations of Horace and Demosthenes. Taylor applied to Sir Philip, who did not die till 1818, for leave to publish, and received from him answers which to an unwary person might appear to constitute denials of the authorship, but were in fact evasions.

The reasons for believing that Sir Philip Francis (*q.v.*) was Junius are very strong. His evasions were only to be expected. Several of the men he attacked lived nearly as long as himself, the sons of others were conspicuous in society, and King George III survived him. Sir Philip, who had held office, who had been decorated, and who in his later years was ambitious to obtain the governor-generalship of India, dared not confess that he was Junius. The similarity of his handwriting to the disguised hand used by the writer of the letters is very close. If Sir Philip Francis did, as his family maintain, address a copy of verses to a Miss Giles in the handwriting of Junius (and the evidence that he did is weighty) there can be little further question as to the identity of the two. The similarity of Junius and Francis in regard to their opinions, their likes and dislikes, their knowledge and their known movements, amount, apart from the handwriting, almost to proof. It is certain that many felons have been condemned on circumstantial evidence less complete.

BIBLIOGRAPHY.—The best edition of the *Letters of Junius,* properly so-called, with the *Miscellaneous Letters,* is that of J. Ward (1854). The most valuable contributions to the controversy as to the authorship are: *The Handwriting of Junius investigated by Charles Chabot, expert, with preface and collateral evidence by the Hon. E. Twisleton* (1871); *Memoirs of Sir Philip Francis, K.C.B.,* by Parkes and Merivale (1867); *Junius Revealed by his Surviving Grandson,* by H. R. Francis (1894); *The Francis Letters,* edit. by Beata Francis and Eliza Keary, with a note on the Junius controversy by C. F. Keary (1901); and "Francis, Sir Philip," by Sir Leslie Stephen, in *Dict. of Nat. Biog.* The case for those who decline to accept the claim of Sir Philip Francis is stated by C. W. Dilke, *Papers of a Critic* (1875); Abraham Hayward, *More about Junius, Franciscan Theory Unsound* (1868); and C. W. Everett, *The Letters of Junius* (1927), in which a claim is put in for Lord Shelburne. (D. H.; X.)

JUNIUS, FRANZ, (1545–1602), French Huguenot divine, born at Bourges, studied at Geneva and was professor at Heidelberg and at Leiden, where he died on Oct. 13, 1602. He was a voluminous writer on theological subjects, and translated and composed many exegetical works. He is best known from his own edition of the Latin Old Testament, with a version of the New Testament added (Geneva, 1590; Hanover, 1624).

The *Opera Theologica Francisci Junii Biturigis* were published at Geneva (2 vols., 1613), to which is prefixed his autobiography, written about 1592 (new ed., by A. Kuypers, 1882, *seq.*).

JUNIUS, FRANZ (1589–1677), son of the above, who prepared the first edition of the Gothic Codex of Ulfilas, was born at Heidelberg, and brought up at Leiden. In 1617 he became pastor at Hillegondsberg, but in 1620 went to England, where he became librarian to Thomas Howard, earl of Arundel, and tutor to his son. He remained in England thirty years, devoting himself to the study of Anglo-Saxon and afterwards of the cognate old Teutonic languages. In 1651 he returned to Holland and for two years lived in Friesland in order to study the old dialect. In 1675 he returned to England and died in the house of his nephew, Isaac Vossius, on Nov. 19, 1677. He was buried at Windsor in St. George's chapel.

Junius published *De pictura veterum* (1637), (in English by the author, 1638; enlarged and improved edition by J. G. Graevius, who prefixed a life of Junius, with a catalogue of architects, painters, etc., and their works, Rotterdam, 1694); *Observationes in Willerami Abbatis francicam paraphrasin cantici canticorum* (Amsterdam, 1655); *Annotationes in harmoniam latino-francicam quatuor evangelistarum, latine a Tatiano confectam* (Amsterdam, 1655); *Caedmonis monachi paraphrasis poetica geneseos* (Amsterdam, 1655) (*see* criticism under CAEDMON); *Quatuor D.N.I.C. evangeliorum versiones perantiquae duae, gothica scilicet et anglo-saxonica* (Dort, 2 vols., 1665) (the Gothic version in this book Junius transcribed from the Silver Codex of Ulfilas; the Anglo-Saxon version is from an edition by Thomas Marshall, whose notes to both versions are given, and a Gothic glossary by Junius); *Etymologicum anglicanum,* ed. by Edward Lye, and preceded by a life of Junius and George Hickes's Anglo-Saxon grammar (1743) (its results require careful verification in the light of modern research). His rich collection of ancient mss., edited and annotated by him, Junius bequeathed to Oxford. Graevius gives a list of them.

JUNK. (1) The name of the native sailing vessel, common to the far eastern seas, and especially used by the Chinese and Javanese. It is a flat-bottomed, high-sterned vessel with square bows and masts carrying lugsails, often made of matting; (2) a nautical term for small pieces of disused rope or cable, cut up to

make fenders, oakum, etc., hence applied colloquially by sailors to the salt beef and pork used on board ship. The word is of doubtful origin; (3) junk has also passed into modern American usage as an expressive term for trash, rubbish and discarded material. A junk dealer is one who buys and sells scrap metal.

JUNKER, WILHELM (1840–1892), German explorer of Africa, was born at Moscow on April 6, 1840. He studied medicine at Dorpat, Göttingen, Berlin and Prague, but did not practise for long. After a series of short journeys to Iceland, Tunis and Lower Egypt, he remained almost continuously in eastern Equatorial Africa from 1875 to 1886. The result of his travels is given in his *Reisen in Afrika* (3 vols., Vienna, 1889–1891, Eng. edit. 1890–2). Perhaps the greatest service he rendered to geographical science was his investigation of the Nile-Congo watershed, when he established the identity of the Welle and Ubangi. The Mahdist rising prevented his return to Europe through the Sudan, as he had planned, and an expedition, fitted out in 1885 by his brother in St. Petersburg, failed to reach him. Junker then determined to go south. Leaving Wadelai on Jan. 2, 1886 he travelled by way of Uganda and Tabora and reached Zanzibar in Dec. 1886. Junker's ethnographical observations in the Niam-Niam (Azandeh) country are especially valuable. He died at St. Petersburg on Feb. 13, 1892.

See the biographical notice by E. G. Ravenstein in *Proceedings of the Royal Geographical Society* (1892), pp. 185–187.

JUNO, the chief Roman and Latin goddess, and the special object of worship by women at all the critical moments of life. Two etymologies have been proposed, (1) from *Iovino,* from same root as *Iup-piter, Iovis;* but it does not appear that in early cult she is associated with Jupiter; (2) connected with *Iuvenis,* hence "young marriageable woman."

That Juno was especially a deity of women, and represents in a sense the female principle of life, is seen in the fact that as every man had his genius, so every woman had her Juno; and the goddess herself may have been a development of this conception. The various forms of her cult all show her in close connection with women. As *Iuno Lucina* she was invoked in time of childbirth, and on March 1, the old Roman New Year's Day, the matrons met and made offerings at her temple in a grove on the Esquiline; hence the day was known as the *Matronalia.* As *Caprotina* she was especially worshipped by female slaves on July 7 (*Nonae Caprotinae*); as *Sospita* she was invoked all over Latium as the saviour of women in their perils, and later as the saviour of the State; and under a number of other titles, *Cinxia, Unxia, Pronuba,* etc., we find her taking a leading part in the ritual of marriage. Her connection with the moon (*Iuno Covella*) is explained by the alleged influence of the moon on the lives of women; thus she became the deity of the Kalends, or day of the new moon, when the wife of the *rex sacrorum* offered a lamb to her in the *regia,* and her husband made known to the people the day on which the Nones would fall. Thus she is brought into close relation with Janus, who also was worshipped on the Kalends by the *rex sacrorum,* and it may be that in the oldest Roman religion these two were closely connected. But in historical times she was associated with Jupiter in the great temple on the Capitoline hill as *Iuno Regina,* the queen of all Junones or queen of heaven, as Jupiter (*q.v.*) there was *Optimus Maximus,* and under the same title she was enticed from Veii after its capture in 392 B.C., and settled in a temple on the Aventine. She thus was identified with Hera (*q.v.*).

BIBLIOGRAPHY.—*See* Roscher, *Juno und Hera,* and in his *Lexikon, s.v.:* Wissowa, *Religion und Kultur der Römer* (181 *et seq.*); Walter Otto in *Philologus* (1905) (p. 161 *et seq.*).

JUNOT, ANDACHE, DUC D'ABRANTES (1771–1813), French general, born at Bussy-le-Grand (Côte d'Or), on Oct. 23, 1771. He became secretary to Napoleon during the siege of Toulon, accompanied him to Italy as aide-de-camp, became general of brigade during the expedition to Egypt, and, on his return to France, fought a duel on Napoleon's behalf, and was made commandant of Paris. He was promoted general of division, and married Laure Permon (*see* JUNOT, LAURE), and became a considerable figure in society. He received various appointments, on account of his early devotion to Napoleon, but his uncertain temperament made it dangerous to employ him at court or headquarters. In 1807 he was given command of the force for the invasion of Portugal. Early in November he set out from Salamanca, crossed the mountains of Beira, rallied his wearied forces at Abrantes, and, with 1,500 men, dashed upon Lisbon, but failed to seize the Portuguese fleet, which had just sailed away with the regent and court to Brazil. The whole movement only took a month; it was undoubtedly bold and well-conducted, and Junot was made duke of Abrantes and invested with the governorship of Portugal. But administration was his weak point. He was not a civil governor, but a *sabreur,* brave, truculent, and also dissipated and rapacious. After Wellesley encountered him at Vimiera (*see* PENINSULAR WAR) he was obliged to conclude the so-called convention of Cintra, and to withdraw his forces from Portugal. Junot was sent back to Spain, where, acting under Masséna (1810–11) he was once more seriously wounded. His last campaign was made in Russia, and he received more than a just share of discredit for it. Napoleon next appointed him to govern Illyria. But Junot's mind had become deranged under the weight of his misfortunes, and on July 29, 1813, at Montbard, he threw himself from a window in a fit of insanity.

JUNOT, LAURE, DUCHESS OF ABRANTES (1783–1834), wife of the preceding, was born at Montpellier. She was the daughter of Mme. Permon, to whom during her widowhood the young Bonaparte made an offer of marriage—such at least is the version presented by the daughter in her celebrated *Memoirs.* The Permon family, after various vicissitudes, settled at Paris, and Bonaparte frequented their house a good deal after the downfall of the Jacobin party in Thermidor 1794. Mlle. Permon was married to Junot early in the consulate. The first consul nicknamed her *petite peste,* but treated her and Junot with the utmost generosity, a fact which did not restrain her sarcasms and slanders in her portrayal of him in her *Memoirs.* Her own and her husband's extravagance threatened her with ruin; this perhaps explains why she took some part in the intrigues for bringing back the Bourbons in 1814. She did not side with Napoleon during the Hundred Days. After 1815 she lived chiefly in Rome, where she compiled her spirited but somewhat spiteful *Mémoires* (Paris, 18 vols., 1831–34).

Of her other books the most noteworthy are *Histoires contemporaines* (2 vols., 1835); *Scènes de la vie espagnole* (2 vols., 1836); *Histoire des salons de Paris* (6 vols., 1837–38); *Souvenirs d'une ambassade et d'un séjour en Espagne et en Portugal, de 1808 à 1811* (2 vols., 1837).

JUNTA, a Spanish word originally meaning a meeting (*juntar,* "to join") but also used, and now almost exclusively, in the sense of (1) a committee, or (2) an administrative council or board.

The superior governing body of the Inquisition was the *junta suprema.* The provincial committees formed to organize resistance to Napoleon's invasion in 1808 were so called, and so was the general committee chosen from among them to represent the nation. In all subsequent civil wars or revolutionary disturbances in Spain or Spanish America, similar bodies, elected or self-chosen, have been known as juntas.

The corrupted form "junto," came into use in English in the 17th century, often in a disparaging sense, of a party united for a political purpose, a faction or cabal. It was particularly applied to the advisers of Charles I., and to the Whigs who controlled the Government in the reign of William III. The name junta is also given to the small group of officials who reorganized British trade unionism after about 1850.

JUPITER, in Latin IUPPITER, DIESPITER or IOVIS, the chief Roman and Italian god; like Zeus, with whom he is etymologically identical (root *diu,* "bright") he was a sky god. One of his most ancient epithets is *Lucetius,* the light-bringer; and later literature has preserved the same idea in such phrases as *sub Iove,* under the open sky. All days of the full moon (*idus*) were sacred to him; as Jupiter *Elicius* he was propitiated with a peculiar ritual, to send rain in time of drought; as *Fulgur* he had an altar in the Campus Martius, and all places struck by lightning were made his property and guarded from the profane by a circular wall. The vintage, which needs especially the light and heat of the sun, was under his particular care, and in the festivals (*Vinalia*) con-

nected with it he was the deity invoked, and his flamen the priest employed.

Throughout Italy we find him worshipped on the summits of hills; thus on the Alban hill south of Rome was an ancient seat of his worship as Jupiter *Latiaris,* which was the centre of the league of 30 Latin cities of which Rome was originally an ordinary member. At Rome itself on the Capitoline hill we find his oldest temple, described by Livy (i. 10); here we have a tradition of his sacred tree, the oak, common to the worship both of Zeus and Jupiter, and here, too, were kept the *lapides silices,* perhaps celts, believed to have been thunderbolts, which were used symbolically by the *fetiales* when officially declaring war or making treaties on behalf of the Roman state. Hence the curious form of oath, *Iovem lapidem iurare,* used at Rome, both in public and private life. (*See* H. J. Rose, *Roman Questions,* p. 75; *Primitive Culture in Italy,* p. 45.)

In Jupiter we undoubtedly see not only the great protecting deity of the race, but one, and perhaps the only one, whose worship embodies a distinct moral conception. He is specially concerned with oaths, treaties and leagues, and it was in the presence of his priest that the most ancient and sacred form of marriage (*confarreatio*) took place. The lesser deities, Dius Fidius and Fides, were, perhaps, originally identical, certainly connected, with him. This connexion with the conscience, with the sense of obligation and right dealing, was never quite lost throughout Roman history. In Virgil's great poem, though Jupiter is in many ways as much Greek as Roman, he is still the great protecting deity who keeps the hero in the path of duty (*pietas*) towards gods, State and family.

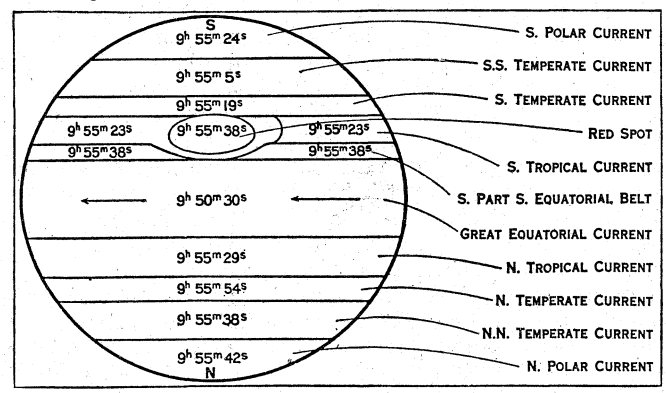
But this aspect of Jupiter gained a new force and meaning at the close of the monarchy with the building of the famous temple on the Capitol, of which the foundations are still to be seen. It was dedicated to *Iuppiter Optimus Maximus; i.e.,* the best and greatest of all the Jupiters, and with him were associated Juno and Minerva, in a fashion which clearly indicates a Graeco-Etruscan origin; for the combination of three deities in one temple was foreign to the ancient Roman religion, while it is found both in Greece and Etruria. Its dedication festival fell on Sept. 13, on which day the consuls originally succeeded to office, accompanied by the senate and other magistrates and priests, and, in fulfilment of a vow made by their predecessors, they offered to the great god a white ox, his favourite sacrifice, and after rendering thanks for the preservation of the State during the past year, made the same vow as that by which their predecessors had been bound. Then followed the *epulum Iovis* or feast of Jupiter, in which the three deities seem to have been visibly present in the form of their statues, Jupiter having a couch and each goddess a *sella,* and to have shared the meal with Senate and magistrates. In later times this day became the central point of the great Roman games (*ludi Romani*), originally games vowed in honour of the god if he brought a war to a successful issue. When a victorious army returned home the triumphal procession passed to this temple. (*See* TRIUMPH.)

Throughout the Republic this remained the central Roman cult, and although Augustus's new foundations (Apollo Palatinus and Mars Ultor) were in some sense its rivals, that emperor was far too shrewd to attempt to oust *Iuppiter Optimus Maximus* from his paramount position; he became the protecting deity of the reigning emperor as representing the State, as he had been the protecting deity of the free republic. His worship spread over the whole empire; a Capitol modelled on that of Rome was a feature of numerous important towns (*e.g.,* Ostia), and the fact that the Romans chose the name of Jupiter, in almost every case, by which to indicate the chief deity of the subject peoples, proves that they continued to regard him, so long as his worship existed at all, as the god whom they themselves looked upon as greatest.

See ZEUS, ROMAN RELIGION, also G. Wissowa, *Religion und Kultus,* p. 113, et seq.; articles "Iuppiter" in Roscher's *Lexikon* and Pauly-Wissowa, *Realencyklopädie,* s.v.

JUPITER, in astronomy, the largest of the planets, and with the exception of Mars the most interesting of all for telescopic study. It revolves round the sun at a mean distance of about 5·2 times that of the earth, or 483,000,000 miles; and since its equatorial diameter is about 88,700 miles it presents a disc which at opposition attains an apparent diameter of from 44 to 50 seconds of arc. The planet requires 4,333 days (11·86 years) to complete a sidereal revolution, and its synodical period, or the mean interval between successive oppositions, is 399 days. To the naked eye Jupiter shines with a lustre second only to that of Venus among the planets and under favourable circumstances it is bright enough to cast a shadow. Its albedo is high, viz., 0·44, which means that it reflects 44% of the sunlight falling upon it. Its stellar magnitude at opposition ranges from −2·1 to −2·5. When viewed telescopically the disc of the planet is seen at once to be not circular but considerably flattened at the poles. The amount of this flattening has been determined by micrometrical measurements and theoretically, by H. Struve, from the perturbations of the satellites by the equatorial protuberance of the planet. The probable value is not far from $\frac{1}{15.4}$. The mass of the planet, taking that of the earth as the unit, is nearly 320, and since its volume is over 1,300 times that of the earth its mean density must be rather less than one quarter as great, or 1·3 times that of water.

Surface Features: Belts and Zones.—A quite small telescope will show that the disc of the planet is marked by parallel dark streaks or "belts" separated by bright spaces which are termed "zones." The belts were first detected by Nicolas Zucchi and Daniel Bartoli in May 1630, about 20 years after the discovery of the four large satellites. Modern instruments show them to be broken up frequently into irregular markings, particularly at the edges where dark spots separated by white indentations and rifts are specially liable to occur. Isolated dark spots and brilliantly white areas are also frequently observed on the zones, together with delicate linear markings or wisps, sometimes resembling loops or festoons enclosing white spots and sometimes connecting together dark spots on the belts on opposite sides of the zones. This is especially the case with the equatorial zone. All these markings are subject to changes which may be very rapid. Occasionally a belt or portion of a belt will disappear in the course of a few weeks or months while other features develop for a time and then die out. It is quite evident that there is nothing stable or fixed about Jupiter as seen from the earth, but that what is observed is merely a shell of clouds or vapours which are often in a greatly disturbed condition. The photograph shown under PLANET (Pl. fig. 2) gives an excellent idea of the general features of the disc as observed telescopically, though the fading of the light and lack of definition near the limb in consequence



JUPITER'S MAIN SURFACE CURRENTS AND THEIR ROTATION PERIODS

of the absorbing effect of the Jovian atmosphere are much more marked photographically than to visual observation.

The planet's surface not infrequently displays striking colours. In particular the two belts north and south of the equator are sometimes very red whereas at other times they may be brown, neutral grey or even bluish. In April 1899 A. Stanley Williams, after a thorough examination of the available material accumulated between the years 1836 and 1898, announced that these belts exhibit a periodic variation in such manner that when one belt attains a maximum of redness the other is colourless or even

bluish and that between the periods of extreme coloration both belts are moderately red. The cycle of changes was found to take place in 12·08 years which is in close agreement with the period of the planet's revolution. Moreover the phase of minimum redness of a belt was found to occur shortly after the autumnal equinox of the hemisphere in which it is situated, which would seem to indicate a seasonal effect. It is hard to understand how the variations can be due to the varying tilt towards the sun of the planet's axis, the inclination of which to the plane of the orbit is only 3° 7′, yet such would appear to be the case. Another point of great interest is Williams's deduction in March 1920 that the equatorial zone also shows a periodic variation in colour in the course of the planet's revolution, assuming a dull orange or tawny hue shortly before the aphelion position is reached.

Rotation.—In 1664 Robert Hooke observed a dark spot in the southern hemisphere, and from its motion J. D. Cassini found a rotation period of 9 h. 56 m. Some few years later Cassini made the important discovery that a spot situated near the equator rotated in a period of about 9 h. 50 m. or in about 6 m. less than the dark spot discovered by Hooke farther south. It was therefore evident that the visible globe of the planet does not rotate like a solid body, and subsequent observations have revealed the fact that in general the rotation periods shown by the markings depend on the latitude in which they are situated. There is, however, no simple relationship between rotation and latitude such as is shown by the sun, although the shortest period is normally that of objects within about 10° or so of the equator. Outside this swiftly rotating region, relatively slow and quick rotations are found in irregular order from the equator polewards, and the arrangement in the northern differs greatly from that in the southern hemisphere.

Special attention has been given to the drift of the surface material in different latitudes by A. Stanley Williams, W. F. Denning and others, and in recent years this department of Jovian study has been followed up assiduously by members of the Jupiter section of the British Astronomical Association. Mean values for the rotation periods are given diagrammatically in fig. 1; an examination of which will show how irregular the arrangement of the "surface currents," as they are commonly called, really is. In general these currents are sharply bounded, though occasionally spots are observed between two of them, especially in the rifts dividing the north and south components of the equatorial belts, which show intermediate periods. The ellipse in the diagram represents the great red spot which will be described presently. Although the figures given may be regarded as fairly reliable *average* values, the periods deduced each year from the observations are found to exhibit variations, and even in the same latitude those of spots in one longitude will differ from those elsewhere. Individual spots, too, often show marked irregularities of motion, while from time to time objects appear with quite abnormal periods. For instance in 1880 a number of black spots in north latitude 23° were found to be rotating in the very short time of about 9 h. 48 m., and in recent years exceptional periods, both long and short, have been observed in other parts of the disc. In 1928 a series of small black spots on the south component of the south equatorial belt rotated in rather more than 9 h. 59 m., the longest period yet recorded.

The Red Spot.—Of all planetary markings it is safe to say that none has aroused so much general interest or received so much attention from observers as Jupiter's great red spot. It came into special prominence in 1878, but was seen actually several years earlier, viz., by W. R. Dawes in 1857, and at various times during the next two decades, especially by Sir W. Huggins, J. Baxendell, Lord Rosse, R. Copeland and H. C. Russell. Since 1878 it has been under constant observation and has been found to vary greatly in colour, form, intensity and motion. It is situated in the southern hemisphere in latitude −20° approximately and commonly appears as an elliptical shading or an elliptical ring in contact with the northern edge of the south temperate belt, and at various times it has presented curiously pointed ends. It is usually about 30,000 miles in length and about 7,000 or 8,000 miles in breadth. In colour it has varied from an intense brick-red to the faintest grey; indeed in some years it has been quite invisible though, fortunately, its position has still been indicated by the "bay" or "hollow" it has made for itself in the southern part of the south equatorial belt in which it is usually seen lying. In recent years the spot itself has as a rule been very faint, but in 1919 and 1927 when the hollow disappeared the spot regained something of its former intensity. In 1927 it also recovered something of its redness. The early history of the red spot has been carefully investigated by W. F. Denning, who, by means of published drawings and records of observations, either of the spot itself or its hollow, has succeeded in carrying our knowledge of the object back as far as Schwabe's drawing of the hollow on Sept. 5th, 1831. He has also suggested the identity of the present red spot with the object observed by Hooke in 1664 to which reference has already been made. But although it seems quite probable that the two objects are one and the same long gaps in the observations make it impossible to regard identity as more than a very plausible speculation. In any case, however, the well established identification with the feature shown by Schwabe shows the red spot to be remarkably long-lived in view of the well-known transitoriness of the Jovian markings in general. It might be imagined from its long enduring nature that the red spot is some sort of projection above the visible superficial vapours or clouds from a more or less solid globe beneath them; but its motion, especially in longitude, shows that this cannot be the case. There is, of course, nothing of a fixed nature visible on Jupiter from which its longitude can be measured. Observers, therefore, make use of a mathematical meridian, rotating uniformly in a period of 9 h. 55 m. 40·6 s., whose relative position to the centre of the planet's disc at any time can be calculated, and which some years ago represented the rotation of the spot very closely. As illustrating the wanderings of the spot Table I. is appended which gives the longitude measured from this meridian at successive oppositions since 1894 when the meridian coincided with the centre of the spot.

TABLE I.

Date of Opposition	°Longitude	Date of Opposition	°Longitude
1894 Dec. 22	0	1912 May 31	304
1896 Jan. 24	7	1913 July 5	261
1897 Feb. 23	15	1914 Aug. 10	208
1898 March 25	22	1915 Sept. 17	171
1899 April 25	31	1916 Oct. 23	130
1900 May 27	40	1917 Nov. 28	77
1901 June 30	46	1919 Jan. 1	11
1902 Aug. 5	42	1920 Feb. 2	317 (?)
1903 Sept. 11	34	1921 March 4	284
1904 Oct. 18	25	1922 April 4	257
1905 Nov. 23	28	1923 May 5	230
1906 Dec. 28	18	1924 June 6	170
1908 Jan. 29	23	1925 July 10	89
1909 Feb. 28	17	1926 Aug. 15	20
1910 March 30	8	1927 Sept. 22	345
1911 April 30	328		

It will be seen that for some years the spot drifted in the direction of increasing longitude, but in the summer of 1902 it reversed its motion and, apart from some irregularities between 1904 and 1908, it has since drifted in the direction of diminishing longitude completely round the planet more than twice relatively to the adopted zero meridian.

The South Tropical Disturbance.—There is another object of long enduring character which calls for mention in connection with the red spot. Like the latter it is situated in the south tropical zone and is known as the south tropical disturbance, but differences in their respective rates of rotation have many times brought the two objects into conjunction. The disturbance was first seen by Major P. B. Molesworth on Feb. 28, 1901. It was then a mere dark hump at the southern edge of the south equatorial belt, but it rapidly developed, spread across the zone and became greatly extended in longitude with a bright spot at each end. At times its length has exceeded 180° and it has frequently displayed much structural detail. It disappeared together with the southern portion of the south equatorial belt and the red spot

hollow—probably in consequence of overlying vapours—in 1919, reappeared in 1920, but again became invisible with the objects above mentioned in 1926. The following points relating to the association of the disturbance with the red spot seem to be of special interest:—

(a) During the earlier part of its history the disturbance was rotating much more rapidly than the red spot and overtook it at intervals of a little more than two years. But its rotation subsequently became slower and in 1925 its period actually exceeded that of the red spot.

(b) It is not known in what way the dark material of the disturbance has got past the red spot at conjunction, whether round it or under it. At the earlier conjunctions there seems to have been an almost immediate transference of dark matter to the other side of the spot, but at later conjunctions the process has been much more protracted.

(c) The red spot has shown a very decided attraction for the disturbance, each end of the latter being accelerated on approaching the spot and retarded after passing it.

(d) Both the red spot and the disturbance have been accelerated during the transference of the dark material of the latter from one side of the spot to the other.

It is very difficult to find any satisfactory explanation of the red spot. The special facts which have to be taken into consideration are the following: its long enduring character; its form and colour and the changes it undergoes; its motion, especially in longitude but also to a slight extent in latitude; its attraction for the south tropical disturbance; its seeming repulsion of the material of the south equatorial belt in which it has formed a bay or hollow; its concomitant association with the disturbance in changes of rotation period.

Possibly the vortex theory fits the facts best, but the pointed ends and dark spots at the tips, sometimes seen, would seem to render this hypothesis untenable. More accurate knowledge of the nature and relative levels of the Jovian markings appears to be required before any theory can be put forward with confidence.

Apparent Analogy with the Sun.—All observers have remarked on the very striking analogy between Jupiter and the sun, and the following points of similarity are specially noteworthy: both bodies are of low density, that of Jupiter being 1.3 times and that of the sun 1.4 times that of water; both show a darkening at the limb due to atmospheric absorption: and on both spots near the equator rotate in less time than those in higher latitudes.

A resemblance may also be traced between Jupiter's belts and the spot zones on the sun, while, occasionally, bright objects have been observed at or close to the planet's limb which became either inconspicuous or quite invisible near the central meridian, suggesting that like the solar faculae their visibility was due to their elevation.

Some of these objects were seen during the apparition of 1919, and E. M. Antoniadi, using the great 32.7 in. refractor at Meudon near Paris, has observed white objects near the limb resembling the solar faculae in appearance as well as in behaviour. It is accordingly tempting to regard Jupiter as a sort of semi-sun, not hot enough to be self luminous to any appreciable extent—for were this the case the satellites would be visible when eclipsed in the planet's shadow—but possessing considerable stores of energy which are the prime cause of the extensive and violent disturbances observed on the visible surface. It seems almost impossible that these disturbances can be the effect of mere solar radiation which can have only $\frac{1}{27}$ part of the intensity it has at the distance of the earth. Reference to Table II, in the article PLANET shows that, at Jupiter's distance, a black, rotating globe without an atmosphere, would have a surface temperature of −152° C.

As a matter of fact radiometric measurements by Coblentz and Lampland with the thermocouple and water cell transmission (as described in the article above mentioned) indicate temperature of approximately −100° C. which, though considerably higher than such as could be derived from solar radiation alone, is very much lower than that hitherto thought probable from a consideration of the disturbances in the planet's surface features.

Dr. Harold Jeffreys has come to the conclusion that the temperature of the planet is probably low on theoretical grounds. He first found that on any reasonable estimate of the planet's age its original store of heat could not have maintained to the present day an effective temperature as high as that of the earth, and later showed that a low temperature, like that deduced from the radiometric observations, is consistent with conclusions derived from considerations of the planet's density and ellipticity. The problem is accordingly a perplexing one. It will probably be felt by most telescopic students of the planet that whatever the temperature of the visible superficial layers the internal temperature at any rate must be *relatively* high. It is tempting to attribute the planet's supply of energy to sub-atomic processes; or, possibly, the enveloping layer in which the observed disturbances occur, may be composed of substances with a low boiling-point.

The Planet's Atmosphere.—In the article PLANET reference has been made to the atmospheric absorption bands in the spectrum of Jupiter and the other outer planets, but the nature of their source has not yet been established.

The Satellites.—Jupiter is accompanied by no less than 9 satellites so far as at present known. Four of them were discovered by Galileo in 1610, and they can be readily seen with a good pair of field glasses.

The others are all very small and faint. The fifth was discovered by Barnard with the Lick telescope in Sept. 1892, the sixth and seventh by Perrine, also at the Lick observatory in Dec. and Jan. 1904–1905, the eighth by Melotte at Greenwich in Feb. 1908, and the ninth by S. B. Nicholson at Lick in July 1914, the last four being found photographically. The ninth is probably only about 15 mi. in diameter and the eighth may be only slightly larger.

The four principal satellites, commonly known as the Galilean Satellites, are named Io, Europa, Ganymede and Callisto, but they are generally designated by the Roman numerals I, II, III, IV in the order of their distance from the planet. They are large enough to show sensible discs even in comparatively small instruments.

Three of these satellites are about equal to or exceed the earth's moon in size and the other (II) is very nearly as large. Both III and IV have diameters of more than 3,000 miles. If they were not so near the planet they would all be naked-eye objects; indeed it has been reported on various occasions, when the conditions have been favourable, that one or more, or perhaps two of them when close together seen as one, have actually been so glimpsed.

Particulars of the orbits of these satellites are given in the table on p. 191, but mention must also be made of a remarkable relationship between the longitudes of I, II and III discovered by Laplace, viz., that the longitude of I plus twice that of III minus three times that of II is 180°, so that they cannot all come into conjunction with one another or into opposition or conjunction with the sun at the same time.

The phenomena of these satellites, viz., their transits, occultations, eclipses and the transits of their shadows across the planet's disc are easily observed even with quite small telescopes, of, say, 2 in. aperture and upwards. Photometric observations of their eclipses are of special value and the Harvard series of such observations formed an important part of the material used some years ago by Professor R. A. Sampson in constructing his Theory of the Satellites and the Tables on which the predictions of their phenomena have since been based.

A comparison of the times as computed and the times observed has led to the interesting conclusion that the diameter of Jupiter is probably subject to small irregularities, or at any rate that the

luminous shell which forms the visible surface of the planet is liable to temporary deformations from atmospheric causes which in turn affect the boundary of the planet's shadow. When projected on Jupiter's surface during transit a satellite near ingress appears as a small white disc, its brightness being much in excess of that of the background near the planet's margin. Shortly afterwards it disappears as the albedos of the two surfaces become equal; reappears later as a relatively dark object projected against the lighter background of the central portions of the planet's surface; it again becomes invisible and reappears as a small bright object shortly before egress. The central parts of III. and IV. are commonly very dark indeed during most of the time these satellites are in transit and IV. especially is often comparable with its shadow in blackness.

All four Galilean satellites exhibit definite surface features when observed with sufficiently powerful telescopes under the best conditions. Satellite III. being the largest and brightest has naturally received special attention and several observers have been led to the conclusion that like the earth's moon it rotates on its axis in the period of its orbital revolution and hence presents always the same face to the planet. This conclusion has been based partly on the fact that certain apparent variations in its form, which are doubtless due to dusky spots on its surface, have been found definitely related to the position of the satellite in its orbit.

During the 1927 apparition E. M. Antoniadi, observing with the 33 in. refractor at Meudon under very favourable conditions, studied the details of the surface markings with great completeness and his observations will be regarded as definitely establishing the long period above mentioned. Moreover, photometric observations, and especially those made in 1926 by Stebbins with the photo-electric photometer at the Lick observatory, show small variations in the light of all four satellites which are related to their orbital positions and indicate that they all present a constant face to Jupiter.

These Galilean Satellites have proved of great value in two respects: (1) the observed variations in the times of the eclipses of I. with the varying distance of the earth from Jupiter led Römer in 1675 to the discovery of the motion of light and the first determination of its velocity; (2) observations of the phenomena of the satellites were formerly much used for the determination of longitudes by comparing the calculated times of their occurrence, at Greenwich, for instance, with the local times of the place at which they were observed. Of the remaining satellites, V., which is the nearest of all to Jupiter, is in consequence of its smallness and its proximity to the planet visible only in the large instruments. About the same mean distance from the planet, viz., rather over 7,000,000 miles, are VI. and VII., which are also very small. Their two orbits interlock like two links in a chain, but their planes are inclined to one another at an angle of about 28°. Somewhat similar conditions hold for the orbits of VIII. and IX., of which the mean distances are of the order of 15,000,000 miles, and the periods of revolution slightly more than two years. Owing to their great remoteness from Jupiter they are subject to enormous perturbations by the sun. The motion of both these satellites, like that of Phoebe, the outermost satellite of Saturn, is retrograde. (T. E. R. P.)

TABLE II. *The Satellites of Jupiter*

Satellite	Distance from Jupiter in miles	Sidereal Period	Inclination of orbit to planet's orbit	Eccentricity	Diameter in miles
		d. h. m. s.	° ′		
V.	112,600	0 11 57 22·71	3 6·9	0·0028	100?
I. Io . .	261,800	1 18 27 33·51	3 6·7	0·0000	2,109
II. Europa	416,600	3 13 13 42·05	3 5·8	0·0003	1,865
III. Ganymede	664,200	7 3 42 33·35	3 2·3	0·0015	3,273
IV. Callisto	1,168,700	16 16 32 11·21	2 42·7	0·0075	3,142
		d.			
VI.	7,114,000	250·68	29	0·155	*80?
VII.	7,292,000	260·06	28	0·207	*25?
VIII.	14,600,000	739	148	0·38	†17?
IX.	15,000,000	745	156	0·25	†15?

*Large perturbations.
†Very large perturbations.

JUR (DIUR), the Dinka name for a tribe of negroes of the upper Nile valley, whose real name is Luoh, or Lwo. They appear to be immigrants from the south; they now occupy a district of the Bahr-el-Ghazal between the Bongo and Dinka tribes. Of a reddish black colour, fairer than the Dinka, they are well proportioned, with the hair short. Tattooing is not common, but when found is similar to that of the Dinka; they pierce the ears and nose, and in addition to the ornaments found among the Dinka wear a series of iron rings on the forearm covering it from wrist to elbow. They are mainly agricultural, but hunt and fish to a considerable extent; they are also skilful smiths, smelting their own iron, of which they supply quantities to the Dinka. Their chief currency is spears and hoe-blades, and cowrie shells are used in the purchase of wives. Their chief weapons are spears and bows.

See G. Schweinfurth, *The Heart of Africa: Travels 1868–1871*, trans. G. E. E. Frewer (2nd ed., 1874); W. Junker, *Travels in Africa* (Eng. ed., 1890–92).

JURA, a department of France, on the eastern frontier, formed from the southern portion of the old province of Franche-Comté. It is bounded N. by the department of Haute-Saône, N.E. by Doubs, E. by Switzerland, S. by Ain, and W. by Saône-et-Loire and Côte d'Or. Pop. (1936) 220,797. Area, 1,952 sq.mi. In the south-east the high Jura (Crêt Pela 4,915 ft.) runs north to south; parallel to the above, west of the Ain, is the forested Jura plateau; next follow the vine-clad hills beyond which, towards the Saône, is the fertile plain of northern Bresse, called the Finage. The department stretches across the lower Doubs, but both banks of the Saône are in Côte d'Or. There are many lakes among the mountains. The climate is, on the whole, cold; the temperature is subject to sudden and violent changes, and among the mountains winter sometimes lingers for eight months. The rainfall is much above the average of France.

Jura is an agricultural department: wheat, oats, maize and barley are the chief cereals, potatoes, tobacco and rape also being grown. Vines are largely grown. Woodlands occupy about a fifth of the area: the oak, hornbeam and beech, and, in the mountains, the spruce and fir, are the principal varieties. Natural pasture is abundant on the mountains. The wild boar still survives in the forests. There are salt mines and stone-quarries. Peat is also worked. Lons-le-Saunier and Salins have mineral springs. Industries include the manufacture of Gruyère, Septmoncel and other cheeses (made in co-operative cheese factories or *fruitières*), sparkling wines, metal founding and forging, saw-milling, the cutting of precious stones (at Septmoncel and elsewhere), the manufacture of nails, tools and other iron goods, paper, leather, brier-pipes, toys and fancy wooden-ware and basket-work; and clocks, watches, spectacles and measures at Morez. The department is served chiefly by the P.L.M. railway, the main line from Paris to Neuchâtel traversing its northern region. The canal from the Rhone to the Rhine, which utilizes the channel of the Doubs over portions of its course, traverses it for 25 m. Lons-le-Saunier is the chief town of Jura, which embraces three arrondissements named after the towns of Lons-le-Saunier, Dôle and St. Claude, with 32 cantons and 585 communes. The department forms the diocese of St. Claude and part of the ecclesiastical province of Lyon, it comes within the region of the VIIth army corps (Besançon) and the educational division (académie) of Besançon, where is its court of appeal. Lons-le-Saunier, Dôle, Arbois, Poligny, St. Claude and Salins are the more noteworthy towns. At Baume-les-Messieurs, 8 m. N.E. of Lons-le-Saunier, there is an ancient abbey with a fine 12th century church.

JURA, an island of the inner Hebrides, the fourth largest of the group, on the west coast of Argyllshire, Scotland. Pop. (1931), 364. On the north it is separated from the island of Scarba by the whirlpool of Corrievreckan, caused by the rush of the tides, on the east from the mainland by the sound of Jura, and on the south and south-west from Islay by the sound of Islay. Craighouse, the chief village, is connected by steamer with W. Loch

Tarbert, and at Feolin there is a ferry to Port Askaig in Islay. Its greatest length is about 27 m., and the breadth varies from 2 m. to 8 m. A chain of hills culminating in the Paps of Jura—Beinn-an-Oir (2,571 ft.), Beinn Siantaidh, and Beinn Chaolais—runs the whole length of the island, interrupted only by Tarbert loch, an arm of the sea, which forms an indentation nearly 6 m. deep and almost cuts the island in two. Cattle and sheep are raised; oats, barley and potatoes are cultivated along the eastern shore, where most of the inhabitants live, and there is some fishing, and a distillery. Granite is quarried and silicious sand employed in glass-making is found.

JURA, a system of mountain ranges between the Rhine and the Rhone, and forming the frontier between France and Switzerland. The Rhine gorge cuts off the Jura from the Swabian and Franconian ranges to the north-east, and the Rhône gorge, the Jura from the Dauphiné to the south. Its three chief rivers—the Doubs, the Loué and the Ain—flow down the western slope, which is much longer and half as steep as the eastern. Some geographers extend the name Jura to the Swabian and Franconian ranges between the Danube, the Neckar and the Main; but, though these are similar to the range to the south, it is most convenient to limit the name of the mountain ridges lying between France and Switzerland, and this narrower sense will be adopted here.

The Jura system is 156 m. long and 38 m. broad, oblong in shape, and raised to an average height of from 1,950 to 2,600 ft. above the surrounding plains. The Juras form essentially a series of ridges parallel to the direction of greatest length of the system. Many transverse gorges or "cluses" cut across these ridges.

Geologically the Jura Mountains belong to the Alpine system; and the same forces which built up the latter produced the folds and faults in the former (*see* ALPS). The rocks of the Juras range from the Permian to the Pliocene, but the Jurassic formation is the most important. The rocks have been folded into a series of parallel anticlines and synclines with a direction from south-west to north-east, but owing to the resistance of the ancient massifs of the central plateau of France on the west and the Vosges-Black Forest on the east the folds are bunched together at the extremities of the range. The intensity of folding decreases northward, away from the Alps. In the east the structure is complicated by block faulting and the beds here are not folded as a general rule. This latter region is known as the Jura table-land (*Jura tabulaire*) while the greater part of the range is known as the folded Jura (*Jura plissé*). In the extreme west the mountains descend steeply to the plain of the Saône, the district being known as the *Région du vignoble.*

Countless blocks of gneiss, granite and other crystalline rocks are found on the slopes of the Jura Mountains. These erratic blocks are of glacial origin having been transported to their present position by glaciers from the Alps which have also left their mark on the Jura range itself in the shape of striations and moraines.

In considering the topography of the Jura, it may be well to take a brief survey of its outer slopes.

1. The *northern face* dominates on one side the famous "Trouée" (or Trench) of Belfort, one of the great geographical centres of Europe, whence routes run north down the Rhine to the North Sea, south-east to the Danube basin and Black Sea, and south-west into France, and so to the Mediterranean basin. It is of great strategical importance. On the other side it overhangs the "Trouée" of the Black Forest towns on the Rhine (Rheinfelden, Säckingen, Laufenburg and Waldshut), through which the central plain of Switzerland is easily gained. On this north slope two openings offer routes into the interior of the chain—the valley of the Doubs (France), and the valley of the Birse (Switzerland). Belfort is the military, Mülhausen the industrial, and Basle the commercial centre of this slope.

2. The *eastern and western faces* offer many striking parallels. The plains through which flow the Aar and the Saône have each been the bed of an ancient lake, traces of which remain in the lakes of Neuchâtel, Bienne and Morat. Both east and west slopes are pierced by many transverse gorges, "cluses" by which access is gained to the great central plateau of Pontarlier, though these are seen more plainly on the east face than on the west; thus the gorges at the exit from which Lons-le-Saunier, Poligny, Arbois and Salins are built balance those of the Suze, of the Val de Ruz, of the Val de Travers, and of the Val d'Orbe. Neuchâtel which commands these eastern gorges is a great military and industrial centre, just as is Besançon on the west. These easy means of communication account for the dialect of Neuchâtel being Burgundian. Mt. Chasseron (5,286 ft.), the central point of the eastern face, commands the two great railways which join Neuchâtel and Pontarlier. The R. Loue which drains the west face of this ridge flows into the Doubs south of Dôle, the only important town of the central portion of the Saône basin. The Chasseron is wholly Swiss, as are the lower summits of Chasseral (5,279 ft.), Mont Suchet (5,220 ft.), Aiguille de Baulmes (5,128 ft.), Dent de Vaulion (4,879 ft.), Weissenstein (4,245 ft.), and Chaumont (3,862 ft.), the two last-named points being probably the best-known points in the Jura, as they are accessible by carriage road from Soleure (Solothurn) and Neuchâtel respectively. South of the Orbe valley the east face becomes a rocky wall which is crowned by all the highest summits (the first and second Swiss, the rest French) of the chain—the Mont Tendre (5,521 ft.), the Dôle (5,511 ft.), the Reculet (5,643 ft.), the Crêt de la Neige (5,653 ft.) and the Grand Crédo (5,328 ft.), the uniformity of level being as striking as on the west edge of the Jura, though there the absolute height is far less. The position of the Dôle is similar to that of the Chasseron, as along the sides of it run the great roads of the Col de St. Cergues (4,051 ft.) and the Col de la Faucille (4,341 ft.), the latter leading through the Vallée des Dappes. The height of these roads shows that they are passages across the chain, rather than through natural depressions.

3. The *southern face* is supported by two great pillars—on the east the Grand Crédo and on the west the ridge of Revermont (2,529 ft.) above Bourg en Bresse; between these a huge bastion (the district of *Bugey*) stretches south, forcing the Rhone to make a long détour. On the two sides of this bastion the plains in which Ambérieu and Culoz stand are the meeting points of the routes which cut through the bastion by means of deep gorges. On the eastern side this great wedge is steep and rugged, ending in the Grand Colombier (5,042 ft.), north of Culoz, and it sinks on the western side to the valley of the Ain, the district of Bresse, and the plateau of Dombes. The junction of the Ain and the Surand at Pont d'Ain on the west balances that of the Valserine and the Rhone at Bellegarde on the east.

The Jura thus dominates on the north one of the great highways of Europe, on the east and west divides the valleys of the Saône and the Aar, and stretches out to the south so as nearly to join hands with the great mass of the Dauphiné Alps. It therefore commands the routes from France into Germany, Switzerland and Italy, and hence its enormous historical importance.

The topography of the interior of the range naturally falls into three divisions, each traversed by one of the three great rivers of the Jura—the Doubs, the Loue and the Ain.

1. The *northern division* is marked by the east and west ridge of the Lomont, and the Mont Terrible; the defile of the Doubs from St. Ursanne to St. Hippolyte, and the "Trouée" of the Black Forest towns. It thus bars access to the central plateau from the north. This division falls again into two distinct portions.

(*a*) The first is the *part east of the deep gorge of the Doubs* below St. Hippolyte. It includes the basin of the river Birse, and the plateau between the Doubs and the Aar, on which, at an average height of 2,600 ft., are situated a number of towns, one of the most striking features of the Jura. These include Le Locle (*q.v.*) and La Chaux de Fonds (*q.v.*), and are mainly occupied with watch-making, an industry well fitted for a mountain district.

(*b*) *The part west of the "cluse" of the Doubs:* of this, the district east of the river Dessoubre, isolated in the interior of the range (unlike the Le Locle plateau), is called the Haute Montagne, and is given up to cheese-making, curing of hams, saw-mills, etc. Besançon is the chief French centre of the watch making industry, and is connected with Geneva by a chain of places similarly occupied, which fringe the west plateau of the Jura. The part west of the Dessoubre, or the Moyenne Montagne, a huge

plateau north of the Loue, is more especially devoted to agriculture, while along its north edge metal-working and manufacture of hardware are carried on, particularly at Besançon and Audincourt.

2. The *central division* in which no deep gorges are found, consists of the basin of which Pontarlier is the centre, through notches in the rim of which routes converge from every direction; hence its immense strategical and commercial importance. The north-east roads run to Morteau and Le Locle, the north-west to Besançon, the west to Salins, the south-west to Dôle and Lons-le-Saunier, the east to the Swiss plain. The Pontarlier plateau has only slight indentations in it due to erosion by the river Drugeon. East of this plateau is the Fort de Joux, under the walls of which meet the two railways from Neuchâtel, and to the west Salins, the meeting place of the routes from the Col de la Faucille, from Besançon, and from the French plain.

The Ain rises on the south edge of this plateau, and on a lower shelf which it waters are situated two points of great military importance—Nozeroy and Champagnole. The latter is specially important, since the road leading thence to Geneva traverses one after another the chief valleys which run down into South Jura, and thus commands the routes from the Geneva region, and a branch route along the Orbe river from Jougne.

There are said to be in the central Jura no less than fifteen ridges running parallel to each other, and it is these which force the Loue to the north, and thereby occasion its very eccentric course. The cultivation of wormwood wherewith to make the tonic "absinthe" has its headquarters at Pontarlier.

3. The *southern division* is the most complicated of the Jura. The lofty ridge which bounds it to the east forces all its drainage to the west, and the result is a number of valleys of erosion, quite distinct from the "cluses" or fissures of the Doubs and the Loue. Another point of interest is the number of roads which intersect it, despite its extreme irregularity. This is due to the great "cluses" of Nantua and Virieu, which traverse it from east to west. The plateaux west of the Ain are cut through by the valleys of the Valouse and of the Surand, and do not possess any considerable towns. The Ain receives three tributaries from the east:—

(*a*) The Bienne, which flows from the fort of Les Rousses by St. Claude, the industrial centre of the south Jura, famous for wooden toys; Septmoncel, a centre for gem cutting, and Morez, a watch and spectacle making centre. The industrial prosperity of this valley is of recent origin.

(*b*) The Oignin, which receives the drainage of the lake of Nantua, a town noted for combs and silk, and which communicates by the "cluse" of the Lac de Silan with the Valserine valley, and so with the Rhone at Bellegarde, and again with the various routes which meet at Les Rousses, while Culoz is easily gained by the Val Romey and the Séran.

(*c*) The Albarine, connected with Culoz by the "cluse" of Virieu, and by the Furan flowing south, with Belley, the capital of the district of Bugey (the old name for the south Jura).

The "cluses" of Nantua and Virieu are now both traversed by important railways; and it is even truer than of old that the keys of the south Jura are Lyons and Geneva.

The range is mentioned by Caesar (*Bell. Gall.* i. 2–3, 6 [1], and 8 [1]), Strabo (iv. 3, 4, and 6, 11), Pliny (iii. 31; iv. 105; xvi. 197) and Ptolemy (ii. ix. 5), its name being a word which appears under many forms (*e.g.*, Joux, Jorat, Jorasse, Juriens), and is a synonym for a wood or forest. The German name is Leberberg, *Leber* being a provincial word for a hill.

Politically the Jura is French (departments of the Doubs, Jura, Ain and in the north a small portion of Alsace) and Swiss (parts of the cantons of Geneva, Vaud, Neuchâtel, Berne, Soleure and Basle). (J. I. P.)

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JURARA (*Podocnemis expansa*), the large turtle of the Amazon, also called arran. Its eggs and flesh are an important food. (*See* TORTOISE.)

See H. W. Bates, *A Naturalist on the Amazon* (1863) and A. R. Wallace, *Travels on the Amazon and Rio Negro* (1853).

JURASSIC SYSTEM, in geology, the succession of rocks deposited during the middle period of the Mesozoic era, succeeding the Trias and preceding the Cretaceous period. This great series of fossiliferous rocks was first studied in Britain by William Smith, who, in his two works *Strata Identified* (1816) and *Stratigraphical System of Organized Fossils* (1817) made it the foundation of stratigraphical geology. Many of his original names for the subdivisions in England have been preserved in the universal terminology of geology. The upper part of the system was originally called the Oolitic series by Conybeare and Phillips (1822) from the characteristic oolitic or roe-like structure of many of the limestones, while the underlying Lias was regarded as a separate series. The name "Jura limestones" for rocks equivalent to the Oolitic series, well developed in the Jura mountains of Switzerland, was first employed by A. Brongniart in 1829 and ten years later was adopted for the whole system by von Buch, who divided it into Lower or Black, Middle or Brown, and Upper or White Jura. The Jurassic rocks and their fossils were studied on the Continent by A. d'Orbigny, F. A. Quenstedt, A. Oppel, M. Neumayr, P. de Loriol, H. Salfeld, and by many other distinguished workers. In England the names of John Phillips, John Lycett, J. Morris, J. F. Blake, W. H. Hudleston, H. B. Woodward, S. S. Buckman, L. Richardson, W. D. Lang, and J. Pringle stand out as the principal geologists to carry on the work begun by William Smith.

Quenstedt in *Der Jura* (1858) subdivided the system into 18 stages, named α to ζ after the letters of the Greek alphabet, and based largely on the lithological divisions in the Jura mountains. Owing to the great petrological diversity of the rocks resulting from their shallow-water origin—clays, sands and limestones succeed one another in different order in different places—Quenstedt's stages have been abandoned and a palaeontological system of zoning has been introduced. The fossils most used have been ammonites, as they have been found to have the most restricted vertical range in the rocks and to be to a certain extent independent of facies. But while there has been general agreement as to the order in which the zonal forms succeed one another, the lines of division between the formations have varied with the opinions of the authors, as have also the number of zones considered worthy of recognition. In addition to the palaeontological zones, a number of stages have been established, named after towns and localities where particular groups of zones are especially well developed, or after any other noteworthy characteristics (*e.g.*, Oxfordian; Virgulian after *Exogyra virgula;* Fullonian after Fuller's Earth).

The Jurassic period was marked by a great extension of the sea, which commenced after the close of the Trias and reached its maximum during the Callovian and Oxfordian stages, the rocks of which consequently have the widest distribution. The marine advance was, however, checked temporarily in certain localities at comparatively early stages (as during the Bajocian and Bathonian in the north of England), and towards the close of the period (Purbeckian) fresh-water marshes became widespread over the continental surfaces, foreshadowing the emergence of the Lower Cretaceous land. In America the Sierras, Cascade mountains, Klamath mountains and Humboldt range began to emerge, but there appears to have been very little crustal disturbance or volcanic activity. Tuffs are known in Argentina and California, and certain volcanic rocks in the islands of Skye and Mull. In the Alpine region marine conditions steadily persisted, forming the local Tithonian stage.

Life of the Period.—The existence of *faunal regions* in Jurassic times was first pointed out by J. Marcou and later the subject was greatly elaborated by M. Neumayr. According to Neumayr, three distinct geographical regions of deposit can be made out among the Jurassic rocks of Europe: (1) The Mediterranean province, embracing the Pyrenees, Alps and Carpathians,

with all the tracts lying to the south. (2) The central European province, comprising the tracts lying to the north of the Alps, characterized principally by abundant coral reefs. (3) The boreal or Russian province, including the middle and north of Russia, Spitzbergen and Greenland. Neumayr was able to trace these faunal belts round the earth, and to detect indications of a similar series in the southern hemisphere. Recent discoveries of the distribution of fossils show that causes other than the mere existence of climatic belts similar to those of the present day must be postulated to explain all the facts.

The Jurassic has been termed the "Age of Reptiles." The most striking forms of life during the period were the dinosaurs, which ranged in size from animals no larger than a rabbit to the gigantic *Atlantosaurus,* 100 ft. long, in the Jurassic of Wyoming. They included many of the carnivorous Theropoda, e.g., *Megalosaurus, Tyrannosaurus, Streptospondylus* and herbivorous Sauropoda, e.g., *Cetiosaurus;* also Ornithischia (rarer, e.g., *Scelidosaurus.* Other land reptiles were the mammal-like theromorpha and lizards. The rivers were stocked with crocodiles (e.g., *Teleosaurus*). In the seas swam innumerable turtles, and the huge extinct ichthyosaurs and plesiosaurs. Even in the air there flew reptiles, the Pterosauria or pterodactyls. By Kimeridgian times (the Solenhofen slates of Germany) the first bird, *Archaeopteryx,* was evolved. It had a long tail with steering feathers growing out at right angles on both sides, claws on its wings and reptilian jaws and teeth. Of mammals there were very few, and all smaller than a rat. Throughout the long Mesozoic era they underwent little change, and must be regarded as eking out an existence in an unfavourable environment, in a world dominated by the Reptilia. They all belong to the Marsupials, and were probably insectivorous. *Phascolotherium, Amphilestes, Stereognathus* and *Amphitherium* have been found in the Stonesfield slate, while *Amblotherium, Plagiaulax* and *Triconodon* occur in the Purbeck beds.

Fish were approaching the modern forms; heterocercal ganoids were becoming scarce, while the homocercal forms abounded (*Gyrodus, Microdon, Lepidosteus, Lepidotus, Dapedius*). The *Chimaeridae* or cat-fish here made their appearance (*Squaloraja*). The ancestors of the modern sturgeons and selachians (*Hybodus, Acrodus*) were numerous. Bony fish were represented by the small *Leptolepis.*

A great change had come over the Crustaceans; in place of the Palaeozoic trilobites we find long-tailed lobster-like forms (*Eryon, Eryma, Glyphaea*) and the broad crab-like type (*Prosopon*). Isopods and Ostracods were common at certain stages (particularly in the Purbeckian). All the orders of insects were represented, but the Neuroptera still predominated.

Mollusca and Molluscoidea (Brachiopods) were extremely abundant, but the most characteristic were the Cephalopods, especially the ammonites, of which an almost endless variety abounded. Crinoids and Echinoids were also abundant, while the corals were important rock-builders (especially in the Corallian period). Sponges, too, occasionally formed rocks, such as the Spongiten Kalk, and the Rhaxella Chert of England.

Vegetation.—The Jurassic vegetation was in the main a continuation of that of Triassic times. In the estuarine and freshwater beds numerous Gymnosperms abound, completely dominating the Jurassic flora. They included Benettitales, Ginkgoales (Ginkgos) and Coniferales in abundance. Until recently there were thought to have been no Jurassic Angiosperms, but Angiospermous fruits have recently been described by H. Thomas from the Estuarine series of Yorkshire (Bajocian) and a Dicotyledonous leaf has been described by Seward from the Stonesfield slate (Bathonian).

Economic Products.—These are very various. Coal occurs principally in the Lias; in Hungary there are 25 workable beds; also in Persia, Turkestan, Caucasus, South Siberia, China, Japan, Farther India, New Zealand and the Pacific Islands. Thin seams of coal occur in the Estuarine series of Yorkshire and in the Oxfordian of Scotland. Iron ores occur at many horizons. Those in Britain will be described under Domerian, Toarcian, Corallian and Kimeridgian; the richest and most plentiful ores are those of Lorraine and Cleveland, in Yorkshire, of Northamptonshire, Lincolnshire and Oxfordshire. Oil shales are found in Germany, and the Kimeridgian and Lower Lias of England are sometimes highly bituminous. Good building stones are obtained from the Aalenian, Bathonian, Portlandian and Purbeckian. Hydraulic cement is made from the Lower Lias, and most of the calcareous beds are burnt for lime. The clays all make excellent bricks, but the most famous are the Oxford clay bricks of Peterborough. In Bavaria the Kimeridgian produces the celebrated lithographic slates of Solenhofen, which are of the highest interest to palaeontologists, as containing the very perfect impression of *Archaeopteryx* (*q.v.*) the oldest known fossil bird, with marked reptilian characteristics.

THE JURASSIC SERIES IN ENGLAND

The sequence of Jurassic rocks as developed in England is full, varied and highly fossiliferous, and may be taken as typical. Although there were no orogenic movements during the period, small earth-movements were probably going on continuously, so that the sediments deposited vary in lithology both in area and in time, and there are many slight unconformities. The fauna to a certain extent varies with the lithology; thus in the clays, belemnites are common and corals rare, while in the limestones, belemnites are rare and corals abundant. The ammonites, on which correlation depends, are found in both types of deposit, and serve to demonstrate that a lithological unit may be of different ages in different places.

Lower Lias.—The name Lias is supposed to be a corruption of the word "layers," used by the quarrymen in the west of England in reference to the stratified clays and limestones of the lower beds. There is a gradual passage from the Trias through the Rhaetic beds into the Lias.

The Lower Lias, the thickest division, is usually divided into the *Hettangian* (from Hettange, Lorraine) below, the *Sinemurian* (from Sinemurum = Semur, Côte-d'Or) in the middle, and the *Charmouthian* (from Charmouth, Dorset) above. It consists almost exclusively of clay, with thin layers of argillaceous limestone. It covers a considerable area in England from the coast of Dorset to north Yorkshire, forming much of the central plain of England. 580 ft. thick in Dorset, it thins out almost completely against the Mendip Hills, thickening again to from 440 ft. to 700 ft. in the Midlands, and 700 ft. in Yorkshire.

See S. S. Buckman, *Jurassic Chronology,* I. Lias, *Q.J.G.S.,* vol. lxxiii. (1917), p. 257, and vol. lxxvi. (1920), p. 62; W. D. Lang, and others, in various papers on the Lower Lias of the Dorset Coast, *Q.J.G.S.,* vol. lxxix. (1923), p. 47; vol. lxxxii. (1926), p. 144; vol. lxxxiv. (1928), p. 179; and *Proc. Geol. Assoc.,* vol. xxxv. (1924), p. 169; A. E. Trueman, on the Lower Lias of the Cardiff District, *Proc. Geol. Assoc.,* vol. xxxi. (1920), p. 93 and of Glamorganshire, *ibid.* vol. xxxiv. (1923), p. 246, of Somerset (with J. W. Tutcher), *Q.J.G.S.,* vol. lxxxi. (1925), p. 595.

Middle Lias or **Domerian** consists principally of sands in the lower part and ferruginous limestone (marlstone) in the upper part. In Dorset, it consists of sands and sandy clays, about 350 ft. thick, with a seam of marlstone (1 ft.) at the top; it is attenuated against the Mendips. Towards the Cotswolds it thickens, the sands to 150 ft., the overlying marlstone to 15 ft. In Oxfordshire, Leicestershire and south Lincolnshire, the marlstone is extensively worked as an iron ore; in Yorkshire, the Middle Lias consists of sandy clays with the valuable Cleveland Ironstone in the upper part.

Upper Lias or **Toarcian** (from Toarcium = Tours) is subdivided into a Lower series or *Whitbian* (from Whitby, Yorkshire) which consists principally of clays, and an Upper series or *Yeovilian* (from Yeovil, Somerset) which is almost entirely arenaceous. The thickness of clays deposited during the Whitbian is greatest in Yorkshire (280 ft.), where they have yielded to commerce alum and jet. In Northamptonshire the clays shrink to 160 ft., and at Fawler, north of Oxford, all the zones are represented in a *remanié* bed a few inches thick. In the Cotswolds, the Whitbian attains its greatest thickness (320 ft.), of which the highest 190 ft.—the Cotswold Sands—are arenaceous. In Dorset, the Whitbian is represented by 10 ft. of clays, resting on a cephalopod bed, 5 ft. thick.

The most important development of the Yeovilian is in Northamptonshire, where, together with the topmost zone of the Whitbian, it contains the Northampton Iron Ore, extensively worked all along the outcrop. The Yeovilian is represented in Yorkshire by sands (50 ft.); near Oxford, by 10 ft. of unfossiliferous clay; in the Cotswold, by a cephalopod bed, some 3 ft. thick; and in Dorset, by the Bridport and Yeovil Sands, 130 ft. thick.

See S. S. Buckman, "Certain Jurassic (Lias-Oolite) Strata of South Dorset, and their Correlation," *Q.J.G.S.*, vol. lxvi. (1910), p. 52; and vol. lxxviii. (1922), p. 378; J. F. Jackson, "The Junction Bed of the Middle and Upper Lias on the Dorset Coast," *Q.J.G.S.*, vol. lxxxii. (1926), p. 490. *The Northampton Sand of Northamptonshire* (1928) (collected papers reprinted); R. H. Rastall, "The Blea Wyke Beds and the Dogger in North-East Yorkshire," *Q.J.G.S.*, vol. lxi. (1905), pp. 441–460.

Bajocian (from Bayeux, Normandy), including at the base the *Aalenian* (from Aalen, Württemberg), and the *Bajocian* (*sensu strictu*) above. These two divisions are usually known as the Inferior Oolite, but are separated by a plane of major unconformity. The Aalenian includes at the base the upper part both of the Bridport Sands of Dorset, and of the Northampton Sands, mentioned above. The greatest development of the Inferior Oolite occurs in the Cotswold Hills (250 ft.); these shallow-water, marine, highly fossiliferous limestones, however, thin out and disappear both to the south in the Mendip region, and to the north on the eastern borders of Oxfordshire. South of the Mendips, in Somerset and Dorset, they reappear as 5 to 15 ft. of limestones; their richness in ammonites (fossils rare in the Cotswolds), and the absence of other fossils common in the Cotswolds, has been taken to indicate that Dorset (with Normandy) formed part of a separate basin of deposition. In Yorkshire, the Bajocian and Aalenian are represented by fissile sandy limestone flags, containing plants—the Lower Estuarine Series; temporary transgressions of the sea are indicated by thin bands with marine fossils.

See S. S. Buckman, "The Bajocian of the Mid-Cotteswolds," *Q.J.G.S.*, vol. li. (1895), p. 388, and "Deposits of Bajocian age in the Northern Cotteswolds," *Q.J.G.S.*, vol. liii. (1897), p. 607 and vol. lvii. (1901), p. 126.

Bathonian (from Bath, Somerset); here taken to consist of a lower division or *Vesulian* (from Vesoul, Haute Saône, France), a middle division or *Fullonian* (from Fuller's Earth), and an upper division or *Bradfordian* (from Bradford-on-Avon, Wiltshire). The Vesulian consists of fossiliferous, gritty ragstones, formerly grouped with the "Inferior Oolite" division; it rests with pronounced unconformity on the denuded surface of the flexured Bajocian. The Fullonian contains the Fuller's Earth Clays and Rock of Dorset, and the highly fossiliferous white limestones of Somersetshire, Gloucestershire and Oxfordshire which might be termed the Great Oolite proper. At Stonesfield, north of Oxford, a local flaggy facies at the base of the Great Oolite is quarried for roofing slates—the Stonesfield Slates. The Bradfordian is subdivided for the most part on lithological grounds (ammonites being absent) into Bradford Clay below and Forest Marble above. In Lincolnshire, the Bradfordian is represented by an argillaceous facies, the Great Oolite Clay.

In Yorkshire, the whole of the Bathonian passes into a poorly fossiliferous series of brackish and freshwater sandstones, the Upper Estuarine Series. The beginning of this change can already be seen in Lincolnshire, where an Estuarine Series separates Great Oolite (upper Fullonian) from the Lincolnshire Limestone.

The **Cornbrash** (from a "brash" or loose rubble which in Wiltshire forms a good soil for corn), the highest member of the old division of Lower Oolites, is usually grouped with the Bradfordian; the upper Cornbrash is however more properly classed with the Callovian.

See for *Vesulian*:—L. Richardson, "The Inferior Oolite and Contiguous Deposits of the Bath-Doulting District," *Q.J.G.S.*, vol. lxiii. (1907), p. 383; and between Rissington and Burford, vol. lxiii. (1907), p. 437; and of the Doulting-Milborne Port District, vol. lxxi. (1915), p. 473; and of the Crewkerne District, vol. lxxiv. (1918), p. 145. *Fullonian-Bradfordian:* M. Odling, "The Bathonian Rocks of the Oxford District," *Q.J.G.S.*, vol. lxix. (1913), p. 484; J. Pringle, "Geology of Oxford," *Mem. Geol. Survey* (1926), p. 13; J. A. Douglas, and W. J. Arkell, "The Stratigraphical Distribution of the Cornbrash," *Q.J.G.S.*, vol. lxxxiv. (1928), p. 172.

Oxfordian (from Oxford) here including the *Callovian* at the base (from Callovium = Kellaways, near Chippenham, Wiltshire), and the *Divesian* (from Dives, Calvados, Normandy) in the middle. The best known feature of this formation is the Oxford Clay, the outcrop of which stretches from Dorset to Yorkshire, forming a belt of low-lying valleys, it is usually a dark clay, and the fossils are often preserved in pyrites. At the base in the Midlands and Wiltshire is a calcareous sandstone (Kellaways Rock), sometimes resting on Callovian clays (Kellaways Clay). The Kelloway Rock of Yorkshire, a highly fossiliferous sandstone, is equivalent not only to the Kellaways Rock and Clay of Wiltshire, but also to the whole of the Lower Oxford Clay. Towards the top of the series (Oxfordian *sensu strictu*) a sandy facies appears at different horizons in different places (Lower Calcareous Grit); although it contains an essentially Oxfordian fauna, it is often grouped with the Corallian. In Yorkshire, a calcareous facies (Hambleton Oolite) appears at the top of the Oxfordian.

See S. S. Buckman, "The Kelloway Rock of Scarborough," *Q.J.G.S.*, vol. lxix. (1913) p. 152; E. Neaverson, "The Zones of the Oxford Clay near Peterborough," *Proc. Geol. Assoc.*, vol. xxxvi. (1925), p. 27; J. Pringle, "Geology of Oxford," *Mem. Geol. Survey* (1926), pp. 29–38.

Corallian (from the prevalence of corals) may be used to denote the shallow-water phase separating the Oxford and Kimeridge Clays; this phase began, however, earlier in England than in most places on the Continent, where clays continued to be deposited until the close of the Oxfordian. The Corallian is here considered to begin with the important stratal break at the base of the Argovian, and to embrace the *Argovian* (from Argovia, Jura Mts.), *Rauracian* (from Rauracia) and *Sequanian* (Sequana = Seine) of Continental geologists. The shallow water Corallian includes sandbanks, shelly limestones and oolites, with coral reefs and subordinate clays. The coral reefs were all of the fringing type, rarely more than 20 ft. in thickness, and they grew at various times and places, wherever conditions were suitable. Beginning in Yorkshire at the top of the Oxfordian, where the passage up to the Corallian is gradual and complete, they continued on the Continent into Virgulian times, when Kimeridge clay was forming in England. The fossilized reefs form the rubbly limestones ("coral rag") and this type of rock was repeated at five successive periods in England.

The outcrop of the shallow-water facies is almost continuous from Weymouth to Oxford, and reappears in Yorkshire, in Sutherlandshire, and in the Kent borings. Between Oxford and Yorkshire, with the exception of a local reef at Upware, near Cambridge, the formation is represented by a deep-water facies, the Ampthill Clay, a dark clay with much selenite.

See J. F. Blake and W. H. Hudleston, "The Corallian Rocks of England," *Q.J.G.S.*, vol. xxxiii. (1877), p. 260; W. J. Arkell, "The Corallian Rocks of Oxford, Berks, and North Wilts," *Phil. Trans. Roy. Soc.*, Series B., vol. ccxvi. (1927), p. 67.

Kimeridgian (from Kimeridge or Kimmeridge, Dorset) is divided into the Lower Kimeridgian or *Virgulian* (from the abundance of the lamellibranch *Exogyra virgula*) and the Upper Kimeridgian or *Bononian* (from Boulogne, France). It consists typically of a dark-grey or black shaly and bituminous clay, with selenite and layers of septaria; the outcrop usually forms low-lying pasture lands, such as the Vale of the White Horse, the Vale of Aylesbury, much of the Fens, the Vale of Lincoln and the Vale of Pickering. Part of the Lower Bononian is represented by a sandy facies in Wiltshire, Oxfordshire and Buckinghamshire. Coast sections may be seen at Kimeridge in Dorset and in Filey bay, Yorkshire, while the best inland exposures are in brickyards at Swindon, Culham, Oxford, Brill, Ely and Market Rasen. In recent years all the zones have been proved in the borings in Kent.

At Kimeridge the carbonaceous clay contains bands of highly bituminous shale, which was worked in the 18th century for the extraction of oil, tar and manure. It is still locally used as fuel, but gives off sulphurous fumes. In Holworth Cliffe, Ringstead Bay, spontaneous combustion broke out in 1826 after heavy rain, and continued for several years.

See J. F. Blake, "On the Kimeridge Clay of England," *Q.J.G.S.* xxxi. (1875), p. 196; J. Pringle, "Geology of Oxford," *Mem. Geol. Survey* (1926), pp. 66–67.

Portlandian (from the Isle of Portland, Dorset). In the type localities of Purbeck and Portland there is a gradual passage upwards from the Passage Beds of the Kimeridge Clay into the Lower Portlandian or Portland Sands, 115 ft. thick. The Upper Portlandian or Portland Limestones include (1) the Cherty Series, 60–75 ft. thick, with very large ammonites; (2) the Freestones, 20–40 ft., extensively quarried as building stone; near the top is the "Roach" or Portland Screw bed, consisting largely of *Cerithium portlandicum* and still larger ammonites. In the Vale of Wardour, the Portlandian reappears in much the same form. The most northerly occurrences of Portland rocks are at Swindon, Wilts, and from Shotover near Oxford to Aylesbury, Bucks. Here the Portland sands are missing, the limestones resting directly on a lydite remanié bed of the Kimeridgian. The Cherty series has dwindled to a single "Cockle bed," a few feet thick, overlain by thick yellow sands with impersistent hard bands called Swindon stone, representing the freestones of Dorset. At the top are some chalky limestones and a representative of the "Portland Screw bed" or "Roach."

In Yorkshire a Coprolite bed at the base of the Speeton clay contains rolled Portlandian ammonites of Russian facies.

See Sir A. Strahan, "Geology of the Isle of Purbeck and Weymouth," *Mem. Geol. Survey* (1898), pp. 60–71; C. P. Chatwin and J. Pringle, "The Zones of the Kimmeridge and Portland Rocks at Swindon"; Summary of Progress, *Mem. Geol. Survey* (1922), pp. 162–168; J. Pringle, "Geology of Oxford," *Mem. Geol. Survey* (1926), p. 77.

Purbeckian (from the promontory known as the Isle of Purbeck, Dorset), the highest member of the Jurassic system, consists principally of freshwater lacustrine beds, indicating extensive swamps, which were sometimes invaded by the sea, sometimes elevated into land surfaces on which grew large "cycads" and coniferous trees. They show the transition from the marine Portlandian to the Wealden, the lowest division of the Cretaceous. Freshwater Purbeck beds have not been recognized north of Oxford; the marine equivalents are possibly present in the Speeton Clay of Yorkshire. The Purbeck Marble, which occurs near the top of the series, is a limestone almost entirely composed of the shells of the pond-snail *Paludina carinifera;* it has been extensively used since mediaeval times in the interior decoration of churches and cathedrals.

See Sir A. Strahan, "Geology of the Isle of Purbeck and Weymouth," *Mem. Geol. Survey* (1898), pp. 72–111.

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JURAT, a name given to the sworn holders of certain offices. Under the *ancien régime* in France, in several towns of the southwest such as Rochelle and Bordeaux, the *jurats* were members of the municipal body. The title was also borne by officials corresponding to aldermen in the Cinque Ports, but is now chiefly used as a title of office in the Channel Islands. There are two bodies, consisting each of 12 jurats, for Jersey and the bailiwick of Guernsey respectively. They form, with the bailiff as presiding judge, the royal court of justice, and are a constituent part of the legislative bodies. In English law the word jurat (*juratum*) is applied to that part of an affidavit which contains the names of the parties swearing the affidavit and the person before whom it was sworn, the date, place and other necessary particulars.

JURIAN, an independent linguistic stock, a name derived from the Juris, its most important tribe, who live on the border between Brazil and Colombia, between the Putumayo and Yapura rivers, mainly on the Puré, a tributary of the latter in about 1°30′ S. Lat. The Jurian tribes were a friendly, sedentary and agricultural people, who tattooed a considerable part of their faces in black, their full name, *Juru-Pixuna,* meaning "black-mouths." The men wore only leaf coverings, the women going quite naked. The men wore a small labret in the lower lip. The houses were circular, domed, thatched, with a small mud-walled chamber inside, capable of being tightly closed, as a refuge from mosquitoes. The bow with poisoned arrows and blow-gun were their main weapons. Circular shields of tapir hide were used in warfare.

See C. F. P. von Martius, *Beiträge zur Ethnographie und Sprachenkunde Amerikas,* etc. (Leipzig, 1867).

JURIEN DE LA GRAVIÈRE, JEAN BAPTISTE EDMOND (1812–1892), French admiral, was born on Nov. 19, 1812. He entered the navy in 1828, and served in the Crimean and Mexican wars. During the Franco-German War of 1870 he had command of the French Mediterranean fleet, and in 1871 he was appointed "director of charts." Jurien died on March 4, 1892. His works include: *Guerres maritimes sous la république et l'empire,* Eng. trans. by Lord Dunsany; *Sketches of the Last Naval War* (1848); *Souvenirs d'un amiral* (1860), that is, of his father, Admiral Jurien; *La Marine d'autrefois* (1865), largely autobiographical; and *La Marine d'aujourd'hui* (1872).

JURIEU, PIERRE (1637–1713), French Protestant divine, was born at Mer, in Orléanais, where his father was pastor. He studied at Saumur and Sedan and completed his studies in Holland and in England, when he received Anglican ordination. Returning to France he was reordained, and succeeded his father at the church at Mer. His *Traité de la dévotion* (1674) led to his appointment as professor of theology and Hebrew at Sedan. He was pastor of the Walloon church of Rotterdam from 1681 till his death on Jan. 11, 1713. Jurieu helped many sufferers from the revocation of the Edict of Nantes (1685). He himself was persuaded (*Accomplissement des prophéties,* 1686) that the overthrow of Antichrist (*i.e.,* the Roman church) would take place in 1689. H. M. Baird says that "this persuasion, however fanciful the grounds on which it was based, exercised no small influence in forwarding the success of the designs of William of Orange in the invasion of England." Jurieu defended Protestant doctrines against Arnauld, Nicole and Bossuet, but was equally ready to dispute with his fellow Protestant divines (with Louis Du Moulin and Claude Payon, for instance) when their opinions differed from his own even on minor matters. The bitterness and persistency of his attacks led to the expulsion of Pierre Bayle from his chair in 1693. Jurieu's *Lettres pastorales adressées aux fidèles de France* (3 vols. Rotterdam, 1686–87; Eng. trans. 1689), found its way into France and produced a deep impression on the Huguenots. His last important work was the *Histoire critique des dogmes et des cultes* (1704; Eng. trans. 1715).

See Herzog-Hauck, *Realencyklopädie;* also H. M. Baird, *The Huguenots and the Revocation of the Edict of Nantes* (1895).

JURISDICTION, in general, the exercise of lawful authority, especially by a court or a judge; and so the extent or limits within which such authority is exercisable. It has primarily a territorial signification, but where its powers are otherwise limited, it is rather a matter of competence, and in foreign codes this distinction is more clearly evident. Thus, a county court has a fixed territorial jurisdiction, but within that jurisdiction is not competent to try any actions but those specifically allotted to it by statute. In international law jurisdiction has a wider meaning, namely, the rights exercisable by a state within the bounds of its sovereignty. (*See* INTERNATIONAL LAW, PRIVATE; INTERNATIONAL LAW, PUBLIC.)

In many States, *e.g.,* France, jurisdiction is founded also on nationality; so the Civil Code of the French, commonly called *Code Napoléon,* governs Frenchmen everywhere. Also many States claim criminal jurisdiction over their nationals everywhere. In Great Britain this is confined to a few major crimes.

JURISDICTION IN PRIZE: *see* PRIZE COURTS AND PRIZE LAW.

JURISPRUDENCE is the name given to those studies, researches and speculations which aim primarily at answering the plain man's question: What is Law? But because the law is a thing of so many aspects, those inquirers who keep that object foremost do not necessarily come quickest at the answer. Indeed the more promising the method pursued, the farther the goal recedes. Thus at the head of English jurisprudence stands admittedly Sir Henry Maine. He more than others kept his purpose vividly in mind, yet when at last he came to lay aside his pen whole sciences had been generated, and all their paths diverged. Should however the inquirer turn first to what the bookseller's catalogue knows as jurisprudence his expectations will again be defeated. He will certainly come upon a definition, clear, logical and precise, but plain man or philosopher, it will have no meaning for him until he has himself become a master of the law. This perhaps comes nearer to the kind of study the Roman jurists denoted by the name, *"Juris prudentia est divinarum atque humanarum rerum notitia, iusti atque iniusti scientia";* though this promise of connecting the lawyer's daily task with the true inwardness of all things human and divine was hardly fulfilled. The Roman jurists perhaps, marvellous science though they had, lacked the philosophic mind. Whatever the explanation, their work was done when they had given to the practical rules they employed a formal perfection; a perfection, be it added, that is still the envy of civil law and common law alike. Such *elegantia* was for them the last word in jurisprudence. Between these greatly opposing conceptions lie a number of methods which have all in one way or another enriched the study of the subject. There is pure philosophy on the one hand, political theory on the other. There is the study of comparative institutions, the history of moral ideas. These and more border upon or overlap the jurist's field. But jurisprudence has an individuality of its own. The methods of social theory are not those of juristic speculation. There is more than political wisdom enshrined in the thought of Burke, but he does not speak the language of Blackstone. Nor does Savigny speak quite with the voice of Kant. And if such has been the case in the past, how much more is it true to-day. The interrelation of the relevant sciences is now so intricate that no general statement can hope to give an adequate conception of the subject as a whole. Nor will any such statement be even attempted here. It is as a guide to the present position, an indication of the trend of interest, a suggestion of the more hopeful lines of inquiry that this sketch had best be regarded.

HISTORICAL

Plato and Aristotle.—Speculation as to the meaning of law rightly dates from the Greeks. Their answers to the question: "What is Law?" thrust upon them by endless political misfortunes, will all be found discussed in the writings of Plato and Aristotle. Mention can only be made of one conception of Aristotle's, of law as a Rule, as an embodiment of Reason whether in the individual or the community: "mind unaffected by impulse" which harmonizes all conflicting elements and secures the well-being of the whole. It would be a mistake to assume that the interest of Greek speculation is now purely historical. In an age of acute specialization there would be far less proportion or balance, were it not for the constant testing of theories in the light of what Plato suggested or Aristotle thought. For the jurist's occasional reading nothing could be more helpful. (The following passages may perhaps be cited. Plato, *Gorgias* 482e–484c, 515–517; *Protagoras; Phaedrus* 260–262c, 273, 277 *seq; Republic* esp. bks. I.–IV. and X., 619b and c; Aristotle, *Ethics* V. esp. 1129b, 14-end; 1131a 25; caps. 6–8 1134–36; *Politics* I. caps. 2 and 3; III. and esp. cap. 16-end; *cf.* E. Barker, *Political Theory of Plato & Aristotle.*)

Mediaeval.—To the mediaeval mind law was the law of God as revealed in the Bible, or rather, the Church. This law was immutable. It was also not a little remote from the workaday world. Princes and rulers had but a limited capacity of interfering with it. Everyday affairs however call for regulation; this therefore had to be effected by means of ordinances. Hence positive law. Such was the great contribution of mediaeval thought to jurisprudence (*cf.* Pollard, *Evolution of Parliament,* cap. xi. and John Dickinson's edition of John of Salisbury). The static character of the law in the minds of the great common lawyers of the 17th century may in part be traced to it; but on the other hand the law-abidingness inherent in English institutions may owe much to it. Again when one hears a modern French lawyer say that his Government has the power but not the right, say, to confiscate the citizen's property without compensation, he is appealing probably to a distinction of this mediaeval origin.

The 17th century was the age of the Law of Nature, but this is still a living influence in jurisprudence and as such will be treated in a suitable context.

Modern.—The 19th century is memorable not so much for its direct contributions to jurisprudence, considerable though these were, as for the complete revolution effected in the method of the moral sciences. The leading idea, the explanatory theory was now to come after, not before the evidence; and every phase of human life came to be studied in the same realistic fashion as the natural sciences and in accordance with similar, impersonal standards. With this change of outlook the bounds of knowledge began to extend beyond all expectation. History, which began the century as a complete record of the race, ended it as a mere episode in the light of the antiquity of man as revealed by archaeology and palaeontology. It is not what the Renaissance handed on from the ancients that has made us what we are, but the cave-designers of Altamira or conceivably the tool-workers of Foxhall. But beyond thus carrying our knowledge back into the remote past and filling us with a sense of foreboding as to what may still lurk within our minds, fresh fields were rapidly disclosed on all sides, for instance, the lives of the simpler peoples, ancient myths and dreams. *The Golden Bough* was an event of the century. Then came psychology, experimental, social and analytical. Thus it comes about that the student to-day is faced in the social sciences with a body of ordered knowledge in relation to which any theory of his must needs be formulated. And the jurist, mindful of Maitland's scorn for those "who elegantly stroll along the high priori road," would be the last to wish it otherwise.

Yet another movement has affected the jurist. This has made him more of a scientist by removing the one time temptation of jurisprudence as an "art." In the 17th century Coke was a leader of the parliamentary party, and provided his followers with their political ideals and their party slogans. In a subsequent age, such was the excellence of the *Commentaries* that Blackstone moulded the social thought of his countrymen for the better part of a century (and not always to their good). In Continental Europe apparently the jurist has always been prompter or critic at the political *première.* In the 19th century all this was altered. The flame of continental nationalism, the spirit of economic discontent could never have emerged from the φροντιστήρια ("chop shops") frequented by Austin, and though Bentham must be credited with many a useful social change, he belonged to an age that was past. The new democratic world found its own ideals; cheaper books and newspapers, intensified electioneering, the growth of clubs and societies, all helped to elbow out the down-at-heels jurist. At the close of the century the school that stood closest to the Benthamite tradition found nothing so alien as the spirit of English law. All this was pure gain to the jurist. To-day he has no political affinities and few social responsibilities. He has the freedom of all the sciences and can pursue truth whithersoever it may lead.

The best historical introduction is to be found in Roscoe Pound's *Jurisprudence,* in H. E. Barnes' *History and Prospects of the Social Sciences* (1925), and *Interpretations of Legal History* (1923).

THE MEANING OF LAW

The Problems.—The political sciences put two major problems to the jurist. The one is special and in the main presented by the work of the field anthropologist. "Have the simpler peoples a rule of law?" In the past society has been conceived much on Aristotelian lines. First we find members of a clan taking to a settled mode of life, then for mutual protection neighbouring clans draw together into villages and finally out of a closer

union of villages there arises the true political unit, the "city" aiming at the well-being of each and all. (*See* further 34 *Monist* [1924], p. 15–62.) In these post-war days clans have been rushed into statehood if not into actual membership of the League of Nations regardless of the Aristotelian logic. The policy of this is neither here nor there, but the jurist can hardly look upon such peoples as without the law. If this position be accepted, how should we differentiate between these peoples and those others no less backward who continue to live as before? The customs of such a folk may not exhibit any regularity intelligible to us, yet taboos are observed and their behaviour implies order of a kind. They are far removed from the incessant turbulence which Hobbes imagined of people living before the reign of law. The problem here presented is a real one. The relation of taboo to law is an inviting subject of research, but here it must suffice to emphasize the special difficulty of the jurist.

The second problem is of a different order. In social theory law is used in a wider sense than by the practitioner. All social regulatives go to the making of the comprehensive idea to which social science gives the name of law. The jurist finds no difficulty in according the title to the selfsame thing. When Pindar sings of law that is king of all, he understands; when the national anthem swells to the refrain *le Roi, la Loi, la Liberté,* the jurist recognizes that law from observation of the courts and the working of the constitution. His difficulty arises when he tries to understand the relation between law in the practitioner's sense and this larger social meaning. Social science for its part has realized the difficulty; the interrelation of law and custom, or law and morality, has long been pondered and skilfully dealt with (*see* L. T. Hobhouse's *Morals in Evolution*). It is peculiarly a sociological problem, yet social science calls for the jurist's aid.

Apart from extraneous considerations the jurist seeks a significant characteristic to distinguish the two meanings. No merely formal distinction can satisfy. "In tota jurisprudentia," Winkler profoundly observes, "nihil est quod minus legaliter tractari possit quam ipsa principia." The jurist is also precluded from resorting to an *a priori* test. He is an observer of a particular group of social phenomena and he must explain them. Should he light upon emerging values so much the better. Primarily however he is an observer. Many consequences flow from this. For one thing he is concerned with the law as it is administered in the courts, not merely the rules found in practice books. Among the merits of Dicey's studies in the law not the least was this. He never for a moment forgot that the law is something more than the sum of the practitioner's rules. He had the jury constantly in mind, even in describing the rules themselves. Now what happens when a jury comes to the decision of a particular case, an issue of murder, a breach of promise action? Is their verdict an expression of twelve men's "reason"; do they merely apply a general rule to a particular instance? Psychologists look rather to all that animates men acting singly and in a group. Many random influences they say are there; group loyalties and social sentiments, vocational habits of mind and the shock of ideas, repressions and all the factors of the unconscious life called into being by the staging of the trial. The psychologist can be left to study this. What concerns the jurist is that the jury's verdict, however arrived at, is an expression of the law in the wider social sense. In so far as it is arrived at by reference to a rule or standard, that rule or standard is the law as the layman understands it. The principle involved in the jury's decision is often that of the lawyer's practice-book; sometimes it is a qualification of it (as where a jury declares to be manslaughter what counsel must advise is murder); or a complete reversal (as when the jury vindicates "the unwritten law"). In Continental Europe, where the jury is less in evidence, the same larger influences make themselves felt. The law then is essentially an elastic conception.

Definition.—Definition then by differentiation can hardly be the most appropriate form; a centre and circumference formula will prove more suitable. It is proposed to define law for the jurist as *the sum of the influences that determine decisions in courts of justice.* This will be found to satisfy the main conditions expected of a working definition.

(1) The definition holds of all rules, of every kind and form of law the jurist is called upon to consider. The term Influence is preferable to Rule, which Salmond employs, because it avoids the strong intellectualist bias inseparable from Rule. Not every ingredient in a judicial decision is intellectual. "Only the trivial elements of the process are controlled by the abstract laws of logic." It is a more appropriate term for many of the factors contributing to the decision. (*See* further 31 *H.L.R.* 1060–62.) There is no legitimate consideration which enters into a judgment which is not covered by the definition.

(2) It makes no impossible demands upon social theory as to the way law is to be there defined. Nor does it prejudice any of the contending theories as to the metaphysical, moral or other basis of law.

(3) It enables the anthropologist's problem to be answered without recourse to artificial distinctions. The ordinary regulatives of life in a savage community may be baffling; Totem and Taboo for example are two of the problems of the hour in anthropology and psychology alike. But the jurist, however, may see the rudiments of justice wherever something in the nature of a trial takes place. Trial by ordeal is practically universal among the simpler peoples. Matters for the ordeal then are matters of law. Trial by ordeal survived the beginnings of the common law; the law of the king's courts was expounded by the aid of the ordeal until the jury took its place. Apparently a similar process occurred in the case of the civil law. *Legis actio* replaced the ordeal, only this was before the beginning of the historical period. Historically then there is warrant for the definition covering the "law" of the simpler peoples.

(4) It emphasizes the independent character of law in social development. Political history, economic development, cultural progress have each a different story to tell. These factors may have changed *pari passu* and incontestably they have all reacted on the law. But the law has a history of its own and there is only a limited correspondence between the stages of legal development and those of any of the other social factors.

(5) It is in keeping with a widespread movement in jurisprudence for the development of judge-made law, for enlarging the scope of the judge's functions and liberalizing the influences which condition his work. This is much in evidence in the United States.

The following (among other) authorities should be consulted: J. W. Salmond, *Jurisprudence* (1908) and the authors mentioned in the bibliography; E. Picard, *Le Droit Pur* (1899); C. del Vecchio, *I Presupposti* (1905); R. Pound, *Opera Omnia* (*Outlines of Jurisprudence,* 1914, has a useful bibliography); F. Somlo, *Juristische grundlehre* (Leipzig, 1917); H. Goitein, *Primitive Ordeal and Modern Law* (1924).

SOVEREIGNTY

The most prolific if not the principal rule-making organization in the modern world is the State, but as it happens the theory of the State is the peculiar concern of the political thinker. For forms of government let philosophers contend. When the jurist steps in the whim of Caligula may be as much law as an act of parliament. The supreme need of the lawyer is to be assured of the authenticity of his rules. This topic is traditionally disposed of under the heading of Sovereignty and little need have been said about it but for the stir it caused some hundred years ago. The law had become petrified and reform all round was long overdue. The reformer was found in Jeremy Bentham, a man of extraordinary parts. No wonder he gained disciples and Austin offered him a Boswell's devotion. Now Austin had conceived his idea of law in the army, so at least Mrs. Austin's biography would indicate. Law was a command, the command of the sovereign. For centuries legal sovereignty (*i.e.,* the final authentication of rules to be applied in the English courts) had lain with king, lords and commons. That is still the theory of English law. Now if anything the sovereign chooses to command is law, popular legislation can usher in the Benthamite era. It did; and Austin was all for furthering the good work. He analysed the theory of English law and found the real sovereign to be king, lords and—electors. A little Procrustean perhaps but next morning the

political sovereign (*i.e.* the community [electors] politically organised) arose from his bed as the legal sovereign. No wonder the Germans called Austin 'tendentious.'

The following are among the more important recent discussions of the subject. L. Duguit (Bordeaux) *Law in the Modern State* (1913, transl. F. & H. Laski 1921); H. L. R. vol. XXXI pp. 51–185, F. Gény, Rev. Trim. de Droit Civil no. 4 p. 779–829; H. Laski (Oxford) *Studies in the Problem of Sovereignty* (1917), *Authority in the Modern State* (1919), *A Grammar of Politics* (1925); H. Kelsen (Vienna), *Der Soziologische und der juristische Staatsbegriff* (1922), *The Conception of the State of Social Psychology,* in the *Internat. Jl. of Psycho-Analysis* vol. V, p. 1 (1924), and *Théorie Générale de l'état,* in *Revue du Droit Public,* vol. XLIII no. 4, pp. 561–646 (1926); J. Krabbe (Leiden) *The Modern Idea of the State* (The Hague, 1915 transl. G. H. Sabine and W. J. Shepard 1922); F. Somló (Kolozsvár) *Juristische Grundlehre* pp. 251–329; C. Schmitt (Bonn), *Soziologie des Souveränitätsbegriffes in Erinnerungsgabe für Max Weber* (edit. M. Palyi 1923); and a most valuable essay by John Dickinson (Princeton, U.S.A.) *A Working Theory of Sovereignty* in *Pol. Sc. Qu.* vol. XLII pp. 524–548 (1927) and vol. XLIII pp. 32–63 (1928).

THE LEGAL ORDER

In recent jurisprudence the question is constantly to the fore, What is the function or end of law? The immediate object of the law, as anyone can see, is the solution of social conflicts. But not every conflict. Where then is the line to be drawn? According to Roscoe Pound, the function of the law is so to balance interest as to secure the utmost of each while sacrificing in the general interest the least of any. But the English courts expect the parties to have delimited their interests for themselves, with or without previous governmental aid. With first hand knowledge of the main factors affecting them, the parties stake out their respective claims, and, with reference to the law of the land, formulate the scheme that is to govern their relations. A price fixing agreement is a common modern example. In the absence of such a formula and when the ordinary law is silent, the court may have to find a rule of its own. On the other hand, where social interests have to be weighed (*e.g.,* the validity of contracts in restraint of trade), the court is soon back at its old task of meting out even-handed justice between man and man. The fact is that Roscoe Pound's theory is more truly a theory of legislation and it is in that direction that its practical bearings are so important. All his instances of what is actually going on in legal systems are examples of legislative change. And as a rule a theory of legislation will not serve as a theory of adjudication ("for the wisdom of a law maker is one thing and of a lawyer another"). It may readily be conceded that the policeman on point duty has diminished enormously the number of accidents, but he is hardly the proper person to decide which of two insurance companies is to pay for a collision. And conversely, Dr. Johnson had some original notions as to the proper functions of the lord chancellor, but point duty was not one of them. Of more importance perhaps is it to consider the implication that it is the business of the jurist to ascertain and formulate the "jural postulates" of the period. He is to ascertain and weigh the various claims that emerge from among contending social forces and decide how they are to receive recognition by the community. This task is indeed formidable. One may well hope with O. W. Holmes that "it is finally for science to determine, so far as it can, the relative worth of our different social ends" (*Collected Papers,* p. 242) and yet doubt whether jurisprudence is that science. Let the judge, the text-writer, the great lawyer be as "creative" as a kind Providence may allow, who is he to act the arbiter of the values of the modern world? The theory may well brave ridicule, indeed for its compelling plea for social enlightenment among lawyers it will outlast many a fashion; still the purely descriptive method of Dicey's *Law and Opinion in the 19th Century* seems a much safer guide. There one may see how social conflicts work themselves out and leave a deposit on the law, even though the reader be left in the end with a more chastened view of the jurist's functions. In the meantime the original inquiry has been lost sight of. What after all is the answer to the question first propounded? Hitherto no satisfactory answer has been forthcoming. In the future it may be different, at least if studies like John Dickinson's *Administrative Justice and the Supremacy of Law* are any guide. Ultimately the question seems one for practical judgment. Should workmen's compensation be for the Ministry of Health, or for the county courts? Should the latest frontier incident in the Balkans be settled by the League Council or the Permanent Court? Let the *φρόνιμος* decide.

ORIGINS AND PSYCHOLOGICAL BASIS OF LAW

Maine found the origins of law in Themistes, "judgments," from which, he thought, Themis "law," was derived by abstraction. Except that, as we now think, it was the other way round, Themistes were derived from Themis, everything has tended to confirm what can only be described as an intuition of genius. Themis was one with Ge, Mother Earth, a goddess of no merely local or Hellenic significance. Sir Arthur Evans has shown that the Great Mother, whose worship is so richly illustrated in the Minoan cultures, was indeed a universal figure throughout the Neolithic world. Possibly we may go even further. These figures seem strangely to recall the celebrated goddess of Willendorf and the other Aurignacian figures hardly less famous. This of course is but conjecture and it is safer to return to the soil of Greece. It is not without significance that Pythagoras could identify Themis with a cosmic figure, Themis in the world above, Dikē (justice) in the world below, Nomos (law) in the world of men. This may be no more than one of the thousand religious fancies of the Greeks. Folklore teaches otherwise. By no means confined to the dream world of ancient Greece is the figure of the Mother in pursuit, never to relent till her fury has exacted her "eye for an eye, a tooth for a tooth." Equally does every mythology know the Mother who releases to new life. On every hand we find ceremonies of rebirth and the Ordeal itself seems to have been just such a rite. Can we doubt then that in this elemental figure we see the primal face of justice and that in man's two-fold attitude towards her is to be found the roots of his need for law? True the nature of the need has had to disguise itself, it has been rationalised away. Aristotle did not deign to cast a glance behind but hastened to identify reason with the law. Reason is so to order one's life that no offence be ever occasioned (*honeste vivere, alterum non laedere*); but if this cannot always be, then readily to tender or accept amends. But it is hardly in this common sense, wide-eyed world that the law flourishes. Only in the twilight of the inner mind can the grievance be nursed to fruition or the black need of revenge swell to a passion for "justice." Two thousand years of reason have failed to light up fully these dark recesses of the mind. Somewhere deep down within us there still lurks a vestige of man's primal need and the phantom figure of the Great Mother must pass to punish or assuage. If it is but rarely that we realise this, it is due to a want of understanding rather than of opportunity. Most days at any rate in the dock of an Assize town will be found some dumb sentient creature wondering why the law whose lash he has so often felt has failed to smooth out the muddle of his life. Nor are traces wholly wanting in the demeanour of those who seek redress in the civil courts. "When I think of the law" writes one of the most distinguished of living judges, "as we know her in the court house and the market, she seems to me a woman sitting by the wayside, beneath whose overshadowing hood every man shall see the countenance of his deserts or needs. The timid and overborne gain heart from her protecting smile. Fair combatants manfully standing to their rights, see her keeping the lists with the stern and discriminating eye of even justice. The wretch who has defied her most sacred commands and has thought to creep through ways where she was not, finds that his path ends with her and beholds beneath her hood the inexorable face of death." (O. W. Holmes, *Collected Legal Papers* p. 27.)

For a criticism of the psychology here relied on *see* J. Rickman, *International Journal of Psycho-Analysis* vol. vi (1925) p. 92 and *British Journal of Medical Psychology* vol. vii (1927) p. 115.

THE LAW OF NATURE

Theories of the law of nature have varied, but they conform in the main to one or other of two types. On the one hand there is the idea which embodies the reaction against the conventions and artificiality of social life. On the other, the scientific ideal in

accordance with which the development of the law may be regulated. Of the former type was the law Pindar extolled, the law of the strong right arm with Hercules for hero. This was in essence the conception of Hobbes. Rousseau's name on the other hand has always been linked with the Romantics who, equally resenting the "restraints imposed by the weak and the rabble," sigh for the Golden Age. The two types are subtly interlinked, for this conception also flourished at the time when the Roman jurists were perfecting the scientific conception, their most original contribution to the world's stock of moral ideas. These jurists generalized their own *jus gentium* and sought in the fundamental features of similar or universal legal institutions suggestions for the simplification of their own rules and an ideal towards which they might converge. Under the influence of this movement distinctions based on privilege fell away one by one, Quirites and plebeians, Romans and Latins, citizens and colonials and many another, till by the light of the law of nature a man was "a man for a' that" and *civis Romanus* was his boast. This scientific conception has played at all times, the mediaeval period included, a very great role in the development of law; and at no time, perhaps, more significantly than in the 17th and 18th centuries when it gave rise to the modern law of nations. This is not the place to estimate the debt the world owes to Grotius, but the beginnings of international law must always be associated with his name. The idea of the law of nature itself is too vast for adequate treatment here. The reader will find an excellent approach to the subject in Pollock's *Essays in the Law*. Two current phases however are of more than passing interest.

In England, the classic home of justice through juries and legislation by laymen, it is befitting to turn first to a popular movement, which finds expression simply as an impatience with the law. Law is no longer the background of life. Life is something bigger than the law. To suggest that well-being or happiness whether of the individual or society is to be sought in such a direction is to invite polite ridicule. This derisory note, by no means always so light hearted, is well caught in a widely fashionable anthology, "The law may be likened to a whimsical lady. It is an advantage to have a knowledge of her character but her embraces are to be avoided" (*The Week End Book* 16th Imp. 1926, p. 318). Allowing for the graver atmosphere of the House of Commons, we have Sir J. Simon saying: "I am not spending my time in discussing some miserable legal technicality . . . I know . . . that I have been talking law but I am the last person in this House to suppose that law is the whole of life. I have never thought so. . . . There are considerations involved in this whole story which are vastly more important than any merely legal proposition . . . apart from the legal question there is a social question, an industrial question and a human question" (Sir J. Simon on *The General Strike,* 1926, p. 15, 26). No less significant is the feeling that finds expression on the stage. *St. Joan* is surely indicative of its age. It is hard to say whether the play or its popularity is the more remarkable phenomenon. There is no more faithful representation of a trial in the whole of literature, and the audience may be forgiven for believing that they have had revealed to them the last secrets of justice. It may be remembered that in the epilogue the president of the court is brought on to make his avowal as well. This is what he says: "The judges in the blindness and bondage of the law praise thee, for thou hast vindicated the freedom and the vision of the living soul." If this is not of the quintessence of the law of nature English political thought since Wyclif is wholly without meaning.

The other conception of the law of nature also has its modern counterpart. In the words of a notable American judge, one of the great needs of the law to-day is "a philosophy that will mediate between the conflicting claims of stability and progress and supply a principle of growth" (Cardozo J., 37 *H.L.R.*, p. 279). To meet this need a great body of European speculation and controversy has come into being. There is the work of Saleilles, with which for its lucidity and good sense the revival in France is worthily associated. For Saleilles natural law finally spells the comparative method (*cf.* "École Historique et Droit Naturel," 10 *Rev. Trim. de Droit Civil,* i. [1902] p. 80). Then there is Stammler, a name to conjure with abroad. He dissociates himself from traditional *Naturrecht,* though his peculiar cast of mind sets him in the right line of that tradition. When is what purports to be law really law? When can we be certain that what is law is also just? Every jurist must face problems such as these. For Stammler they presented themselves as essentially theoretical questions. A formal criterion of legal validity, characterized by unity and universality was at once his need and his aim. "Our purpose is to find a universally valid formal method by means of which the necessarily changing material of empirically conditioned legal rules may be so worked out, judged and determined that it shall have the quality of objective justice" (*Theory of Justice,* p. 89). Hence the slogan of his school, "natural law with a variable content." Impressive though this may be, one is apt to turn in the end to Oliver Wendell Holmes: "Natural Law" (*Collected Legal Papers,* p. 310).

As law involves a reference to uniformities of human conduct it is tempting to see some connection between this law (and a fortiori the law of nature) and law in the scientist's sense (especially in its more abstract forms). And at no time more so than in the 19th century when ideas borrowed from scientific thinking played so large a part in popular morality. Natural law came to reinforce the authority of social law, behind the social order lay the world order. It was only a step to identifying the two (as in H. H. Bancroft's *Popular Tribunals* [San Francisco 1887] I p. 30–34, a fine "period piece"); B. J. Gilman's *Logical Study of Law* (scientists' use) 34 Mind No. 135 will serve as a sufficient corrective, or even Croce's pithballs (*Philosophy of the Practical* [Ainslie] p. 481 ff.) for a class-room test. MacIver's *Community* is the usual reference for the systematic identification. J. E. G. de Montmorency's *Natural History of Law* presents a more suggestive thesis, but it is best read along with Morris R. Cohen's *The Social Sciences and the Natural Sciences* (in Ogburn and Goldenweisser's *The Social Sciences,* 1927) even though the logic there is perhaps a shade too rigorous and less negative comparisons might be warranted. There are notable contributions to method by recent German writers. *Cf. e.g.* Emil Lask, *Rechtsphilosophie in the Festschrift für Kuno Fischer;* English (Brünn) *Grundlagen des wirtschaftlichen Denkens;* L. Nelson, *System der philosophischen Rechtslehre;* S. Marck, *Substanz und Funktionsbegriff in der Rechtsphilosophie;* M. Solomon, *Grundlegung zur Rechtsphilosophie.* For the views of F. Kaufmann, C. A. Emge, J. Kraft and others see the *Archiv für Rechtsphilosophie.*

THE SCOPE OF JURISPRUDENCE

The wide range of topics with which jurisprudence concerns itself will be suggested by the number of matters to which no more than a passing reference can here be made quite as much as by those already dealt with. Of Liberty (F. W. Maitland, *Collected Papers* vol. I p. 1–120); A. Levi, *Contributi* (1914) [s. 35] and of Persons, of Property (*e.g.* Joüon des Langrais, La Saisine, 1925) and of Crime a mere mention alone is possible. And so of Rights, cardinal in jurisprudence and political theory alike. For the rest the reader must content himself with the following bibliography.

BIBLIOGRAPHY.—Besides the works already mentioned see F. Gény, *Méthode d'Interpretation, Science et Technique* (1913); *L'Oeuvre juridique de R. Saleilles* (various writers, 1914); J. Charmont *La Renaissance du Droit naturel* (1909); P. de Tourtoulon, *Philosophy in the Development of Law* (1922), G. Davy, *Le Droit* (1922); G. Renard, *Le Droit* (3 vols. 1925–27), E. Ehrlich *Soziologie des Rechts* (1913); 36 H. L. R. p. 130–145; H. V. Kantorowitz (Gnaeus Flavius) *Lehre vom Richtigen Recht* (1909); A. Merkl, *Die Lehre von der Rechtskraft* (1923); E. Kaufmann, *Kritik des neukantischen Rechtsphilosophie* (1921); *Festgabe für R. Stammler,* (edit. E. Tatarin-Tarnheyden (1926); W. Haensel, *Kants Lehre vom Widerstandsrecht* (1926) the footnotes to which will serve as an admirable bibliography of modern German jurisprudence. The following articles of Morris R. Cohen, *Int. Jl. of Ethics* vol. XXIV (1914), p. 88, XXV (1915), p. 469, XXVI (1916), p. 347, 29 H. L. R. p. 622, *Philosophical Review* vol. XXV (1916), 761, *Journal of Philosophy* (1925), p. 141; B. N. Cardozo, *The Nature of the Judicial Process* (1921); *The Growth of the Law* (1924); L. B. Register, *Science of Legal Method* (1921); J. B. Ames, *Lectures on Legal History* (1913); W. N. Hohfeld, *Fundamental Legal Conceptions* (edit. W. W. Cook 1920).

The following periodicals should be referred to for their wealth of

material, *Harvard Law Review* (H. L. R.), *International Journal of Ethics* (Int. Jl. Ethics) *Political Science Quarterly* (Pol. Sc. Qu.), *L'Année Sociologique, Revue de Metaphysique et de Morale, Revue générale du Droit, Logos* (Tübingen), *Archiv für Rechtsphilosophie* and the *Zeitschrift für vergleichende Rechtswissenschaft.*

The following bibliographies are useful, *Bibliographie générale des Sciences juridiques* etc. de 1800 à 1925–6 (Grandin, Recueil Sirey, Paris); *Index to Legal Periodicals* (N.Y. annually in parts) *The Psychological Index* (Princeton, N.J. annually), *The Readers' Guide to Periodical Literature* (No. 7 for the more popular articles) *International Index to Periodicals* (N.Y.). (H. Got.)

JURISPRUDENCE, COMPARATIVE. The comparative study of law may be treated in two different ways: it may be directed to a comparison of existing systems of legislation and law, with a view to tracing analogies and contrasts in the treatment of practical problems and taking note of expedients and of possible solutions; or it may aim at discovering the principles regulating the development of legal systems, with a view to explain the origin of institutions and to study the conditions of their life. In the first sense, comparative jurisprudence resolves itself into a study of home and foreign law. In the second, comparative jurisprudence is one of the aspects of so-called sociology, being the study of social evolution in the special domain of law. From this point of view it is, in substance, immaterial whether the legal phenomena subjected to investigation are ancient or modern, are drawn from civilized or from primitive communities. The fact that they are being observed and explained as features of social evolution characterizes the inquiry and forms the distinctive attribute separating these studies from kindred subjects. It is only natural, however, that early periods and primitive conditions rather than recent developments should have attracted investigators in this field. The tendency of all evolutionary investigations is to obtain a view of origins in order to follow up the threads of development from their initial starting-point. Besides, the simpler phenomena of ancient and primitive society afford more convenient material for generalizations as to legal evolution than the extremely complex legal institutions of civilized nations. But there is no determined line of division between ancient and modern comparative jurisprudence in so far as both are aiming at the study of legal development. The law of Islam or, for that matter, the German civil code, may be taken up as a subject of study quite as much as the code of Hammurabi or the marriage customs of Australian tribes.

The Beginnings of the Study.—The idea that the legal enactments and customs of different countries should be compared for the purpose of deducing general principles from them is as old as political science itself. It was realized with special vividness in epochs when material could be gathered from different sources and in various forms. The wealth of varieties and the recurrence of certain leading forms led to comparison and to generalizations based on comparison; Aristotle, who lived at the close of a period marked by the growth of free Greek cities, summarized, as it were, their political experience in his *Constitutions* and *Politics*. Another great attempt at comparative observation was made at the close of the pre-revolutionary period of modern Europe. Montesquieu took stock of the analogies and contrasts of law in the commonwealths of his time and tried to show to what extent particular enactments and rules were dependent on certain general currents in the life of societies—on forms of government, on moral conditions corresponding to these, and ultimately on the geographical facts with which various nationalities and states have to reckon in their development.

It is perhaps just worthy of note, in view of the importance folklore and folk customs were to assume, that Blackstone in his comparisons was not averse to instances taken from these sources. Thus he would explain the peculiar custom known as *Borough English* (*q.v.*), under which the youngest instead of the eldest son inherits, by a reference to "the practice of the Tartars among whom, according to Father Duhalde, this custom of descent also prevails." (Blackstone's *Commentaries*, Bk. II, Cap. 6.)

These were, however, only slight beginnings. It was reserved for the 19th century to come forward with connected and far-reaching investigations in this field as in many others, comparative jurisprudence, as here understood, dates from the second half of the century.

19th Century Investigators.—There were many reasons for such a departure. The 19th century was an eminently historical and an eminently scientific age: in the domain of history it may be said that it opened an entirely new vista. Before that time history was conceived as a narrative of memorable events, more or less skilful, more or less sensational, but appealing primarily to the literary sense of the reader; in the 19th century it became an encyclopaedia of reasoned knowledge, a means of understanding social life by observing its phenomena in the past. The historic bent of mind of 19th century thinkers was to a great extent the result of heightened political and cultural self-consciousness. It was the reflection in the world of letters of the tremendous upheaval in the states of Europe and America which took place from the close of the 18th century onwards. As one of the greatest leaders of the movement, Niebuhr, pointed out, the fact of being a witness of such struggles and catastrophes as the American Revolution, the French Revolution, the Napoleonic empire and the national reaction against it, taught every one to appreciate the importance of historical factors, to measure the force not only of logical argument and moral impulse, but also of instinctive habits and traditional customs. It is not a matter of chance that the *historical school* of jurisprudence, Savigny's doctrine of the organic growth of law, was formed and matured while Europe collected its forces after the most violent revolutionary crisis it had ever experienced, and in most intimate connection with the romantic movement, a movement animated by enthusiastic belief in the historical, traditional life of social groups as opposed to the intellectual conceptions of individualistic radicalism.

On the other hand, the 19th century was a scientific age and especially an age of biological science. Former periods—the 16th and 17th centuries especially—had bequeathed to it high standards of scientific investigation and a conception of the world as ruled by laws and not by capricious interference. But these scientific views had been chiefly applied in the domain of mathematics, astronomy and physics; and though great discoveries had been made in physiology and other branches of biology, the achievements of 19th century students in this respect far surpassed those of the preceding period. The doctrine of transformation which came to occupy the central place in scientific thought was eminently fitted to co-ordinate and suggest investigations of social facts. Though much is expressed in the one name of Darwin, it is perhaps even more significant as a symbol of the tendency of a great epoch, and to this tendency we are indebted for the rise of anthropology and of sociology, of the scientific study of man and of the scientific study of society. Of course it must not be forgotten that the scope of the subject has been immensely widened by growth of knowledge with regard to savage and half-civilized nations. Ethnography and ethnology have come into the field with a wealth of material and it is with their help that the far-reaching generalizations of modern inquirers as to man and society have been achieved.

Influence of Philological Research.—The immediate incitement for the formation of comparative jurisprudence was given by the discoveries of comparative philology, now chiefly associated with the name of Max Müller, which revealed the profound connection between the different branches of the Indo-European languages, and showed that the development of these languages proceeded on lines which might be studied in a strictly scientific manner, on the basis of comparative observation and with the object of tracing the uniformities of the process. Naturally, students of religion, of folklore and of legal institutions took up the same method and tried to win similar results.

It is interesting to note that one of the leading scholars of the Germanistic revival, Jacob Grimm, a compeer of Savigny in his own line, took up with remarkable success not only the scientific study of German but also that of Germanic mythology and popular law. His *Rechtsalterthümer* are still unrivalled as a collection of data as to the legal lore of Teutonic tribes. Their basis is undoubtedly narrow; but the method of treatment is already a

comparative one. Grimm takes up the different subjects—property, contract, crime, etc.—and examines them in the light of national, provincial and local customs, sometimes noticing expressly affinities with Roman and Greek law. It would have been well if more of the work of this school had followed this scholarly model, but the results of the new method were too exciting for that. As if the common elements of French, Spanish and Italian constituted the language Cicero spoke, the newly discovered affinities of the Indo-European languages invited the reconstruction of "Aryan" of which, unlike Latin, there is no record. This perhaps might have passed, but when enthusiasts went on to formulate a code of civil law (with a *jus gentium* thrown in) for the hypothetical users of an inferential language it was time to call a halt. Such extravagances, however, must not blind us to the importance of the immediate effects of the new methods, the rare stimulus to research and enquiry at once afforded. For Maine and his contemporaries the triumphs of comparative philology were a thing to emulate. "I should, however, be making a very idle pretension if I held out a prospect of obtaining by the application of the comparative method of jurisprudence any results which in point of interest or trustworthiness are to be placed on a level with those which, for example, have been accomplished in comparative philology" (Maine, *Village Communities,* 1871, p. 8).

The comparative study of primitive law assumed a wholly different aspect in the works of Sir Henry Maine. His best personal preparation for the task was that he had come into contact with living legal customs in India. For him the comparison between the legal lore of Rome and that of India did not depend on linguistic roots or on the philological study of the laws of Manu, but was the result of recognizing again and again, in actual modern custom, the rules and institutions of which he had read in Gaius or the Twelve Tables. The sense of historical analogy and evolution had shown itself already in the lectures on *Ancient Law,* which, after all, were mainly a presentment of Roman legal history mapped out by a man of the world, averse to all pedantry. But what appears as the expression of Maine's personal aptitude and intelligent reading in *Ancient Law* gets to be the interpretation of popular legal principles by modern as well as by ancient instances in *Village Communities, The Early History of Institutions, Early Law and Custom.* This breadth of view seemed startling when the lectures appeared, and the original treatment of the subject was hailed on all sides as a most welcome departure in the study of legal customs and institutions. And yet Maine set very definite boundaries to his comparative surveys. He renounced the chronological limitation confining such inquiries to the domain of antiquaries, but he upheld the ethnographical limitation confining them to laws of the same race.

Thus, notwithstanding all diversities in the treatment of particular problems, one leading methodical principle runs through the works of all the above-mentioned exponents of comparative study. It was to proceed on the basis of common origin and on the assumption of a certain common stock of language, religion, material culture and law to start with.

Ethnology and Jurisprudence.—The literary group which started from the discoveries of comparative philology and history was met on the way by what may be called the ethnological school of inquirers. The original impetus was given, in this case, by jurists and historians who took up the study in the field of ancient history, but treated it from the beginning in such a way as to break up the subdivisions of historic races and to direct the inquiry to a state of culture best illustrated by savage customs. The first impulse may be said to have come from J. J. Bachofen (*Mutterrecht,* 1861; *Antiquarische Briefe,* 1880; *Die Sage von Tanaquil*). All the representatives of "Aryan" antiquities were at one in laying stress on the patriarchal and agnatic system of the kindreds in the different "Aryan" nations; even Leist, although dwelling on the importance of cognatic ties, looks to agnatic relationship for the explanation of military organization and political authority. Now, Bachofen discovered in the very tradition of classical antiquity traces of a fundamentally different state of things, the central conception of which was not patriarchal power, but maternity, relationship being traced through mothers, the wife presenting the constant and directing element of the household, while the husband (and perhaps several husbands) joined her from time to time in more or less inconstant unions. Some such a state of society is described by Herodotus in the case of the Lycians, and something of the same nature possibly is noticeable even in later historical times in Sparta (for Herodotus as an anthropologist, *cf.* J. L. Myres in R. R. Marett's *Anthropology and the Classics*). Although chiefly drawing his materials from classical literature, Bachofen included in his *Antiquarian Letters* an interesting study of the marriage customs and systems of relationship of the Malabar Coast in India; they attracted his attention by the contrasts between different layers of legal tradition—the Brahmans living in patriarchal order, while the class next to them, the Nayirs (Nairs), follow rules of matriarchy.

Similar ideas were put forward in a more comprehensive form by J. F. McLennan (*Studies in Ancient History,* 1876). He starts from the wide occurrence of marriage by capture in primitive societies, and groups the tribes of which we have definite knowledge into endogamous and exogamous societies according as they take their wives from among the kindred or outside it. Marriage by capture and by purchase are signs of exogamy, connected with the custom in many tribes of killing female offspring. The development of marriage by capture and purchase is a powerful agent in bringing about patriarchal rule, agnatic relationship, and the formation of clans or *gentes,* but the more primitive forms of relationship appear as variations of systems based on mother-right. These views are supported by ethnological observations and used as a clue to the history of relationship and family law in ancient Greece. In further contributions, published after his death, the peculiarities of exogamous societies are traced back to the even more primitive practice of Totemism (*q.v.*). McLennan's line of inquiry was taken up in a very effective manner not only by anthropologists like E. B. Tylor or scholars like A. Lang, but also in a special manner by students of primitive family law. An interesting monograph in this direction is Robertson Smith's study of *Kinship and Marriage in Early Arabia.*

But perhaps the most decisive influence was exercised by the discoveries of an American, Lewis H. Morgan. In his epoch-making works on *Systems of Consanguinity* (1869) and on *Ancient Society* (1877) he drew attention to the remarkable fact that in the case of a number of tribes—the Red Indians of America, the Australian black fellows, some of the polar races, and several Asiatic tribes, mostly of Turanian race—degrees of relationship are reckoned and distinguished by names, not as ties between individuals, but as ties between entire groups, classes or generations. Instead of a mother and a father a man speaks of fathers and mothers; all the individuals of a certain group are deemed husbands or wives of corresponding individuals of another group; sisters and brothers have to be sought in entire generations, and not among the descendants of a definite and common parent, and so forth. There are variations and types in these forms of organization, and intermediate links may be traced between unions of consanguine people—brothers and sisters of the same blood—on the one hand, and the monogamic marriage prevailing nowadays, on the other. Facts of this kind produce very peculiar and elaborate systems of relationship, which have been copiously illustrated by Morgan in his tables. In his *Ancient Society* he attempted to reduce all the known forms and facts of marriage and kinship arrangements to a comprehensive view of evolution leading up to the Aryan, Semitic and Uralian family, as exhibiting the most modern type of relationship.

To complicate the matter still further the existence of classificatory systems of relationship may or may not be accompanied by an ignorance of the fact of paternity. Many of the simpler peoples see no causal connection between conception and birth. This surprising fact first arose to startle the scientific world in the course of field work by Spencer and Gillen among the Arunta in Australia. It was subsequently confirmed by Rivers for three entirely unconnected peoples and elaborately tested by Malinow-

ski in the case of the Trobriand Islanders (*see* his *Sex in Primitive Societies, Psyche,* vols. iv. and v. and the *I.R.A.I.* 1916). It may therefore now be taken as completely established. For a psychological discussion of the ignorance in question, see a valuable article by Ernest Jones, *"Mother Right and Sexual Ignorance of Savages," International Journal of Psycho-Analysis,* vol. vi., p. 109 (1915).

Totemism and exogamy, sexual ignorance and the classification system have become one of the most difficult topics in anthropology and equally one of the most eagerly canvassed. There is a voluminous literature on the subject; Frazer's *Totemism and Exogamy* heading the list. This great work is a mine of information, and all the principal explanations to account for what after all remain most perplexing phenomena will be found there fully discussed. Students will also refer to his *Folk lore in the Old Testament,* II. vi., and to studies of special peoples that will be found in the I.R.A.I.

Among other works which should be mentioned is Freud's *Totem and Taboo* which offers some highly stimulating psychological reading. The best criticism of it is still that of A. L. Kroeber (22 *American Anthropologist,* 1920, p. 48–55) but unfortunately his note of warning, that henceforth Freud's thesis could never be ignored without stultification, has in some instances passed unheeded, with the result that much patient work has been entirely wasted. On the other hand, some of Freud's followers have not allowed his brilliant suggestions to fructify, but, in their zeal, have reduced them to rigid formulae and spent themselves in elaboration.

Thus there has come about by itself a complete change of perspective in the comparative study of man and society. The right of ethnologists to have their say in regard to legal, political and social development was forcibly illustrated from both ends, as it were. On the one hand, classical antiquity itself proved to be a rather thin layer of human civilization hardly sufficient to conceal the long periods of barbarism and primitive evolution which had gone to its making. On the other hand, unexpected combinations in regard to family, property, social order, were discovered in every corner of the inhabited world, and our trite notions as to the character of laws and institutions were reduced to the rank of variations on themes which recur over and over again, but may be and have been treated in very different ways.

There is no need to speak of the use made of ethnological material in the wider range of anthropological and sociological studies—the works of Westermarck, Tylor and Frazer are in everybody's hands—but attention must be called to the further influence of the ethnological point of view in comparative jurisprudence. An interesting example of the passage from one line of investigation to another, from the historical to the anthropological, is presented in the works of one of the founders of the *Zeitschrift für Vergleichende Rechtswissenschaft*—Franz Bernhöft. He appears in his earlier books as an exponent of the comparative study of Greek and Roman antiquities, more or less in the style of Leist. Like the latter he was gradually incited to draw India into the range of his observations, but unlike Leist, he ended by fully recognizing the importance of ethnological evidence, and the influence of Bachofen and of the ethnologists made itself felt in Bernhöft's treatment of classical antiquity itself. A somewhat similar process will occur to the minds of English readers in the case of Jane Harrison, Gilbert Murray, Sir Arthur Evans and others.

But, of course, the utmost use was made of ethnological evidence by writers who cut themselves entirely free from the special study of classical or European antiquities. The most characteristic representative of these newer methods of extensive comparison was undoubtedly A. H. Post (1839–95)—the author of many works, in which he ranges over the whole domain of mankind—Hovas, Zulus, Maoris, Tunguses, alternating in a kaleidoscopic fashion with Hindus, Teutons, Jews, Egyptians. The order of his compositions is systematic, not chronological or even ethnographical in the sense of grouping kindred races together. He takes up the different subdivisions of law and traces them through all the various tribes which present any data in regard to them. What he sought was not common origin or a common stock of ideas, but recourse to similar expedients in similar situations; and it is one of the most striking results of ethnology that it can show how peoples entirely cut off from one another and even placed in very different planes of development can resort to analogous solutions in analogous emergencies. Is not the custom of the so-called *Couvade*—the pretended confinement of the husband when a child is born to his wife—a most quaint and seemingly recondite ceremony? Yet we find it practised in the same way by Basques, Californian Indians and some Siberian tribes. They have surely not borrowed from each other, nor have they kept the ceremony as a remnant of the time when they formed one race (*see* Frazer, *Totemism and Exogamy,* iv. 244, de Jong, *Couvade* and Reik, *Probleme der Religionspsychologie*). Again, an inscription from the Cretan town of Gortyn, published in the American *Journal of Archaeology* (2nd series, vol. i., 1897) by Halbherr, tells us that the weapons of a warrior, the wool of a woman, the plough of a peasant, could not be taken from them as pledges. We find a similar idea in the prohibition to take from a knight his weapons, from a villein his plough, in payment of fines, which obtained in mediaeval England and was actually inserted in Magna Carta. The legal conception of pledge has been carefully worked out on a broad basis of evolutionary comparison by J. H. Wigmore (*The Pledge Idea,* in *Primitive and Ancient Legal Institutions,* Boston, 1915). Here also the similarity extends to details, and is certainly not derived from direct borrowing or common origin but from analogies of situations translating themselves into analogies of legal thought. It may be said in a sense that for the ethnological school the less relationship there is between the compared groups the more instructive the comparison turns out to be.

Criticism of Ethnological Theory.—Ethnologists of Post's school have not had it entirely their own way, however. Not only did their natural opponents, the philologists, historians and jurists, reproach them with lack of critical discrimination, with a tendency to throw the most disparate elements into the same pot. In their own ranks a number of conscientious and scientifically trained investigators protested against the manner in which the most intricate problems had been treated, and sought to evolve more definite methodical rules. A very interesting departure was attempted by Dargun in his studies on the origin and development of property and his treatise on mother-right and marriage by capture. His lead was followed by R. Hildebrand in the monograph on law and custom and subsequently by L. T. Hobhouse, whose series of studies *Morals in Evolution, Mind in Evolution* and the *Material Culture of the Simpler Peoples* are now the recognized works on the subject.

The principal idea of these inquirers may be stated as follows. We must utilize ethnological as well as historical materials from the whole world, but it is no use doing this indiscriminately. Fruitful comparisons may be instituted mainly in the case of tribes on the same level in their general culture and especially their economic pursuits. Hunting tribes must be primarily compared with other hunters, fishers with fishers, pastoral nations with pastoral nations, agriculturists with agriculturists; nations in transitional stages from one type of culture to the other have to be grouped and examined by themselves. The result would be to establish certain parallel lines in the development of institutions and customs. Another line of criticism was opened up from the side of exact sociological study. Its exponent is Steinmetz, who represents with Wilken the Dutch group of investigators of social phenomena. He takes up a standpoint which severs him entirely from the linguistic and historic school. In a discourse on the *Meaning of Sociology* (p. 10) he says: "One who judges of the social state of the Hindus by the book of Manu takes the ideal notions of one portion of the people for the actual conditions of all its parts." In his sense jurisprudence is a part of ethnology and of the comparative history of culture.

The necessity of employing more stringent standards of criticism and more exact methods is now recognized, and it is characteristic that the late Joseph Kohler of Berlin, principal editor of the *Zeitschrift für vergleichende Rechtswissenschaft,*

often gives expression to this view. Beginning with studies of procedure and private law in the provinces of Germany where the French law of the Code Napoléon was still applied, he has thrown his whole energy into monographic surveys and investigations in all the departments of historical and ethnological jurisprudence. The code of Hammurabi, the legal customs of the different tribes and provinces of India, the materials supplied by investigators of Australian and American tribes, the history of legal customs of the Mohammedans, and numberless other points of ethnological research, have been treated by him in articles in his *Zeitschrift* and in other publications. Comprehensive attempts have also been made by him at a synthetic treatment of certain sides of the law—like the law of debt in his *Shakespeare vor dem Forum der Jurisprudenz* (1883) or his *Primitive History of Marriage*. Undoubtedly we have not to deal in this case with mere accumulation of material or with remarks on casual analogies. And yet the importance of these works consists mainly in their extensive range of observation. *See* also his *Die Anfänge des Rechts und das Recht der primitiven Völker* and for a valuable discussion of Kohler's work, R. Pound's *Interpretations of Legal History* (1923) and *Jurisprudence* in Barnes' *History and Prospects of the Social Sciences* (1925). Now in Kohler's work and that of some of his compeers and followers, J. E. Hitzig, Hellwig, Max Huber, R. Dareste, more exact forms and means of inquiry are employed and the results testify to a distinct heightening of the scientific standard in comparative jurisprudence. Especially conspicuous in this respect are three tendencies: (*a*) the growing disinclination to accept superficial analysis between phenomena belonging to widely different spheres of culture as necessarily produced by identical causes (*e.g.*, Darinsky's review of Kovalevsky's assumptions as to group marriage among the Caucasian tribes, *Z. für vgl. Rw.* xiv. 151 *seq.*, or Boas and Goldenweiser in their treatment of Totemism); (*b*) the selection of definite historical or ethnological territories for monographic inquiries, in the course of which arrangements observed elsewhere are treated as suggestive material for supplying gaps and starting possible explanations: Kohler's own contributions have been mainly of this kind; (*c*) the treatment of selected subjects by an intensive legal analysis, bringing out the principles underlying one or the other rule, its possible differentiation, the means of its application in practice, etc.: Hellwig's monograph on the right of sanctuary in savage communities (*Das Asylrecht der Naturvölker*) may be named in illustration of this analytical tendency.

The collection of ethnological parallels for the case of sociology and comparative jurisprudence has proceeded in a most fruitful manner, and it has now become all the richer for the valuable contributions of archaeology. The spade has revealed traces of cultures unknown to history, and for the most part lacking all written record. The study of social origins has thus taken on an entirely fresh aspect and though it has only postponed the longer the solution of the big questions comparative jurisprudence had hoped to solve, it has added enormously to the fascination of the subject. The comparison, for example, of the condition of life of the simpler peoples and the products of prehistoric cultures has proved most suggestive; few who have read such a work as Sollas' *Ancient Hunters* can have failed to realize this. (*See* also Carveth Read, *The Origin of Man;* G. G. MacCurdy, *Human Origins;* Burkitt's *Prehistory* [for the *Old Stone Age*]; V. Gordon Childe's *Dawn of History* [for the *New*]).

Assistance from Psychology.—Ethnological studies have to look for guidance to psychology, especially to the psychology of emotional life and of character. Although these branches of psychology have been less investigated than the intellectual processes, they afford material help to the ethnologist and comparative jurist. Steinmetz made an attempt to utilize a psychological analysis of the feelings of revenge in his *Origin of Punishment.* Wundt, too, might be mentioned in this connection, but the wholly new impulse given to the study of psychological questions by Freud and his followers has left all such works far behind; his *Totem and Taboo* has already been referred to. It is much too early yet to estimate the results of a movement of so far reaching a character, but the work of an investigator like W. H. Rivers, at once field anthropologist, physician and psychologist, may be mentioned as among the first fruits of the newer methods. Certainly in the whole of the vast field there is no branch where patient research will so richly reward the investigator. For the literature John Rickman's *Index Psycho-Analyticus,* 1893–1926, a model bibliography, is here invaluable.

Review of Method.—It is desirable, in conclusion, to review the field and to formulate the chief principles of method. It is evident, to begin with, that a scientific comparison of facts must be directed towards two aims—towards establishing and explaining similarity, and towards enumerating and explaining differences. As a matter of fact the same material may be studied from both points of view, though logically these are two distinct processes.

Cause and Effect.—At this initial stage we have already to meet a difficulty and guard against a misconception; we have, namely, to reckon with the *plurality of causes,* and are debarred from assuming that wherever similar phenomena are forthcoming they are always produced by identical causes. Death may be produced by various agents—by sickness, by poison, by a blow. The habit of wearing mourning upon the death of a relation is a widespread habit, and yet it is not always to be ascribed to real or supposed grief and the wish to express it outwardly: savage people are known to go into mourning in order to conceal themselves from the terrible spirit of the dead which would recognize them in their everyday costume (Frazer's *Golden Bough* iii. 31 and General Index). This is certainly a momentous difficulty at the start, but it can be greatly reduced and guarded against in actual investigation. In the example taken we are led to suppose different origin because we are informed as to the motives of the external ceremony, and thus we are taught to look not only to bare facts, but to the psychological environment in which they appear. And it is evident that the greater the complexity of observed phenomena, the more they are made up of different elements welded into one sum, the less probability there is that we have to do with consequences derived from different causes. The recurrence of group-marriage in Australia and among the Red Indians of North America can in no way be explained by the working of entirely different agencies.

Borrowing.—The easiest way of explaining a similarity is by attributing it to a direct *loan.* The process of reception, of the borrowing of one people from another, plays a notable part in the history of institutions and ideas. The Japanese have in our days engrafted many European institutions on their perfectly distinct civilization; the Romans absorbed an enormous amount of Greek and Oriental law in their famous jurisprudence. A check upon explanation by direct loan will, of course, lie in the fact that two societies may be entirely disconnected, so that it comes to be very improbable that one drew its laws from the other. Although migrations of words, legends, beliefs, charms, have been shown by Theodor Benfey and his school to range over much wider areas than might be supposed, still, in the case of law, in so far as it has to regulate material conditions, the limits have perhaps to be drawn rather narrowly. In any case we shall not look to India in order to explain the burning of widows among the negroes of Africa; *suttee* may be the example of this custom which happens to be most familiar to us, but it is certainly not the only root of it on the surface of the earth.

It is much more difficult to make out the share of direct borrowing in the case of peoples who might conceivably have influenced one another. A hard and fast rule cannot be laid down in such cases, and everything depends on the weighing of evidence and sometimes on almost instinctive estimates. The use of a wager for the benefit of the tribunal in the early procedure of the Romans and Greeks, the *sacramentum* and the πρυτανεία, with a similar growth of the sum laid down by the parties in proportion to the interests at stake, has been explained by a direct borrowing by the Romans from the Greeks at the time of the Twelve Tables legislation (Hofmann, *Beiträge zur Geschichte des griechischen und römischen Rechts*). No direct proof is available for this hypothesis, and the question in dispute might have lain for ever between this explanation and that based on the analogous

development in the two closely related branches of law. The further study of the legal antiquities of other branches of the "Aryan" race leads one to suppose, however, that we have actually to do with the latter and not with the former eventuality. Why should the popular custom of the *Vzdání* in Bohemia (Kapras, "Das Pfandrecht in altböhmischen Landrecht," *Z. für vgl. Rw.* xvii. 424 *seq.*), regulating the wager of litigation in the case of two parties submitting their dispute to the decision of a public tribunal, turn out to be so similar to the Greek and the Roman process? And the Teutonic Wedde would further countenance the view that we have to do in this case with analogous expediency or, possibly, common origin, not loans.

Disconnected Analogies.—This leads to the consideration of what we may call disconnected analogies. They are instructive in so far as they go back, not to any continuous development, but to the fundamental, psychological and logical unity of human nature. In similar circumstances human beings are likely to solve the same problems in the same way. But while dwelling on considerations which may disprove the assumption of direct loans, we must not omit to mention circumstances that may render such an assumption the best available explanation for certain points of similarity. We mean especially the recurrence of special secondary traits not deducible from the nature of the relations compared. Terminological parallels are especially convincing in such cases. An example of most careful linguistic investigation attended by important results is presented by Thomsen's treatment of the affinities between the languages and cultures of the peoples of northern and eastern Europe in his *Über den Einfluss der germanischen Sprachen auf die Finnisch-lappischen* (trans. E. Sievers, 1870), p. 166, *seq.* (*cf.* the same writer's *Relations between Ancient Russia and Scandinavia and the Origin of the Russian State,* p. 127 *seq.*, and Miklosich, "Die Fremdwörter in den slavischen Sprachen," *Denkschriften der Wiener Akademie,* Ph. hist. Klasse, XV.).

The Diffusionists.—It is in the light of the foregoing considerations that the claims of the recent Diffusionists, G. Elliott Smith and W. J. Perry, had best be judged. Indeed, had they paid a little more regard to them their original and suggestive theories might have been even more numerous, and there certainly would have been fewer extravagances for their critics to tax them with. For some very temperate criticism, *see* R. R. Marett, *The Diffusion of Culture.* On the subject of borrowings generally, *see* Lowie, *Primitive Society,* and for a psychological discussion of the mechanism of diffusion F. C. Bartlett, *Psychology and Primitive Culture.*

Common Origins.—The next group of analogies is formed by cases which may be reduced to common origin. In addition to what has already been said on the subject in connection with the literature of the historical school, we must point out that in the case of kindred peoples this form of derivation has, of course, to be primarily considered. Inferences in the direction of common origin become more doubtful when we argue, not that certain facts proceed from a common stock of notions embodied in the early culture of a race before it was broken up into several branches, but that they have to be accounted for as instances of a similar treatment of legal problems by different peoples of the same ethnic family. The only thing that can be said in such a case is that, methodically, the customs of kindred nations have the first claim to comparison. But it is by no means useless for the investigator of these problems to inform himself about the aspect of such customs in the life of nations of other descent, and especially of the simpler peoples.

Consecutive Stages.—Organizing thought always seeks to substitute order for chaotic variety. Observations as to disconnected analogies lead to attempts to systematize them from some comprehensive point of view. These attempts may take the shape of a theory of consecutive stages of development. Similar facts appear over and over again in ethnological and antiquarian evidence, because all peoples and tribes, no matter what their race and geographical position, go through the same series of social arrangements. This is the fundamental idea which directed the researches of Maine, McLennan, Morgan, Post, Kohler, although each of these scholars formulated his sequence of stages in a peculiar way. McLennan, for instance, puts the idea referred to in the following words:—

> In short, it is suggested to us, that the history of human society is that of a development following very slowly one general law, and that the variety of forms of life—of domestic and civil institution—is ascribable mainly to the unequal development of the different sections of mankind. . . . The first thing to be done is to inform ourselves of the facts relating to the least developed races. To begin with them is to begin with history at the farthest-back point of time to which, except by argument and inference, we can reach. Their condition, as it may to-day be observed, is truly the most ancient condition of man (*Studies in Ancient History,* 2nd series, 9, 15).

On this basis we might draw up tables of consecutive stages, of which the simplest may be taken from Post:—

> Four types of organization: the tribal, the territorial, the seignorial, and the social. The first has as its basis marriage and relationship by blood; the second, neighbouring occupation of a district; the third, patronage relations between lord and dependants; the fourth, social intercourse and contractual relations between individual personalities (*Grundriss,* i. 14).

It is, however, at the very least, premature to sketch anything like a course of universal development for legal history. We have grave doubts whether the time will ever come for laying down any single course of that kind. The attempts made hitherto have generally led to overstating the value of certain parts of the evidence and to squeezing special traits into a supposed general course of evolution.

Economic Stages and Types.—Another group of thinkers is therefore content to systematize and explain the material from the point of view, not of universal history, but of correspondence to economic stages and types. This is, as we have seen, the leading idea in Dargun's or Hildebrand's investigations. It is needless to go into the question of the right or wrong of particular suggestions made by these writers, but the general trend of study initiated in this direction is certainly promising, if only investigators are very chary of laying down certain combinations as the necessary outcome of certain economic situations. Such combinations or consequences certainly exist; pastoral husbandry, the life of scattered hunting groups, the conditions of agriculturists under feudal rule, certainly contain elements which will recur in divers ethnical surroundings. But we must not forget that different minds and characters will draw different and perhaps opposite conclusions in exactly similar outward conditions. This may happen in identical or similar geographical environment—as in the case of ancient Greeks and Turks on the Balkan peninsula, for instance, or of ancient Greeks and modern Greeks. But even the same *historical medium* leaves, as a rule, scope for treatment of legal problems on divers lines. Take systems of succession. They exercise the most potent influence on the structure and life of society. Undivided succession, whether in the form of primogeniture or in that of junior right, sacrifices equity and natural affection to the economic efficiency of estates. Equal-partition rules, like *gavelkind* or *parage,* lead in an exactly opposite direction. And yet both sets of rules co-existed among the agriculturists of feudal England; communities placed in nearly identical historical positions followed one or the other of these rules. The same may be said of types of dwelling and forms of settlement. In other words, it is not enough to start from a given economic condition as if it were bound to regulate with fatalistic precision all the incidents of legal custom and social intercourse. We have to start from actual facts as complex results of many causes, and to try to reduce as much as we can of this material to the action of economic forces in a particular stage or type of development.

Conclusion.—If one turns to a current number of the *Zeitschrift* one will probably find that the first article deals with some such topic as the Soviet Civil Code, and the last with, say, a biological theory of Totemism. Clearly no one scientific pursuit can embrace such diverse topics, nor would a common origin be even suspected from the opening sentences of this article. The two methods there indicated have indeed diverged. The comparative study of law, narrowing itself to more immediately practical aims, has become a subject all to itself, and the work of Mario Sarfatti

and that of the Institute over which Prof. Edouard Lambert presides amply justify its special recognition. The other method has undergone a more subtle transformation. By almost imperceptible steps comparative jurisprudence passed into juristic ethnography, and then widened out into cultural anthropology. There was little difference of subject matter, hardly any of treatment, only the outlook was broader and the point of view freed from the preoccupations of the jurist. But if the special training of the lawyer is no longer a first requisite in the comprehensive study of social phenomena, that is not to say that the jurist is not concerned for the solution of his own particular problems. In fact, it is precisely from this angle that both jurists and sociologists are coming to discover fresh possibilities for their investigations. Within the realm of the empirical social sciences there is a special pursuit for the jurist: the effort to understand the specific nature of legal institutions and ideas. To add one more to the long list of illustrations this article has already afforded of problems opened up if not solved: the Ordeal, hitherto wholly unintelligible but cardinal in every primitive system of justice, is at last beginning to engage the attention it deserves. After all, it is justice and the law and not social organization or culture that is the primary concern of the jurist. But this is to begin a new chapter. (P. Vi.; H. Got.)

Bibliography.—References to many works on special branches of our subject are given throughout the article; important excerpts from these and others will be found in Wigmore and Kocourek's *Evolution of Law*, 3 vols., 1915–19, Boston. *The Continental Legal History* (edited by J. H. Wigmore, 1912, with an Introduction to vol. iv. by Prof. Vinogradoff) is also invaluable. The list of books in Prof. Vinogradoff's *Historical Jurisprudence*, the footnotes and references in *The History and Prospects of the Social Sciences* (H. E. Barnes, 1915) together with the excellent bibliographies in Park and Burgess, *Introduction to the Science of Sociology* (1924) will serve as a sufficient guide to the vast literature on the subject.

For periodicals, see the list given in the *Journal of the Royal Anthropological Institute* and those mentioned in the last bibliography to Jurisprudence.

JURJĀNĪ, the name of two Arabic scholars.

1. Abū Bakr ʿAbdu-l-Qāhir ibn ʿAbdur-Raḥmān ul-Jurjānī (d. 1078), Arabian grammarian, belonged to the Persian school and wrote a famous grammar, the *Kitāb ul-ʿAwāmil ul-Miʾa* or *Kitāb Miʾat ʿĀmil,* which was edited by Erpenius (Leiden, 1617), by Baillie (Calcutta, 1803), and by A. Lockett (Calcutta, 1814). Ten Arabic commentaries on this work exist in ms., also two Turkish. Another of his grammatical works on which several commentaries have been written is the *Kitāb Jumal fin-Nahw.*

For other works *see* C. Brockelmann's *Gesch. der Arabischen Litteratur* (1898), i.

2. ʿAlī ibn Maḥommed ul-Jurjānī (1339–1414), Arabian encyclopaedic writer, was born near Astarābād and became professor in Shīrāz. When this city was plundered by Tīmūr (1387) he removed to Samarkand, but returned to Shīrāz in 1405, and remained there until his death. Of his 31 extant works, many being commentaries on other works, one of the best known is the *Taʿrifāt* (*Definitions*), which was edited by G. Flügel (Leipzig, 1845), published also in Constantinople (1837), Cairo (1866, etc.), and St. Petersburg (1897). (G. W. T.)

JURY: *see* Practice and Procedure.

JUS GENTIUM: *see* Roman Law.

JUS PRIMAE NOCTIS ("right of first night"), or *droit du seigneur,* a custom alleged to have existed in mediaeval Europe giving the lord the right to sleep the first night with the bride of any one of his vassals. This custom is paralleled in various primitive societies; however, practically none of the evidence that we have deals with its actual enforcement in Europe, but only with the redemption dues which were paid under various significant names (*cunnagium, cullage, ius cunni,* etc.) to avoid its enforcement. The one document which appears to present it actually in action (decree of the Seneschal of Guyenne, 1302) has been challenged on several grounds. The question is violently controversial, and has been, especially in France, the subject of remarkable displays of embittered and scabrous learning. With some hesitation, it may be said that the weight of evidence does point to the existence of such a custom, at a very early date, in parts of France and possibly also in a few centres in Italy and Germany, but certainly not elsewhere. This observation refers merely to the existence of a recognized custom; irregular oppression of this particular kind was no doubt frequent enough.

See L. Veuillot, *Le droit du seigneur au moyen age* (1854); J. Delpit, *Réponse d'un Campagnard . . . ou Refutation du livre de M. Veuillot* (1857) and *Le Droit du seigneur* (1873), also the *Grand Dictionnaire Larousse, s.v.* "Droit."

JUS RELICTAE, in Scots law, the wife's common law right in the moveable property of her husband, exigible from him or his executors on the dissolution of the marriage by his divorce or death. The right depends upon the husband's domicile being Scottish. The amount of the right is one-third where there are children of the husband surviving, and one-half where there are no surviving children. The right vests on divorce or by survivance, and is independent of the husband's testamentary provisions; it may, however, be renounced by contract, or be discharged by satisfaction. It is subject to alienation of the husband's moveable estate during his lifetime or by its conversion into heritage.

Jus relicti is the statutory right of a husband to a share in his wife's moveable estate, in the event of her dying, domiciled in Scotland. *See* the Married Women's Property (Scotland) Act 1881. It is not due to the husband where the marriage is dissolved by the divorce of his wife, but in other respects as regards amount, exclusion, discharge and satisfaction it is subject to the same rules as *jus relictae.*

JUSSERAND, JEAN ADRIEN ANTOINE JULES (1855–1932), French author and diplomatist, was born at Lyons on Feb. 18, 1855. Entering the diplomatic service in 1876, he became in 1878 consul in London. After an interval spent in Tunis he returned to London in 1887 as a member of the French embassy. In 1890 he became French minister at Copenhagen, and in 1902 was transferred to Washington. He remained there until his retirement from the service in 1925, serving his country's interests throughout the difficult war and post-war periods with great tact and ability. A close student of English literature, he produced some very lucid and penetrating studies on comparatively little-known subjects: *Le Théâtre en Angleterre depuis la conquête jusqu'aux prédécesseurs immédiats de Shakespeare* (1878); *Le Roman au temps de Shakespeare* (1887; Eng. trans., E. Lee, 1890); *Les Anglais au moyen âge: la vie nomade et les routes d'Angleterre au XIVe siècle* (1884: Eng. trans., *English Wayfaring Life in the Middle Ages,* by L. T. Smith, 1889), and *L'Épopée de Langland* (1893, Eng. trans., *Piers Plowman,* by M. C. R., 1894). His *Histoire littéraire du peuple anglais,* the first volume of which was published in 1895, was completed in three volumes in 1909. In English he wrote *A French Ambassador at the Court of Charles II.* (1892), from the unpublished papers of the count de Cominges. His other works include *With Americans of Past and Present Days* (1916); *The School for Ambassadors, and other Essays* (1924). He died July 18, 1932.

JUSSIEU, DE, the name of a French family distinguished for its botanists. The more eminent members are:—

1. Antoine de Jussieu (1686–1758); born at Lyons on July 6, 1686, studied at the university of Montpellier, and travelled with his brother Bernard through Spain, Portugal and southern France. In 1708, he went to Paris where he became director of the Jardin des Plantes. His own original publications are not of marked importance, but he edited Tournefort's *Institutiones rei herbariae* (3 vols., 1719), and J. Barrelier's *Plantae per Galliam, Hispaniam, et Italiam observatae,* etc. (1714). He died at Paris on April 22, 1758.

2. Bernard de Jussieu (1699–1777), younger brother of the above, was born at Lyons on Aug. 17, 1699. He studied medicine at Montpellier, but in 1722, became sub-demonstrator of plants in the Jardin du Roi at Paris. In 1725 he brought out a new edition of Tournefort's *Histoire des plantes qui naissent aux environs de Paris,* 2 vols. Long before Abraham Trembley (1700–84) published his *Histoire des polypes d'eau douce,* Jussieu maintained that these organisms were animals, and not the flowers of marine plants, then the current notion. He died at Paris on

Nov. 6, 1777.

3. JOSEPH DE JUSSIEU (1704–1779), brother of Antoine and Bernard, was born at Lyons on Sept. 3, 1704. Educated for the medical profession, he accompanied C. M. de la Condamine to Peru, in the expedition for measuring an arc of meridian, and remained in South America for 36 years. He introduced *Heliotropium peruvianum,* Linn. into Europe. He died at Paris on April 11, 1779.

4. ANTOINE LAURENT DE JUSSIEU (1748–1836), nephew of the preceding, was born at Lyons on April 12, 1748. He studied medicine and botany in Paris, and in 1789 issued his *Genera plantarum secundum ordines naturales disposita, juxta methodum in horto regio Parisiensi exaratam, anno* MDCCLXXIV., which formed the basis of modern classification. When the Revolution broke out, the author was installed in charge of the hospitals of Paris. From 1770 to 1826 he was professor of botany at the muséum d'histoire naturelle. He produced nearly sixty memoirs on botanical topics. He died at Paris on Sept. 17, 1836.

5. ADRIEN LAURENT HENRI DE JUSSIEU (1797–1853), son of Antoine Laurent, was born at Paris on Dec. 23, 1797. He displayed the qualities of his family in his thesis for the M.D., *De Euphorbiacearum generibus medicisque earundem viribus tentamen,* Paris, 1824. He made valuable contributions to botanical literature on the *Rutaceae, Meliaceae* and *Malpighiaceae,* and wrote *Botanique,* which reached nine editions, and was often translated. He died at Paris on June 29, 1853.

JUSTI, KARL (1832–1912), German art historian, born at Marburg on Aug. 2, 1832, the son of a clergyman. He studied theology and philosophy at Berlin. He was elected professor at Marburg in 1867. After a visit to Italy in 1871 he became professor of philosophy at Kiel, and in 1873 professor of art history at Bonn. His two chief literary works were *Winckelmann, sein Leben, seine Werke und Zeitgenossen* (Leipzig, 1866–72), and *Diego Velazques und sein Jahrhundert* (Bonn, 1888) which was translated into English in 1889. He died at Bonn on Dec. 9, 1912.

JUSTICE, a term used both in the abstract, for the quality of being or doing what is just, *i.e.,* right in law and equity, and in the concrete for an officer deputed by the Sovereign to administer justice and do right by way of judgment. It has long been the official title of the judges of two of the English superior courts of common law, and it is now extended to all the judges in the supreme court of judicature—a judge in the high court of justice being styled Mr. Justice, and in the court of appeal Lord Justice. The president of the King's bench division of the high court is styled Lord Chief Justice (*q.v.*). The word is also applied, and perhaps more usually, to certain subordinate magistrates who administer justice in minor matters, and who are usually called *justices of the peace* (*q.v.*).

JUSTICE, DEPARTMENT OF: *see* GOVERNMENT DEPARTMENTS.

JUSTICE OF THE PEACE, in England, a magistrate appointed by special commission under the great seal to keep the peace within the jurisdiction for which he is appointed. The title is commonly abbreviated to J.P. and is used after the name. The justices of the peace perform without any other reward than the dignity they acquire from their office a large amount of work indispensable to the administration of the law, including the initiatory stages of all criminal proceedings. Although usually not professional lawyers (and therefore unversed in the rules of evidence), for the most part they discharge their multifarious duties with becoming good sense and impartiality. For centuries they were necessarily chosen mainly from the landed gentry; but at the present day both sexes and all classes of the community are represented on the magisterial bench irrespective of social status or political bias, it being recognized—at least in theory—that capacity duly to administer justice rather than creed, position or party influence should regulate selection and appointment. In great centres of population, where the judicial business of justices is heavy, it has been found necessary to appoint paid justices or stipendiary magistrates to do the work, and an extension of the system to the country districts has been often advocated. Where a borough council desire the appointment of a stipendiary magistrate they may present a petition for the same to the secretary of State and it is thereupon lawful for the king to appoint to that office a barrister of seven years' standing. He is by virtue of his office a justice for the borough, and receives a yearly salary, payable in four equal quarterly instalments. On a vacancy, application must again be made as for a first appointment. There may be more than one stipendiary magistrate for a borough.

The commission of the peace assigns to justices the duty of keeping and causing to be kept all ordinances and statutes for the conservation of the peace, and for the quiet rule and governance of the people. Justices for counties are appointed by the Crown on the advice of the lord chancellor, usually with the recommendation of the lord lieutenant of the county. Justices for boroughs having municipal corporations and separate commissions of the peace are appointed by the Crown, the lord chancellor either adopting the recommendation of the town council, the local advisory committee, or acting independently. Justices cannot act as such until they have taken the oath of allegiance and the judicial oath. A justice for a borough, while acting as such, must reside in or within seven miles of the borough or occupy a house or other property in the borough, but he need not be a burgess. The mayor of a borough is *ex officio* a justice during his years of office and during the succeeding year. As mayor he takes precedence over all borough justices and is entitled to take the chair at all their meetings. But, except when dealing with business relating to the borough, he has not precedence over justices acting in or for the county in which the borough or any part thereof is situated, nor has he precedence over a stipendiary magistrate engaged in administering justice (45/46 Vict. ch. 50, s. 155). The chairman of a county council is *ex officio* a justice of the peace for the county, and the chairman of an urban or rural district council for the county in which the district is situated. The Criminal Justice Act, 1925 (s. 31) empowers the issue of process by justices throughout England and Wales without endorsement. But English warrants for indictable offences in other parts of Great Britain must be "backed" or endorsed by a justice of the jurisdiction in which they are to be executed. A justice acting partially and corruptly may be proceeded against by a criminal information, and a justice improperly refusing to act may be compelled to do so by the high court of justice. An action will lie against a justice for any act done by him in excess of his jurisdiction, and for any act within his jurisdiction which has been done wrongfully and maliciously and without reasonable or probable cause. But no action can be brought against a justice for a wrongful conviction until it has been quashed. The Justices of the Peace Act 1906, abolished the property qualification for county justices. It also removed the necessity for residence within the county, substituting therefor the same residential qualification as for borough magistrates, viz., "within seven miles thereof." The same act removed the disqualification of solicitors to be county justices and added to the existing power to remove other justices from the commission of the peace the power to exclude *ex officio* justices.

The justices for every petty sessional division of a county or for a borough having a separate commission of the peace must appoint a fit person to be their salaried clerk. He must be either a barrister of not less than 14 years' standing, or a solicitor of the supreme court, or have served for not less than seven years as a clerk to a police or stipendiary magistrate, or have been attached to a metropolitan police court. The multifarious and constantly increasing duties and enhanced powers of justices embrace some portion of every important branch of the criminal law and include a considerable number of matters more particularly relating to the civil law.

In the United States, the justices of the peace usually are elected, although sometimes they are appointed by executive authority. The justices of the peace are the lowest of the state courts, and their limitation in civil matters generally is about $200, and in criminal matters they may try only misdemeanors. They are not courts of record. Ordinarily in criminal cases they may not impose a jail sentence, if the person tried prefers to pay the fine imposed.

JUSTICIAR. Unlike all other officers of the central administration in the 12th century the justiciar was not a household official. The justiciarship originated in the king's need for a responsible subordinate who could take as wide a view of the royal needs as the king himself. A man of unquestionable loyalty, with a specialist's knowledge of the details of administration, was necessary to act as regent when the king was abroad, and at other times to take charge of such matters as the king could not arrange himself. Such a man from the nature of his office could not be a member of the king's household. He was in a position superior to that of any household officer.

William I. had appointed men to hold authority while he was in Normandy, but their office had always ended on his return to England. Ranulf Flambard, chaplain to William II., was the first man to hold a position analogous to that of the 12th century justiciars. He was responsible for the collection of William II.'s revenue, and is known to have interested himself in the administration of justice all over the country. In the reign of Henry I. increasing specialisation in the administration meant more and better trained officials. Richard and Ralf Basset, father and son, were successively styled *Justiciarius,* with the implication that they held some authoritative position among the royal judges, but they never held the position of supremacy in the administration which belonged to the justiciar at the end of the century. That was held in the reign of Henry I. by Roger, bishop of Salisbury, who is styled, and who styles himself, *Justiciarius* and *Procurator Anglie.* The fall of Roger owing to King Stephen's jealousy, and the anarchy of Stephen's reign broke the normal development of the administrative offices.

Although at the beginning of his reign Henry II. appointed justiciars, apparently to fill the place once held by Roger, their position was very different. He appointed two justiciars instead of one, and kept them busy with routine work, not at first trusting them with control, even when he was abroad. The Chancellor, Thomas Becket, was the chief minister in the earlier years of the reign, and it was not till after his appointment to the archbishopric and consequent quarrel with Henry that the justiciar became the greatest man in the kingdom after the king. His supremacy was firmly established during the long official career of Richard de Lucy (1153–79) followed by that of Ranulf de Glanvil (1180–89). Head of the whole administration, the justiciar found his labours constantly increasing. The volume of judicial work was growing greater every year owing to the popularity of Henry II.'s reforms. The justiciar presided over the bench of judges at Westminster, organised the judicial circuits, heard difficult pleas, gave his advice to judges on innumerable points of law and himself went round the country to see that the administration was properly conducted. Such work kept him fully occupied when the king was in England. It is not remarkable that although in theory he should have presided over the sessions of the Exchequer (*q.v.*), he was seldom able to be present. When the king was abroad, in addition to his ordinary routine duties, the justiciar had to raise such money as the king needed, and to see that peace was maintained. All the justiciars of the second half of the twelfth century on occasion raised forces and took the field either against rebels (*e.g.,* Count John in 1194) or to preserve the peace of the Marches. Under Richard I. the office grew in importance, since the king was continuously out of the country and it fell to successive justiciars to raise his ransom and the large sums for his war with France. John was interested in English administration and his justiciar, Geoffrey Fitz Peter, had less responsibility than his immediate predecessors. He was able to concentrate more on his judicial work.

The office became extremely important during the minority of Henry III. Hubert de Burgh was not a trained lawyer as Geoffrey Fitz Peter had been, and he was mainly concerned and interested in affairs of state. He was the ruler of the country as no justiciar had ever been before, but he was the last of the great justiciars. His fall (1232) was due to Henry's weariness of his domination, to royal jealousy of the supreme great official. The day of the great officer of state governing all departments and controlling all was past. One of the leading judges was appointed justiciar, but his work was mainly judicial and only lasted till 1234, when the barons secured the fall of the Poitevins, whose support had enabled Henry to rid himself of Hubert de Burgh. During the period of Henry's personal rule no justiciar was appointed. Henry distrusted the great official chancellor, treasurer and justiciar alike. When the barons took control in 1258 the office was re-established for a time. But the baronial justiciars were temporary, paid, and overworked officials, whose work lay in the administration of justice and the supervision of the routine of government. The office came to an end in 1261. In Sicily and Scotland, countries closely connected with England, similar officials existed in the 12th century. In Scotland there were two justiciars, one for the country to the north and another for that to the south of the Forth.

(D. M. S.)

JUSTICIARIUS CAPITALIS ANGLIAE, a minister of State who derived his office from the practice of the Norman kings to appoint two lieutenants to exercise the royal functions during their absence abroad. In this capacity William Fitz-Osbern and Odo of Bayeux acted during the Conqueror's visit to the Continent in 1067, and William of Warenne and Richard Clare who were left in charge in 1074 are described as *praecipui Angliae justiciarii.* Other holders of the office were Lanfranc, Gosfrid of Coutance, and Robert of Mortain. With the return of the king their functions ceased. With the appointment of Ranulf Flambard by William II. as sole holder, the office became permanent, and the justiciar became the first minister of the Crown with the direction of the whole judicial and financial administration of the kingdom. He was followed by Roger of Salisbury, Richard de Lucy, Glanvil, Hubert Walter de Burgh and Geoffrey Fitz Peter. It was the last-named who staved off the breach between John and the barons. The office was never again filled permanently after 1234, and when Robert de Brus was appointed in 1268 he was appointed *ad placita coram rege tenenda,* at the moment when the court of king's bench (*q.v.*) was beginning to emerge as a separate court from *Curia Regis.*

See Holdsworth, *Hist. Eng. Law,* vol. i., p. 36. (H. H. L. B.)

JUSTICIARY, HIGH COURT OF, in Scotland, the supreme criminal court, consisting of the lord justice-general, the lord justice-clerk and 11 lords commissioners of justiciary. (*See* the Criminal Procedure [Scotland] Act, 1887.) Three judges form a quorum, but sometimes five judges sit. When so constituted the high court has power to suspend and to quash the proceedings in the inferior criminal courts on the ground of incompetency or irregularity. The high court has also a statutory jurisdiction to entertain stated cases on points of law from inferior criminal courts. The sittings of the circuit courts of justiciary for the trial of indictments with a jury are presided over by a single judge, but are deemed to be sittings of the high court of justiciary. No other civil criminal court has power to pronounce sentence of death or of penal servitude. Until 1926 the sentences of this court were pronounced for doom and were not subject to suspension or review in any form. A single judge had power, however, instead of deciding a point of difficulty to report it to the high court in Edinburgh for decision if he saw fit. Since the Criminal Appeal (Scotland) Act, 1926, sentences of the justiciary court and of the sheriff and jury court are subject to appeal. In either case the appeal lies to the high court of justiciary then sitting as a court of appeal under that act, with a quorum of three judges and with jurisdiction to entertain an appeal on questions of fact and of law. Appeal from this court does not lie to the House of Lords, either at common law or under the act of 1926.

JUSTIFICATION, in law, the showing by a defendant in an action of sufficient legal reason why he did what he was called upon to answer. The word is employed particularly in actions for defamation (*see* LIBEL AND SLANDER).

JUSTIN I., East Roman emperor from 518 to 527; born in 450 in Asia. He rose to be commander of the imperial guards of Anastasius. On the latter's death in 518 Justin succeeded in securing his own election. Being ignorant even of the rudiments of letters, Justin entrusted the administration of state almost entirely to his quaestor Proclus and to his nephew Justinian. He effected in 519 a reconciliation of the Eastern and Western Churches

after a schism of thirty-five years. (*See* HORMISDAS.) In 522 Justin ceded to Theodoric the right of naming the consuls. On the 1st of April 527, enfeebled by an incurable wound, he assumed Justinian as his colleague; on the 1st of August he died.

See E. Gibbon, *Decline and Fall of the Roman Empire* (ed. Bury, 1896), iv. 206–209.

JUSTIN II. (d. 578), East Roman emperor (565–578), was the nephew and successor of Justinian I. As master of the palace, and as husband of Sophia, the niece of the late empress Theodora, he secured a peaceful election. The first few days of his reign—when he paid his uncle's debts, administered justice in person and proclaimed religious toleration—gave bright promise, but in the face of the lawless aristocracy and defiant governors of provinces he effected few subsequent reforms. The most important event of his reign was the invasion of Italy by the Lombards (*q.v.*), who, entering in 568, under Alboin, in a few years made themselves masters of nearly the entire country. Justin's attention was distracted from Italy towards the N. and E. frontiers. After refusing, with his usual hauteur, to pay the Avars tribute, he fought several unsuccessful campaigns against them. In 572 his overtures to the Turks and protection of the Christian Armenians led to a war with Persia. After two disastrous campaigns, in which his enemies overran Syria, Justin bought a precarious peace by payment of a yearly tribute. The temporary fits of insanity into which he fell warned him to name a colleague. Passing over his own relatives, he raised, on the advice of Sophia, the general Tiberius (*q.v.*) to be Caesar in December 574 and withdrew for his remaining years into retirement.

See E. Gibbon, *Decline and Fall of the Roman Empire* (ed. Bury, 1896), v. 2–17; G. Finlay, *History of Greece* (ed. 1877), i. 291–297; J. Bury, *The Later Roman Empire* (1889), ii. 67–79; N. H. Baynes, *Camb. Med. Hist.*, ii. 263–275. (M. C.)

JUSTIN (IUNIANUS IUSTINUS), Roman historian, probably lived during the age of the Antonines. Of his personal history nothing is known. He is the author of *Historiarum Philippicarum libri XLIV.*, a work described by himself in his preface as a selection from the *Historiae philippicae et totius mundi origines et terrae situs*, written in the time of Augustus by Pompeius Trogus (*q.v.*). The work of Trogus is lost; but the *prologi* or arguments of the text are preserved by Pliny and other writers. The main theme of Trogus was the history of the Macedonian monarchy, but Justin permitted himself considerable freedom of digression. As it stands, however, the history contains much valuable information. The style, though far from perfect, is clear and occasionally elegant. The book was much used in the middle ages, when the author was sometimes confounded with Justin Martyr.

Ed. princeps (1470); J. G. Graevius (1668); J. F. Gronovius (1719); C. H. Frotscher (1827–1830); J. Jeep (1859); F. Rühl (1886, with prologues); *see* also J. F. Fischer, *De elocutione Justini* (1868); F. Rühl, *Die Verbreitung des J. im Mittelalter* (1871); Köhler and Rühl in *Neue Jahrbücher für Philologie*, xci., ci., cxxxiii. There are translations in the chief European languages; in English by A. Goldyng (1564); R. Codrington (1682); Brown-Dykes (1712); G. Turnbull (1746); J. Clarke (1790); J. S. Watson (1853).

JUSTINIAN I. (483–565). Flavius Anicius Iustinianus, surnamed the Great, the most famous of all the emperors of the Eastern Roman Empire, was by birth a barbarian, native of a place called Tauresium in Illyricum[1], and was born, most probably, on May 11, 483, probably of Slavonic parentage. His own name was originally Uprauda[2]. Iustinianus was a Roman name which he took from his uncle Justin I., who adopted him, and to whom his advancement in life was due. Of his early life we know nothing, except that he went to Constantinople while still a young man, and received there an excellent education, though it is alleged that he always spoke Greek with a barbarian accent. When Justin ascended the throne in 518, Justinian became at once a person of the first consequence, guiding, especially in church matters, the policy of his aged, childless and ignorant uncle, and soon coming to be regarded as his destined successor. On Justin's death in 527, having been a few months earlier associated with him as co-emperor, Justinian succeeded without opposition to the throne. About 523 he had married the famous Theodora (*q.v.*), who, as empress regnant, was closely associated in all his actions till her death in 547.

Justinian's reign was filled with great events, both at home and abroad, both in peace and in war. They may be classed under four heads: (1) his legal reforms; (2) his administration of the empire; (3) his ecclesiastical policy; and (4) his wars and foreign policy generally.

1. **Consolidation of Law.**—It is as a legislator and codifier of the law that Justinian's name is most familiar to the modern world. He found the law of the Roman empire in a state of great confusion. It consisted of two masses, which were usually distinguished as old law (*ius vetus*) and new law (*ius novum*). The first of these comprised: (i.) all such of the statutes (*leges*) passed under the republic and early empire as had not become obsolete; (ii.) the decrees of the senate (*senatus consulta*) passed at the end of the republic and during the first two centuries of the empire; (iii.) the writings of the jurists, and more particularly of those to whom the right of declaring the law with authority (*ius respondendi*) had been committed by the emperors. As these jurists had, in their commentaries upon the *leges, senatus consulta* and edicts of the magistrates, practically incorporated all that was of importance in those documents, the books of the jurists may substantially be taken as including (i.) and (ii.). These writings were, of course, very numerous. Many of them had become exceedingly scarce—many had been altogether lost. Some were of doubtful authenticity. They were so costly that even the public libraries had nothing approaching to a complete collection. Moreover, as was natural, they contained many discrepancies and contradictions. A remedy had been attempted to be applied to this evil by a law of the emperors Theodosius II. and Valentinian III., which gave special weight to the writings of five eminent jurists (Papinian, Paulus, Ulpian, Modestinus, Gaius); but it was very far from removing it.

The new law (*ius novum*), which consisted of the ordinances of the emperors promulgated during the middle and later empires (*edicta, rescripta, mandata, decreta*, usually called by the general name of *constitutiones*), was in a condition not much better. These ordinances or constitutions were extremely numerous. No complete collection of them existed, for the earlier Codices did not include all the constitutions; there were others which it was necessary to obtain separately, but many whereof it must have been impossible for a private person to procure. In this branch too of the law there existed some, though a less formidable, uncertainty; for there were constitutions which practically, if not formally, repealed or superseded others without expressly mentioning them. It was therefore clearly necessary to collect so much of the law, both New and Old, as was regarded as binding into a reasonable corpus and to purge away the contradictions and inconsistencies of it.

Immediately after his accession, Justinian appointed a commission to deal with the imperial constitutions (*ius novum*), this being the easier part of the problem. The commissioners, ten in number, were directed to go through all the constitutions of which copies existed, to select such as were of practical value, to cut these down by retrenching all unnecessary matter, and gather them, arranged in order of date, into one volume, getting rid of any contradictions by omitting one or other of the conflicting passages[3]. These law commissioners completed their task in fourteen months, distributing the constitutions which they "retained" into ten books, in general conformity with the order of the Perpetual Edict enacted by Hadrian. By this means the bulk of the statute law was immensely reduced, its obscurities and internal discrepancies in great measure removed, its provisions adapted, by the abrogation of what was obsolete, to the circumstances of Justinian's own time. This *Codex constitutionum* was formally

[1] It is commonly identified with the modern Küstendil, but Skoplye (the former Usküb) has also been suggested. *See* Tozer, *Highlands of European Turkey*, ii. 370.

[2] The name Uprauda is said to be derived from the word *prauda*, which in Old Slavic means *jus, justitia*, the prefix being simply a breathing frequently attached to Slavonic names.

[3] *See*, for an account of the instructions given to the commission, the constitution *Haec quae*, prefixed to the revised *Codex* in the *Corpus iuris civilis*.

promulgated in 529, all imperial ordinances not included in it being repealed at one stroke.

The success of this first experiment encouraged the emperor to attempt the more difficult enterprise of simplifying and digesting the old law. Before entering on this, however, he wisely took the preliminary step of settling the more important of the legal questions as to which the older jurists had been divided in opinion. This was accomplished by a series of constitutions known as the "Fifty Decisions" (*Quinquaginta decisiones*), along with which there were published other ordinances amending the law in a variety of points, in which old and now inconvenient rules had been suffered to subsist. Then in December 530 a new commission was appointed, consisting of sixteen eminent lawyers, under the presidency of the famous Tribonian, who had already served on the previous commission. They were to procure and peruse all the writings of all the authorized jurists (those who had enjoyed the *ius respondendi*); were to extract from these writings whatever was of the most permanent and substantial value, with power to change the expressions of the author wherever conciseness or clearness would be thereby promoted, or wherever such a change was needed in order to adapt his language to the condition of the law as it stood in Justinian's time; were to avoid repetitions and contradictions by giving only one statement of the law upon each point; were to insert nothing at variance with any provision contained in the *Codex constitutionum;* and were to distribute the results of their labours into fifty books, subdividing each book into titles, and following the order of the Perpetual Edict[4].

The commissioners presented their selection of extracts to the emperor in 533, and he published it as an imperial statute on December 16th of that year, with two prefatory constitutions (those known as *Omnem reipublicae* and *Dedit nobis*). It is the Latin volume which we now call the *Digest* (*Digesta*) or *Pandects* (Πάνδεκται). The extracts comprised in it are 9,123 in number, taken from thirty-nine authors, and are of greatly varying length, mostly only a few lines long. The worst thing about the *Digest* is its highly unscientific arrangement. The order of the Perpetual Edict, which appears to have been taken as a sort of model for the general scheme of books and titles, was doubtless convenient to the Roman lawyers from their familiarity with it, but was in itself rather accidental and historical than logical. The disposition of the extracts inside each title was still less rational; it has been shown by a modern jurist to have been the result of the way in which the committees of the commissioners worked through the books they had to peruse. In enacting the *Digest* as a law book, Justinian repealed all the other law contained in the treatises of the jurists (that *ius vetus* which has been already mentioned), and directed that those treatises should never be cited in future even by way of illustration; and he of course at the same time abrogated all the older statutes which had formed a part of the *ius vetus*. This was a necessary incident of his scheme of reform. But he went too far, and indeed attempted what was impossible, when he forbade all commentaries upon the *Digest*. He was obliged to allow a Greek translation to be made of it, but directed this translation to be exactly literal.

These two great enterprises had substantially despatched Justinian's work; however, he, or rather Tribonian, conceived that an outline of the elementary manual law was needed to take the place of the now obsolete *Commentarii* of Gaius. The result was the publication, shortly before the *Digest,* of the *Institutes of Justinian,* a work which nevertheless, both in matter and style, owes much to the work of Gaius.

In the four years and a half which elapsed between the publication of the *Codex* and that of the *Digest,* many important changes had been made in the law, notably by the publication of the "Fifty Decisions." It was therefore natural that the idea should present itself of revising the *Codex,* so as to contain in one volume the whole Statute Law. Accordingly, another commission was appointed, consisting of Tribonian with four other coadjutors, full power being given them not only to incorporate the new constitutions with the *Codex* and make in it the requisite changes, but also to revise the *Codex* generally. This work was completed in a few months; and in November 534 the revised *Codex* (*Codex repetitae praelectionis*) was promulgated with the force of law, prefaced by a constitution (*Cordi nobis*) which sets forth its history, and declares it to be alone authoritative. It is this revised *Codex* which has come down to the modern world.

The constitutions contained in it number 4,652, the earliest dating from Hadrian, the latest being of course Justinian's own. A few thus belong to the period to which the greater part of the *Digest* belongs, *i.e.,* the so-called classical period of Roman law down to the time of Alexander Severus (244); but the great majority are later, and belong to one or other of the four great eras of imperial legislation, the eras of Diocletian, of Constantine, of Theodosius II. and of Justinian himself. Although this *Codex* is said to have the same general order as that of the *Digest,* viz., the order of the Perpetual Edict, there are considerable differences of arrangement between the two. It is divided into twelve books. Its contents, although of course of the utmost practical importance to the lawyers of that time, and of much value still, historical as well as legal, are far less interesting and scientifically admirable than the extracts preserved in the *Digest.*

Between 534 and 565 Justinian issued a great number of ordinances, dealing with all sorts of subjects and seriously altering the law on many points—the majority appearing before the death of Tribonian, which happened in 545. These ordinances are called, by way of distinction, new constitutions, *Novellae constitutiones post codicem* (*νεαραὶ διατάξεις*), *Novels.* Although the emperor had stated in publishing the *Codex* that all further statutes (if any) would be officially collected, this promise does not seem to have been redeemed. The three collections of the Novels which we possess are apparently private collections, nor do we even know how many such constitutions were promulgated. One of the three contains 168 (together with 13 Edicts), but some of these are by the emperors Justin II. and Tiberius II. Another, the so-called *Epitome of Julian,* contains 125 Novels in Latin; and the third, the *Liber authenticarum* or *vulgata versio,* has 134, also in Latin. This last was the collection first known and chiefly used in the West during the middle ages; and of its 134 only 97 have been written on by the *glossatores* or mediaeval commentators; these therefore alone have been received as binding in those countries which recognize and obey the Roman law,—according to the maxim *Quicquid non agnoscit glossa, nec agnoscit curia.* And, whereas Justinian's constitutions contained in the *Codex* were all issued in Latin, the rest of the book being in that tongue, these Novels were nearly all published in Greek, Latin translations being of course made for the use of the western provinces. They may be found printed in any edition of the *Corpus iuris civilis.*

This *Corpus iuris* consists of the four books described above: (1) *Codex constitutionum;* (2) *Digesta* or *Pandectae;* (3) *Institutiones;* (4) *Novellae.*

From what has been already stated, the reader will perceive that Justinian did not, according to a strict use of terms, codify the Roman law. By a codification we understand the reduction of the whole pre-existing body of law to a new form, the re-stating it in a series of propositions, scientifically ordered, which may or may not contain some new substance, but are at any rate new in form. What he did do was something quite different. It was not codification but consolidation. He gave to posterity not one code but two digests or collections of extracts, which are new only to this extent that they are arranged in a new order, and that here and there their words have been modified in order to bring one extract into harmony with some other. Except for this, the matter is old in expression as well as in substance.

Thus regarded, Justinian's work may appear to entitle him and Tribonian to much less credit than they have usually received for it. But let it be observed, first, that to reduce the huge and confused mass of pre-existing law into the compass of these two collections was an immense practical benefit to the empire; secondly, that, whereas the work which he undertook was accomplished in seven years, the infinitely more difficult task of codification might probably have been left unfinished at Tribonian's death, or even at Justinian's own, and been abandoned by his successor; thirdly, that in the extracts preserved in the *Digest* we have the opinions

[4] *See* the Constitution *Deo auctor* (*Cod.* i. 17, 1).

of the greatest legal luminaries given in their own admirably concise language, while in the extracts of which the *Codex* is composed we find valuable historical evidence bearing on the administration and social condition of the later empire; fourthly, that Justinian's age was quite unequal in intellect to so vast an undertaking as the fusing upon scientific principles into one new organic whole of the entire law of the empire.

To the merits of the work as actually performed some reference has already been made. The chief defect of the *Digest* is in point of scientific arrangement, a matter about which the Roman lawyers cared very little. There are some repetitions and some inconsistencies, but not more than may fairly be allowed for in a compilation of such magnitude executed so rapidly. Tribonian has been blamed for the insertions the compilers made in the sentences of the old jurists (the so-called *Emblemata Triboniani*); but it was a part of Justinian's plan that such insertions should be made, so as to adapt those sentences to the law as settled in the emperor's time. On Justinian's own laws, contained in the *Codex* and in his *Novels*, a less favourable judgment must be pronounced. They, and especially the latter, are diffuse and often lax in expression, needlessly prolix, and pompously rhetorical. The policy of many, particularly of those which deal with ecclesiastical matters, may also be condemned; yet some gratitude is due to the legislator who put the law of intestate succession on that plain and rational footing whereon it has ever since continued to stand. It is somewhat remarkable that, although Justinian is so much more familiar to us by his legislation than by anything else, this sphere of his imperial labour is hardly referred to by any of the contemporary historians, and then only with censure. Procopius complains that he and Tribonian were always repealing old laws and enacting new ones, and accuses them of venal motives for doing so.

The *Corpus Iuris* of Justinian continued to be, with naturally a few additions in the ordinances of succeeding emperors, the chief law-book of the Roman world till a new system was prepared by Leo the Isaurian, which we know as the *Basilica*. It is of course written in Greek, and consists of parts of the substance of the *Codex* and the *Digest*, thrown together and often altered in expression, together with some matter from the *Novels* and imperial ordinances posterior to Justinian. In the western provinces, the law as settled by Justinian held its ground; but copies of the *Corpus Iuris* were extremely rare, nor did the study of it revive until the end of the 11th century.

The best edition of the *Digest* is that of Mommsen (Berlin 1868–70), and of the *Codex* that of Krüger (Berlin 1875–77).

2. **Financial Administration.**—In his financial administration of the empire Justinian is represented to us as being at once rapacious and extravagant. His unwearied activity and inordinate vanity led him to undertake a great many costly public works, many of them unremunerative. The money needed for these, for his wars, and for buying off the barbarians who threatened the frontiers, had to be obtained by increasing the burdens of the people. They suffered, not only from the regular taxes, which were seldom remitted even after bad seasons, but also from monopolies and even confiscations. Fiscal severities were no doubt one cause of the insurrections which now and then broke out, and in the gravest of which (532) thirty thousand persons are said to have perished in the capital. It is not always easy to discover, putting together the trustworthy evidence of Justinian's own laws and the angry complaints of Procopius, what was the nature and justification of the changes made in the civil administration. But the general conclusion seems to be that these changes were always in the direction of further centralization, of bringing all offices more directly under the control of the Crown, and in some cases limiting the powers and appropriating the funds of local municipalities. Financial necessities compelled retrenchment, so that a certain number of offices including the useless and expensive Consulship, were suppressed altogether.

In a bureaucratic despotism the greatest merit of a sovereign is to choose capable and honest ministers. Justinian's selections were usually capable, but not so often honest. Even the great Tribonian labours under the reproach of corruption, while the fact that Justinian maintained John of Cappadocia in power long after his greed, his unscrupulousness, and the excesses of his private life had excited the anger of the whole empire, reflects little credit on his own principles of government and sense of duty to his subjects. The department of administration in which he seems to have felt most personal interest was that of public works. He spent immense sums on buildings of all sorts, especially churches. Of these works only two remain perfect, the celebrated St. Sophia in Constantinople, and the church of SS Sergius and Bacchus, now commonly called Little St. Sophia, which stands about half a mile from the great church, and is in its way a very delicate and beautiful piece of work.

3. **Ecclesiastical Policy.**—Justinian's ecclesiastical policy was complex and varying. For many years before the accession of his uncle Justin, the Eastern world had been vexed by the struggles of the Monophysite party, who recognized only one nature in Christ, against the view which then and ever since has maintained itself as orthodox, that the divine and human natures coexisted in Him. The latter doctrine had triumphed at the council of Chalcedon, but Egypt, a great part of Syria and Asia Minor, and a considerable minority even in Constantinople clung to Monophysitism. One of Justinian's first public acts was to put an end to this schism by inducing Justin to make the then patriarch declare his full adhesion to the creed of Chalcedon. When he himself came to the throne he endeavoured to persuade the Monophysites to come in by summoning some of their leaders to a conference. This failing, he ejected suspected prelates, and occasionally persecuted them.

Not long afterwards, his attention having been called to the spread of Origenistic opinions in Syria, he issued an edict condemning fourteen propositions drawn from the writings of the great Alexandrian, and caused a synod to be held which renewed the condemnation of the impugned doctrines and anathematized Origen himself. Still later, he was induced by the machinations of some of the prelates who haunted his court, and by the influence of Theodora, herself much interested in theological questions, and more than suspected of Monophysitism, to raise a needless, mischievous, and protracted controversy. The Monophysites sometimes alleged that they could not accept the decrees of the council of Chalcedon because that council had not condemned, but (as they argued) virtually approved, three writers tainted with Nestorian principles, Theodore of Mopsuestia, Theodoret, and Ibas, bishop of Edessa. It was represented to the emperor, who was still pursued by the desire to bring back the schismatics, that a great step would have been taken towards reconciliation if a condemnation of these teachers, or rather of such of their books as were complained of, could be brought about, since then the Chalcedonian party would be purged from any appearance of sympathy with the errors of Nestorius.

Not stopping to reflect that in the angry and suspicious state of men's minds he was sure to lose as much in one direction as he would gain in the other, Justinian put forth an edict exposing and denouncing the errors contained in the writings of Theodore generally, in the treatise of Theodoret against Cyril of Alexandria, and in a letter of Bishop Ibas (a letter whose authenticity was doubted, but which passed under his name) to the Persian bishop Maris. This edict was circulated through the Christian world to be subscribed by the bishops. The four Eastern patriarchs, and the great majority of the Eastern prelates generally, subscribed. Among the Western bishops, who were less disposed to Monophysitism and subservience, the edict was earnestly resisted. Long disputes and negotiations followed, the end of which was that Justinian summoned a general council of the church, that which we reckon the Fifth, which condemned the impugned writings, and anathematized several other heretical authors. Its decrees were received in the East but long contested in the Western Church, where a schism arose that lasted for seventy years. This is the controversy known as that of the Three Chapters (*Tria capitula, τρία κεφάλαια*), apparently from the three propositions or condemnations contained in Justinian's original edict, one relating to Theodore's writings and person, the second to the incriminated treatise of Theodoret (whose person was not attacked), the third to the letter (if genuine) of Ibas. (*See* Hefele, *Conciliengeschichte*, ii. 777.)

At the very end of his long career of theological discussion, Justinian himself lapsed into heresy, by accepting the doctrine that the earthly body of Christ was incorruptible, insensible to the weaknesses of the flesh, a doctrine which went by the name of Aphthartodocetism. According to his usual practice, he issued an edict enforcing this view, and requiring all patriarchs, metropolitans, and bishops to subscribe to it. Some refused at once, and were deprived of their sees. Others submitted or temporized; but before there had been time enough for the matter to be carried through, the emperor died.

As no preceding sovereign had been so much interested in church affairs, so none seems to have shown so much activity as a persecutor both of pagans and of heretics. He renewed with additional stringency the laws against both these classes. The former embraced a large part of the rural population in certain secluded districts, such as parts of Asia Minor and Peloponnesus; and we are told that the efforts directed against them resulted in the forcible baptism of 70,000 persons in Asia Minor alone. At Athens, the philosophers who taught in the schools hallowed by memories of Plato still openly professed what passed for Paganism, though it was really a body of moral doctrine, strongly tinged with mysticism, in which there was far more of Christianity and of the speculative metaphysics of the East than of the old Olympian religion. Justinian, partly from religious motives, partly because he discountenanced all rivals to the imperial university of Constantinople, closed these Athenian schools (529).

Heresy proved more obstinate. The severities directed against the Montanists of Phrygia led to a furious war, in which most of the sectaries perished, while the doctrine was not extinguished. Harsh laws provoked the Samaritans to a revolt, from whose effects Palestine had not recovered when conquered by the Arabs in the following century. The Nestorians and the Eutychian Monophysites were not threatened with such severe civil penalties, although their worship was interdicted, and their bishops were sometimes banished; but this vexatious treatment was quite enough to keep them disaffected, and the rapidity of the Mohammedan conquests may be partly traced to that alienation of the bulk of the Egyptian and a large part of the Syrian population which dates from Justinian's persecutions.

4. **Foreign Wars.**—Justinian was engaged in three great foreign wars, two of them of his own seeking, the third a legacy which nearly every emperor had come into for three centuries, the secular strife of Rome and Persia. When Justinian came to the throne, his troops were maintaining an unequal struggle on the Euphrates against the armies of Kavadh I. (*q.v.*). After some campaigns, in which the skill of Belisarius obtained considerable successes, a peace was concluded in 533 with Chosroes I. (*q.v.*). This lasted till 539, when Chosroes declared war. The emperor was too much occupied in the West to be able adequately to defend his eastern frontier. Chosroes advanced into Syria with little resistance, and in 540 captured Antioch. The war continued with varying fortunes for four years more in this quarter; while in the meantime an even fiercer struggle had begun in the mountainous region inhabited by the Lazi at the south-eastern corner of the Black Sea. (*See* COLCHIS.)

When after two-and-twenty years of fighting no substantial advantage had been gained by either party, Chosroes agreed in 562 to a peace which left Lazica to the Romans, but under the dishonourable condition of their paying 30,000 pieces of gold annually to the Persian king. Thus no result of permanent importance flowed from these Persian wars, except that they greatly weakened the Roman Empire, increased Justinian's financial embarrassments, and prevented him from prosecuting with sufficient vigour his enterprises in the West. (*See* further PERSIA: *History: Ancient, to the Fall of the Sassanid Dynasty.*)

These enterprises had begun in 533 with an attack on the Vandals, in Africa. Belisarius landed without opposition, and destroyed the barbarian power in two engagements. North Africa from beyond the strait of Gibraltar to the Syrtes became again a Roman province, although the Moorish tribes of the interior maintained a species of independence; and part of southern Spain was also recovered for the empire. The ease with which so important a conquest had been effected encouraged Justinian to attack the Ostrogoths of Italy. Justinian began the war in 535, taking as his pretext the murder of Queen Amalasuntha, daughter of Theodoric, who had placed herself under his protection, and alleging that the Ostrogothic kingdom had always owned a species of allegiance to the emperor at Constantinople, a claim for which there was some foundation. For the Italian campaign *see* BELISARIUS.

The imperial administration was established through Italy, but its rapacity soon began to excite discontent, and the kernel of the Gothic nation had not submitted. After two short and unfortunate reigns, the crown had been bestowed on Totila or Baduila, a warrior of distinguished abilities, who by degrees drove the imperial generals and governors out of Italy. Belisarius was sent against him, but with forces too small for the gravity of the situation. He moved from place to place during several years, but saw city after city captured by or open its gates to Totila, till only Ravenna, Otranto and Ancona remained. Justinian was occupied by the ecclesiastical controversy of the Three Chapters, and had not the money to fit out a proper army and fleet. It was not until 552 that re-conquest was attempted In that year a powerful army was despatched under Narses. Under him the Goths were completely defeated at Taginae and the Mons Lactarius, and Italy was annexed. (*See* NARSES.) But it was an Italy terribly impoverished and depopulated, whose possession carried little strength with it. Justinian's policy both in the Vandalic and in the Gothic War stands condemned by the result. The resources of the state, which might better have been spent in defending the frontiers of the empire, were consumed in the conquest of two countries which had suffered too much to be of any substantial value, and which could not be permanently retained. However, Justinian must have been almost preternaturally wise to have foreseen this: his conduct was in the circumstances only what might have been expected from an ambitious prince who perceived an opportunity of recovering territories that had formerly belonged to the empire, and over which its rights were conceived to be only suspended.

Besides these three great foreign wars, Justinian's reign was troubled by a constant succession of border inroads, especially on the northern frontier. Immense damage was inflicted by Slavonic and Hunnish marauders; and on one occasion the capital was itself in danger.

5. **Personal Character.**—Regarding Justinian's personal character and capacities a great diversity of opinion has existed among historians. The difficulty of arriving at a fair conclusion is increased by the fact that Procopius, our principal contemporary authority, speaks with a very different voice in his secret memoirs (the *Anecdota*) from that which he has used in his published history, and that some of the accusations contained in the former work are so rancorous and improbable that a certain measure of discredit attaches to everything which it contains.

The truth seems to be that Justinian was not a great ruler in the higher sense of the word, that is to say, a man of large views, deep insight, a capacity for forming just such plans as the circumstances needed, and carrying them out by a skilful adaptation of means to ends. But he was a man of considerable abilities, wonderful activity of mind and admirable industry. He was interested in many things, and threw himself with ardour into whatever he took up; he contrived schemes quickly, and pushed them on with an energy which usually made them succeed when no long time was needed, for, if a project was delayed, there was a risk of his tiring of it and dropping it. Although vain and full of self-confidence, he was easily led by those who knew how to get at him.

Justinian was quick rather than strong or profound; his policy does not strike one as the result of deliberate and well-considered views, but dictated by the hopes and fancies of the moment. His activity was in so far a misfortune as it led him to attempt too many things at once, and engage in undertakings so costly that oppression became necessary to provide the funds for them. Even his devotion to work, which excites our admiration, in the centre of a luxurious court, was to a great extent unprofitable, for it was mainly given to theological controversies which neither he nor any one else could settle.

Still, after making all deductions, it is plain that the man who accomplished so much, and kept the whole world so occupied, as Justinian did during the thirty-eight years of his reign, must have possessed no common abilities. He was affable and easy of approach to all his subjects, with a pleasant address; nor does he seem to have been, like his wife, either cruel or revengeful. We hear several times of his sparing those who had conspired against him. But he was not scrupulous in the means he employed, and he was willing to maintain in power detestable ministers if only they served him efficiently and filled his coffers. His chief passion, after that for his own fame and glory, seems to have been for theology; it was in this field that his literary powers exerted themselves, and his taste also, for among his numerous buildings the churches are those on which he spent most thought and money. Considering that his legal reforms are those by which his name is mainly known to posterity, it is curious that we should have hardly any information as to his legal knowledge, or the share which he took in those reforms.

In person he was somewhat above the middle height, well-shaped, with plenty of fresh colour in his cheeks, and an extraordinary power of doing without food and sleep. Two mosaic figures of him exist at Ravenna, one in the apse of the church of S. Vitale, the other in the church of S. Apollinare in Urbe; but of course one cannot be sure how far in such a material the portrait fairly represents the original. His only child by his marriage with Theodora died in infancy, and he did not remarry. The throne passed to his nephew Justin II on his death Nov. 14, 565.

AUTHORITIES.—For the life of Justinian the chief authorities are Procopius (*Historiae, De aedificiis, Anecdota*) and (from A.D. 552) the *History* of Agathias; the Chronicle of Johannes Malalas is also of value. Occasional reference must be made to the writings of Jordanes and Marcellinus, and even to the late compilation of Cedrenus.

See also Gibbon (ed. Bury 1923); Bury, *Later Roman Empire*, vol. ii.; Grupe, *Kaiser Justinian* (Leipzig 1923). The best general account of Justinian's reign in all its aspects is probably Diehl, *Justinian et la civilisation byzantine* (1901). (J. BRY.; X.)

JUSTINIAN II., RHINOTMETUS (669–711), East Roman emperor 685–695 and 704–711, succeeded his father Constantine IV., at the age of sixteen. His reign was unhappy both at home and abroad. After a successful invasion he made a truce with the Arabs, which admitted them to the joint possession of Armenia, Iberia and Cyprus, while by removing 12,000 Christian Mardaites from their native Lebanon, he gave the Arabs a command over Asia Minor of which they took advantage in 692 by conquering all Armenia. In 689 Justinian was defeated by the Bulgarians, but settled many Slavs in Asia Minor. Meanwhile the bitter dissensions caused in the Church by the emperor, his bloody persecution of the Manichaeans, and the rapacity with which, through his creatures Stephanus and Theodatus, he extorted the means of gratifying his sumptuous tastes and his mania for erecting costly buildings, drove his subjects into rebellion. In 695 they rose under Leontius, and, after cutting off the emperor's nose (whence his surname), banished him to Cherson in the Crimea. Leontius, after a reign of three years, was in turn dethroned and imprisoned by Tiberius Absimarus, who next assumed the purple. Justinian meanwhile had escaped from Cherson and married Theodora, sister of Busirus, khan of the Khazars. Compelled, however, by the intrigues of Tiberius, to quit his new home, he fled to Terbelis, king of the Bulgarians. With an army of 15,000 horsemen Justinian suddenly pounced upon Constantinople, slew his rivals Leontius and Tiberius, with thousands of their partisans, and once more ascended the throne in 704. His second reign was marked by an unsuccessful war against Terbelis, by Arab victories in Asia Minor, by devastating expeditions sent against his own cities of Ravenna and Cherson, where he inflicted horrible punishment upon the disaffected nobles and refugees, and by the same cruel rapacity towards his subjects. Conspiracies again broke out: Bardanes, surnamed Philippicus, assumed the purple, and Justinian, the last of the house of Heraclius, was assassinated in Asia Minor, December 711.

See E. Gibbon, *Decline and Fall of the Roman Empire* (ed. Bury, 1896), v. 179–183; J. B. Bury, *The Later Roman Empire* (1889), ii. 320–330, 358–367; F. Görres, in *Byzantinische-Zeitschrift*, 1908, p. 432; E. W. Brooks, in *Cambridge Mediaeval History* II. (1913), pp. 406–414.

JUSTIN MARTYR (b. *c.* A.D. 100), Christian apologist, was born, of pagan parents, *c.* 100 at Flavia Neapolis (anc. *Shechem*), now Nablus, in Palestinian Syria (Samaria). A thorough study of the philosophy of Peripatetics and Pythagoreans, Stoics and Platonists, brought home to Justin the conviction that true knowledge was not to be found in them. On the other hand, he came to look upon the Old Testament prophets as approved by their antiquity, sanctity, mystery and prophecies to be interpreters of the truth. To this must be added the deep impression produced upon him by the life and death of Christ. His conversion apparently took place at Ephesus. After his conversion he retained his philosopher's cloak (Euseb., *Hist. Eccl.* iv. 11. 8), the distinctive badge of the wandering professional teacher of philosophy, and went about from place to place discussing the truths of Christianity in the hope of bringing educated Pagans, as he himself had been brought, through philosophy to Christ. In Rome he gave lectures in a class-room of his own, though not without opposition from his fellow-teachers. Among his opponents was the Cynic Crescentius (*Apol.* ii. 13). Eusebius (*Hist. Eccl.* iv. 16. 7–8) concludes somewhat hastily, from the statement of Justin and his disciple Tatian (*Orat. ad Graec.* 19), that the accusation of Justin before the authorities, which led to his death, was due to Crescentius. But we know, from the undoubtedly genuine *Acta SS. Justini et sociorum,* that Justin suffered the death of a martyr under the prefect Rusticus between 163 and 167.

To form an opinion of Justin as a Christian and theologian, we must turn to his *Apology* and to the *Dialogue* with the Jew Trypho, for the authenticity of all other extant works attributed to him is disputed with good reason. The *Apology* was written in Rome about 150. In the first part Justin defends his fellow-believers against the charge of atheism and hostility to the state. He then demonstrates the truth of his religion from the effects of the new faith, and from the excellence of its moral teaching, and concludes with a comparison of Christian and Pagan doctrines, in which the latter are set down as the work of demons. As the main support of his proof of the truth of Christianity appears his demonstration that the prophecies of the old dispensation have found their fulfilment in Christianity. A third part shows, from the practices of their religious worship, that the Christians had in truth dedicated themselves to God. The whole closes with an appeal to the princes, with a reference to the edict issued by Hadrian in favour of the Christians. In the so-called *Second Apology,* Justin takes occasion from the trial of a Christian recently held in Rome to argue that the innocence of the Christians was proved by the very persecutions.

Even as a Christian Justin always remained a philosopher. By his conscious recognition of the Greek philosophy as a preparation for the truths of the Christian religion, he appears as the first and most distinguished in the long list of those who have endeavoured to reconcile Christian with non-Christian culture. In the *Dialogue* with the Jew Trypho, where he had to deal with the Judaism that believed in a Messiah, he was far better able to do justice to Christianity as a revelation; and the arguments of this work are much more completely in harmony with primitive Christian theology than those of the *Apology.*

Justin is a valuable authority for the life of the Christian Church in the middle of the 2nd century. The *Apology* contains a few paragraphs (61 *seq.*), which give a vivid description of the public worship of the Church and its method of celebrating the sacraments (Baptism and the Eucharist). His works are also of great value for the history of the New Testament writings. He knows of no canon of the New Testament, *i.e.,* no fixed and inclusive collection of the apostolic writings. His sources for the teachings of Jesus are the "Memoirs of the Apostles," by which are probably to be understood the Synoptic Gospels (without the Gospel according to St. John), which, according to his account, were read along with the prophetic writings at the public services.

Both the *Apology* and the *Dialogue* are preserved in but a single ms. (cod. Paris, 450, A.D. 1364).

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JUSTUS, SAINT (d. 627), fourth archbishop of Canterbury and first bishop of Rochester, was born in Rome. In 601 Pope Gregory I made him a member of a mission which was sent to England to assist St. Augustine in his work. The latter chose Justus as bishop of Rochester when the see was established in 604. A period of hostility to the Christian religion followed the death of Ethelbert, king of Kent, in 616. With a number of other Christians, Justus fled to France during this period, returning to Rochester in 617. He became archbishop of Canterbury on the death of Mellitus, the third archbishop, in 624. The most important event of Justus' archiepiscopacy was the conversion of the kingdom of Northumbria to Christianity by Paulinus, whom Justus consecrated as bishop and sent to accompany to Northumbria Ethelburga, sister of the king of Kent, who had just married Edwin, heathen king of Northumbria. Justus probably died Nov. 10, 627. He was buried at Canterbury with the first three archbishops, Augustine, Laurentius and Mellitus.

The chief sources of our knowledge of him are the Venerable Bede's *Historia Ecclesiastica* and the Anglo-Saxon Chronicle.

JUSTUS OF GHENT (JODOCUS, or JOOS OF GHENT) (?1430–?1480), a Flemish painter whom Vasari and Guicciardini called Guisto da Guanto, and who has been identified with Joos van Wassenhove, a member of the painters' guild at Antwerp in 1460 and at Ghent in 1464. His name is not mentioned in the records of the guilds after 1468 and it is supposed that he then emigrated to Italy. To his early period in Flanders two pictures have been ascribed: the altarpiece at St. Bavo in Ghent representing the "Crucifixion" and the "Adoration of the Magi" in the Blumenthal collection at New York. In 1474 we see him in Italy, where he painted the "Communion of the Apostles," which is described by Vasari and which is now in the Palazzo Ducale at Urbino.

This is the only absolutely authenticated picture by the master. It was painted for the brotherhood of Corpus Christi at the bidding of Federico of Montefeltro, who was introduced into the picture as a companion of Caterino Zeno, a Persian envoy at that time on a mission to the court of Urbino. Vespasiano de Bisticci, the librarian of Federico of Montefeltro, states that this duke sent to the Netherlands for a capable artist to paint a series of "ancient worthies" for a library recently erected in the palace of Urbino, because he knew no one in Italy who understood how to paint in oil colours. It has been conjectured that the author of these "worthies," which are still in existence at the Louvre and in the Barberini palace at Rome, was Justus. His Flemish style is here tempered by the study of the masterpieces of Santi and Melozzo, two 15th century Italian painters.

To Justus is also ascribed the portrait of the duke and his son now in the Barberini palace in Rome. The seven "Liberal Arts," which decorated the ducal palace at Urbino, and whereof two are now in the National gallery and another two at Berlin, are ascribed to Justus by some critics and by others to Melozzo da Forli. They seem to recall Melozzo in their design, but are Flemish in their colour and execution. According to recent art criticism Justus was an artist who brought his northern traditions to Italy and there combined them with those of the Italian school.

His development was gradual and his later works are difficult to distinguish from those of Italian masters.

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JUTE, the name of a plant or its fibre now occupying a position in the manufacturing scale inferior only to cotton. The term jute appears to have been first used in 1746. Importations of the substance had been made earlier under the name of *pat,* an East Indian native term, by which the fibre continued to be spoken of in England till the early years of the 19th century. The modern name appears to be derived from *jhot* or *jhout* (Sansk. *jhat*), the vernacular name by which the substance is known in the Cuttack district.

Different Species.—The fibre is obtained from two species of *Corchorus* (nat. family Tiliaceae), *C. capsularis* and *C. olitorius,* the products of both being essentially alike. These and various other species of *Corchorus* have been cultivated in Bengal from very remote times for economic purposes, although there is reason to believe that the cultivation did not originate in the northern parts of India. The two species cultivated for jute fibre are very similar to each other, except in their fructification and the relatively greater size attained by *C. capsularis.* They are annual plants from 5 to 10 ft. high, with a cylindrical stalk as thick as a man's finger, and hardly branching except near the top. The light green leaves are from 4 to 5 in. long by 1½ in. broad above the base, and taper upwards into a fine point; the edges are serrated; the two lower teeth are drawn out into bristle-like points. The small whitish-yellow flowers are produced in clusters of two or three opposite the leaves.

The capsules or seed-pods in the case of *C. capsularis* are globular, rough and wrinkled, while in *C. olitorius* they are slender, quill-like cylinders (about 2 in. long), a very marked distinction, as may be noted from fig. 1, in which *c* and *d* show the capsules of *C. capsularis* and *C. olitorius* respectively. Fig. *a* represents a flowering top of *C. olitorius.*

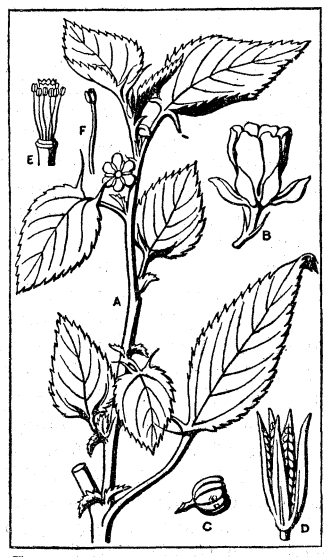

FIG. 1.—(A) JUTE PLANT (CORCHORUS OLITORIUS). (B) FLOWER. (C) CAPSULE OF CORCHORUS CAPSULARIS. (D) CAPSULE OF CORCHORUS OLITORIUS. (E) STAMENS. (F) STAMEN

Both species are cultivated in India, not only on account of their fibre, but also for the sake of their leaves, which are there extensively used as a pot-herb. The cultivation of jute is most extensive in Bengal, but is also prevalent in Bihar, Orissa and Assam. The fibre known as China jute or Tien-tsin jute is the product of another plant, *Abutilon avicennae,* a member of the Mallow family.

Cultivation and Cropping.—Attempts have been made to grow the jute plant in America, Egypt, Africa and other places. The plant has grown well in some experiments outside India but the cheap production of the fibre in India has hindered competitive production elsewhere. One of the most successful endeavours to grow jute outside of India was started in Brazil in 1930. In 1940 the fibre production was reported to be 350 tons but increasing.

The successful cultivation of the plant demands a hot, moist climate, with a fair amount of rain. Too much rain at the beginning of the season is detrimental to the growth, while a very dry season is disastrous. The climate of eastern and northern Bengal appears to be ideal for the growth of the plant.

The quality of the fibre and the produce per acre depend in a measure on the type and preparation of the soil. The seed is sown broadcast as in the case of flax. Seed of the first improved

strain developed as a result of the scientific work of the Indian government was distributed in 1916.

The time of sowing extends from the middle of March to the middle of June, while the reaping, which depends upon the time of sowing and upon the weather, is performed from the end of June to the middle of October. The crop is said to be ready for gathering when the flowers begin to fade; if it is gathered before then, the fibre is weak; while if left until the seed is ripe, the fibre is stronger, but is coarser and lacks the characteristic lustre.

Retting.—The fibre is separated from the stalks by a process of retting similar to that for flax and hemp. In certain districts of Bengal it is the practice to stack the crop for a few days previous to retting in order to allow the leaves to dry and to drop off the stalks, but in other districts it is placed in water immediately on harvesting to ret. It is stated that the colour of the fibre is darkened if the leaves are allowed to remain on during the process of retting. Any simple operation that improves the colour of the fibre or shortens the operation of retting is worthy of consideration. The benefits to be derived from the above process, however, cannot be great, for the bundles are usually taken direct to the pools and streams. The period necessary for the completion of the retting process varies according to the temperature and to the properties of the water, and may occupy from two days to a month. After the first few days of immersion the stalks are examined daily to test the progress of the retting. When the fibres are easily separated from the stalk, the operation is complete and the bundles should be withdrawn. The following description of the retting of jute is taken from Royle's *Fibrous Plants of India:*

"The proper point being attained, the native operator, standing up to his middle in water, takes as many of the sticks in his hands as he can grasp, and removing a small portion of the bark from the ends next the roots, and grasping them together, he strips off the whole with a little management from end to end, without breaking either stem or fibre. Having prepared a certain quantity into this half state, he next proceeds to wash off; this is done by taking a large handful; swinging it round his head he dashes it repeatedly against the surface of the water, drawing it through towards him, so as to wash off the impurities; then, with a dexterous throw he fans it out on the surface of the water and carefully picks off all remaining black spots. It is now wrung out so as to remove as much water as possible, and then hung up on lines, prepared on the spot, to dry in the sun."

The separated fibre is then made up into bundles ready for sending to one of the jute presses. The jute is carefully sorted into different qualities, and then each lot is subjected to an enormous hydraulic pressure from which it emerges in the shape of the well-known bales, each weighing 400 lb.

The crop naturally depends upon the quality of the soil, and upon the attention which the fibre has received in its various stages; the yield per acre varies in different districts. Three bales per acre, or 1,200 lb., is termed a 100% crop; but improved methods of manuring and of agricultural working result in higher yields. Sometimes the crop is stated in lakhs of 100,000 bales each. The crop varies from year to year, but it seldom reaches

Cultivation and Production of Jute

Year	Cultivated acres	Bales of 400 lb. each
1893–94 to 1897–98 (5-year average)	2,199,000	5,824,000
1903–04 to 1907–08 (5-year average)	3,093,000	8,188,000
1913–14 to 1917–18 (5-year average)	2,830,000	8,819,000
1923–24 to 1927–28 (5-year average)	3,162,000	10,018,000
1933–34 to 1937–38 (5-year average)	2,637,000	9,611,000
1939–40	3,160,000	9,749,000
1940–41	4,345,950	12,562,450
1941–42	2,160,410	5,474,000

10,000,000 bales; it is usually between 8 and 9 million bales. For detailed particulars concerning both fibre and cloth production see *The Report of the Committee of the Indian Jute Mills Association,* or the latest Jute Year Book.

Fibre Characteristics.—The characters by which qualities of jute are judged are colour, lustre, softness, strength, length, firmness, uniformity and absence of roots. The best qualities are of a clear whitish-yellow colour, with a fine silky lustre, soft and smooth to the touch, and fine, long and uniform in fibre. When the fibre is intended for goods in the natural colour it is essential that it should be of a light shade and uniform; but if intended for yarns that are to be dyed a dark shade the colour is not so important.

The cultivated plant yields a fibre with a length of from 6 to 10 ft., but in exceptional cases it has been known to reach 14 to 15 ft. in length. The fibre is decidedly inferior to flax and hemp in strength and tenacity; and, owing to a peculiarity in its microscopic structure, by which the walls of the separate cells composing the fibre vary much in thickness at different points, the single strands of fibre are of unequal strength. Recently prepared fibre is always stronger, more lustrous, softer and whiter than such as has been stored for some time—age and exposure rendering it brown in colour and harsh and brittle in quality. Jute, indeed, is much more woody in texture than either flax or hemp, a circumstance which may be easily demonstrated by its behaviour under appropriate reagents; and to that fact is due the change in colour and character it undergoes on exposure to the air. The fibre bleaches with facility, up to a certain point, sufficient to enable it to take brilliant and delicate shades of dye colour, but it is with great difficulty brought to a pure white by bleaching.

A very striking and remarkable fact, which has much practical interest, is its highly hygroscopic nature. While in a dry position and atmosphere it may not possess more than 6% of moisture, under damp conditions it will absorb as much as 23%; the normal percentage is 12 to 13%.

The Indian Central Jute committee in an agricultural research bulletin No. 1, published in 1940, reports that a careful survey and study of the morphological and cultural characteristics of the jute plants, as well as the microscopic and chemical properties of the fibre of the various types led to the conclusion that there are 33 distinct types of jute belonging to *C. capsularis* (30 of which were grown for fibre and 3 as vegetables), and of *C. olitorius* there were only 5 types. Further, it was estimated that about 33% of the *C. capsularis* area is under D. 154, and about 75% of the *C. olitorius* area is under the strain "Chinsurah Green."

The grading of jute fibre is rather confusing because of the large assortment of designating marks used to distinguish qualities and handlers. The evolution of designating marks has not become stabilized and changes may be expected. There are a number of recognized qualities or types of fibre on the Indian market representing different production areas and markets. These main quality production areas are represented by Naraingunge (markets: Narayanganj, Chandpur, Mymensingh, Dacca and Tipperah); Serajgunge (markets: Sirajganj, Mymensingh, Pabna, Bogra, Rangpur and Goalpara); Uttarya or northern jute (markets: Huldibari, Kissenganj, Rajshahi, Bogra, Rangpur, Jalpaiguri, Dinajpur); Dowrah (markets: Madaripur and Karidpur); and Daisee (*C. olitorius*). There are other regional qualities of minor importance. The fibre from these regional classifications may be subdivided into groups or grades. The London Jute association groups are: Firsts, Daccas, Lightnings, Hearts, Daisee and Tossa (*C. olitorius*), Rejections and Cuttings. The groups or grades used by United States consumers are: Dacca, Dacca tossa, District tossa, Good Firsts, Actual Firsts, Cuttings or Butts. These grades or groups are further subdivided according to length, colour, lustre, strength and cleanliness, and are indicated by the balers' identification marks and numbers or letters. The grades may sometimes be broken down, *i.e.,* ordinary firsts, good firsts, special firsts and superior firsts, or in some other manner.

The relative prices of the different grades depend upon the crop, upon the demand and upon the quality of the fibre. The prices of first marks averaged about £19 per ton between the years 1903–06.

In August 1939, First marks stood at about £20. During September quotations started a rapid advance which continued until January 1940 when the speculators' bubble burst at £60 per ton. This created a record price back to 1919.

Jute Manufacture.—Before jute came to occupy a prominent place among the textile fibres of Europe, it formed the raw material of a large and important industry throughout the regions of eastern Bengal. The Hindu population made the material up into cordage, paper and cloth, the chief use of the latter being in the manufacture of gunny bags. Indeed, up to 1830–40 there was little or no competition with hand labour for this class of material.

Development of the Trade.—For many years Great Britain was the only European country engaged in the manufacture of jute, the great seat being Dundee. Gradually, however, the trade began to extend, and now almost every European country is partly engaged in the trade, and the work is extending much in North and South America.

The success of the mechanical method of spinning and weaving jute in Dundee and district led to the introduction of textile machinery into and around Calcutta. The first mill to be run there by power was started in 1854, while by 1872 three others had been established. In the next ten years no fewer than 16 new mills were erected and equipped with modern machinery from Great Britain, while in 1907 there were 39 mills engaged in the industry. There were in 1940 115 mills, containing 67,730 looms. If it is assumed that there are 20 spinning spindles for each loom, the usual figures, then the number of spindles amounted to 1,354,600. India had in 1940 a total of 222 pressing and baling plants, of which 62 are for "kutcha" (preliminary) baling and 160 for "pucca" (final) baling. Of the latter, 25 were owned by Europeans and 135 by Indians, and the percentage of production by each group as well as the number of European and Indian managers operating them, was in about the same proportion. Of 57 "kutcha" baling plants owned by Indians, only 7 were under European supervision; the other 5 plants were owned and operated by Europeans.

The purchasing of shares in jute mills by Indians began on a large scale after World War I and by 1921 Indians held about 50% of the combined total of shares in the various jute mills; in 1923, the proportion had increased to approximately 67% and in 1943 it was estimated that more than 75% of the total number of shares in all jute mills was owned by Indians.

The Calcutta looms are engaged for the most part with a few varieties of the commoner classes of jute fabrics, but the success in this direction has been really remarkable. Dundee, on the other hand, turns out not only the commoner classes of fabrics, but a very large variety of other fabrics. Among these may be mentioned the following: Hessian, bagging, tarpaulin, sacking, scrims, Brussels carpets, Wilton carpets, imitation Brussels and several other types of carpets, rugs and matting, in addition to a large variety of fabrics of which jute forms a part. Calcutta has certainly taken a large part of the trade which Dundee held in its former days, but the continually increasing demands for jute fabrics for new purposes have enabled Dundee to enter new markets and so to take part in the prosperity of the trade.

Spinning and Weaving.—In their general features the spinning and weaving of jute fabrics do not differ essentially as to machinery and processes from those employed in the manufacture of hemp and heavy flax goods. Owing, however, to the woody and brittle nature of the fibre, it has to undergo a preliminary treatment peculiar to itself. The pioneers of the jute industry who did not understand this necessity, or rather who did not know how the woody and brittle character of the fibre could be remedied, were greatly perplexed by the difficulties they had to encounter, the fibre spinning badly into a hard, rough and hairy yarn owing to the splitting and breaking of the fibre. This peculiarity of jute, coupled also with the fact that the flax machinery on which it was first spun, although quite suitable for the stronger and more elastic fibres for which it was designed, required certain modifications to suit it to the weaker jute, was the cause of many annoyances and failures in the early days of the trade.

Batching, Opening and Softening.—The first process in the manufacture of jute is termed batching. Batch setting is the first part of this operation; it consists of selecting the different kinds or qualities of jute for any predetermined kind of yarn. The number of bales for a batch seldom exceeds 12, indeed it is generally about 6, and of these there may be 3, 4 or even more varieties or marks. The "stricks" (also in the forms "streek," "strick" or "strike," as in Chaucer, *Canterbury Tales,* Prologue 676, where the Pardoner's hair is compared with a "strike of flax"; the term is also used of a handful of hemp or other fibre and is one of the many technical applications of "strike" or "streak," which etymologically are cognate words) or "heads" of jute as they come from the bale are in a hard condition in consequence of having been subjected to a high hydraulic pressure during baling; it is therefore necessary to soften them before any further process is entered. The stricks are sometimes partly softened or crushed during the process of opening the bale, in a "bale opener," or "jute crusher." The fibre delivered is then passed between a series of fluted rollers, each pair of which is kept in contact by spiral springs. The standard number of pairs is 63, but different numbers are used according to opinions. There is also a difference in the structure of the flutes, some being straight and others spiral, and each pair may or may not contain the same number of flutes. The springs allow the top rollers of each pair to rise as the material passes through the machine. Advantage is taken of this slight upward and downward movement of the top rollers to regulate automatically the flow of water and oil upon the material; the apparatus is placed often over the 11th and 12th rollers of the softening machine. In many cases the water and oil are applied by less automatic, but equally effective, means. The main object is to see that the liquids are distributed evenly while the fibre is passing through, and to stop the supply when the machine stops or when no fibre is passing. The uniform moistening of the fibre in this machine facilitates the subsequent operations; indeed the introduction of this preliminary process (originally by hand) constituted the first important step in the practical solution of the difficulties of jute spinning. The relative quantities of oil and water depend upon the quality of the batch. Sometimes both whale and mineral oils are used, but in most cases the whale oil is omitted. About 1 to 1¼ gal. of oil is the usual amount given per bale of 400 lb. of jute, while the quantity of water per bale varies from 3 to 7 gal. The delivery attendants remove the stricks, give them a twist to facilitate future handling and place them on what are termed jute barrows. The stricks are now handed over to the cutters who cut off the roots, and finally the material is allowed to remain for 12 to 24 hrs. to allow the mixture of oil and water to spread evenly and thoroughly over the fibre.

Carding.—When the moisture has spread sufficiently, the material is taken to the "breaker card," the first machine in the preparing department. A certain weight of jute, termed a "dollop," is laid upon the feed cloth for each revolution of the latter. The fibre, which should be arranged on the sheet as evenly as possible, is carried up by the feed cloth and passes between the feed roller and the shell on to the large cylinder. This cylinder, which has a high surface speed, carries part of the fibre towards the workers and strippers, the surface speed of the workers being much slower than that of the cylinder. The pins in the two rollers oppose each other, those of the workers being "back-set," and this arrangement, combined with the relative angle of the pins, and the difference in the surface speeds of the two rollers, results in the fibre being broken and split, and part of it carried round by the worker towards the stripper. This, as its name implies, strips the fibre off the worker, and carries it round to the cylinder. The pins of the stripper and cylinder point in the same direction, but since the surface speed of the cylinder is much greater than the surface speed of the stripper, it follows that the fibre is combed between the two, and that part is carried forward by the cylinder to be reworked. The strippers and workers are in pairs of which there may be two or more. After passing the last pair of workers and strippers the fibre is carried forward towards the doffing roller, the pins of which are back-set, and the fibre is

removed from the cylinder by the doffer, from which it passes between the drawing and pressing rollers into the conductor, and finally between the delivery and pressing rollers into the sliver can. It may be mentioned that more or less breaking takes place between each pair of rollers, the pins of which are opposed, and that combing and drawing out obtains between those rollers with pins pointing in the same direction.

The sliver from the can of the breaker card may be wound into balls, or it may be taken direct to the finisher card. In the latter method from 8 to 15 cans are placed behind the feed rollers, and all the slivers from these cans are united before they emerge from the machine. The main difference between a breaker card and a finisher card is that the latter is fitted with finer pins, that it contains two doffing rollers, and that it usually possesses a greater number of pairs of workers and strippers—a full circular finisher card having four sets.

Drawing.—After the fibre has been thoroughly carded by the above machines, the cans containing the sliver from the finisher card are taken to the first drawing frame. A very common method is to let four slivers run into one sliver at the first drawing, then two slivers from the first drawing are run into one sliver at the second drawing frame. There are several types of drawing frames, *e.g.*, push-bar or slide, rotary, spiral, ring, open link or chain, the spiral being generally used for the second drawing. All, however, perform the same function, viz., combing out the fibres and thus laying them parallel, and in addition drawing out the sliver. The designation of the machine indicates the particular method in which the gill pins are moved. These pins are much finer than those of the breaker and finisher cards, consequently the fibres are more thoroughly separated. The draft in the first drawing varies from three to five, while that in the second drawing is usually five to seven. It is easy to see that a certain amount of draft, or drawing out of the sliver, is necessary, otherwise the various doublings would cause the sliver to emerge thicker and thicker from each machine. The doublings play a very important part in the appearance of the ultimate rove and yarn, for the chief reason for doubling threads or slivers is to minimize irregularities of thickness and of colour in the material. In an ordinary case, the total doublings in jute from the breaker card to the end of the second drawing is 96: $12\times4\times2=96$, and if the slivers were made thinner and more of them used the ultimate result would naturally be improved.

Roving.—The final preparing process is that of roving. In the operation there is no doubling of the slivers, but each sliver passes separately through the machine, from the can to the spindle, is drawn out to about eight times its length, and receives a small amount of twist to strengthen it, in order that it may be successfully wound upon the roving bobbin by the flyer. The chief piece of mechanism in the roving frame is the gearing known as the "differential motion." It works in conjunction with the disk and scroll, the cones, or the expanding pulley, to impart an intermittingly variable speed to the bobbin (each layer of the bobbin has its own particular speed which is constant for the full traverse, but each change of direction of the builder is accompanied by a quick change of speed to the bobbin). It is essential that the bobbin should have such a motion, because the delivery of the sliver and the speed of the flyer are constant for a given size of rove, whereas the layers of rove on the bobbin increase in length as the bobbin fills. In the jute roving frame the bobbin is termed the "follower," because its revolutions per minute are fewer than those of the flyer. Each layer of rove increases the diameter of the material on the bobbin shank; hence, at the beginning of each layer, the speed of the bobbin must be increased, and kept at this increased speed for the whole traverse from top to bottom or vice versa.

The builder, which receives its motion from the disk and scroll, from the cones, or from the expanding pulley, has also an intermittingly variable speed. It begins at a maximum speed when the bobbin is empty, is constant for each layer, but decreases as the bobbin fills.

Spinning.—The rove yarn is now ready for the spinning frame, where a further draft of about eight is given. The principles of jute spinning are similar to those of dry spinning for flax. For very heavy jute yarns the spinning frame is not used—the desired amount of twist being given at the roving frame.

Method of Counting Jute Yarns.—The count of jute yarn is based upon the weight in pounds of 14,400 yd., such length receiving the name of "spyndle." The finest yarns weigh $2\frac{1}{2}$ lb. to 3 lb. per spyndle, but the commonest kinds are 7 lb., 8 lb., 9 lb., and 10 lb. per spyndle. The sizes rise in pounds up to about 20 lb., then by 2 lb. up to about 50 lb. per spyndle, with much larger jumps above this weight. It is not uncommon to find 200 lb. to 300 lb. rove yarn, while the weight occasionally reaches 450 lb. per spyndle. The different sizes of yarn are extensively used in a large variety of fabrics, sometimes alone, sometimes in conjunction with other fibres, *e.g.*, with worsted in the various kinds of carpets, with cotton in tapestries and household cloths, with line and tow yarns for the same fabrics and for paddings, etc., and with wool for horse clothing. The yarns are capable of being dyed brilliant colours, but, unfortunately, the colours are not very fast to light.

The fibre can also be prepared to imitate human hair with remarkable closeness, and advantage of this is largely taken in making stage wigs.

The United States Department of Agriculture introduced jute into America in 1870 and it was found to be adapted to cultivation along the line of Gulf states from Texas to South Carolina. Although jute grew well in experimental plantings in the United States, an industry failed to develop, no doubt due to the absence of adequate machinery for preparing the fibre. Between 1925 and 1939 inclusive, the United States imported annually 60,519 short tons of long jute fibre, and 14,781 short tons of jute butts. During the same period the value of unmanufactured and manufactured fibre and fibre articles imported into the United States averaged $61,642,000.

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JÜTERBOG or **GÜTERBOG,** a town in the Prussian province of Brandenburg, on the Nuthe 39 mi. S.W. of Berlin, at the junction of the main lines of railway from Berlin to Dresden and Leipzig. Pop. (1939) 13,214.

Jüterbog belonged in the later middle ages to the archbishopric of Magdeburg, passing to electoral Saxony in 1648, and to Prussia in 1815. The town is surrounded by a mediaeval wall, with three gateways, and the Protestant church of St. Nicholas (14th century) is remarkable for its three fine aisles. Jüterbog also has an old town-hall. It carries on weaving both of flax and wool and manufactures cigars. Vines are cultivated in the neighbourhood.

A treaty over the succession to the duchy of Jülich was made in March 1611 between Saxony and Brandenburg at Jüterbog, and during the Thirty Years' War the Swedes defeated the Imperialists there in Nov. 1644. Two mi. S.W. of the town is the battlefield of Dennewitz, the site, during the Napoleonic wars, of the Battle of Jüterbog in which the Prussians on Sept. 6, 1813, defeated the French.

JUTES, the third of the Teutonic nations which invaded Britain in the 5th century, called by Bede *Iutae* or *Iuti* (*see* BRITAIN: *Anglo-Saxon*). They settled in Kent and the Isle of Wight, together with the adjacent parts of Hampshire. In the latter case the national name is said to have survived until Bede's own time, in the New Forest indeed apparently very much later. In Kent, however, it seems to have soon passed out of use, though there is good reason for believing that the inhabitants of that

kingdom were of a different nationality from their neighbours (*see* KENT, KINGDOM OF). With regard to the origin of the Jutes, Bede only says that Angulus (Angel) lay between the territories of the Saxons and the Iutae—a statement which points to their identity with the Iuti or Jyder of later times, *i.e.*, the inhabitants of Jutland. Some recent writers have preferred to identify the Jutes with a tribe called Eucii mentioned in a letter from Theodberht to Justinian (*Mon. Germ. Hist. Epist. iii.* p. 132 *seq.*), and settled apparently in the neighbourhood of the Franks. But these people may themselves have come from Jutland.

See Bede, *Hist. Eccles.* i. 15. iv. 16. (H. M. C.)

JUTICALPA, capital of the department of Olancho, Honduras, and the centre of an important agricultural and potentially valuable mining section. It lies at an altitude of 2,700 ft., 130 mi. E.N.E. of Tegucigalpa, capital of Honduras. Pop. (1940) 3,836. Juticalpa has no motor road or rail connections, although a highway from Tegucigalpa to Galeras ends but a few miles to the west of the city. Mule trails lead north to Olanchito, which is connected by rail with the Caribbean ports of Puerto Castilla, La Ceiba, etc. The surrounding region produces sugar cane, cereals, cattle and numerous subsistence crops, and the natives pan gold in the local streams.

JUTLAND (Danish *Gylland*), the Chersonese or Cimbric peninsula of ancient geography, a projection of northern Europe, forming the continental portion of the kingdom of Denmark and including, in its larger sense, the German province of Schleswig-Holstein. Politically, Jutland ends southwards at the narrowest part of the peninsula (36 m.), in lat. 54° 50′ N., and includes several small islands. Its physical features, etc., are treated under DENMARK.

JUTLAND, BATTLE OF. Called by the Germans the battle of the Skagerrak, this battle was fought in the North Sea between the British Grand Fleet, under Admiral Sir J. R. Jellicoe, and the German High Seas Fleet, under Admiral Reinhard Scheer, on May 31, 1916. The main action took place about 75 m. from the Danish coast in the neighbourhood of lat. 57° N. long. 6° E. The encounter is memorable as being the only occasion throughout the World War on which the rival battle fleets met, also for the fact that it left the British fleet undisputed master of the German one up to the day of the latter's surrender. As a test of modern naval material it was prolific in lessons for both sides.

I. INTRODUCTORY

The movements of the fleets and squadrons were necessarily

TABLE I. *British Grand Fleet*

Unit	Ships	Commander
SCAPA FLOW		
Fleet Flagship and attached ships	Iron Duke 1 Destroyer 1 Flotilla Leader 1 Light Cruiser	Admiral Sir John Jellicoe.
First Battle Squadron		
6th Division	Marlborough, Revenge, Hercules, Agincourt	Vice-Admiral Sir C. Burney.
5th Division	Colossus, Collingwood, Neptune, St. Vincent	Rear-Admiral Gaunt.
Attached	1 Light Cruiser	
Fourth Battle Squadron		
4th Division	Benbow, Bellerophon, Temeraire, Vanguard	Vice-Admiral Sir D. Sturdee.
3rd Division	Royal Oak, Superb, Canada and fleet flagship (Iron Duke)	Rear-Admiral A. L. Duff.
Third Battle Cruiser Squadron, attached	Invincible, Indomitable, Inflexible 2 Light Cruisers	Rear-Admiral Hood.
Second Cruiser Squadron, also attached	Minotaur, Hampshire, Cochrane, Shannon	Rear-Admiral Heath.
Fourth Light Cruiser Squadron	5 Light Cruisers	Commodore Le Mesurier.
Fourth Flotilla	2 Flotilla Leaders and 17 Destroyers	Captain C. J. Wintour.
Eleventh Flotilla (part)	1 Light Cruiser and 4 Destroyers	Commodore Hawksley.
Twelfth Flotilla	2 Flotilla Leaders and 14 Destroyers	Captain Stirling.
INVERGORDON		
Second Battle Squadron		
1st Division	King George V., Ajax, Centurion, Erin	Vice-Admiral Sir M. Jerram.
2nd Division	Orion, Monarch, Conqueror, Thunderer	Rear-Admiral Leveson.
Attached	1 Light Cruiser	
First Cruiser Squadron	Defence, Warrior, Duke of Edinburgh, Black Prince	Rear-Admiral Sir R. Arbuthnot.
Eleventh Flotilla (part)	1 Flotilla Leader and 10 Destroyers	Commander Sullivan.
ROSYTH		
Battle Cruiser Fleet Flagship	Lion	Vice-Admiral Sir D. Beatty.
Fifth Battle Squadron	Barham, Valiant, Warspite, Malaya	Rear-Admiral Evan-Thomas.
First Battle Cruiser Squadron	Princess Royal, Queen Mary, Tiger	Rear-Admiral Brock.
Second Battle Cruiser Squadron	New Zealand, Indefatigable	Rear-Admiral Pakenham.
First Light Cruiser Squadron	4 Light Cruisers	Commodore Alexander-Sinclair.
Second Light Cruiser Squadron	4 Light Cruisers	Commodore Goodenough.
Third Light Cruiser Squadron	4 Light Cruisers	Rear-Admiral Napier.
First Flotilla (part)	1 Light Cruiser and 9 Destroyers	Captain Roper.
Thirteenth Flotilla	1 Light Cruiser and 10 Destroyers	Captain Farie.
Ninth Flotilla (part)	4 Destroyers	Commander Goldsmith.
Tenth Flotilla (part)	4 Destroyers	Commander Hodgson.
Attached	Engadine, Seaplane Carrier	Lieut.-Commander Robinson.

governed to a large extent by highly technical considerations, and the battle is not an easy one for the layman to follow without a painstaking study of its successive phases and the motives which produced them. Moreover, in order to obtain a true perspective of events it is necessary to keep in mind the following fundamental facts:—

(*a*) The Allied cause rested absolutely on the retention by Britain of that sea supremacy of which the Grand Fleet was the fulcrum.

(*b*) By the date of Jutland Germany's surface navy had already been rendered largely immobile and her mercantile marine had been swept off the seas.

(*c*) It was the definite policy of the British naval command to bring the German main fleet to action and annihilate it if possible, but there was no intention to gamble with the Allied fortunes by seeking an engagement in waters where mines, submarines and shore defences would give the enemy a definite advantage, nor under conditions where the outcome would be largely dependent on chance, such as a fleet action at night.

(*d*) It was the definite policy of the German High Command not to risk a decisive action until, by a process of attrition, the British forces might have become so weakened as to give good prospects of success.

(*e*) It was to pursue this policy of attrition that Scheer set out prior to Jutland, his object being to lure the British fleet out in the hope of falling on a section of it before it could be supported; but the last thing he intended or desired was to meet a united Grand Fleet.

The order of events can be conveniently summarised as follows:—

1. The German plan to entice the British fleet to sea while submarines were lying in wait for it, and in the hope of concentrating the High Seas Fleet on a detached part of it.
2. The sailing of the rival forces, neither realising the full significance of the coming impact.
3. The first contact and battle-cruiser action on the run south to the High Seas Fleet.
4. Beatty's run north leading the High Seas Fleet up to the Grand Fleet.
5. Jellicoe's main engagement with his combined Grand Fleet against the combined High Seas Fleet.
6. The German fleet's break through the British destroyer flotillas at night, and the failure to send intelligence to Jellicoe which resulted in the escape of the enemy next day.

Situation Before the Battle.—Admiral Jellicoe has summarised the causes which led up to Jutland as follows:—

1. The pressure of the British blockade had led to insistent calls for action by the German fleet.
2. Scheer, who had assumed command of the High Seas Fleet in Jan. 1916, was chafing under his enforced inactivity.
3. A strong protest from President Wilson had caused the withdrawal of German submarines from the trade routes and thereby rendered them available for enterprises of a military character.
4. Scheer may have been led to believe that the steps announced in England to prevent a recurrence of such episodes as the Lowestoft raid indicated that some division of the Grand Fleet was intended.

While Scheer was planning a new attack on the east coast of England, certain changes had, in fact, been made in the distribution of the British forces. Jellicoe, with the main part of the Grand Fleet, was still at Scapa Flow awaiting the completion of the outer defences of the Firth of Forth before transferring his base to the more southerly harbour, but he had detached the 5th Battle Squadron of four fast "Queen Elizabeths," "Barham," "Valiant," "Warspite" and "Malaya," to replace the 3rd Battle-Cruiser Squadron of three "Invincibles," which were at Scapa for gunnery practice, and sent them to reinforce Beatty's Battle-Cruiser Fleet at Rosyth. A third force, consisting of the 2nd Battle Squadron, 1st Cruiser Squadron and a destroyer flotilla, was based on Invergordon.

THE FORCES ENGAGED

The Grand Fleet.—Immediately prior to the battle of Jutland the distribution and composition of the British forces which took part in the action was as in table on p. 218.

At Harwich were five light cruisers and about 20 torpedo craft under Commodore Tyrwhitt, and at Sheerness was the 3rd Battle Squadron consisting of the "King Edward" and the "Dreadnought" flying the flag of Admiral Bradford. These two commands, however, took no part in the battle.

The High Seas Fleet.—The main German forces, in preparation for Admiral Scheer's project, had been concentrated in the Jade Basin. They were organized as in Table II.

Attached to the High Seas Fleet were sixteen U boats and ten "L" class airships, but these took no part in the action.

The Table on p. 220 is a summary of the principal armaments of the capital ships of the rival fleets.

THE GERMAN PLAN

An order issued to the High Seas Fleet on May 18 ran as follows:—

The bombardment of Sunderland by our cruisers is intended to compel the enemy to send out forces against us. For the attack on the advancing enemy the High Seas Fleet forces to be south of the Dogger Bank, and the U boats to be stationed for attack off the East Coast of England. The enemy's ports of sortie will be closed by mines.

This order may be taken as defining the strategy of the enemy on the above date.

In preparation for the execution of this scheme the U boats

TABLE II. *German High Seas Fleet*

Unit	Ships	Commander
Fleet Flagship	Friedrich der Grosse	Vice-Admiral Scheer.
First Battle Squadron		
1st Division	Ostfriesland, Thüringen, Helgoland, Oldenburg	Vice-Admiral Schmidt.
2nd Division	Posen, Rheinland, Nassau, Westfalen	Rear-Admiral Engelhardt.
Second Battle Squadron		
3rd Division	Deutschland, Hessen, Pommern	Rear-Admiral Mauve.
4th Division	Hannover, Schlesien, Schleswig-Holstein	Rear-Admiral F. von D. zu Lichtenfels.
Third Battle Squadron		
5th Division	König, Grosser Kurfürst, Kronprinz, Markgraf	Rear-Admiral Behncke.
6th Division	Kaiser, Kaiserin, Prinzregent Luitpold	Rear-Admiral Nordmann.
Destroyer Flotillas	3rd, 5th, 7th and half 1st Flotillas	Commodore Michelsen.
Scouting Forces		
First Scouting Group Flagship	Lützow	Vice-Admiral Hipper.
Battle Cruisers	Seydlitz, Moltke, Derfflinger, Von der Tann	
Second Scouting Group	6 Light Cruisers	Rear-Admiral Boedicker.
Fourth Scouting Group	5 Light Cruisers	Commodore von Reuter.
Destroyer Flotillas	2nd, 6th and 9th Flotillas	Commodore Heinrich.

TABLE III. *Comparison of British and German Capital Ships at Jutland and Their Main Armaments*

BRITISH					GERMAN			
No. of each class	Total Turret Guns				No. of each class	Total Turret Guns	
	15 in.	14 in.	13·5 in.	12 in.		12 in.	11 in.
2 Revenge	16	..	..	..	4 König	40	..
4 Barham	32	..	..	..	4 Kaiser	40	..
1 Canada	..	10	..	..	4 Thüringen	48	..
1 Erin	..	..	10	..	4 Westfalen	48	..
1 Agincourt	..	..	..	14	4 Deutschland*	..	16
3 Iron Duke	..	..	30	..	2 Preussen*	..	8
3 King George V.	..	..	30	..			
4 Orion	..	..	40	..			
2 Colossus	..	..	..	20	(*Pre-Dreadnought type)		
1 Neptune	..	..	..	10			
3 St. Vincent	..	..	..	30			
3 Bellerophon	..	..	..	30			
28 Battleships	48	10	110	104	22 Battleships	176	24
1 Tiger	..	..	8	..	2 Derfflinger	16	..
3 Lion	..	..	24	..	1 Seydlitz	..	10
2 Indefatigable	..	..	..	16	1 Moltke	..	10
3 Invincible	..	..	..	24	1 Von der Tann	..	8
9 Battle-Cruisers	..	..	32	40	5 Battle Cruisers	16	28
37 Capital Ships	48	10	142	144	27 Capital Ships	192	52
			Total Turret Guns	344		Total Turret Guns	244

To sum up: the British Fleet consisted of 37 capital ships, 8 armoured cruisers, 26 light cruisers and 80 flotilla leaders and destroyers. The German Fleet consisted of 27 capital ships, 11 light cruisers, 63 flotilla leaders and destroyers.

had already set out in order to be in their appointed stations by May 23, while some six or eight Flanders submarines had gone north to reconnoitre between Norway and the Firth of Forth. From that date to June 1 was the period during which it was intended to bring off the bombardment. But the weather continued to be unfavourable for airship reconnaissance. Scheer would not risk an advance on the English coast without ample warning of

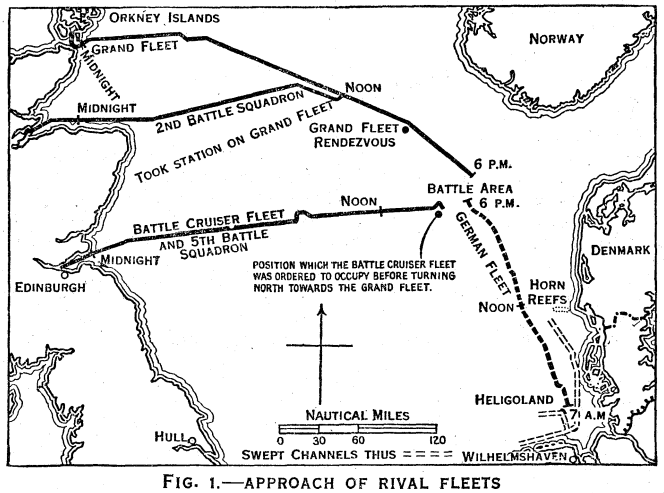

FIG. 1.—APPROACH OF RIVAL FLEETS

the approach of the British fleet; meanwhile the limit of endurance of his submarines was nearly spent.

On May 30, when he could wait no longer, he abandoned the bombarding plan and ordered Hipper, with the scouting force to sail next day and to demonstrate off the southwest coast of Norway. This he anticipated would soon be known to the British Admiralty, and he hoped, by following the scouting force with the battle fleet, but keeping out of sight until the enemy appeared, that he might fall on a detached portion of the Grand Fleet, which would probably be sent out to protect the cruiser patrol and shipping to the northward. But events turned out otherwise.

II. THE PRELIMINARY ACTIONS

The Grand Fleet Sails.—The British Naval Intelligence Dept. was already aware both of the movement of German submarines and that there was a "certain liveliness" in the Jade Roads, and Jellicoe was warned that a large operation on the part of the enemy appeared to be imminent. At 5:40 P.M. on May 30 the commander-in-chief and the admiral commanding the Battle Cruiser Fleet were sent orders to proceed to the predetermined rendezvous eastward of the Long Forties (about 60 m. east of the Scottish coast) in readiness for eventualities. A warning was also sent to the Harwich Forces and 3rd Battle Squadron at the Nore. By 10.30 P.M. the three sections of the Grand Fleet had left their respective bases at Scapa Flow, Invergordon and Rosyth and were heading out across the North Sea. The main battle fleet made for a rendezvous in lat. 57° 45′ N. long. 4° 15′ E. where the forces under Admiral Jerram from Invergordon would meet him at 2 P.M. next day. Beatty, with the Rosyth force, was making for a point 69 m. S.S.E. of the battle fleet's position (*see* fig. 1). These dispositions would enable the battle fleet to intercept an enemy trying to attack the 10th Cruiser Squadron on the northern patrol, while the Rosyth force would guard against a raid.

When the British fleet put to sea 13 hostile submarines were lying off the coast; also U-67 was south of the Dogger Bank; and U-75, having laid the mines, which afterward sank the "Hampshire" with Kitchener on board, was on her way home. The German submarines made a few ineffective attacks; but in the main the under-water craft, as usual, proved unable to prevent free movement of the fleet.

To Jellicoe the position was by no means clear when he set out. The evidence pointed to another cruiser raid being afoot, but a misleading telegram sent from the Admiralty during the forenoon of May 31 informed him that directional wireless signals placed the German fleet flagship in the Jade river, thereby leaving him with the impression that there was no reason for undue haste; he, therefore, regulated his speed so as to economise his destroyers' fuel consumption.

First Contact.—Hipper, with the scouting force left the Jade at 2 A.M. on May 31 and steamed northward, keeping well out of sight on the Danish coast. Scheer followed 50 m. astern with the battle fleet. During the early morning the German commander-in-chief received wireless reports from his U boats, but these proved vague and misleading, so much so that far from gleaning that a combined advance was being made by the British forces, he alludes to "our hope of meeting with separate enemy divisions," as being "likely to be fulfilled." (See *Germany's High Seas Fleet in the World War,* Scheer.)

At 2 P.M. Beatty, having arrived at his rendezvous, prepared to turn north in accordance with his instructions. Then followed one of those seemingly trivial events which are sometimes destined to have momentous issues. A stray merchant steamer attracted the attention of Commodore Alexander-Sinclair in the "Galatea," on the eastern wing of the light cruiser screen. He stood on to the E.S.E. to examine her. Simultaneously the "Elbing," on the west-

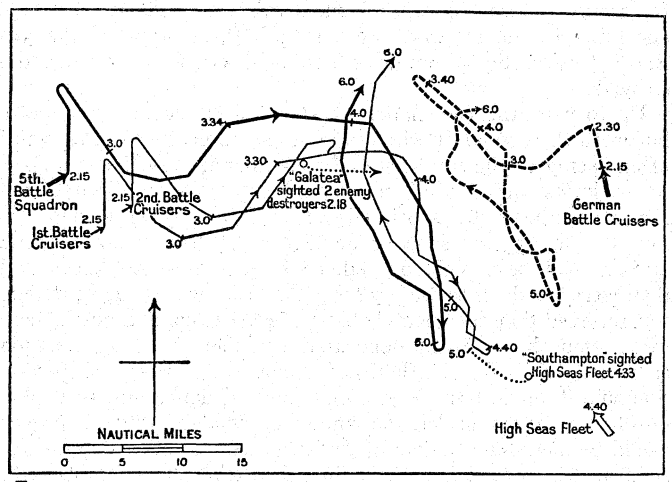

FIG. 2.—FIRST CONTACT OF OPPOSING FLEETS AND THE BATTLE CRUISER ACTION

ern wing of the German scouting force, sighted the same steamer and detached a destroyer to investigate. Another instant and the rival warships had seen each other. At 2.20, just as Beatty had turned to the northward, "Galatea" hoisted the signal "enemy in sight." (*See* fig. 2.) The result was to hasten a meeting which otherwise would, most probably, have occurred farther North and therefore nearer the British battle fleet. Beatty at once set out to cut off the line of retreat of the enemy's light cruisers towards Horn Reefs, but finding that they were apparently following the "Galatea" to the northwest, he hauled round more to the northward. He had been steering northeast for some 10 minutes when the heavy smoke of Hipper's five battle cruisers was sighted on his starboard bow, whereupon he turned back to the east.

Owing to the greater visibility to the westward, Hipper had already sighted the six British battle cruisers, and now realised that they were heading to cross his stern and cut off his line of retreat, and that he must hasten to fall back on the battle fleet. Beatty, knowing nothing of the greater forces to the south, could only regard this as a golden opportunity for getting to grips with the enemy. There followed a hot running fight to the southward between the opposing battle cruisers (*see* fig. 2). The 5th Battle Squadron under Rear-Adm. Evan-Thomas had, unfortunately, been stationed by Beatty 5 miles on the opposite bearing to that on which the enemy was sighted. A further delay in bringing this powerful force into action was caused through ineffective signalling in the "Lion." The result of this division of forces was that the British battle cruisers suffered heavily instead of the German squadron being annihilated.

THE BATTLE CRUISER ACTION

At 3.34 P.M. Beatty formed the battle cruisers into single line, increased to 25 knots and made for the enemy. About this time the "Engadine" sent up a seaplane which reported Hipper's course south. This is noteworthy as being the only occasion on which a British aircraft was used throughout the operations, and the report failed to reach the battle cruiser's flagship. At 3.45 however, the enemy could be made out distinctly from the "Lion," and Beatty formed his ships on a line bearing north-west to clear the smoke and bring their guns to bear, while he turned to E.S.E. At about 3.48 fire was opened almost simultaneously on both sides at a range of approximately 16,000 yards.

The British battle cruisers were at considerable disadvantage, for they showed up well against the western sky, while visibility to the eastward was poor for observing their fire. German accounts agree that the British firing during this part of the action was somewhat ragged, while they pay high tribute to that of the 5th Battle Squadron as it eventually got into range. The better protection of the enemy's battle cruisers and the better shell with which the heavy guns of his fleet generally were provided stood him in good stead, while confusion in the interpretation of the "Lion's" signals for distribution of fire added to the disadvantages of the British battle cruisers.

The range was rapidly decreasing as the courses of the rival forces converged. A few minutes after 4 P.M. the "Lion" was heavily hit by a shell from the "Lützow" which plunged into her midship turret and killed nearly the whole of the gun's crew. But for the presence of mind and devotion to duty of Major F. J. W. Harvey, R.M.L.I. (awarded a posthumous V.C.), who when mortally wounded saw to the flooding of the magazine, the flagship would doubtless have been destroyed. Up to this time, owing to a misunderstanding, the "Derfflinger" had been left unfired at, but was now engaged by the "Queen Mary." In the rear of the line the "Von der Tann" and "Indefatigable" were fighting a furious duel when a salvo of three shells from the former crashed into the vitals of the British ship; she fell out of the line sinking by the stern; at 4.06 P.M. another salvo hit her and with a rending explosion she turned over and sank with her 57 officers and 960 men. Now came a moment's respite; both sides, finding the fighting too hot, decided to open the range, and soon the German shells were falling short and their fire ceased.

Meanwhile Evan-Thomas, by cutting corners, had manoeuvred the 5th Battle Squadron into range, and shortly after 4 o'clock the "Barham" opened fire on the "Von der Tann" at about 19,000 yards. In spite of the poor visibility the battleships' firing was very accurate, and Hipper had to take to zig-zagging to dodge the great 15 in. salvoes. Nothing but the poor quality of the British shells, which burst without penetrating the enemy's armour, could have saved his rear ships from destruction. The van of the German line was not long out of action.

At 4.10 Hipper turned inwards two points while Beatty, having established sufficient overlap, started to press his way to the eastward again. The effect was to close the range rapidly and the engagement was fiercely renewed.

The "Lion" seems to have been still enveloped in the smoke of her burnt-out turret, and practically invisible, with the result that she was left in peace while the "Seydlitz" concentrated her guns with those of the "Derfflinger" on the "Queen Mary." The latter was fighting gallantly when at 4.26, a salvo crashed into her forward, a red flame shot up and an explosion rent her asunder. In another instant only a great pall of smoke marked the grave of the "Queen Mary" and her 57 officers and 1,209 men.

About this time a subsidiary battle was being fought between the lines. The 13th Destroyer Flotilla, having attained a suitable position, was launched to attack. At the same moment a German flotilla advanced into the arena making for the 5th Battle Squadron. The two flotillas met; the enemy destroyers fired twelve torpedoes at long range and hastily retired before the superior gun-fire of the British craft. Evan-Thomas swung his Battle Squadron away two points and safely avoided the torpedoes. Part of the British flotilla chased the fleeing enemy towards the van of the German battle cruisers, while Commander Bingham in the "Nestor," followed by the "Nicator," pursued those making for the rear. When within 5,000 yd. of the "Lützow," the two destroyers fired their torpedoes, but Hipper adopted the same dodging tactics and swung his ships away while the torpedoes ran clear or fell short of their mark. The gallant pair of destroyers pressed on and fired more torpedoes at a range of only 3,500 yd. under a hail of shell from the enemy's secondary armament. The "Nicator" escaped, but the light cruiser "Regensburg" appeared suddenly from behind the battle cruisers and crippled the "Nestor" with two shots in her boiler. The "Nomad," another destroyer, was also hit and left helpless between the lines. Another small force of British destroyers had accounted for two of their opponents, "V.27" and "V.29," when at 4.43 P.M. the "Lion" ran up the destroyers' general recall. Events suddenly took a new and dramatic turn. To Hipper, sorely pressed ahead and astern, came welcome and timely relief. The German battle fleet was in sight.

German Battle Fleet in Sight.—The head of the German

battle fleet was first sighted by the "Southampton" in which was Commodore Goodenough leading his 2nd Light Cruiser Squadron about two miles ahead of the "Lion." At 4.33 he made the signal "battleships southeast." Holding boldly to his course he was soon able to identify the High Seas Battle Fleet in full array. Mindful of the extreme importance of his information, he sent a wireless message direct to Jellicoe. Within ten minutes of this signal being dispatched the commander-in-chief had quickened the pulse of his own great command with the signal "enemy battle fleet is coming north."

Goodenough stood down to within 13,000 yd. of the enemy so that he could identify him in detail before turning north under a hail of shell fire. An admirable piece of cruiser work had not only galvanised many and far distant forces into activity, but it had crystallised the whole position for the British commands. Beatty also held his course until the German battle fleet was in sight, then, at 4.40, he turned 16 points in succession and started to run north, assuming the rôle of the pursued instead of that of pursuer. To Scheer it seemed as if his opportunity to fall on a detached part of the British fleet had come, but Beatty was happy in the knowledge that if the enemy was not frightened off prematurely he would be confronted with the whole Grand Fleet.

Hipper, it so happened, was too occupied with the British destroyers' attacks to take advantage of the target presented by the British battle cruisers as they wheeled in succession round the same point. By 4.50 Beatty with his line now reduced to four ships had straightened up on a northerly course and was re-engaging his late enemy. Hipper had just resumed his southerly course, after turning away from the British destroyers, when a torpedo hit the "Seydlitz" tearing a huge hole under water and putting a 15 cm. gun out of action. The ship's stout construction saved her, however, and she kept her place in the line. By 5 P.M. Hipper, too, had turned 16 points to the northward and taken up his station ahead of the battle fleet. Meanwhile the 5th Battle Squadron could not see the "Lion's" flag signal to turn about. Evan-Thomas saw Beatty turn, but was intent on hanging to the rear of the enemy's battle cruisers, who were still on a southerly course, with the result that the two British squadrons passed each other at high speed. The "Lion" now repeated the signal to turn, direct to the 5th Battle Squadron, but before it could be obeyed, that squadron found itself under the guns of the German battle fleet.

Evan-Thomas turned 16 points at practically the same instant as Hipper, but in the process the "Barham" received a heavy shell which cost her casualties and the use of her wireless gear. The rear battleship of the line, the "Malaya," was a target for at least a whole division of enemy battle ships and suffered even more severely. ("Barham" lost 26 killed and 37 wounded, "Malaya" 63 killed and 33 wounded.) For some 20 min., she was straddled again and again and received serious damage below the waterline, but held on and eventually the whole squadron forged ahead and got clear. A plucky attempt by the destroyers "Onslow" and "Moresby" to attack the enemy battle cruisers just as they had turned north was defeated by the German light scouting group, but the "Moresby" stood on to within 8,000 yd. of the enemy's battle fleet and fired a torpedo at the third ship of the line; it did not take effect, but both destroyers escaped miraculously under a very hot fire. Scheer continued to hasten north after the apparently hard-pressed British squadrons. As he did so the motionless "Nestor" and "Nomad" came drifting down between the lines. They scorned surrender and fired their last torpedoes at the oncoming battleships but without effect. A moment later they were overwhelmed in a storm of shell. The undaunted "Nestors" gave three cheers for their sinking ship and sang a verse of "God Save the King" before the crews took to boats and Carley rafts, from which they were chivalrously rescued by enemy destroyers.

Once the 5th Battle Squadron had shaken off the German battle fleet the firing slackened. At 5.40 P.M. Hipper's squadron reappeared out of the mist and there was a temporary burst of firing from the British battle cruisers and the leading battleships, but Beatty was intent on joining his commander-in-chief and was reserving his forces for the greater issues impending.

III. THE MAIN ACTION

Meeting of the Battle Fleets.—Coming down from the north-west was Jellicoe in the "Iron Duke," at the head of a centre division of his six lines of battleships, each in single line ahead at manoeuvring distance apart. Directly ahead of him was the 4th Light Cruiser Squadron which with the destroyer flotillas was acting as an anti-submarine screen. Further ahead and spread for scouting were the 1st and 2nd Cruiser Squadrons. Twenty-one miles to the eastward were Hood's three ships of the 3rd Battle Cruiser Squadron, with two light cruisers and four destroyers.

Up to 2.45, the fleet had been steaming at economical speed, but, with the arrival of wireless messages indicating the presence of an enemy to the southward, the commander-in-chief increased to 17 knots and ten minutes later to 18 knots. Course was shaped southeast by south for Horn Reefs as previously arranged. At 3.59, as soon as he learnt that the enemy's battle cruisers had been sighted, Jellicoe increased to 20 knots and then sent Hood on to Beatty's support, so that when the report was received that the enemy's battle fleet was coming north there was nothing better to be done at the moment than to stand on as he was doing. The battle fleet was closed up in cruising formation, and it would have been useless, indeed dangerous, to deploy into line of battle until it was known on what bearing the enemy would be met. The leaders of divisions were already disposed at right angles to the most likely line of bearing on which to sight the enemy in order that they might wheel their ships into line with a minimum of delay. So the rival battle fleets approached, charging towards each other at a rate of nearly 40 knots, but as yet out of sight.

When in due course contact was made it did not come about quite as Jellicoe expected. The "Iron Duke" and "Lion" had communicated their respective positions from time to time, but zig-zagging and many other alterations of course had caused both flagships to be out in their reckoning. The "Iron Duke" was in fact some $4\frac{1}{2}$ m. ahead (*i.e.*, to the southeastward) and the "Lion" $6\frac{3}{4}$ m. to the westward of their estimated positions as they approached each other. The reports of the enemy received by the commander-in-chief were therefore somewhat perplexing, and by the time it became evident that the German Battle Fleet would be met on a starboard bow bearing instead of right ahead it was too late to alter his dispositions. Hood, also, was thrown out in his calculations. Steering as he thought to join Beatty he found himself on the opposite side, *i.e.*, to eastward of the enemy. It was at this juncture that fighting broke out with renewed vigour.

At 5.40 the Battle Cruiser Fleet converging on the 1st Scouting Group, from the westward, saw the "Lützow" and her consorts emerging from the mist. Fire was opened at a range of about 14,000 yards. This apparently disconcerted Hipper, who turned away to the eastward. Hardly had he done so before he heard the guns of the 3rd Battle Cruiser Squadron engaging his 2nd Scouting Group. The trap was closing in on him, but as yet he was unaware of the far greater menace to the northward; but he seems to have sensed danger and at 6.34, hotly pursued by Beatty, he turned southeast only to see his light cruisers being attacked by four British destroyers. These latter he took to be the forerunners of the British Battle Fleet and, now thoroughly alarmed, he doubled right back to southwest to seek the cover of his own battleships. In fact what he had seen were Hood's light forces. These had been hotly engaged with Boedicker's 2nd Scouting Group. In the initial skirmish the "Chester" was badly mauled by the German light cruisers, but they in turn suddenly found themselves overwhelmed by the fire of the three "Invincibles." The "Wiesbaden" was reduced to a wreck and the "Pillau" and "Frankfurt" were badly damaged and only escaped by using their torpedoes, which forced Hood to turn away and break off the pursuit.

The destroyers which Hipper had seen were part of the 4th flotilla. Led by the "Shark," they gallantly went for the "Regensburg" and nine or ten enemy torpedo craft which seemed to be preparing to attack the 3rd Battle-Cruiser Squadron. In the

course of this encounter the "Shark" was severely battered and eventually sank, fighting to the last under her mortally wounded captain, Commander Loftus Jones. Hood avoided this attack by turning his squadron sharply to starboard; and almost at the same instant he sighted the "Lion" racing up from the westward. He turned to meet her and then swung his squadron into station ahead of the Battle Cruiser Fleet and led the line on a south-easterly course. Jellicoe was left in doubt until the very last minute as to the exact position of the enemy. Somewhere to the southward was the High Seas Fleet, but between him and his adversary were battle cruisers, cruisers and destroyers belching smoke and gun fire and obscuring his view. Beatty, hot on the heels of his own particular quarry again, had lost sight of the enemy battle fleet and at the moment could not answer the commander-in-chief's urgent enquiry. Nine minutes the latter waited, then at 6.10 repeated his question "Where is enemy's battle fleet?" The first definite information came from the "Barham," now rapidly closing with the 5th Battle Squadron from the southwest. She reported "Enemy's battle fleet S.S.E." At 6.14 the "Lion," having regained touch, reported it too, bearing S.S.W. from her.

The Deployment (see fig. 3.).—Within a minute of the "Lion's" report, Jellicoe had ordered the fleet to deploy on the port or easterly column. The manoeuvre was a vital one and the commander-in-chief made a masterly decision. Had he followed his natural inclination to deploy to starboard, *i.e.*, on the side toward the enemy, the ships on that wing would have found themselves at grave disadvantage; the enemy would have been able to concentrate his fire on them while they would have been masking the other columns until each could turn up in rear in succession. Moreover, the head of the British line would have had to make a sharp turn to port at once to prevent the enemy crossing the "T." It is not too much to say that had Jellicoe

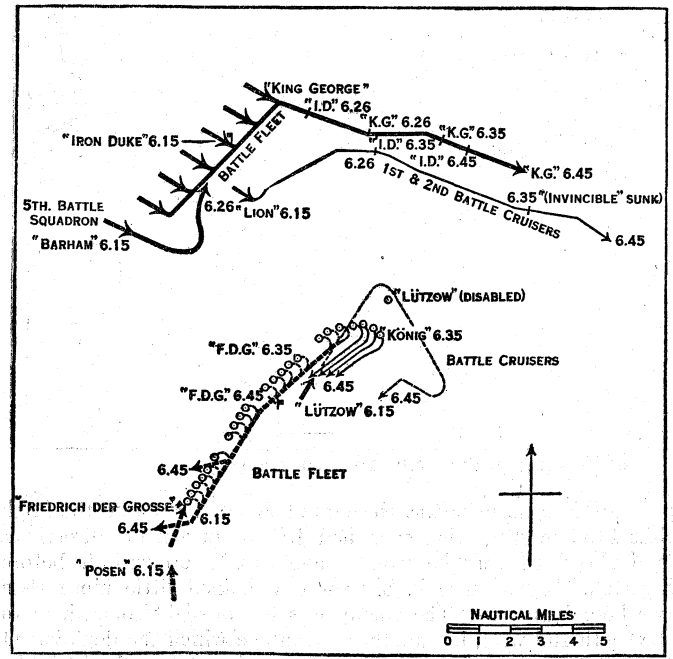

FIG. 3.—DEPLOYMENT OF BRITISH BATTLE FLEET AND FIRST RETIREMENT OF THE GERMAN FLEET

made a wrong decision at this moment irretrievable disaster might have followed. As it was the Grand Fleet was placed at the outset in a position of overwhelming tactical advantage.

The deployment, it will be seen, developed in the form of an obtuse-angled "L," one arm of which steadily lengthened to envelop the head of the enemy's line, while, during the process, the British ships could give each other the maximum of support. The battle cruisers hurried to their station at the head of the line, the 5th Battle Squadron slipped into place astern, cruisers and destroyers automatically took up their pre-arranged positions. The whole was a magnificent piece of fleet work, the culmination of fine organization and training and a clear indication of a high standard of leadership on the part of the flag officers commanding the several divisions and squadrons.

But now a tragedy occurred in the foreground of this impressive scene. Up to the moment of deployment Rear-Admiral Arbuthnot in the "Defence" with his 1st Cruiser Squadron had been scouting ahead of the battle fleet, but on contact being made, it became his duty to engage the enemy's cruisers. Boedicker's 2nd Scouting Group was faintly visible to the southward and, followed by the "Warrior," Arbuthnot turned to pursue them. He was about to deliver a *coup de grâce* to the now blazing and disabled "Wiesbaden," when out of the mist came both the British and German battle cruisers hotly engaged. Holding on tenaciously, close across the bows of the "Lion," the two cruisers soon found themselves in a hurricane of fire as Hipper endeavoured to cover the stricken "Wiesbaden." Two great salvoes hit the "Defence" in quick succession and at 6.19 Arbuthnot and his flagship disappeared in a sheet of flame. The "Warrior" limped away, and was only saved for the time being by the battleship "Warspite" performing an involuntary circle round her, owing to the sudden jamming of the latter's steering gear. Clear of the fighting, the sea-plane carrier "Engadine" made a brave effort to tow her home, but the "Warrior" had to be abandoned at 7 A.M. the following morning and eventually sank.

As the cloud of smoke over the spot where the "Defence" had gone down rolled away, the full measure of his peril was revealed to Scheer. The High Seas Fleet was heading into the crook of the rapidly extending arm of the whole combined British Battle Fleet. It seemed to Jellicoe a glorious opportunity to fall on his enemy and crush him. The signal was actually hoisted for the Grand Fleet to close, when the commander-in-chief realised that his line had not yet straightened out, and the battle cruisers were not yet clear of his van; to turn to S.S.E. by subdivisions, as he wished, was not practicable at the moment. He had to cancel the signal and hold on on a course which nevertheless sharply converged with that of the enemy battle fleet. The Grand Fleet deployed on a course southeast at 6.15. The deployment (excluding the 5th B.S.) was completed by about 6.40. The German Battle Fleet approached on a northeasterly course. At 6.27, the "König," leading battleship, turned east, the remainder following in succession (*see* fig. 3).

Now yet another misfortune befell the British. Proudly leading the long line of capital ships, was Hood in the "Invincible." Having closed to a bare 9,000 yd. she was furiously engaging the "Derfflinger," hitting her again and again with well directed salvoes, when the "König," leading the van of the enemy battle fleet, came to the rescue of the battle cruiser. Once again the plunging shell sought the vitals of the lightly armoured British ship; the "Invincible" was torn asunder, her stem and stern rising high out of the water before she disappeared (6.34). With her went Hood, who had so finely upheld the traditions of his historic name, and his splendid crew of over a thousand officers and men. The British battle cruisers had indeed suffered heavily. Valuable as their work had been in bringing about the main action, they were clearly unsuited for "in-fighting." From now onwards they rightly confined themselves to harassing the van of the enemy when opportunity served, leaving the battleships to take the shock of closer contact. But close contact was the last thing Scheer was seeking. He was in a trap and needed all his wits to escape impending disaster.

The possibility of such a situation had not been overlooked by the German commander-in-chief, and he had practised his command in a manoeuvre known as the *Gefechtskehrtwendung,* which was really an "emergency retirement." In this the destroyers dashed out, fired their torpedoes "into the brown," and put up a smoke screen while each big ship did a right-about turn and retreated precipitately. This manoeuvre he ordered when at 6.35 he found battleship after battleship of the Grand Fleet concentrating on the head of his line. It was not unattended with risk, but it was boldly ordered and skilfully executed. (*See* fig. 3.) In less than three minutes the evasive Germans had disappeared for the first time. The destroyer attack had not been pressed home,

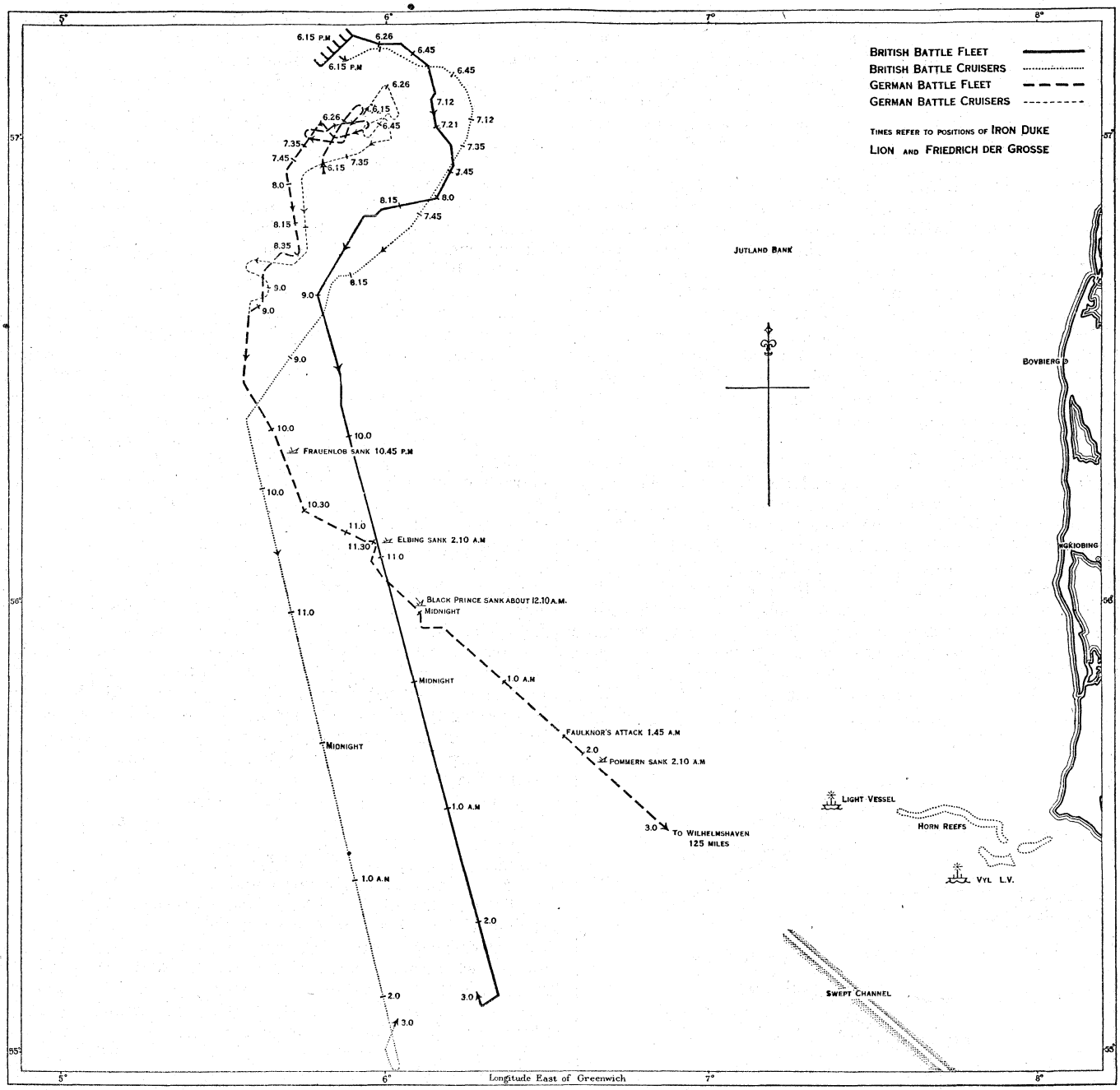

FIG. 4.—COURSE OF MAIN ACTION AND ESCAPE OF GERMAN FLEET (6.15 P.M. TO 3.00 A.M.)

and, although some of the British battleship divisions swung away momentarily to avoid the torpedoes, the course of the fleet as a whole was not deflected. Burney's flagship, the "Marlborough," was hit by a torpedo, but the damage was not so great as to force her to leave the line. The German light cruiser "Wiesbaden," now the only enemy in sight, came under a heavy fire and in ten minutes, a blazing wreck, she sank from sight.

Jellicoe, too, had foreseen the problem which now confronted him, and he had not been alone in seeking, for some time past, a satisfactory solution; it was agreed by the highest tactical authorities that to follow directly in the path of an enemy's battle fleet in a position where it could obtain the maximum advantage from torpedoes and mines, was sheer foolhardiness. He had been informed by the Naval Intelligence Dept. that the German capital ships were known to carry mines. In fact, he had already summed up the situation when he wrote "Nothing but ample time and superior speed can be an answer, and this means that unless the meeting takes place fairly early in the day, it is most difficult, if not impossible, to fight the action to a finish." In point of fact, so little was the Grand Fleet superior to the High Seas Fleet in speed that even had Jellicoe pursued it directly it is doubtful whether he would have caught up with it before nightfall. It was now 6.40. There remained little more than two hours' daylight. The enemy was out of sight somewhere to the south and west, but another advantage which the deployment to port had given was the overlap to the eastward which the Grand Fleet had secured. (*See* fig. 4.) Jellicoe was therefore in a position to work his way steadily between the High Seas Fleet and its possible lines of retreat to the German coast, and this he proceeded to do. At 6.44 he turned his divisions southeast. Simultaneously Goodenough turned south and led his Light Cruiser Squadron to look for the enemy. By 7 he was able to report the hostile battle fleet bearing S.S.W.

Five minutes before this Jellicoe had altered course to south, and now, knowing that he was again in a position of considerable tactical advantage, he ordered a turn of "3 points to starboard together" to close more rapidly. About this time a number of reports of submarines were being made to the com-

mander-in-chief. The "Lion" had just reported sighting one, the "King George V.," leading the battle fleet, sent a warning that a submarine was just ahead of the "Iron Duke," then the "Duke of Edinburgh" reported one "2 points from right ahead." It is now known that there were no submarines in the vicinity, but these reports could not well be ignored, so Jellicoe took the best course possible and turned directly towards the supposed

ron at the northward end of the line was seen to open fire. The "Marlborough's" gunnery efficiency had not been impaired by her underwater injuries, and she discharged salvo after salvo at the "König" as the head of the enemy battle fleet came into sight. The rest of the squadron took up the engagement and soon the leading German ships were smothered in shell at a range of less than 9,000 yards. At 7.13 the "Iron Duke" came

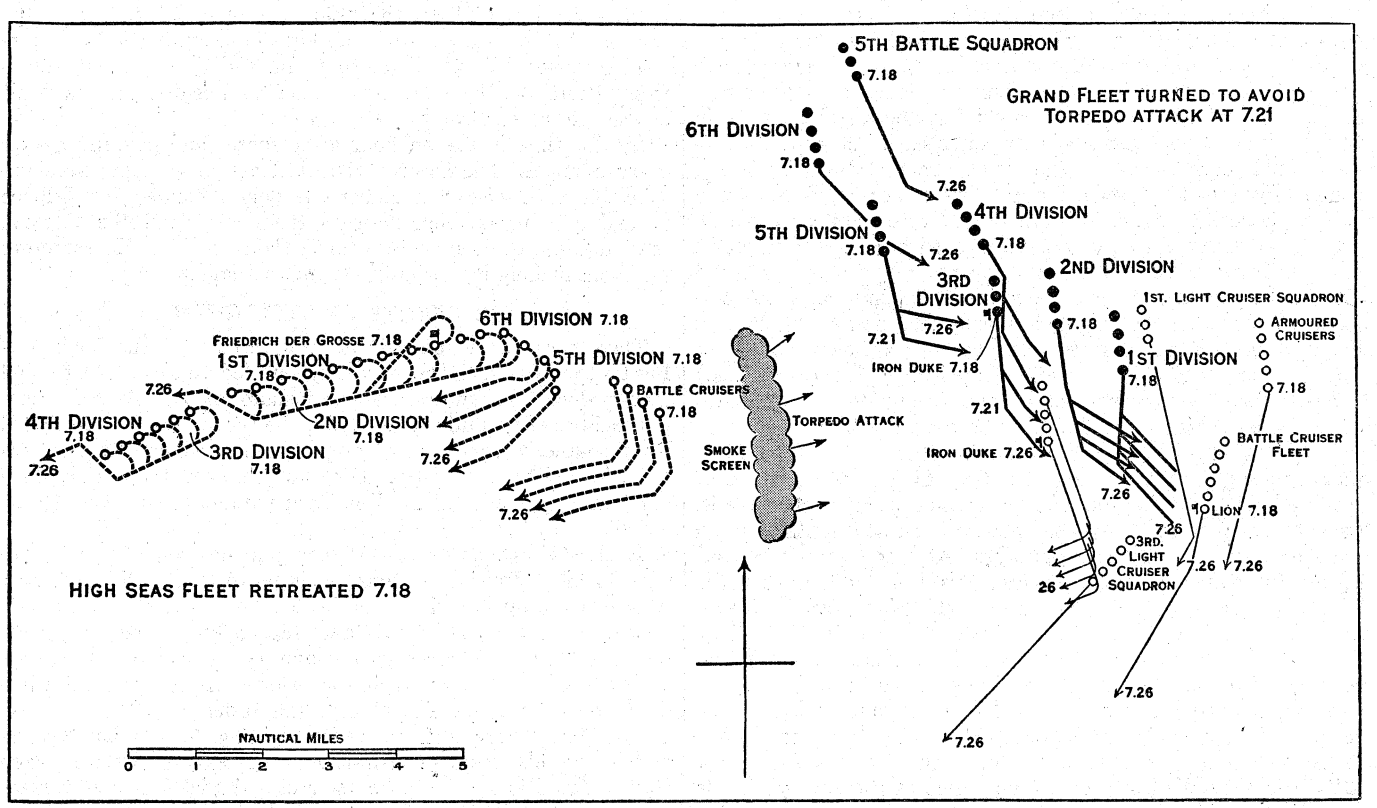

FIG. 5.—SECOND RETIREMENT OF GERMAN FLEET (7.18 P.M. TO 7.26 P.M.)

menace. Incidentally this brought the course of the fleet back to south and re-formed the divisions into line ahead, the leaders being disposed quarterly. Hardly was the turn completed before the enemy reappeared out of the mist.

THE BATTLE FLEETS RE-ENGAGE

Having extricated his fleet from one trap it seems incredible that Scheer should have deliberately walked into another (*see* fig. 5). In his official despatch he says: "It was as yet too early to assume night cruising order. The enemy could have compelled us to fight before dark, he could have prevented our exercising our initiative, and finally, he could have cut off our return to the German Bight." If ever there was a man who wanted to avoid decisive action it was the man who penned those words, yet in the next paragraph of his despatch he makes the illogical statement: "There was only one way of avoiding this: to deal the enemy a second blow by again advancing regardless of the consequences, and to bring all the destroyers to attack." The manner in which the High Seas Fleet renewed the action was such that its course was practically at right angles to that of the Grand Fleet, whose battleships were stretched across his bows so that they could concentrate on the leading German ships, while those in rear trailed astern out of action. The evidence goes to show that Scheer hoped to pass astern of the British line and thence make his way to the eastward, possibly engaging a detached force en route. If he had succeeded, he could then have made for home, fighting a rearguard action.

But Jellicoe had forestalled him. The British Battle Fleet was fair across his path and, in the low visibility prevailing, its commander-in-chief had not risked dividing his forces. First some enemy light cruisers appeared to the southwest of the "Iron Duke." A few minutes later, at 7.12, the 1st Battle Squad-

into action again. Once more the Grand Fleet was in a position of overwhelming tactical advantage and ship after ship joined her fire and picked out a battleship or battle-cruiser target as occasion offered. Meanwhile a small force of enemy destroyers had developed an attack which caused Sturdee to swing his 4th Division away two points to avoid their torpedoes. Directly the attack had expended itself, he turned back to the course of the fleet, approximately south, which brought him into line astern of the 3rd Division led by the "Iron Duke."

Jellicoe had been holding steadily on his course across the head of the enemy, but seeing his rear divisions in some danger of segregation he ordered them to form astern of him, while the "King George" was directed to lead the van into line ahead. And now the full fire-effect of the British battleships was rapidly developing, and Scheer saw that his leading ships were in danger of annihilation; another "right-about turn" was imperative. But the enemy seemed right on top and half round him. Drastic measures were necessary to get clear. The German battle cruisers would have to be sacrificed, if need be, to save the battle fleet. He made a signal to them which, read literally, meant "charge the enemy; ram; ships are to attack without regard to consequences." At the same time the destroyers, once again, were launched *en masse* to attack.

The "Lützow" had been completely disabled in the first contact of the main engagement, and was still ablaze and out of action. Hipper had not yet been able to get on board another battle cruiser, but Capt. Hartog, in the "Derfflinger" with the remaining three, led off gallantly on what the Germans have called a "death ride." To make matters worse, the British battle cruisers which had been working round on the outer arc of the circle, so to speak, were now coming into action again. So the enemy's 1st Scouting Group became the centre of a perfect

hurricane of fire. The "Derfflinger" had two turrets shattered to bits and was being hit again and again, the "Seydlitz," "Moltke" and "Von der Tann" were also suffering severely when the welcome signal came permitting them to withdraw. By 7.20 the German Battle Fleet had repeated its former tactics and was retreating pell-mell to the westward behind a dense smoke screen put up by its destroyers. The latter pressed on to attack with more determination this time. There was no other enemy in sight so Jellicoe was free to concentrate his attention on this one. A heavy fire was opened on the oncoming torpedo craft which made them loose their torpedoes at long range. At 7.21 the British commander-in-chief swung his ships away in two quick successive turns of two points each before the torpedoes could reach the line. The result was that this attack was completely foiled. A second and third attack were countered by Commodore Le Mesurier's 4th Light Cruiser Squadron which, crossing from its station on the disengaged bow, drove furiously at the enemy. One German destroyer, "S.35," was sunk and several badly damaged. Jellicoe was, for the time being, in complete ignorance of what his main enemy was doing, but directly the torpedo attack had spent itself he, at 7.35, swung the fleet back five points to starboard and steered S. by W. (*See* fig. 4.)

Beatty had by now worked his way round to the starboard bow of the Battle Fleet and was heading southwest. At 7.40 he signalled to the commander-in-chief to say that the enemy was about 10 m. N.W. by W. But the "Lion" was quite out of sight from the fleet flagship, and her own position, as she gave it, was obviously wrong. Jellicoe, however, turned southwest, on the same course as his battle cruisers. At 7.45 Beatty again reported the position of the enemy, this time adding that the latter's course was about southwest. This signal was made to the "Minotaur" by searchlight, passed by her to the "King George V.," who passed it on to the "Iron Duke," where it did not arrive till 7.59. Jellicoe promptly turned the battle fleet west by divisions, and increased to 17 knots to regain touch with the enemy. Hardly had he done so before a wireless message came to hand from Beatty saying: "Submit van of battleships follow battle cruisers. We can then cut off whole of the enemy's battle fleet." The commander-in-chief ordered Admiral Jerram, at the head of the line, to comply with this request, but, owing to the unavoidable delay in cyphering, transmitting and decyphering the message, the "Lion" had by then lost sight of the enemy; moreover, the battle cruisers were not in sight from the "King George V." In point of fact, the battle fleet was already steering straight for the enemy.

Although he had twice butted his head into trouble and twice withdrawn it considerably battered, Scheer was loath to be forced further to the westward and away from home. So, at 7.53, he hauled round and made his way tentatively to the southward. (*See* fig. 4.) Jerram had been somewhat at a loss as to how he was to carry out his orders, but hearing gunfire on the port bow, he turned his division towards it, and at 8.21 was heading W.S.W. The firing came from Rear-Adml. Napier's 3rd Light Cruiser Squadron, which was engaging the 4th Scouting Group at the head of the High Seas Fleet. After a sharp conflict the enemy turned away and disappeared. Meanwhile, Beatty, who was also steering west, had again sighted the German battle cruisers and beyond them the pre-Dreadnought battleships steering south. He thereupon turned in succession to W.S.W. and opened fire. An attempt by hostile destroyers to attack the British battle cruisers was frustrated by Le Mesurier's Light Cruiser Squadron. Beatty held on his course and was beginning to inflict severe punishment on the sorely stricken enemy battle cruisers; but they could stand no more, and, running out of action to the westward, sought cover behind the old ships of Admiral Mauve's 2nd Battle Squadron.

Meanwhile Jellicoe had good reason to be satisfied with the situation. His battle cruisers had made contact, he was between the German fleet and its own coast, and he seemed on the point of renewing the engagement. At 8.28 he turned by divisions to southwest and stood down on a converging course expecting momentarily to meet his adversary. But Scheer foresaw the impending collision, indeed his headmost ships were already in the track of the on-coming storm. He had no intention of suffering again from its full blast, and by 8.35 he had turned hastily to the westward and disappeared before the British battle fleet came in sight. So the firing died away; and now the mists of night rolled down between the rival forces. It was past 9.00 before Jellicoe was fully informed as to the situation; then he received a message from the "Lion" reporting that at 8.40 the enemy's battle cruisers and pre-Dreadnought battleships bore from that ship N. 34° W. 10 to 11 m. and were steering southwest. Beatty at the same time made his position and gave his course also as southwest.

By this time it was an hour after sunset and growing darker every moment. The hazards of a fleet action at night were unthinkable to a wise commander. It only remained for Jellicoe to maintain his position between the enemy and the German coast until he could fight to a finish the next day. He therefore set about making his dispositions for the dark hours.

IV. EVENTS OF THE NIGHT

There were three potential lines of retreat for the High Seas Fleet. (*See* fig. 1.) The northerly one led to Horn Reefs, and thence down the swept channel inshore of the Amrun Bank minefield to the mouth of the Jade; the second would be reached by a southerly course to a swept channel which led eastward close to Heligoland; lastly, there was the swept channel which led from the vicinity of the Ems river parallel to the coast to the entrance into the Jade. (*See* fig. 1.)

Jellicoe's Dispositions.—At 9.17 Jellicoe ordered the fleet to take up night cruising stations. This meant that the battle fleet were to close up into three parallel columns with the 5th Battle Squadron, now consisting of three ships only, on the port quarter. The "Warspite" after her involuntary circle at 6.20 P.M. continued to have trouble with her steering gear. At 7.00 she withdrew from the action and at 8.50 was ordered back to Rosyth. She had been badly hit in the earlier fighting. Beatty had already anticipated his commander-in-chief's wishes and having taken station ahead and placed the 1st and 3rd Light Cruiser Squadrons to the southward and westward of him, assumed the course and speed of the fleet; this was south at 17 knots. Five miles astern of the battle fleet Jellicoe massed his destroyer flotillas. This had the following advantages:—

(*a*) It covered the rear of the fleet from attacks by hostile flotillas.
(*b*) It increased the chances of intercepting the enemy should he endeavour to make to the eastward, and of obstructing his passage by torpedo attacks.
(*c*) It kept the Grand Fleet destroyers clear of their own battleships and therefore minimised the chances of disastrous mistakes in the dark.

The value of these dispositions was to some extent diminished by the difficulty of communicating their purport to commanding officers, especially those of the innumerable destroyers, but, in effect, the British fleet ploughing through the night presented a living wall of steel barring the enemy's passage home.

Scheer's Return.—Scheer also prepared for the night. His 1st Battle Squadron led the line and was followed by the 3rd Battle Squadron; then came the older ships of the 2nd Battle Squadron and lastly the three sorely wounded battle cruisers. The "Lützow" was limping along to the northward sinking deeper and deeper by the bows. At 2 A.M. she had to be abandoned and was afterwards sunk with a torpedo. The light cruisers of the 2nd and 4th Scouting Groups were stationed near the head of the battle fleet, while in advance of all were the majority of the German destroyers groping like antennae into the darkness. About 9.30 Scheer started to feel his way to the eastward, the van of his line turning S.S.E.¼E., a course which headed for Horn Reefs. Shortly after 10.00 his advanced light cruisers came into contact with the right wing of the flotillas bringing up the rear of the Grand Fleet. A sharp fight took place in which the "Castor," leading the 11th flotilla, was severely handled. The near-by destroyers would probably have retaliated with more effect had they not been deceived by the enemy making part of the British challenge for the day. This he appears to have

picked up through indiscreet flashing signalling between the "Lion" and "Princess Royal," about half an hour previously.

The High Seas Fleet recoiled slightly after this brief encounter, but even the rival forces continued to converge and now Goodenough's light cruisers once more came into the forefront of the scene. He had been keeping in touch with the "Marlborough's" division, but owing to the under-water injuries of the flagship, the latter was lagging nearly three miles astern of its proper station. The "Castor's" engagement had put the "Southampton" and her consorts on the alert, and they were well prepared when, about 10.30, they suddenly found themselves abreast the 4th Scouting Group. A fierce contest ensued. The "Southampton" was the most vigorously assaulted. Her upper deck became a shambles and she was blazing like a haystack from cordite fires, but in the midst of this holocaust she fired a torpedo which sunk the "Frauenlob" with all hands. At the end of a quarter of an hour the enemy had had enough and drew off into the darkness. The German light cruisers had already reported the presence of enemy light forces and the order stationing the British destroyer flotillas astern had been intercepted and translated to Scheer by a shore wireless station. From these reports he probably realised that the British Battle Fleet had drawn ahead. In any case he was determined to force his way to the eastward. At 10.30 he turned back to S.E.½E. heading direct for Horn Reefs Light Vessel.

The British Destroyers in Action.—The rest of the story of that night is one of sudden encounters with an enemy fighting desperately to get home while British destroyers gallantly threw themselves in his path whenever opportunity served. The German fleet was frequently in a state of much confusion, the "Elbing" was rammed by the "Posen" and later had to be sunk to prevent capture. The "Rostock" was torpedoed by the 4th Flotilla and also had to be sunk. On the British side the destroyers suffered severely. About 11.30 the "Tipperary" was so badly damaged by gunfire that she sank the next morning. The "Spitfire" met the great battleship "Nassau" nearly end on, tore twenty feet from the latter's plating and carried it off on her forecastle. She was badly damaged but had done good execution with her small gun armament, putting out the big ship's searchlights and causing a number of casualties.

The shock of this conflict again caused the German fleet to waver and the leading battleships turned away nearly eight points to the westward, but Scheer was adamant in his determination to break through at all costs while darkness gave hope of escape. He forced his van back, and by 11.34 the "Westfalen" was again leading the line to the south-eastward. In another encounter a few moments later the "Broke's" steering gear was disabled and she and the "Contest" rammed the "Sparrowhawk," and the latter had to be sunk the next day. Between midnight and 12.30 A.M. the "Fortune" and "Ardent" were sunk and the "Porpoise" disabled by gunfire, and the "Turbulent" was rammed and sunk with all hands. The armoured cruiser "Black Prince," which had got separated from the fleet, was making her way to the southward when she fell in with the German battle fleet. Under the glare of their search lights she was sunk by overwhelming fire at point-blank range. Again and again the British light craft attacked, but from now onwards the enemy held his course; and the tragedy of that night was that no accurate information of the German battle fleet was vouchsafed to Admiral Jellicoe.

Admiralty Messages.—Two reports, based on intercepted wireless messages, were sent to Jellicoe by the Admiralty. One, despatched at 9.58, received in the "Iron Duke" about 10.23, but not deciphered and read until 11, gave an obviously wrong position of the rear ships of the enemy battle fleet at 9 P.M. A second message, dispatched at 10.41, received at 11.05, and read about 11.30, stated that the German battle fleet had been ordered home at 9.14, battle cruisers in rear, course S.S.E.¾E., 16 knots. This latter was a summary of several intercepted signals but most unfortunately it omitted the fact that Scheer, at 9.06, had made an urgent call for airship reconnaissance off Horn Reefs at daylight, clearly indicating his intended line of retreat. The second Admiralty message referred to the enemy's movements at 9.14, but at 11.38 Goodenough's report was received saying: "Have engaged enemy cruisers at 10.15 bearing W.S.W.," and about the same time the "Birmingham" also reported from astern: "Battle cruisers probably hostile in sight northeast course south" (11.30). These reports came from ships which had actually sighted the enemy long after the time referred to in the Admiralty messages. They indicated that he had not yet turned home. The "Birmingham," unfortunately, sighted the German heavy ships at a moment when they had turned away from our torpedo attacks, his report therefore was misleading, but other ships might have saved the situation.

At 11.35 the "Valiant," last ship but one of the 5th Battle Squadron, noted what appeared to be "two German cruisers with at least two funnels and a crane amidships, apparently steering to the eastward at a high speed." These details make it certain that the ships were battleships and should have been recognized as such. The "Malaya," the last ship of the squadron, had a clearer view and noted at 11.40 "enemy big ships, three points abaft the starboard beam, steering the same way as ours." By the flash of an explosion the leading ship was seen to have "two masts, two funnels and a conspicuous crane (apparently "Westfalen" class)." It was obvious that the enemy's main fleet had closed in from the westward and was edging its way across the wake of the 5th Battle Squadron, yet for some inconceivable reason the captains of these two ships neglected to report what they had seen. Had they done so it would have greatly increased the chances of an overwhelming victory next day. The courage and self-sacrifices of the British destroyers did not provide the one thing lacking, *i.e.*, information. Before the curtain of darkness had lifted, Scheer had hacked his way through the light forces and passed to the eastward.

Scheer was not yet out of the wood, however. About 1.45, just as a faint grey light was heralding the approaching dawn, Captain Stirling, in the "Faulkner" with his fine 34 knot 12th Flotilla, sighted large ships on his starboard bow, steering a southeasterly course. Even as he manoeuvred to attack he thought to send a wireless report to his commander-in-chief. The attack, carried out with the greatest dash and gallantry, resulted in the battleship "Pommern" being sunk without a trace. Again Captain Stirling made his wireless message, but neither of his reports reached the "Iron Duke." About 2.25 in the growing light, the "Champion" with three destroyers sighted the enemy. One of the latter, the "Moresby," broke off at once and made a plucky attack which sank the German destroyer "V4," but the "Champion" turned to the eastward and made no report.

At 2.39 A.M. Jellicoe turned north. He had been left with the impression that the enemy had been following him south and now, with daylight rapidly returning, he was anxious to get in touch with a view to renewing the engagement. It had been his intention to close Horn Reefs at dawn, but the night fighting had scattered his flotillas and he deemed it imprudent to thrust into enemy waters until he could collect a destroyer screen. A signal from the Admiralty, despatched at 1.48 A.M. but not received in the "Iron Duke" until 2.40 informed the commander-in-chief that enemy submarines were apparently coming out from German ports. The battle fleet formed single line on the northerly course so as to be ready for emergency in the early morning haze, and so, retracing his path, Jellicoe expected momentarily to fall in with his destroyer flotillas and possibly the damaged "Lützow." Tyrwhitt's Harwich Force had, at last, been ordered to sea, and by 3.50 A.M. he was under way, much too late to be of service. From 3.15 A.M. Zeppelins began to be sighted and at 3.42 A.M. the British battle fleet had turned expectantly towards the sound of guns, but found that it was only some of their own cruisers engaging one of the enemy airships. It was obvious, however, that by now the position of the British fleet must be known to the German command. The hope of meeting the enemy which had been growing fainter was finally shattered by an Admiralty message received at 4.15 A.M. saying that at 2.30 A.M. the High Seas Fleet was only 16 m. from Horn Reefs steering S.E.b.S. at 16 knots.

Beatty was still clinging to the idea that the enemy was to the south-westward, and asked permission to sweep in that direction; but at 4.30 A.M., having re-formed into cruising formation, Jellicoe regretfully made the signal "Enemy fleet has returned to harbour." Scheer reached Horn Reefs Light Vessel about 3 A.M. There he lingered for a short space receiving reports from his airships and taking stock of the condition of his fleet. At 3.30 A.M. he was informed that the "Lützow" had had to be sunk. The rest of the 1st Scouting Group was in no condition for serious action, the battleships which had been in the van had also suffered considerably, and he had only three light cruisers serviceable; moreover the visibility was such that he could not rely on airship reconnaissance. Indeed many of the reports which he received from this source have since been proved to be very inaccurate. A policy of discretion was obviously dictated, and he gave the order for the whole fleet to return to harbour. On the way in, the battleship "Ostfriesland" struck a mine laid in the channel by the British destroyer "Abdiel" but got home.

The losses may be summarised as follows:—

Ships		
	British	German
Battleships	Nil	1
Battle cruisers	3	1
Cruisers	3	Nil
Light cruisers	Nil	4
Torpedo craft	8	5
Personnel		
	British	German
Officers (killed)	328	160
Men (killed)	5,769	2,385
Officers (prisoners)	10	Nil
Men (prisoners)	167	Nil
	6,274	2,545

On the face of them these figures would appear to leave the balance of Jutland in favour of Germany, so far as destruction of men and ships is concerned, but the value of the battle must be measured in its after effects and not in its momentary losses.

Results.—The broad effects of Jutland are a matter of history, but they may be summarised as follows:

1. The High Seas Fleet after "consistently refusing action and manoeuvring with the sole object of returning safely to its base," as Jellicoe has put it, left the Grand Fleet in undisputed possession of the arena.

2. Although the German High Command must have realised that the Grand Fleet as a "fleet in being," was the fulcrum of the whole Allied cause, the High Seas Fleet only once left the Heligoland Bight after Jutland; this was on Aug. 19 of the same year. On this occasion Scheer was warned by airship reconnaissance that the British Battle Fleet was advancing to meet him, whereupon he returned to his base.

3. In Nov. 1918 Scheer ordered the High Seas Fleet to sea "to break the blockade." It was to have been a final bid for victory, but inaction had only served to crystallise the memories of Jutland; the crews refused to weigh anchor. This mutinous outbreak at Wilhelmshaven widened the fissure which shortly afterwards engulfed the whole German cause.

4. The full fruits of Jellicoe's domination of the German Fleet at Jutland were yielded on Nov. 21, 1918, when Beatty received the surrender of the greater part of the High Seas Fleet.

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JUTURNA: *see* IUTURNA.

JUVENAL (DECIMUS IUNIUS IUVENALIS) (*c.* A.D. 60–140), Roman satirist and poet, was probably born at Aquinum. Our knowledge of his life is slight, though various mediaeval mss. of his works have a *Life* of the author prefixed to them. Many of the statements they contain are improbable, and most of the rest seem to be deductions from passages in his works, and not derived from any independent source. Our material consists of 13 of these *Lives*, an inscription from Aquinum which may or may not be relevant, three poems addressed to Juvenal by Martial, and an allusion, almost certainly to him, in Sidonius Apollinaris. The most reliable of the *Lives* tells us that Juvenal was the son or ward of a wealthy freedman; it is impossible to tell if this is true or not; if it is, the rancour with which he attacks the whole class in his satires is surprising; that until middle age he practised declamation, which is not improbable; that he published his satires late in life, when they met with great success, and that an actor of the time, annoyed at a passage really aimed at Paris, Domitian's favourite, had the poet banished, under the form of a military appointment, to Egypt, where he died at the age of eighty. The only independent tradition in all this is the reference to his exile. The idea of military service, in Egypt of all places, being used as a cloak for exile does not sound particularly convincing, but the tradition is persistent. The story of military service is to some extent confirmed by an inscription found at Aquinum (*C.I.L.* X., 5382), recording the dedication of an altar to Ceres by a Iunius Iuvenalis, tribune of the first cohort of Dalmatians, *duumvir quinquennialis* and *flamen Divi Vespasiani*. On the question whether this is or is not the poet, opinions differ flatly. Duff (preface to his edition of the *Satires*) is against the identification, Friedländer for it. Juvenal certainly does not write like a soldier, nor like a man who has held important offices in a country town. On the other hand it is tempting to relate his obvious interest in, and one might almost say personal acquaintance with, Britain to service with a corps which is known to have been there.

From the poems of Martial addressed to Juvenal we may conclude that Juvenal was in Rome in 92 (*Epig.* VII., 91) and 101 (XII., 18). Martial addresses Juvenal as *facundus*, into which phrase it is possible to read as little as a mere reference to the eloquence of Juvenal's verse, or as much as a definite implication that Juvenal had a forensic practice. Sidonius' reference (*Carm.* IX., 269) has no further value than to show that the tradition of his exile was prevalent in the 5th Century A.D.

The *Satires* were published at intervals, grouped in books as we have them now, but they were not necessarily written in that order, or even at about the same times. Repeatedly there are references to the life, public, literary and private, of Domitian's reign as if it belonged to the present, while the first book was certainly not published till the beginning of Trajan's reign. Juvenal would not be the only man of letters of the period who shunned publication till that tyranny was overpast.

Contents of the Satires.—The first book contains satires 1–5, and belongs to the first years of the second century. It cannot be earlier than 100, and has been dated as late as 112–116. Satire 1 is a general introduction. "Why do I write satire?" he asks; "say rather, how could I help it?" The famous lines

Quidquid agunt homines, votum, timor, ira, voluptas,
Gaudia, discursus, nostri est farrago libelli

give the key-note of all that is to follow. The third satire is a description of Rome, imitated by Johnson in his poem on London. Among the many pictures it contains of the discomforts and dangers of the capital, two incidents in Juvenal's best style stand out, a street accident and a nocturnal "hold-up." The remaining two satires are slighter; the fourth tells the story of Domitian's turbot, with a picture of the ghastly crew that surrounded him, the fifth recounts the indignities of the poor at the rich man's table.

Book two contains only the famous sixth satire, directed against the female sex. The theme is "Why marry, as long as there is still rope to hang oneself with?", illustrated by portraits of every variety of female horror from Messallina to the bluestocking. The allusion to a comet boding disaster to Parthia can be related to Trajan's Eastern campaign, and will give us 116 as a date.

The third book, Satires 7–9, seems to be dated by its opening to the accession of Hadrian (118), though the eighth satire was probably written earlier. The seventh satire hails the new reign as the dawn of better days, but laments that literature (unless one is a writer of pantomime) is still an unprofitable profession, and rhetoric is in the same plight. The eighth is on a well-worn Stoic theme, *stemmata quid faciunt?*, rely on the distinction of personal virtue, not on the fame of your ancestors.

The fourth book cannot be exactly dated. It contains the famous tenth satire, the eleventh and the twelfth. In the tenth, imitated by Johnson as the *Vanity of Human Wishes,* the various objects of ambition and desire are recounted, with examples of the disasters that have befallen those who have achieved them. The eleventh is an invitation to dinner, contrasting his simplicity with the fashionable luxury; here he states directly what the abatement of his former tremendous energy and indignation suggest, that he is growing old.

Nostra bibat vernum contracta cuticula solem.

The twelfth is a portrait of a legacy-hunter.

The fifth book, satires 13–16, can be dated 127–128. The work is now on a lower level, its tone gentler and its grip less powerful. The outstanding poem in the book is the fourteenth, on the power of parental example for good and ill. The last is unfinished.

From the change of tone discernible from the tenth satire, onwards, the increasing prolixity and tendency to abstraction, Ribbeck (*Der echte und der unechte Juvenal,* Berlin, 1865) sought to deduce a double authorship of the *Satires.* Nobody believes this now.

Juvenal had a decisive influence in the history of satire. Before him the satire in Latin literature had been true to its name, a sort of hotch-potch. The term covered equally the mixed verse and prose extravaganza of Petronius and the easy conversational *sermones* of Horace. But Juvenal was the outstanding, as he was the first, example of a truly great tragic Satirist. He carried the rhetorical form of Satire to the utmost limits of excellence. He was the first in whose work there shows no negligence, but rather an excess of elaboration. His diction is full, even to excess, of meaning, point and emphasis. Juvenal might seek to affiliate his work to Horace, but his real prototype is Lucilius; with his moralist temper, his rhetorical training and his Stoic philosophy, Juvenal turned the easy-going Latin *satura* into a fixed verse-form restricted, practically speaking, to the note of denunciation.

There is little humour in Juvenal, and what there is, is grim; there is less kindliness, though the helpless and dependent, the "homesick boy from the Sabine highlands," are sometimes treated more gently than the rest of the world. His most remarkable gift, apart from the blazing indignation with which all his work is suffused, and the terrific power and violence with which it is expressed, is his gift of presentation. The satires are studded with unforgettably vivid single sketches of various kinds: historical vignettes like that of Sejanus, characters hit off in a line or elaborately drawn, and scenes from everyday life that set the Rome of his day alive before us; perhaps one should say, the Rome of his earlier days, for in the true temper of the satirist Juvenal fails to do justice to the improvements, at any rate in public life, that followed the bad times of Domitian.

Juvenal leaves a mixed impression, both as a poet and as a man. In neither capacity is it easy to feel affection for him, or to refuse him respect. His verse is powerful and well-constructed, true Silver Age Latin in its epigrammatic force and point, if often overstrained. It is superb rhetoric nearly always; hardly ever, perhaps, true poetry. Yet Pope himself never enriched a language with so many crisp, clean-cut phrases of the sort that pass inevitably into common use: *nam quis custodiet ipsos Custodes? Mens sana in corpore sano: Nemo repente fuit turpissimus: Maxima debetur pueris reverentia: Panem et circenses:* these are but a few. As the style, so the man; he is harsh but undeniably strong. Swinburne said that Juvenal knew what he hated, and that was tyranny and democracy; but this seems unduly limited. He hated nearly everything he saw, impartially; not only the vice and cruelty of his age, but its luxury, its art, its poetry, even its philosophy. He is a sort of Cato, cut off from public life and forced to express his combative nature in literature; what seem to us his most surprising lapses of judgment, his habit, for example, of placing at the head of a list of appalling crimes what is at worst an error of taste, all this is due to his intensely Roman feeling, his hatred of any degeneration from the old Roman standard of manliness and self-respect. He could only see the evil effects of Greek influence, and they blinded him to its humanising value.

In the structure of his verse Juvenal returned to the Virgilian type of hexameter. His style shows most of the usual tendencies of the time, particularly a frequent use of the diminutive forms of words from the *sermo cotidianus.*

BIBLIOGRAPHY.—The best of the known manuscripts of Juvenal (P) is at Montpellier (125); but there are several others which cannot be neglected. Amongst these may be specially mentioned the Bodleian MS. (Canon. Lat. 41), which contains a portion of Satire vi., the existence of which was unknown until E. O. Winstedt published it in the *Classical Review* (1899), pp. 201 *seq.* Another fragment in the Bibliothèque Nationale was described by C. E. Stuart in the *Classical Quarterly* (Jan. 1909). There are two classes of scholia—the older or "Pithoeana," first published by P. Pithoeus, and the "Cornutus scholia" of less value. The earliest edition which need now be mentioned is that of P. Pithoeus, 1585, in which P. was first used for the text. Amongst later ones we may mention the commentaries of Ruperti (1819) and C. F. Heinrich (1839, with the old scholia), O. Jahn (1851, critical with the old scholia), A. Weidner (1889), L. Friedländer (1895, with a full verbal index). The most useful English commentaries are those of J. E. B. Mayor (a voluminous and learned commentary on thirteen of the *Satires,* ii., vi. and ix. being omitted), J. D. Lewis (1882, with a prose translation) and J. D. Duff (1898, expurgated, and ii. and ix. being omitted). There are recent critical texts: conservative and chiefly based on P. by F. Buecheler (1893, with selections from the scholia) and S. G. Owen (in the Oxford Series of Texts); on the other side, by A. E. Housman (1905) and by the same, but with fewer innovations, in the new *Corpus poetarum latinorum,* fasc. v. The two last-named editors alone give the newly discovered lines of Satire vi. Dryden translated i., iii., vi., x. and xvi., the others being committed to inferior hands. Other versions are Gifford's (1802), of some merit, and C. Badham's (1814). English prose version by Ramsay (London, 1918). Johnson's imitations of Satires iii. and x. are well known. For the numerous articles and contributions to the criticism and elucidation of the *Satires,* reference should be made to Teuffel's *Geschichte der römischen Literatur* (Eng. trans. by Warre), § 331, and Schanz, ditto (1901, ii. § 2, §420*a*).

See also E. Walford, *Juvenal* (1870); Nettleship, *Lectures and Essays* (1895, series 2); J. de Decker, *Juvenalis declamans* (1913); U. Knocke, *Die Überlieferung Juvenals* (1926); I. G. Scott, *The grand Style in the Satires of Juvenal* (1927). On the question of the inscription, *see* P. Knox McElderry, in *Class. Quart.* 16 (1922), arguing for a visit to Ireland in 81; Friedländer, *Sittengeschichte,* and Nettleship in *Journ. Phil.* 16, 45. (W. Y. S.; J. P. P.)

JUVENILE COURTS: *see* CHILDREN'S COURTS.

JUVENILE OFFENDERS. In modern social science the question of the proper penal treatment of juvenile (*i.e.,* non-adult) offenders has been increasingly discussed; and the reformatory principle, first applied in the case of children, has even been extended to reclaimable adult offenders (juveniles in crime, if not in age) in a way which brings them sufficiently within the same category to be noticed in this article. In the old days the main idea in England was to use the same penal methods for all criminals, young and old; when the child broke the law he was sent to prison like his elders. It was only in comparatively recent times that it was realized that child criminals were too often the victims of circumstances beyond their own control. They were rather potential than actual criminals, calling for rescue and regeneration rather than vindictive reprisals. Striplings of 13 and 14 had been committed 10, 12, 16 or 17 times. Religion and moral improvement were little regarded in prisons, industrial and technical training was impossible. The chief lesson learnt was an intimate and contemptuous acquaintance with the demoralizing interior of a gaol. There were at one time in London 200 "flash houses" frequented by 6,000 boys trained and proficient in thieving and depredation.

The substantial movement for reform in England dates from the first Reformatory School act in 1854. Sporadic efforts to meet the evil had indeed been made earlier. In 1756 the Marine society established a school for the reception and reform of younger criminals; in 1788 the City of London formed a similar institution, which grew much later into the farm school at Redhill. In 1838

an act of parliament created an establishment at Parkhurst for the detention and correction of juvenile offenders, to whom pardon was given conditional on their entrance into some charitable institution. Parkhurst was technically a prison, and the system combined industrial training with religious and educational instruction. These earlier efforts had, however, been quite insufficient to meet the evils, for in the years immediately preceding 1854 crime was being so constantly reinforced in its beginnings under the existing penal system, that it threatened to swamp the country. Unofficial, but more or less accurate, figures showed that between 11,000 and 12,000 juveniles passed annually through the prisons of England and Wales, a third of the whole number being contributed by London alone. In 1854 the total reached 14,000. The ages of offenders ranged from less than 12 to 17; 60% of the whole were between 14 and 17; 46% had been committed more than once; 18% four times and more.

The Reformatory School act 1854, substituted the school for the gaol, and all judicial benches were empowered to send delinquents to schools if over the age of 12 and under the age of 16 when they had been guilty of acts punishable by short imprisonment. A serious flaw in this act long survived; this was the provision that a short period of imprisonment in gaol must precede reception into the reformatory; it was upheld by well-meaning but mistaken people as essential for deterrence. But more enlightened opinion condemned the rule as inflicting an indelible prison taint and breeding contamination, even with ample and effective safeguards. Wiser legislation has followed, and an act of 1899 abolished preliminary imprisonment.

Certified Schools.—Reformatories, or "senior home office schools" as they are officially styled, in England numbered 28 in 1928. They maintain 1,861 boys and 163 girls. They receive all juvenile offenders, up to the age of 16, who have been convicted of an offence punishable with penal servitude or imprisonment. Industrial schools or "junior home office schools" receive children under 12 years of age who have been found guilty of an offence, or under 14 if not previously convicted. To these schools may also be sent children found wandering, begging in the streets, frequenting the company of thieves, living in immoral surroundings, playing truant from school, etc. There are now 57 industrial schools (37 for boys and 20 for girls). The number of children sent to schools of either kind has greatly diminished. In the year 1913 there were 18,916 inmates; in 1926 only 6,871 inmates. Whilst at one time there may have been too great a readiness to commit to certified schools, the tendency would appear now to be in the opposite direction, yet these schools were never so efficient as they are at present, nor their work so valuable. Older offenders, between 16 and 21, come within the category of juvenile adults and are dealt with differently (*see* BORSTAL SYSTEM).

The disciplinary system of the English schools is planned upon the establishment or institution system, as opposed to that of the "family" or "boarding out" systems adopted in some countries, and some controversy has been aroused as to the comparative value of the methods. The British practice has always favoured the well-governed school, with the proviso that it is kept small so that the head may know all of his charges. But a compromise has been effected in large establishments by dividing the boys into "houses," each containing a small manageable total as a family under an official father or head. Under this system the idea of the home is maintained, while uniformity of treatment and discipline is secured by grouping several houses together under one general authority. The plan of "boarding out" is now being adopted very largely in the case of young children, who although technically "committed" to a particular school are in reality boarded out by the school authorities and remain under their control, becoming inmates of the school on attaining the age of 10 years. The value of the domestic training is questionable and of uncertain quality, depending entirely upon the character and fitness of the foster-parents secured. Education must be less systematic in the private home, industrial training is less easily carried out, and there can be none of that *esprit de corps* that stimulates effort in physical training as applied to athletics and the playing of games.

Under careful management and the wise inspection and supervision of the Home office, the "certified schools," both Reformatory and Industrial, have attained a very high degree of efficiency. Punishments in them have greatly decreased and a much larger measure of freedom and self-development has been secured. In nearly all schools the boys or girls go into "camp" for a summer holiday and, where conditions render it possible, also have a short holiday with parents or relations. The standard of education has been raised and the technical instruction has become really valuable in after life.

Inmates of certified schools remain after discharge under the control of the authorities; in the case of the senior schools until 19, in that of the junior until 18 years of age. This system enables the managers to give every boy and girl on leaving a good start in life in a carefully selected occupation. So efficient has it now become that some schools are able to claim 95% of successes for those discharged under control.

Certain schools specialize in nautical training, others in farm work, but nearly every trade and occupation is open to choice, the Army receiving a very large number. Exact figures are given in the Home office reports.

Special Features.—Nearly all civilized countries have provided institutions for the care and training of Juvenile Delinquents and in most instances they are conducted on lines very similar to those of the British certified schools.

Belgium has inaugurated an experiment of great interest in the establishment of "observation schools" at Molle for boys and at Namur for girls. The period of residence lasts for about three months and during this time every characteristic of the child, physical, mental, psychological and vocational, is carefully studied, so that the Court having cognizance of the particular case may be fully advised as to the best method of treatment.

Holland has not only followed Belgium in this respect but has instituted a system of special police for the control and care of children and most countries have now established Children's Courts.

The "George Junior Republic" (*q.v.*) is a remarkable institution established in 1895 at Freeville, near the centre of New York State, by Mr. William Reuben George. The original features of the institution are that the motto "Nothing without labour" is rigidly enforced, and that self-government is carried to a point that, with mere children, would appear whimsical were it not a proved success. The place is, as the name implies, a miniature "republic" with laws, legislature, courts and administration of its own, all made and carried on by the "citizens" themselves. The tone and spirit of the place appeared to be excellent and there is much evidence that in many cases strong and independent character is developed in children whose antecedents have been almost hopeless.

Some time back the experiment of establishing a penal reformatory for offenders above the age hitherto committed to reformatory schools was resolved upon. This led to the foundation of the Borstal scheme, which was first formally started in October 1902 (*see* BORSTAL SYSTEM). (X.)

United States.—It is only within the century that the notion of a differentiated treatment of the youthful offender led to the establishment of separate correctional institutions for juvenile offenders under 16 years of age. The first of these houses of refuge, as they were called, was set up in the City of New York in 1825. Under the general description of reform schools, institutions of this type multiplied in the United States, some under public and some under private, religious or other benevolent auspices. These have for the most part been prisons in all but name and have done little to reform the young delinquents committed to their custody, but the last 20 years have marked a considerable improvement in the spirit and methods of their administration. The more recent tendency is to locate them in the country and to house the inmates in cottages holding from 20 to 40 each, under the immediate supervision of a house-father and mother. In this new phase of their development these institutions are commonly known as State, city or county homes or industrial schools. There are to-day (1928) 145 such institutions in the United States wholly or in part supported out of the public funds.

Commitments are made by the juvenile courts and are for an indeterminate period in the discretion of the management of the school. The boy or girl committed may be held until he or she attains the age of 21, but the usual period of residence does not exceed three years. Release is conditional on parole, subject to supervision by the parole officer of the institution who may return the delinquent for any subsequent misconduct.

As an escape from the prison there can be no doubt of the value of the reform school; but it is open to the question whether it is anything better than a makeshift—a question which raises the issue of the balance of the benefits and the detrimental effects of institutional treatment. Students of the problem in America are looking hopefully to other social agencies—probation, boys' and girls' clubs and, for the younger delinquents, foster homes—as more promising means of dealing effectively with the problem. The juvenile court is still in a state of transition; equipped with the psychiatric clinic and its staff of probation officers, it is feeling its way. It will be remembered that the juvenile court has ridded itself of the criminal law—its punitive aims, inflexible procedure and tradition of finality, replaced by a court of chancery with no aim but the protection of the child and with a procedure which is not exhausted until that end has been attained. It is from the juvenile court, therefore, rather than from houses of refuge and reformatories, that a solution of the problem of the juvenile offender is to be expected. (*See* CHILDREN'S COURTS; REFORMATORY SCHOOL; PRISON.)

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JUVENTAS (Lat. for "youth," later *Iuventus*), in Roman mythology the tutelary goddess of young men. *See* HEBE.

JUXON, WILLIAM (1582–1663), English prelate, archbishop of Canterbury, was born probably at Chichester, being educated at Merchant Taylors' School, London, and at St. John's College, Oxford. He studied law at Oxford, but took orders, and held various preferments. In 1621 he succeeded his friend, William Laud, as president of St. John's College, and in 1626 and 1627 he was vice-chancellor of the university. Juxon became chaplain-in-ordinary to Charles I. In 1627 he was made dean of Worcester and in 1632 he was nominated to the bishopric of Hereford, though he never took up his episcopal duties at Hereford, as in Oct. 1633 he was consecrated bishop of London in succession to Laud. In March 1636 Charles I. made him lord high treasurer of England. He resigned the treasurership in May 1641. During the Civil War the bishop lived undisturbed at Fulham Palace, and his advice was often sought by the king, who selected him to be with him on the scaffold and to administer to him the last consolations of religion. Juxon was deprived of his bishopric in 1649, and retired to Little Compton in Gloucestershire. At the restoration of Charles II. he became archbishop of Canterbury. He died at Lambeth on June 4, 1663. By his will the archbishop was a benefactor to St. John's College, where he was buried; he also aided the work of restoring St. Paul's Cathedral and rebuilt the great hall at Lambeth Palace.

See W. H. Marah, *Memoirs of Archbishop Juxon and his Times* (1869); and the article by W. H. Hutton in the *Dict. Nat. Biog.* (1892).

K THIS letter, corresponding to Semitic 𐤊 (*kaph*), Greek 𐤊, K (*kappa*), has changed its shape less perhaps than any other in the history of the alphabet. Early Greek forms from the island of Thera k, ƙ, closely resemble the Semitic. In the Lydian alphabet the form 𐤊 occurs, written from right to left, as had been the case with the Semitic form on the Moabite stone. The Chalcidic, Etruscan, and Latin forms were identical, K, and the letter has retained its shape till modern times. The minuscule form k is but a slight adaptation of the majuscule with the point of junction of the three strokes lowered and the lower transverse stroke consequently much shortened and moved to the right. The round form ƙ also appears in handwriting.

The sound represented by the letter throughout its known history until the present day has been the unvoiced velar stop. Its function in the Latin alphabet was usurped by the letter C, which, taken over as representing the voiced velar, came under Etruscan influence to represent the unvoiced sound as well. Later the letter G was adapted from C to represent the voiced velar and C stood

NAME OF FORM	APPROXIMATE DATE	FORM OF LETTER
PHOENICIAN	B.C. 1,200	𐤊
CRETAN	1,100-900	H
THERAEAN	700-600	H
ARCHAIC LATIN	700-500	K
ATTIC	600	𐤊
CORINTHIAN	600	𐤊
CHALCIDIAN	600	K
IONIC	403	𐤊
ROMAN COLONIAL	PRE-CLASSICAL AND CLASSICAL TIMES	< C K
URBAN ROMAN		C
FALISCAN		> ⊃
OSCAN		𐤊
UMBRIAN		𐤊 ⊃ 𐤊
CLASSICAL LATIN AND ONWARDS		K

DEVELOPMENT OF THE LETTER K

for the unvoiced only. K now fell into disuse except in official formulae or initials such as in the word *Kalendae*.

In late Latin and the early Roman period the unvoiced velar, represented by C, became palatalised before front vowels, and in the 12th century K was reintroduced as a substitute for C to represent the velar before front vowels, since C did duty for both the velar and palatal in such cases and confusion was thus liable to arise. Thus the English word *cyng* for example began to be spelt *kyng*, later *king*.

In modern English orthography *k* is combined with *c* to represent the unvoiced velar, when the sound is final, e.g., *thick, stock, buck*. This is usually the case only in monosyllabic words.

(B. F. C. A.)

K_2, or MT. GODWIN-AUSTEN, the second highest mountain in the world, ranking after Mt. Everest. It is a peak of the Karakoram extension of the Muztagh range dividing Kashmir from Chinese Turkestan. The most recent determination of the height of K_2 is 28,250 ft. thus placing it higher than Kinchinjunga. The duke of the Abruzzi in June 1909 ascended to the height of 21,650 ft., being at that time the highest elevation on the earth's surface reached by man.

KA. The name given by the ancient Egyptians to the second self or physical double of their personality—represented in hieroglyphics by uplifted hands—which they believed survived after death together with the soul or *bai*. It was supposed to be born with the person to whom it belonged and acted as a protection during his life on earth. (*See* EGYPT and RELIGION.)

KABABISH: *see* ARABS.

KA'BAH, the sacred shrine of Islam, containing the "black stone," in the middle of the great mosque at Mecca (*q.v.*).

KABARDA-BALKARIA, autonomous republic created in 1936, occupying a part of the former North Caucasian area of the Russian S.F.S.R. It occupies about 4,749 sq.mi. (1939), and lies between the territory of the Karachaevs on the west and that of the Northern Osetians and Chechen-Ingushes on the east. To the south is the Svanetian district of Georgia and to the north, the Orjonikidze territory. Kabarda is mainly the plain and foothill region, while Balkaria is entirely mountainous and includes the highest portion of the Caucasus, with a series of peaks standing on a subsidiary range north of the main range, including Elburz, 18,471 ft., Janga (Dzhanga)-tau, 16,660 ft., Shkara-tau, 17,040 ft., Dykh-tau, 17,050 ft. and Koshtan-tau, 16,875 ft.

The Balkars live in the upper valleys of the glacier-fed streams and little is known accurately of the climate of the region; every valley varies according to its slope, aspect and height. The Balkars are a branch of the same race as the Karachaevs, and speak a Turkish dialect. They call themselves the hill people and probably settled here some five hundred years ago to escape oppression. Under the influence of the Kabardians they became Mohammedans of the Sunni sect in the 18th century, but a good deal of primitive nature-worship survives among them. Their tiny *auls* or mountain villages are perched in almost inaccessible valleys and their stone huts are usually flat roofed, with a hole for the outlet of smoke. In their severe climate agriculture is impossible and they are mainly herders of cattle and sheep: in prewar times they also hunted the bear and aurochs. Attempts are being made to improve the breed of sheep, on which many villages rely entirely for food and clothing. Numerically the Balkars form about 16% of the population of the area.

The Kabardians are a north eastern branch of the Adighei (Cherkess; Circassians). They form 60% of the population and are an able people who formerly held an influential position among the neighbouring tribes, from many of whom they exacted tribute, including the Osetians, the Ingushes, the Abkhasians and the mountain Tatars.

The territory which they now occupy has a mild climate suitable for agriculture except in the north east, on the right bank of the Terek river, where irrigation is necessary. The rest of Kabarda-Balkaria is drained by abundant streams, flowing in a north easterly direction, and including the Malka, Baksan, Chegen, Nalchik and Cherek, all linking with the left bank of the Terek.

The main crop is maize, sown in a primitive way; millet, sunflower seed; potatoes, vegetables, melons, cucumbers and vines are also cultivated to a small extent. The foothills are everywhere rich in grass, and herding is as important as cultivation. Kabardian horses are famous and draught cattle, sheep and goats

are bred. The Kabardians breed cattle for meat and for working purposes, the Balkars for dairy purposes. Balkaria still depends on nomad pasturage, but Kabarda is in a transition stage to intensive cattle rearing, with the use of winter foods; a few veterinary training centres exist.

Kabarda is well forested with beech, maple and oak, though little timber is exported. Poultry and beekeeping are common both among Kabardians and Balkars, but for local needs only. Silkworm-breeding of a primitive kind is common among the Kabardians, but has no economic importance; neither wine nor tobacco is manufactured. The only industrial undertakings are two timber-mills, a steam flour mill, and the Nalchik electric station and printing works. Peasant handicraft industries are widespread and include the making of homespun, felt and fur cloaks, saddlery, and wooden wares. The administrative centre is Nalchik. Of the population (1939) of 359,236, Kabardians and Balkars numbered 75%; the remaining people being Russians, Ukrainians, Osetians, Germans and Jews. Education is spreading among the Kabardians of the plains; a teachers' training college was established at Nalchik. A short grammar of the Kabardian language, and a Russian-Kabardian dictionary by Lopatinsky were published in 1891. In 1864 fragments of the poem "Sosyruko," some Persian tales, and the tenets of the Mohammedan religion were printed in Kabardian by Kazi Atazhukin and Shardanov. Roman script has been adopted instead of the Turkish, and Kabardian is now the medium of instruction in schools; textbooks in that language are in use. In the hill regions and among the Balkars, the percentage of illiterates is probably over 90% and about 75% of the children are receiving no education. There is one children's and one general hospital, and the net work of medical services is extremely poor. The budget is slender, and plans to improve it involve capital expenditure on an irrigation canal between the Terek and the Sunzha, the organization of health resorts, the building of an electric power station on the Malka or the Baksan river to provide power for the timber and flour mills, and the construction of roads and bridges. Communications are poor; there is no first-class road and the only railway is in the east, a part of the branch from the Trans-Caucasian to Orjonikidze (formerly Vladikavkaz). A branch from Kotlyarevsk on this line to Nalchik was constructed in 1936.

KABBA, a province of Northern Nigeria, British West Africa. Area 10,577 sq.m.; pop. (1931) 462,726. The province is riverine; in it is the junction of the Niger and Benue. A small part lies north of this junction; south of the confluence, Kabba is divided into two roughly equal portions by the Niger. Most of the province lies over 1,000 ft. above sea level. It has many fertile valleys and belts of thick forest. It includes the Idah division of the former Munshi province, added to Kabba in 1926. Idah lies east of the Niger and south of the Benue; it forms a native state, the ruling chief being styled *Attah.* West of the Niger is the Igbirra district, also under an *Attah.* These two pagan negro states, in which, however, there are strong Christian missions, with many adherents, are efficiently governed. North of Igbirra is Kabba proper. Under Fula rule the armies of Bida regularly raided Kabba for slaves and laid waste the country. Both the Idah and the Igbirra people are industrious, and cotton, tobacco, indigo and many food crops are grown. The sylvan products include palm oil, kolas, shea and rubber.

Lokoja, a town situated at the Niger-Benue confluence was the centre from which British penetration of Northern Nigeria began. The site was ceded to the British government in 1841 by the *Attah* of Idah, but the first British settlement was a failure. In 1854 MacGregor Laird sent thither W. B. Baikie, who was successful in dealing with the natives and in 1857 became the first British consul in the interior. The town of Lokoja was founded by him in 1860. In 1868 the consulate was abolished and the settlement was left wholly to commercial interests. In 1886 the Royal Niger company made Lokoja its military centre and under crown government it was the first capital (1900–1902) of Northern Nigeria. Kabba town, 30 m. W. by N. of Lokoja, is a thriving place. The trunk road systems of the northern and southern provinces of Nigeria join in Kabba province, which has also a regular passenger and goods service of steamers on the Niger.

KABBALAH (or *Kabbālah, Cabala, Qabbālah,* Hebr. קַבָּלָה from קִבֵּל, he received) signifies "reception" or "doctrines received by tradition," applied originally to the Prophets and Hagiographa as opposed to the Pentateuch (*cf.* T. B. *Rōsh hash-Shānah* 19a; C. Taylor, *Sayings,* etc. Cambridge, ed. 2, 1897, pp. 106–114: G. F. Moore, *Judaism,* i. 87, 239, Cambridge, Harvard, 1927). The term sometimes included the oral traditions embodied in the *Mishnah* and was finally applied to a group of hidden doctrines dealing with the nature of the Deity and His relation to the world. A later, commoner name is חן, the initials of חכמה נסתרה, or hidden wisdom, which form the word חֵן, or grace. The Kabbalistic system, as now known, goes back to the 11th or 12th centuries but its claims to a much greater antiquity are probably well founded. The germ of the Kabbalah or the *Geōnim* (*see* GĀON) may be traced to sayings and beliefs mentioned in the Talmud and known to have existed among gnostics and followers of Pythagoras.

The purpose of the Kabbalah was to connect a finite universe with an infinite God, to account for the existence of evil and to achieve perfection in life. Kabbalism questions and even denies the *creatio ex nihilo* and declares that God, being boundless (*'ēn ṣōf, ἄπειρος*) cannot be known: He may be understood by the expedient of negative attributes. Yet Kabbalism may be described as a reaction of immanence against transcendance and, in fact, the Kabbalists attained a mystic communion which, by its occasionally exaggerated anthropomorphisms, seems at times fantastic. It was just this use of anthropomorphism that attracted mediaeval Christianity and correspondingly alarmed mediaeval Judaism. None the less the influence of Kabbalism on Judaism was great and lasting; it was not antinomian, for Joseph Caro (1488–1575), the author of the last and most generally accepted code of Canon law (*Shulḥan 'Arūkh*), was a prominent Kabbalist of Safed.

The mysteries of deity and cosmogony were linked: both were esoteric. The total restriction of these speculations and their limitation to students of mature age are discussed in *T.B. Ḥagigah* 13a (*see* p. 55 of A. W. Streane's *Chagigah,* Camb., 1891): they are clearly indicated at an earlier date in Ecclesiasticus (Hebr. iii., 21 *sqq.*) of which the recently-discovered Hebrew original bears marked resemblances to *Genesis Rabba* viii. (edit. J. Theodore, Berlin, 1903, p. 58), thus showing the connection in thought. If the etymology of Essene (*q.v.*) is to be sought in חשאי (Hebr., secret or silent), an additional source of esoteric wisdom is suggested.

Emanations.—The relation of the infinite to the finite is achieved by the Kabbalah through the means of emanations, proceeding from the Deity as rays from a luminary. The Deity being incomprehensible through His infinity and the act of creation involving finite acts, such as intention, wish and activity—all of which are finite—some voluntary action on the part of the *'ēn ṣōf* must be predicated. The desire to become known and to create is coeternal with the Deity and this produced the first and the successive emanations. These emanations are called by various terms, *Aziluth* אצילות from Num. xi., 7) or *Hashpā'ah.* The former stage includes the ten *Ṣefiroth,* which are a detailed development of *Aziluth.* The etymology of *Ṣefirah* is still disputed but *σφαῖρα* is more probable than *Ṣappīr* (brilliance or sapphire) and $\sqrt{\text{ספר}}$ (he counted). The ten *Ṣefiroth* form a unity of progressive or associated qualities and are named:—the Crown, Wisdom, Intelligence, Love, Justice, Beauty, Firmness, Splendour, Foundation and the Kingdom. As an example of hymns on the Spheres remaining in the liturgy, *cf.* אל אדון (S. Singer's *Authorized Daily P.B.,* annotated ed., pp. 129 and cxliii.: M. Gaster, P.B. vol. i., p. 101, Oxf., 1901: on origin *see* I. Davidson, *Thesaurus,* vol. i., No. 3,320, p. 155, New York, 1924). As man is created in the Divine image, it is possible to argue from the known to the unknown.

Hence the Spheres were grouped anthropomonically and often drawn up in charts, suggesting the correspondence between man the microcosm (*Adam Qadmōn*) and the macrocosm. An illustration of such a chart is given in *Jew. Enc.* (i. 181: another one, with a more recent article, in *Enc. Jud.,* Berlin, 1927, *s.v. Adam*

Kadmon). The Spheres are arranged in triads and represent the intellectual, moral and material worlds: the Spheres are not creations of the *'ēn ṣōf* as this would imply a diminution of its power but they and the *'ēn ṣōf* form a unity. They are finite and yet infinite, according to their conjunction with or absence from the *'ēn ṣōf*. A system of four different worlds was evolved, on the basis of Isa. xliii., 7, *e.g.*, *'Açilah, Beri'āh, Yeçīrah* and *'Asiyyah,* or emanation, creation, formation, making. These were opposed to the negative world (*'Olam hap-Pirūdh*) or world of separation.

Kabbalistic System.—There are two main subdivisions in the Kabbalistic system, theoretical or *'Iyyūnith,* and practical *Ma'asith.* The chief points can only be enumerated briefly:—(1) Permutations of letters and combinations of numbers, partly Pythagorean—the generic Jewish term, *Gematria* (see *Jew. Enc.* s.v.) or *Grammatia* is foreign—and partly Jewish. Biblical examples are not unknown, *e.g.,* בבל-ששך and נשרים-לב-קמי (Jer., xxv., 26: li., 1) and many examples occur in the Talmud. The *Ṣēfer Yeçīrah* is based on the alphabet. It must be remembered that the numerical value of letters was obvious and striking when no ciphers for figures existed: a combination of consonants would automatically suggest either a word or a total and a connection between the two would not seem so far-fetched as it does to-day. (2) Classes of angels and demiurges, partly due to gnosticism. Reaction against angelology is seen in the Midrash, whenever angels are felt to be too near the Godhead; *e.g.,* the denial to the angels of any part in the Creation is emphatic and frequent. The Kabbalistic angels facilitate man's approach to the Deity: they are subordinate, even Meṭaṭron (*Metator* or μετα θρόνον). (3) *Qelippōth* and *Ṣōdh haz-Ziwug, i.e.,* "Scales" and syzygies, dualism in nature, the Scales being the impure side in a universe wherein everything has a mate and where light and darkness are contrasted throughout. (4) The "Chariot" (*Merkābah*) of Ezek. i., by which man can ascend to the *Hekhalōth* or halls of God. (5) Limitation (צימצום) God's self-withdrawal, to enable the finite universe to be created. (6) *Adam Kadmon,* primordial, sexless man, intermediate between the *'ēn ṣōf* and the spheres: *cf.* St. Paul's idea of a heavenly and earthly Adam (1 Cor. xv., 45–50). (7) *Gilgūlim* or metempsychosis, a doctrine adopted by the Kabbalists in defiance of Jewish philosophers.

Works.—The chief books of the Kabbalists are (1) *Ṣēfer Yeçīrah,* dealing with permutations and letters: source of the spheres. Date, probably 6th century. (2) *Ṣēfer hab-Bāhir,* probably by Isaac the Blind (13th century), mystic commentary on Genesis; a precursor of the *Zohar:* originally attributed to Neḥunya haq-Qāna. (3) *Hekhāloth,* mystic writings on the *Merkābah,* of the Geonic age. (4) The *Zohar,* the most important of all Kabbalistic works, attributed to Simon ben Yoḥai (*q.v.*), the mystic Tanna of Galilee, in the 2nd century A.D. by Moses de Leon in the 13th century, later stated to be the invention of Moses de Leon himself. It is now held that Moses was not a mere forger, that he had a considerable basis of ancient material before him and that he may sincerely have believed the work which he was giving the world to have been a copy of a Midrash of Simon. The *Zohar* is composed in Aramaic: it is a mystical commentary on the Pentateuch. Other books of note are the *Raziel,* the *Shi'ur Qōmah* and the mystical-ethical works such as the *Roqēaḥ* of Eleazar of Worms.

Prominent Kabbalists.—The course of Kabbalism may be briefly traced. As in the Midrash, so in Philo are evidences of Kabbalistic exegesis. In Egypt Kabbalism was in existence in the time of *Ṣa'adya* (892–942), the philosopher and bible-translator, who composed a commentary to the *Ṣēfer Yeçīrah.* About this time it is held that Kabbalah came to Europe, sponsored by Aaron b. Samuel, who migrated to Italy from Babylonia. From this developed the French, German and Spanish schools. Judah ben Samuel *Ḥasīdh* (the Saint), the Kalonymides, and Eleazar of Worms were the chief German Kabbalists. Judah, who founded the Regensburg academy, died in 1217. Among other famous mystics were Abraham ben Samuel Abulafīa (1240–91), founder of the Spanish Kabbalistic school; Joseph ben Abraham Giqatilla (1248–1305), author of *Ginnath 'Egōz* and *Sha'arē Çèdeq;* Isaac ibn Laṭif (d. 1290), a Spanish physician and philosopher, to whom precision in Kabbalistic terminology is largely due; 'Azriel ben Menaḥem (1160–1238), who maintained the theory of negative attributes and denied the *creatio ex nihilo;* Isaac the Blind of Posquières; Isaac Arāma (1420–94); Menaḥem ben Benjamin Recanati, Italian Kabbalist of the 13th century, one of whose mystic bible commentaries was translated into Latin by Pico di Mirandola; Isaac Lurya Ashkenazi (Ari) (1534–72), founder of modern Kabbalah, with his disciples Cordovero, al-Qabeç, Joseph Caro, Hagiz and Vital. He brought Kabbalah into the prayerbook and daily life. His liturgy is saturated with mysticism: every rite and every prayer, almost every word, is invested with a *Ṣōdh* or hidden meaning, often of rare beauty of thought. The Kabbalah of Lurya has remained orthodox, whereas a later development, that of the *Ḥaṣidim* under Israel b. Eliezer *Ba'al Shem Ṭōbh* (*Besht*) (1700–1760), and Baer Dob of Meseritz (1710–62), became sectarian.

Estimates of the Kabbalah.—In the Kabbalah, as in all mystic systems, excesses and extravagances sometimes arose. Hence modern scholars such as Graetz, influenced ultimately by the rationalism of Maimonides which had no patience with the emotions, have looked askance at Kabbalah and decried it. The trend of the last century was almost unmitigated disapproval. But latterly a more temperate verdict has succeeded to the one-sided judgment of the past. The Kabbalah is being studied instead of being condemned. The library catalogues of the last generation were content to label Kabbalist works as "collectanea": the present age is identifying, classifying and seeking to interpret them. Interest is being devoted to Kabbalah and, especially in Jerusalem and in Germany, much useful work is being done: manuscripts are being collected and critical texts are being produced. Two of the leaders in the new movement are R. Eisler and G. Scholem and a new aspect of Kabbalah is in process of being revealed. The reader is cautioned against accepting many of the categorical statements of the past century without reference to present-day views.

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KABINDA (CABINDA), a Portuguese possession on the west coast of Africa north of the mouth of the Congo. On the west it borders the Atlantic, north and northeast French Equatorial Africa, south and southeast Belgian Congo. It has a coast-line of 93 mi., extends inland, at its greatest breadth, 70 mi. Its area is about 3,000 sq.mi. In its physical features, flora, fauna and inhabitants, it resembles the coast region of French Equatorial Africa (*q.v.*). The only considerable river is the Chiloango, which in part forms the boundary between Portuguese and Belgian territory, and in its lower course divides Kabinda into two fairly equal portions. The mouth of the river is in 5° 12′ S., 12° 5′ E. The chief town, named Kabinda, is a seaport finely situated on the right bank of the small river Bele, in 5° 33′ S., 12° 10′ E.; pop. (1940) 1,554. The harbour is sheltered and commodious, with anchorage in four fathoms. Kabinda was formerly a noted slave mart. There is a considerable trade in palm oil, ground nuts and other jungle produce. For administrative purposes Kabinda forms a division of the Congo district of Angola (*q.v.*). The inhabitants are Bantu negroes who are called Kabindas. They are an intelligent, energetic and enterprising people, daring sailors and active traders. Population, district (1940), 46,277.

KABIRPANTHIS. Kabir, the weaver, a remarkable man who lived in the latter part of the 15th century, is claimed by both Hindus and Muslims. Kabir's activity lay in the direction of a

compromise between the Hindu and the Mohammedan creeds, the religious practices of both of which he criticized with equal severity. His followers, the Kabir Panthis ("those following Kabir's path") neither worship the gods of the pantheon, nor observe the rites and ceremonial of the Hindus but are in close touch with the Vaishnava sects, especially the Ramavats, and generally worship Rama as the supreme deity. Whilst very numerous, the mendicants of this creed, however, never actually solicit alms; and, indeed, "the quaker-like spirit of the sect, their abhorrence of all violence, their regard for truth and the inobtrusiveness of their opinions render them very inoffensive members of the state" (H. H. Wilson).

The peculiar conciliatory tendencies of Kabir were carried on with even greater zeal from the latter part of the 15th century by one of his followers, Nanak Shah, the promulgator of the creed of the *Nanak Shahis* or *Sikhs—i.e.,* (Sanskrit) *sishya,* disciples, whose *guru,* or teacher, he called himself—a peaceful sect at first, until, in consequence of Mohammedan persecution, a martial spirit was infused into it by the tenth, and last, *guru,* Govind Shah, changing it into a political organization. (*See* SIKHS.)

KABRE, a warlike people, in physical and social characters resembling their neighbours the Bariba; who live among, and south of, the Atakora mountains in northern Togo, and speak a language akin to Bariba. They are cultivators and cattle-raisers and animist in religion.

KABUL (kah'bool), capital of Afghanistan, at an elevation of 6,900 ft. above the sea in 34° 32′ N. and 69° 14′ E. Estimated pop. *c.* 120,000. Lying at the root of the bare and rocky mountains forming the western boundary of the Kabul valley, just below the gorge made by the Kabul river, the city extends a mile and a half east to west and one mile north to south and is hemmed in by the mountains except to the north. Kabul has been a city of vast importance for countless ages commanding all the passes which here debouch from the north through the Hindu Kush, and from the west through Kandahar; and through it passed successive invasions of India by Alexander the Great, Mahmud of Ghazni, Jenghiz Khan, Baber, Nadir Shah and Ahmad Shah. Indeed from the time of Baber to that of Nadir Shah (1526–1738) Kabul was part of the empire of Delhi. It is now some 160 m. from the British frontier post of Jamrud near Peshawar.

Kabul was formerly walled; and the city itself is a contrast of narrow and widened streets, with the Bala Hissar or fort forming the southeast angle, and rising about 150 ft. above the plain. The king's palace is situated outside the town about midway between it and the Sherpur cantonment which lies about a mile to the northeast. Formerly the greatest ornament of the city was the arcaded and roofed bazaar called *Chihâr Châtâ,* ascribed to Ali Mardan Khan, a noble of the 17th century, who has left behind him many monuments of his munificent public spirit both in Kabul and in Hindustan. Its four arms had an aggregate length of about 600 ft., with a breadth of 30. This edifice was destroyed by Sir G. Pollock on evacuating Kabul in 1842 as a record of the treachery of the city.

The tomb of the Sultan Baber stands on a slope about a mile to the west of the city in a charming spot. Near him lie several of his wives and children; the garden was formerly enclosed by a marble wall; a clear stream waters the flower-beds. From the hill that rises behind the tomb there is a noble prospect of his beloved city, and of the all-fruitful plain to the north of it.

After the accession of Abdur Rahman in 1880 the city underwent great changes. The Bala Hissar was destroyed and has never since been entirely rebuilt, and a fortified cantonment at Sherpur (one side of which was represented by the historic Bemaru ridge) had taken the place of the old earthworks of the British occupation of 1842 which were constructed on nearly the same site. The city streets were as narrow, the surrounding gardens as picturesque and attractive, and the wealth of fruit was as great, as they had been fifty years previously. The amir, however, effected many improvements. Kabul is now connected by well-planned and metalled roads with Afghan Turkestan on the west, with the Oxus and Bokhara on the north, and with India on the east. The road to India was first made by British and is now maintained by Afghan engineers. Improvements were continued under the Amir Habibullah, and the road from Kabul to Ghazni was surfaced for motors. A good road from Jalalabad runs now to Kafiristan via Asmar. The city ways have been improved until it has become possible for wheeled vehicles to pass, and the various roads connecting the suburbs and the city are efficiently maintained. A purely local railway has also been introduced, to assist in transporting building material. The buildings erected by Abdur Rahman included a new palace and a durbar hall, a bridge across the river and embankment, a pavilion and garden laid out around the site of Baber's tomb overlooking the Chardeh valley; and many other buildings of public utility connected with stud arrangements, the manufacture of small arms and ammunition, and the requirements of what may be termed a wholesale shop under European direction, besides hospitals, dispensaries, bazaars, etc. The palace is within an entrenchment just outside the city. It is enclosed in a fine garden, well planted with trees, where the harem serai (or ladies' apartments) occupies a considerable space. But the arrangement of terraced gardens and the lightly constructed pavilion which graces the western slopes of the hills overlooking Chardeh are the most attractive of these innovations. Here, on a summer's day, with the scent of roses pervading the heated air, the cool refreshment of the passing breezes and of splashing fountains may be enjoyed by the officials of the Kabul court, while they look across the beauty of the thickly planted plains of Chardeh to the rugged outlines of Paghman and the snows of the Hindu Kush. The artistic taste of the landscape gardening is excellent, and the mountain scenery is not unworthy of Kashmir.

Kabul was invaded by the Arabs in the thirty-fifth year of the Hegira, but it was long before the Mohammedans effected any lasting settlement. Kabul first became a capital when Baber made himself master of it in 1504, and here he reigned for fifteen years before his invasion of Hindustan. In modern times it became a capital again, under Timur Shah (*see* AFGHANISTAN), and so has continued both to the end of the Durani dynasty, and under the Barakzais, who now reign. It was occupied by Sir John Keane in 1839, General Pollock in 1842, and again by Sir Frederick, afterwards Lord Roberts, in 1879.

Kabul is also the name of the province including the whole of the plains called Koh Daman and Beghram, etc., to the Hindu Kush northward, with the Kohistan or hill country adjoining. Eastward it extends to the border of Jalalabad at Jagdalak; southward it includes the Logar district, and extends to the border of Ghazni; north-westward it includes the Paghman hills, and the valley of the upper Kabul river, and so to the Koh-i-Baba. Roughly it embraces a territory of about 100 m. square, chiefly mountainous. Wheat and barley are the staple products of the arable tracts. Artificial grasses are also much cultivated, and fruits largely, especially in the Koh Daman. A considerable part of the population spends the summer in tents. The villages are not enclosed by fortifications, but contain small private castles or fortalices.

It is pleasant to record that the graveyard of those officers who fell in the Kabul campaign of 1879–1880, which lies at the northern end of the Bemaru ridge, is not uncared for. Since World War I the number of Europeans (non-British) in Kabul has greatly increased, and European engineers have developed electricity by water power, and made the main roads fit for motor traffic. King Amanullah soon after his succession started a new royal suburb at Dar-es-Salaam a few miles from the city and much modernized the environs of Kabul.

See C. Yate, *Northern Afghanistan* (1888); J. A. Gray, *At the Court of the Amir* (1895); Sir T. H. H. Holdich, *The Indian Borderland* (1901). (T. H. H.; X.)

KABUL RIVER, Afghanistan, is 300 miles in length. The Kabul (ancient *Kophes*), which is the most important river in Afghanistan, rises at the foot of the Unai pass leading over the Sanglakh range, an offshoot of the Hindu Kush towards Bamian and Afghan Turkestan. Its basin forms the province of Kabul, which includes all northern Afghanistan between the Hindu Kush and the Safed Koh ranges. From its source to the city of Kabul

the course of the river is only 45 m., and this part of it is often exhausted in summer for purposes of irrigation. Half a mile east of Kabul it is joined by the Logar, a much larger river, which rises beyond Ghazni among the slopes of the Gul Koh (14,200 ft.), and drains the rich and picturesque valleys of Logar and Wardak. Below the confluence the Kabul becomes a rapid stream with a great volume of water and gradually absorbs the whole drainage of the Hindu Kush. About 40 m. below Kabul the Panjshir river joins it; 15 m. farther the Tagao; 20 m. from the Tagao junction the united streams of Alingar and Alishang (rivers of Kafiristan); and 20 m. below that, at Balabagh, the Surkhab from the Safed Koh. Two or three miles below Jalalabad it is joined by the Kunar, the river of Chitral. Thenceforward it passes by deep gorges through the Mohmand hills, curving northward until it emerges into the Peshawar plain at Michni. Soon afterwards it receives the Swat river from the north and the Bara river from the south, and after a further course of 40 m. falls into the Indus at Attock. From Jalalabad downwards the river is navigable by boats or rafts of inflated skins, and is considerably used for purposes of commerce.

KABYLES or KABAIL, a confederation of tribes in Algeria, Tunisia, and a few oases of the Sahara, who form a branch of the great Berber race. Their name (Arabic *gabīlat,* pl. *gabāil*), was at first indiscriminately applied by the Arabs to all Berber peoples. There are two divisions—Great Kabylia and Lesser Kabylia, the former being also known as the Kabylia of the Jurjura (also called Adrar Budfel, "Mountain of Snow"). Physically many Kabyles resemble the Arabs of Algeria. Both Kabyle and Arab are white at birth, but rapidly grow brown through exposure to air and sunshine. Both have in general brown eyes and wavy hair of coarse quality, varying from dark brown to jet black. The Kabyle appears to be of heavier build and more muscular. Both are clearly long-headed. Some, however, of the purer type of Kabyles in Kabylia proper have fair skins, ruddy complexions and blue or grey eyes. In fact there are two distinct types of Kabyles: those which by much admixture have approximated to Arab and negroid types, and those which preserve Libyan features. Active, energetic and enterprising, the Kabyle is found as a soldier in the French army, as a workman in the towns, as a field labourer, or as a pedlar or trader earning the means of purchasing his bit of ground in his native village. The Kabyles are Mohammedans of the Sunnite branch and the Malikite rite, looking to Morocco as the nearer centre of their religion. Some retain their vernacular speech. The best known of the Kabyle dialects is Zouave (which gave its name to the Zouave regiments) or Agawawa, spoken on the northern side of the Jurjura at least from the time of Ibn Khaldun. The Kabyles have no alphabet, and their literature, of historical pieces, proverbial couplets and quatrains, dancing songs, etc., is preserved by professional writers.

See General L. L. C. Faidherbe and Dr. Paul Topinard, *Instructions sur l'anthropologie de l'Algérie* (1874); Melchior Joseph Eugène Daumas, *Le Sahara algérien* (1845) and *Moeurs et coutumes de l'Algérie* (1857); De Slane's translation of Ibn Khaldun's *Hist. des Berbères* (Algiers, 1852); Aucapitaine, *Les Kabyles et la colonie de l' Algérie* (1864) and *Les Beni M'zab* (1868); L. J. A. C. Hanoteau and A. Letourneux, *La Kabylie et les coutumes kabyles* (1893); Charmetant, in *Jahrbücher der Verbreitung des Glaubens* (1874); Masqueray, *Formation des cités . . . de l'Algérie* (1886); Dugas, *La Kabylie et le peuple kabyle* (1878); Récoux, *La Démographie de l'Algérie* (1880); J. Liorel, *Races berbères: les Kabyles* (1893); MacIver and Wilkin, *Libyan Notes* (1901).

KACHARI, a more or less Hinduized tribe in Assam belonging to the Bodo (*q.v.*) group; divided into clans, formerly exogamous and, perhaps, originally totemistic, which include that of Swarga-aroi ("Heaven-folk") as the socially superior clan and the Basumati-aroi ("earth-folk") as another. The sons inherit their fathers' clans and the daughters those of their mothers. The religion, generally animistic, includes traces of phallicism, Menhirs and Y-shaped posts being erected, at any rate up to a recent date, while the *euphorbia,* a cactus-like tree exuding a milky juice, is reverenced as a sacred tree. Bachelor's houses are built for the young men, and this institution, under Hindu influence, becomes the village *nāmghar* or prayer-house. Both burial and cremation are practised.

See Soppitt, *Account of the Kachari Tribe,* etc. (1901); Endle, *The Kacharis* (1911).

KACH GANDAVA or **KACHHI** (Kach, Kej, Kiz), a low-lying flat region in Baluchistan separating the Bugti hills from those of Kalat. It is driven, like a wedge, into the frontier mountain system and extends for 150 mi. from Jacobabad to Sibi, with nearly as great a breadth at its base on the Sind frontier. Area, 5,310 sq.mi.; pop. (1941) 86,112. The Mula pass, which connects it with the Kalat highlands, was once (when the ancient city of Kandabel was the capital of Gandava) a much trodden trade highway, and is still a practicable route though no longer a popular one. The soil is fertile wherever it can be irrigated by the floods brought down from the surrounding hills; but much of the central portion is sandy waste. It is traversed by the North-Western railway. The climate is unhealthful in summer, when pestilential hot winds are sometimes destructive to life. The annual rainfall averages only 3 in. Kachhi, though subject to the khan of Kalat, is administered under the tribal system. There are no schools, dispensaries or gaols.

See *Baluchistan District Gazetteer.*

KACHIN, a tribe in northern Burma of Tibeto-Burmese language and affinities and probably related to the Kuki (*q.v.*) tribes. They are also known as Kakhyen, Chingpaw and Singpho. They are governed generally by hereditary chiefs called Duwas, and live in small communities practising the cultivation of dry rather than irrigated rice. They are exogamous and organized in patronymic clans, but appear to be restricted in matrimonial choice by involved genealogical regulations which cause much dispute among themselves. Earlier records state that there were five clans, each taking its wives from a specified clan, thus depending on a definite mode of cousin marriage, that with the maternal uncle's daughter. They bury their dead (except in the Hukong valley where they burn them) and erect a conical thatched cover over the grave and surround it with a trench. Special modes of burial are used in cases of unnatural death. Land seems to belong to the free members of the community. Slaves are obtained by raiding. They use daos, spears, guns and crossbows, and take the heads of their enemies apparently merely as proof of having killed them. The men wear rings below the knee, the women round the waist. Traces of phallicism exist. They believe in a separable soul which departs after death to rejoin the souls of its ancestors, by a path over mountain tops which include a "Sandy Pass" (*cf.* KAREN). They believe in a Supreme Being and in large numbers of *nats* who need to be propitiated, and with whom communication is held by means of shamanistic mediums, called *Myihtoi.*

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KACHIN HILLS. The Kachins have been the object of many police operations and several regular expeditions:—(1) Expedition of 1892. It was essential to pacify the trade routes through the mountains, which lay between the Chinese frontier and the Irrawaddi, inhabited by Kachins. In the winter of 1891–92 two military columns operated in the hills. The larger column, after establishing a post at Sadon, moved north into "the triangle" between the N'Markha and N'Malikha branches of the Irrawaddi. During its absence Sadon was attacked by Chinese and Kachins and besieged for 14 days, but was eventually relieved and the country pacified. (2) Expedition of 1892–93. Bhamo was occupied by the British on Dec. 28, 1885, and almost immediately trouble began. Constant punitive measures were carried on by the military police; but in Dec. 1892 a police column proceeding to establish a post at Sima was heavily attacked, and simultaneously the town of Myitkyina was raided by Kachins. A force of 1,200 troops was sent to put down the rising. The enemy received their final blow at Palap, but not before three officers were killed, three wounded, and 102 sepoys and followers killed and wounded. (3) Expedition of 1895–96. The continued misconduct of the Sana Kachins from beyond the administrative border rendered punitive measures necessary. They had remained unpunished since the attack on Myitkyina in Dec. 1892. Two columns

were sent up, one of 250 rifles from Myitkyina, the other of 200 rifles from Mogaung, marching in Dec. 1895. The resistance was insignificant, and the operations were completely successful. A strong force of military police is stationed at Myitkyina, with several outposts in the Kachin hills, and the country is never wholly free from crimes of violence committed by the Kachins.

KADU, a Burmanized tribe of Katha and the Upper Chindwin districts, probably of mixed origin from Burman, Shan, Kachin and Chin elements, speaking a dialect of their own. They are Buddhists, but worship spirits also, in particular the Great *Nat* of Maingthon Mountain. They live on spurs above their cultivated valleys, growing rice, tea, etc., on communal land. They are hard-working, elect their own headmen, are divided into several exogamous groups and blacken their teeth. *See* Scott and Hardiman, *Gazetter of Upper Burma* (1900); Clayton, *Katha Settlement Report* (1906).

KADUR, a district of Mysore state, in southern India, with an area of 2,771 sq.m. Pop. (1931) 347,715. The larger portion of the district consists of the Malnad or hill country, which contains some of the wildest mountain scenery in southern India. The western frontier is formed by the chain of the Ghats, of which the highest peaks are the Kudremukh (6,215 ft.) and the Meruti Gudda (5,451 ft.). The centre is occupied by the horse-shoe range of the Baba Budans, containing the loftiest mountain in Mysore, Mulaingiri (6,317 ft.). The Maidan or plain country lying beneath the amphitheatre formed by the Baba Budan hills is a fertile, well-watered region, with the famous "black cotton soil." The principal rivers are the Tunga and Bhadra, which rise near each other in the Ghats, and unite to form the Tungabhadra, a tributary of the Kistna. The eastern region is watered by the Vedavati. From all the rivers water is drawn off into irrigation channels by means of anicuts or weirs. The chief natural wealth of Kadur is in its forests, which contain large supplies of the finest timber, especially teak, and also furnish shelter for the coffee plantations. Iron is found and smelted, and corundum exists in certain localities.

The headquarters are at Chikmagalur (pop. 12,225). The staple crop is rice, chiefly grown on the hill slopes, where the natural rainfall is sufficient, or in the river valley, where the fields can be irrigated. The district is served by the Madras and Southern Mahratta railway.

KAEMPFER, ENGELBRECHT (1651–1716), German traveller and physician, was born on Sept. 16, 1651 at Lemgo in Lippe-Detmold, Westphalia, where his father was a pastor. He studied at Hameln, Lüneburg, Hamburg, Lübeck and Danzig, and after graduating Ph.D. at Cracow, spent four years at Königsberg in Prussia, studying medicine and natural science. In 1681 he visited Uppsala in Sweden, and became secretary to the embassy which Charles XI. sent through Russia to Persia in 1683. He reached Persia by way of Moscow, Kazan and Astrakhan, landing at Nizabad in Daghestan after a voyage in the Caspian; from Shemakha in Shirvan he made an expedition to the Baku peninsula. In 1684 he arrived in Isfahan, then the Persian capital.

When after a stay of more than a year the Swedish embassy prepared to return, Kaempfer joined the fleet of the Dutch East India company in the Persian gulf as chief surgeon, and in spite of fever caught at Bander Abbasi he saw something of Arabia and of many of the western coast-lands of India. In September 1689 he reached Batavia; spent the following winter in studying Javanese natural history; and in May 1690 set out for Japan as physician to the embassy sent yearly to that country by the Dutch. The ship in which he sailed touched at Siam, whose capital he visited; and in September 1690 he arrived at Nagasaki, the only Japanese port then open to foreigners. Kaempfer stayed two years in Japan, during which he twice visited Tōkyō. In 1693 he returned to his native city where he died on Nov. 2, 1716.

Kaempfer's *Amoenitatum exoticarum politico-physico-medicarum fasciculi* V. (Lemgo, 1712), contains invaluable observations in Georgia, Persia and Japan. At his death the unpublished mss. were purchased by Sir Hans Sloane. Among them was a *History of Japan*, translated from the manuscript into English by J. G. Scheuchzer (London, 2 vols., 1727). This book contains a description of the political, social and physical state of Japan in the 17th century. For upwards of a hundred years it remained the chief source of information for the general reader, and is still not wholly obsolete. A life of the author is prefixed to the *History*. Another work was *Icones selectae Plantarum, quas in Japonia collegit* (1791).

KAFFA, a district in the southwest part of the Great Ethiopian plateau, lying roughly within 6° to 9° N. and 35° to 37° E. It is a beautiful country, consisting of broken tableland deeply scored by mountain torrents and densely wooded. The general elevation is about 8,000 ft., while several peaks are over 10,000 ft. From the western slopes of the plateau descend headstreams of the Sobat. The principal river however is the Omo, the chief feeder of Lake Rudolf. Kaffa proper is the native home of the coffee plant (whence the name), which grows in profusion on the mountain sides. The present official capital is Sherada to which the Ethiopians transferred their headquarters from Anderacha, the former capital which still remains a trading centre, especially for coffee.

Kaffa proper was until recently an independent kingdom; the Ethiopians had penetrated into it and partly Christianized it some centuries ago, and it was later overrun by the Moslem invaders under Mohammed Gran in the early 16th century. The last independent king was taken prisoner by the Ethiopians in 1897 when Menelik conquered the country and devastated it, two-thirds of the population being killed or transported, the remainder being reduced to a state of serfdom. The natives of Kaffa are known as Kafecho, a branch of the Harmatic race, copper in colour, and speaking a language of their own differing widely from Amharic or Galla. They are in part pagan and in part profess a debased form of Christianity. (C. F. R.; X.)

KAFFIR BREAD, the popular name for a species of *Encephalartos* (*E. caffer*), one of the Cycadaceae (*see* GYMNOSPERMS), a native of South Africa, so called from the farinaceous food-stuff which is found at the apex of the stem. It is a tree reaching nearly 20 ft. in height, with very stiff, spreading pinnate leaves 3 to 4 ft. long and recurving at the tip. The species of *Encephalartos,* which are natives of tropical and South Africa, form handsome greenhouse and conservatory plants.

KAFFRARIA, the descriptive name given to the E. part, or Transkeian territories, of the Cape province, South Africa. Kaffraria, *i.e.,* the land of the Kafirs, is no longer an official designation. It used to comprise the districts now known as Kingwilliamstown and East London, which formed British Kaffraria, annexed to Cape Colony in 1865, and the territory between the Drakensberg and the coast, from the Kei river to the borders of Natal, known as Kaffraria proper. As a geographical term it is still used to indicate the Transkeian territories of the Cape provinces comprising the four administrative divisions of Transkei, Pondoland, Tembuland and Griqualand East, incorporated into Cape Colony at various periods between 1879 and 1894. They have a total area of 18,310 sq.mi. (*See* SOUTH AFRICA, UNION OF; CAPE PROVINCE.) Much of the land is held by the natives under tribal tenure.

Towns, Communication and Administration.—The chief town is Kokstad (*q.v.*), pop. (1936) 5,643 (1,677 white), the capital of Griqualand East. Umtata, pop. 5,542 (2,350 white), on the river of the same name, capital of Tembuland, is seat of the chief magistracy of native territories, and of the Anglican bishopric of Kaffraria. Port St. John is the chief town in Pondoland, and the only harbour of the country. Butterworth is the chief town in Transkei. A railway, the first link in the direct Cape-Natal line, runs through Indwe to Maclear, an agricultural centre in Griqualand East. Another railway parallel but south of that described also traverses Kaffraria. Starting from Amabele, a station on the main line from East London to the north, it goes via Butterworth (132 mi. from East London) to Umtata (234 mi.).

The Cape administrative and judicial system is in force, save as modified by Union legislation. A "Native Territories Penal Code" came into operation on Jan. 1, 1887. The natives are under the jurisdiction of chief magistrate of the Transkeian territories at Umtata with subordinate magistrates in the territories. In civil affairs the tribal organization and native laws are maintained. No chief, however, exercises criminal jurisdiction. After 1898 certain provisions of the Glen Grey act were applied to Kaffraria.

(*See* GLEN GREY.)

Purely native affairs are dealt with by the United Transkeian Territories general council established in 1931. District councils were established in 1895 in the districts of Butterworth, Indutywa, Nqamakwe and Tsomo, and the four were united into the Transkeian general council which, when four Pondoland districts were included, became the United Transkeian territories general council. A district council consists of a resident magistrate, and six members, two nominated by the governor-general and four either nominated or elected by local headmen or tax payers. Each district council nominates members to the general council. The general and district councils are advisory bodies, and allow the people to express their views on local affairs under the supervision of the ministry of native affairs. Among the subjects discussed are native marriage and inheritance laws, education, stock diseases, etc. The responsibility for action rests with the white magistrates and the higher authorities. The district councils are also executive organs of the general council, and are made responsible for road maintenance, cattle dipping, etc. The general council's revenue is derived from all quit-rents collected in the districts, and from a local tax of 10/- payable in respect of every hut, according to the number of wives. The system was gradually extended to other districts as the natives have progressed and become able to profit by it. Twenty-three districts are included, and comprise the whole of the Transkei and Tembuland, eastern Pondoland and almost the whole of East Griqualand.

Religion.—Numbers of Protestant missionary societies have churches and educational establishments in Kaffraria, but except in Fingoland, most of the Kaffirs are heathen. The Griquas profess Christianity and have their own churches and ministers. The Anglican diocese of St. John's, Kaffraria, was founded in 1873.

Particulars concerning the four divisions of Kaffraria follow.

Griqualand East (area, 7,594 sq.mi.) (*q.v.*).

Tembuland (area, 4,122 sq.mi.), which lies S.W. of Griqualand East and comprises the districts of Tembuland Proper, Emigrant Tembuland and Bomvanaland, takes its name from the Tembu nation, called sometimes Tambookies, one of the most powerful of the Kaffir groups. The chief town is Umtata.

Transkei (area, 2,552 sq.mi.) comprises the districts of Fingoland, the Idutywa Reserve and Gcalekaland, this last being named from the Gcaleka nation, who claim to be the senior branch of the Xosa family, principal royal line of the Kaffir tribes. They form the chief element of the population. Some prosperous missionary stations are there. Even more advanced in all social respects are the Fingo, who give their name to the district of Fingoland and also form the bulk of the population in the Idutywa Reserve. The majority profess Christianity. The industrial institution of Blythswood, about 20 mi. N.W. of Butterworth, is a branch of Lovedale (*q.v.*), and is largely supported by the Fingo.

Pondoland (area, 4,040 sq.mi.) is bounded E. by the sea, N. by Natal, W. by Griqualand East and S. by Tembuland. In Pondoland the primitive organization of the natives has been little altered and the influence of the chiefs is very great. Land is held almost wholly in tribal tenure, though a number of whites possess farms acquired before annexation of the country.

See G. McCall Theal's *History of South Africa* and other works cited under CAPE PROVINCE; also *The Native or Transkeian Territories*, by C. C. Henkel (Hamburg, 1903), a useful handbook by an ex-official in the Transkeian Territories.

KAFIR, one of the principal grain-producing types of the cereal grass *Sorghum vulgare,* extensively cultivated in tropical and subtropical countries, where the grain, made into bread, forms an important article of diet. In the warmer parts of the U.S. this as well as other types of sorghum are important. Kafir originally came from Africa, where many varieties are grown and where it is generally known as durra. Closely related strains commonly grown in the U.S. are Milo, Feterita, Pearl Millet and Hegari. (*See* SORGHUM.)

KAFIRISTAN, a province of Afghanistan. Very little of this country was known with accuracy and nothing at first hand until Lockhart headed a mission to examine the passes of the Hindu Kush range in 1885–1886. He penetrated into the upper Bashgal valley, but after a few days was compelled to return. In 1889 Robertson was sent to Kafiristan. He only remained a few days, but a year later he revisited the country, staying amongst the Kafirs for nearly a year, and was able to study the people. His observations are the most trustworthy foundations of our knowledge.

Kafiristan is the name given to the tract between Chitral and Afghan territory. Its pagan mountaineers maintained independence until 1895, when they were finally subdued by Abdur Rahman, the amir of Kabul, who also compelled them to accept the religion of Islam. The territory is included between 34° 30′ and 36° N., and from about 70° to 71° 30′ E. Its greatest extent is from east to west at 35° 10′ N.; its greatest breadth is probably about 71° E. The total area approximates to 5,000 sq.m. Along the north the boundary is the province of Badakshan, on the north-east the Lutkho valley of Chitral. Chitral and lower Chitral enclose it to the east, and the Kunar valley on the south-east. Afghanistan proper supplies the south limit. The ranges above the Nijrao and Pansher valleys of Afghanistan wall it in upon the west. The northern frontier is split by the narrow Minjan valley of Badakshan, which seems to rise in the very heart of Kafiristan.

The mountain ranges of metamorphic rock, which separate the main drainage valleys, are all high, rugged and difficult. During the winter Kafiristan becomes a number of isolated communities, with few means of intercommunication. In the whole land there is probably nothing in the shape of a plain. Every variety of mountain scenery can be found: silent peaks, mighty pine forests, wooded slopes and grazing grounds; or wild vine and pomegranate thickets bordering sparkling streams. The lower hill-sides are covered with the wild olive and evergreen oaks. Many kinds of fruit trees—walnuts, mulberries, apricots and apples—grow near the villages or by the wayside, as well as splendid horse-chestnuts and other shade trees. Higher in elevation, and from 4,000 to 8,000 ft., are the dense pine and cedar forests. Above this altitude the slopes become dreary, the juniper, cedar and wild rhubarb gradually giving place to scanty willow patches, tamarisk and stunted birches. Over 13,000 ft. there are merely mosses and rough grass. Familiar wildflowers blossom at different heights. The rivers teem with fish. Immense numbers of red-legged partridges live in the lower valleys, as well as pigeons and doves. Gorgeously plumaged pheasants are plentiful. Of wild animals the chief are the *markhor* (a goat) and the *oorial* (a sheep). In the winter the former are recklessly slaughtered by hunters, being either brought to bay by trained hounds, or trapped in pits, or caught floundering in the snow-drifts; but in the summer immense herds move on the higher slopes. The *ibex* is very rare. Bears and leopards are fairly common, as well as the smaller hill creatures.

History.—Yule thought the present Kafiristan was part of that pagan country stretching between Kashmir and Kabul which mediaeval Asiatics referred to vaguely as *Bilaur,* a name to be found in Marco Polo as *Bolor.* The first distinct mention of the Kafirs as a separate people appears in the history of Timur. On his march to the invasion of India the people at Andarab appealed to Timur for help against the Kator and the Siah-Posh Kafirs, to which he endeavoured to respond. He caused an inscription to be carved in the defiles of Kator to commemorate his invasion and to explain its route. Inside the Kafir country on the Najil or Alishang river there is a fort still called Timur's castle, and in the Kalam fort there is said to be a stone engraved to report that as the farthest point of his advance. In the *Memoirs* of Baber there is mention of the Kafirs raiding into Panjhir and of their taste for drinking, every man having a leathern wine-bottle slung round his neck. The *Ain-i-Akbari* makes occasional mention of the Kafirs, probably on the authority of the famous *Memoirs.*

After Robertson's sojourn in the country and the visit of several Kafirs to India with him in 1892 an increasing intimacy continued, especially with the people of the eastern valleys, until 1895, when by the terms of an agreement entered into between the government of India and the ruler of Afghanistan the whole of the Kafir territory was recognized so far as Great Britain was concerned as

within the Afghan sphere. The amir Abdur Rahman at once set about enforcing his authority, and the conversion of the population to Islam, amid scenes of cruel and fierce fighting. Since then the converted Kafirs have been a common sight in Kabul while in the high valley the old people have bitterly cherished their lost religion.

KAFIRS: *see* XOSA.

KAGERA, a river of east equatorial Africa, the most remote headstream of the Nile. The sources of its principal upper branch, the Nyavarongo, rise in the hill country immediately east of Lake Kivu. After a course of over 400 mi. the Kagera enters Victoria Nyanza on its western shore in 0° 58′ S. It is navigable by steamers for 70 mi. from its mouth, being obstructed by rapids above that point. The river was first seen (by white men) by J. H. Speke (Jan. 16, 1862) on his journey to discover the Nile source. By him the stream was called "Kitangŭlé," *kagera* being given as equivalent to "river." The exploration of the Kagera has been largely the work of German travellers.

See NILE; also J. H. Speke, *Discovery of the Source of the Nile* (Edinburgh, 1863); R. Kandt, *Caput Nili* (Berlin, 1904); and map by P. Sprigade and M. Moisel in *Grosser deutscher Kolonialatlas,* No. 16 (Berlin, 1906).

KAGU (*Rhinochetos jubatus*), a bird inhabiting New Caledonia, about the size of a bittern, gray above, white below, with a loose crest on the head, and with orange-red bill and feet. It is now threatened with extinction. Its nearest allies seem to be the sun bitterns (*q.v.*) of America and the cranes (*q.v.*), but its exact affinities are very uncertain. It forms a family of its own, the Rhinochetidae.

KAHLUR or Bilaspur, an Indian hill state, within the Punjab, under British protection since 1846. The Gurkhas overran the country in the early 19th century, and expelled the rajah, who was, however, reinstated by the British in 1815. Area, 453 sq. miles. Pop. (1941) 110,336; estimated gross revenue, £22,000; tribute £530. The town of Bilaspur on the Sutlej is 1,465 ft. above sea-level; pop. (1931) 2,387.

KAHN, GUSTAVE (1859–1936), French poet, was born at Metz on Dec. 21, 1859. He was educated in Paris at the École des Chartes and the École des langues orientales, and began to contribute to obscure Parisian reviews. After four years spent in Africa he returned to Paris in 1885, and founded in 1886 a weekly review, *La Vogue,* in which many of his early poems appeared. In the autumn of the same year he founded, with Jean Moréas and Paul Adam, a short-lived periodical *Le Symboliste,* in which they preached the doctrine of Stéphane Mallarmé; and in 1888 he became one of the editors of the *Revue indépendante.* He contributed poetry and criticism to the French and Belgian reviews favourable to the extreme symbolists, and, with Catulle Mendès, he arranged at the Odéon, the Théâtre Antoine and the Théâtre Sarah Bernhardt, matinées for the production of the plays of the younger poets. He claimed to be the earliest writer of *vers libre,* and explained his methods and the history of the movement in a preface to his *Premiers poèmes* (1897). Whether he can justly be said to be the first *vers libriste* or not, he broke quite definitely with the dominating tradition of the Alexandrine and sought to make rhythm dependent on the movement of the poet's thought, rather than on accepted rules of prosody. He was the leader of the revolt against the Pamassiaus. Other books are *Le Livre d'images* (1897); *Les Fleurs de la passion* (1900); some novels, a good example of which is *L'adultère Sentimentale* (1902); and a valuable contribution to the history of modern French verse in *Symbolistes et décadents* (1902).

KAIANIA: *see* SEISTAN.

KAI-FÊNG, one of the most historic cities of China and the capital of Honan province. It is situated on the western borders of the Plain of North China a little beyond the point where the Hwang-ho emerges on to it from the Tung-kwan Gorge. It thus guards the eastern end of the long corridor by which China was most easily approached from the West. Kai-fêng was one of the most important of the early settlement sites and a great node of routes leading eastwards towards the Shantung Highlands and southwards towards the Yangtze along the drier western margin of the Plain. It lay within the zone of early Imperial capitals and was itself a capital city in the period of the Five Dynasties (A.D. 907–960) and the early part of the succeeding Sung Dynasty. Under the Ming and Manchu Dynasties it was made the centre of important road systems. Its significance as a "gate" city for influences from the west is shown by the large Muslim element in its population and the continuance almost down to the present time of a distinct Jewish colony, whose advent is recorded on some famous inscribed stones still preserved. Kai-fêng is the centre of a densely-populated rural area, producing good crops of wheat, millet, sorghum and also cotton which is locally manufactured. The rearing of horses, mules, swine and sheep is also very important. But both the city and the country of which it is the market are often menaced by the floods of the Hwang-ho which runs a few miles to the north.

Kai-fêng is linked by the transverse Lung-Hai railway with both the great north-south trunk lines (Peking-Hankow and Tientsin-Pukow). The Japanese took the city in 1938. The population of the city was 244,844.

KAILAS, a mountain in Tibet; the highest point of a range lying to the north of Lake Manasorawar, with an altitude of about 22,000 feet. It is famous in Sanskrit literature as Siva's paradise, and is a favourite place of pilgrimage with Hindus. A track encircles the base of the mountain, and it takes the pilgrim three weeks to complete the round, prostrating himself all the way.

KAILYARD SCHOOL OF FICTION, THE, was a name applied to a group of Scottish novelists which, flourishing during the last two decades of the 19th century, included J. M. Barrie, "Ian Maclaren" (the Rev. John Watson) and S. R. Crockett. Its tendencies were towards the sentimental, the humorous and the "pawky"; dialect was freely used, and the harsher verities of Scots rural life were kept in the background —an evasion of reality which drew from George Douglas Brown his grim counterblast, *The House with the Green Shutters* (1900). The term "Kailyard" is believed to have been the invention of the late J. H. Millar, who, reviewing the movement in *The New Age* for April, 1895, borrowed the epithet from the opening line of the Jacobite song, "There grows a bonnie brier bush in our kailyard," from which line "Ian Maclaren" had already derived the title of his characteristic and very popular *Beside the Bonnie Brier Bush* (1894).

There are, however, those who hold that the phrase was inserted in Millar's critique by W. E. Henley, then editor of the periodical in which it appeared.

KAIN: *see* QAIN.

KAIRA, a town and district of British India, in the Northern division of Bombay. The town is 20 mi. S.W. of Ahmedabad and 7 mi. from Mehmadabad railway station. Pop. (1941) 7,311. Its antiquity is proved by the evidence of copperplate grants to have been known as early as the 5th century. Early in the 18th century it passed to the Babi family, with whom it remained till 1763, when it was taken by the Mahrattas; it was finally handed over to the British in 1803.

The DISTRICT OF KAIRA has an area of 1,617 sq.mi.; pop. (1941), 914,957. Except a small corner of hilly ground near its northern boundary and in the south-east and south, where the land along the Mahi is furrowed into deep ravines, the district forms one unbroken plain, sloping gently towards the south-west. The north and north-east portions are dotted with patches of rich rice-land, broken by untilled tracts of low brushwood. The centre of the district is very fertile and highly cultivated, with clusters of trees. To the west this belt of rich vegetation passes into a bare though well-cultivated tract of rice-land, growing more barren and open till it reaches the maritime belt, along the Gulf of Cambay. Antelope, gazelle and many game-birds are common. The chief rivers are the Mahi on the south-east and south, and the Sabarmati on the western boundary. The Mahi, owing to its deeply cut bed and sandbanks, is impracticable for either navigation or irrigation; but the waters of the Sabarmati are largely utilized for the latter purpose, as are those of a smaller stream, the Khari. The principal crops are cotton, millets, rice and pulse; the industries are cotton,

printing, dyeing and glass manufacture. Bauxite is worked. The chief centre of trade is Nadiad, on the railway, with a cotton-mill and leather works. A special article of export is *ghi*, or clarified butter. The Bombay and Baroda railway runs through the district.

KAIRWAN: *see* QAIRWĀN.

KAISER, GEORG (1878–1945), German dramatist, was born at Magdeburg on Nov. 25, 1878, the son of a merchant. Educated in his native city, he became a merchant and joined the staff of the Deutsch-Ueberseeische Elektrizitäts-Gesellschaft, Buenos Aires. After three years he was forced to return to Germany owing to ill health. He lived for some time at Magdeburg, Berlin and Weimar, later at Tutzine on the Starnberger See. In 1903 he published his first drama and from that time onward wrote numerous plays, at first mostly farcical, but later approaching social and ethical problems in an increasingly serious and successful fashion, which secured him recognition as a leader of the expressionist school. In 1921 he was prosecuted for embezzlement and sentenced to a term of imprisonment. His play *Von Morgens bis Mitternachts* was produced in London as *From Morn to Midnight* in 1926. He died at Ascona, Switz., June 5, 1945.

His works include: *Rektor Kleist* (1905); *Die jüdische Witwe* (1911); *König Hahnrei* (1913); *Die Bürger von Calais* (1914); *Von Morgens bis Mitternachts* (1916); *Die Sorina* (1917); *Die Versuchung* (1917); *Gas* (1918 and 1920); *Die Koralle* (1918); *Der Brand im Opernhaus* (1918); *Hölle, Weg, Erde* (1919); *Die Flucht nach Venedig* (1923); *Nebeneinander* (1923); *Kolportage* (1924); *Zweimal Oliver* (1927).

See G. Landauer, *Das Werk Kaisers* (1918).

KAISERSLAUTERN, town in the Bavarian palatinate, Germany, on the Waldlauter, in the district of Westrich, 41 mi. W. of Mannheim. Pop. (1939) 70,317. Kaiserslautern takes its name from the emperor (Kaiser) Frederick I., who built a castle here about 1152, although it appears to have been a royal residence in Carolingian times. It was an imperial city until 1357, when it passed to the palatinate. It was one of the early stations of the Reformation, and in 1849 was the centre of the revolutionary spirit in the palatinate. The house of correction occupies the site of Frederick Barbarossa's castle, which was demolished by the French in 1713. Kaiserslautern is one of the most important industrial towns in the palatinate. Its industries include cotton and wool spinning and weaving, iron-founding, and the manufacture of beer, tobacco, sugar, boots and furniture.

KAISERSWERTH, town in the Prussian Rhine, Germany, on the right bank of the Rhine, 6 mi. below Düsseldorf. Population 2,972. It possesses a Romanesque Roman Catholic church of the 12th or 13th century, with a shrine, said to contain the bones of St. Suitbert. The Roman Catholic hospital occupies the former Franciscan convent. The population is engaged in small industries.

In 710 Bishop Suitbert built the Benedictine monastery round which the town gradually formed. Until 1214 Kaiserswerth lay on an island, but in that year the Count of Berg, who was besieging it, dammed up effectually one arm of the Rhine. About the beginning of the 14th century Kaiserswerth, then an imperial city, came to the archbishopric of Cologne. It finally passed into the possession of the princes of the palatinate, whose rights, long disputed by the elector of Cologne, were legally settled in 1772.

KAITHAL or KYTHAL, an ancient town of British India, Karnal district, Punjab. Pop. (1941), 22,325. It is said to have been founded by the mythical hero Yudisthira, and is connected by tradition with the monkey-god Hanuman. In 1767 it fell into the hands of the Sikh chieftain, Bhai Desu Singh, whose descendants, the bhais of Kaithal, ranked among the most powerful Cis-Sutlej chiefs. Their territories lapsed to the British in 1843.

KAIZAK. The Kaizak are a Turki people living in the eastern and northern part of the Aral Caspian basin, and in the Orenburg Steppes. They are divided into three hordes, and claim to be the kinsfolk of the Usbegs, although they undoubtedly have a very close connection with the Mongols, being, like them, nomads, keeping horses and cattle. The Karakalpak of Amu Daria, Kokand and Khiva also probably belong to the same group.

KAJANUS, ROBERT (1856–1933), Finnish conductor and composer, was born at Helsingfors on Dec. 2, 1856. He studied at Leipzig and later in Paris under Svensden. His great achievement has been the founding of the municipal orchestra at Helsingfors, which has stimulated the musical life of the city and, by its concert tours, has introduced the works of Finnish composers into other countries. Kajanus has also done pioneer work in the discovery of Finnish folk music, drawing largely on it himself for inspiration in his compositions and opening up a rich field for others. His works include two "Finnish Rhapsodies" and a symphony, *Aino*.

KAKAPO, the Maori name for a bird often called the "ground-parrot" or "owl-parrot." This bird (*Strigops habroptilus*) is a flightless parrot inhabiting New Zealand. Nocturnal in habit, it feeds on twigs, leaves, roots and fruits. It is about the size of a raven, of a green colour, barred and freckled with dark brown and light yellow. The powerful beak and the elongated face feathers give it the appearance of an owl. The keel of the sternum is much reduced. It constitutes the subfamily Strigopinae, and lives in burrows in the mountains. It is faced with possible extinction.

KAKAR, a Pathan group on the Zhob valley frontier of Baluchistan. They are divided into many distinct tribes who have no connexion beyond the common name of Kakar. There is no chief of the Kakars, or general *jirgah* (or council) of the whole tribe. See *Census of India*, 1911, vol. iv.

KAKWA: *see* BARI-SPEAKING TRIBES.

KALA-AZAR. In 1881 a malaria-like fever, with great enlargement of the spleen, was found to be causing serious mortality at the foot of the Garo hills in Assam, whence it spread east during the next two decades over some 200 mi. of the Brahmaputra valley, carrying off about one-third of the inhabitants.

Causation and History of Parasite.—It was attributed by successive investigators to hookworm disease, epidemic malaria, and Malta fever respectively, until in 1903 Leishman and Donovan independently discovered its cause in a new minute protozoal parasite, *Leishmania donovani*, found in the spleen. In the following year L. Rogers developed a flagellate stage of the organism in cultures, and suggested a biting insect, probably the bedbug, as its carrier, a supposition which was supported by Patton demonstrating the flagellate stage of the parasite in bedbugs fed on the blood of kala-azar patients in 1905. But in 1925 Knowles and Napier, of the Calcutta School of Tropical Medicine, appear to have solved the difficult problem by incriminating a sand fly, *Phlebotomus argentipes*, as the true agent in transmitting the disease; this minute insect, together with kala-azar cases, being far more prevalent in areas of Calcutta with much vegetation than in the more crowded Indian quarter. After the discovery of the causative parasite in 1903 it was soon found that what had for a century been called malarial cachexia in Bengal was nothing but a widely distributed sporadic form of the Assam epidemic kala-azar, the virulence of the latter being due to its invasion of an area previously free from the disease. The disease is now recognized as being very prevalent over all Bengal, Behar, the eastern part of the United provinces and in Madras, but the comparatively dry Punjab and north-west frontier are practically free from the disease, a certain degree of humidity being necessary for it. A form of kala-azar especially affecting children is also prevalent all round the Mediterranean basin and in Egypt and the Sudan.

Symptoms.—Kala-azar is characterized by very prolonged fever, often typhoid-like in the early stages, and frequently showing two or three rises and falls in 24 hours, the characteristic double remittent fever, but with long intervals of low continued or intermittent fever, the total duration being seldom less than seven months and often extending, with periods of freedom from fever, over several years; accompanied by extreme wasting, very great enlargement of the spleen, and later of the liver, some anaemia and extreme reduction of the white corpuscles of the blood, which lowers the resisting power of the patients to secondary infections with septic diseases, pneumonia, dysentery and phthisis, which are far more frequently the ultimate cause of death than the original disease, the case mortality having been until recently from 80 to 96%.

Prophylaxis and Treatment.—As the result of his Assam researches of 1897, L. Rogers established a house and site infec-

tion of kala-azar and worked out a system of moving the sites of the villages and tea garden coolie lines, whereby the further progress of the epidemic up the Assam valley was checked for many years. J. Dodds Price successfully applied the same plan to stamping out the disease from a number of badly infected tea estates, thereby saving the industry in the Nowgong district. The debilitating effects of the 1918 influenza pandemic led to a recrudescence of kala-azar in the Assam valley, including the more eastern and little infected area. Fortunately by this time an effective treatment had been discovered in intravenous injection of tartar emetic and other antimony preparations, which now enables some 90% of the cases to be cured; a greater saving of life perhaps than has been effected in any such fatal illness by modern medical research, with the result that many thousand cases have been treated successfully each year in Assam and Bengal. Given adequate funds and organization, this, the most terrible of tropical fevers, might be nearly stamped out of the large areas which it has decimated for centuries past and further epidemics prevented.

See L. E. Napier and E. Muir, *Kala-Azar* (1923). (L. R.)

KALACH, also known as Donskaya, a village of south-east U.S.S.R. in the region of Stalingrad, in lat. 48° 43′ N. and long. 43° 30′ E., a summer river port on the Don at the point where that river approaches the bend of the Volga on which Stalingrad (Tsaritsyn) is situated. Its population (45,182) is much greater during the navigation period, when fish, petroleum, cereals and timber brought up the Volga from the Caspian are unloaded at Stalingrad and sent by rail across the 45 mi. between the Volga and Don on the way to the Sea of Azov or to south central Russia.

Also a village in lat. 50° 22′ N., 41° 0′ E., in the region of Voronezh, population 14,833. It is the terminus of a branch line running south through Buturlinovka and has six annual fairs dealing mainly in cattle and hides.

KALAHANDI (formerly KAROND), one of the Orissa states in India, in the Eastern States agency. A range of the Eastern Ghats runs from northeast to southwest through the state, with open undulating country to the north. Area 3,559 sq.mi.; pop. (1941) 597,940. The inhabitants belong mostly to the aboriginal race of Khonds. The ruler has the title of maharaja. The capital is Bhawani-Patna (pop. 7,174).

KALAHARI DESERT, a region of South Africa, lying mainly between 20° and 28° S. and 19° and 24° E., and covering fully 120,000 sq.m. The greater part of this territory forms the western portion of the (British) Bechuanaland protectorate, but it extends south into that part of Bechuanaland annexed to the Cape and west into German South-West Africa. The Orange river marks its southern limit; westward it reaches to the foot of the Nama and Damara hills, eastward to the cultivable parts of Bechuanaland, northward and north-westward to the valley of the Okavango and the bed of Lake Ngami. The Kalahari, part of the immense inner table-land of South Africa, has an average elevation of over 3,000 ft. with a general slope from east to west and a dip northward to Ngami. The surface soil is mainly red sand. On the eastern border long tongues of sand project into the veld, while the veld in places penetrates far into the desert. There are also, and especially along the river beds, extensive mud flats. After heavy rain these become pans or lakes. A tough, sun-bleached grass, growing knee-high in tufts at spaces of about 15 in., covers the dunes and gives the general colour of the landscape. Considerable parts of the Kalahari, chiefly in the west and north, are however covered with dense scrub and there are occasional patches of forest. Next to the lack of water the chief characteristics of the desert are the tuberous and herbaceous plants and the large numbers of big game found in it.

In the south the drainage is towards the Orange. The Molopo and the Kuruman, which in their upper course in eastern Bechuanaland are perennial streams, lose their water by evaporation and percolation on their way westward through the Kalahari. The Molopo, a very imposing river on the map, is dry in its lower stretches. (*See* BECHUANALAND.)

The Kalahari was first crossed to Lake Ngami by David Livingstone, accompanied by William C. Oswell, in 1849. In 1878–1879 a party of Boers, with about three hundred wagons, trekked from the Transvaal across the Kalahari to Ngami and thence to the hinterland of Angola. Many of the party, men, women and children, perished of thirst during the journey. Survivors stated that in all some 250 people and 9,000 cattle died.

See BECHUANALAND. *Die Kalahari,* by Dr. Siegfried Passarge (Berlin, 1904), is a valuable treatise on the geology, topography, hydrography, climate and flora of the desert, with maps and bibliography. The author spent two years (1896–98) in the Kalahari. *See* also *Missionary Travels and Researches in South Africa,* etc., by David Livingstone (1857) and the *South African Year Book.*

KALAKH (Calah, modern Nimrud), an Assyrian city situated in the angle formed by the confluence of the Tigris and the upper Zab 19 m. south of Mosul. The city was the artificial creation of Shalmaneser I., as Agade to the south was of Sargon. It was later abandoned for many centuries and subsequently occupied by Assur-nasir-pal. The city was the headquarters of the army in Assyria and as such played an important part in the military revolts which at various times upset the empire. The excavations which have been made on this site, although mostly carried on before the time of scientific archaeology, have produced particularly valuable results in the way of statues and inscriptions although comparatively few tablets have been found, apparently because many of these were transferred in ancient times to Nineveh. The most important objects from the site are the winged lions now in the British Museum, the black obelisk of Shalmaneser, in the same collection and a series of great winged bulls. The most important buildings fall into six groups. First, south of the stage tower lies the north-west palace, originally built by Assur-nasir-pal, and restored by Sargon. It is a wonderfully complete Assyrian building measuring about 350 feet square and including a central court, 129×90 feet, surrounded as in most oriental buildings by a series of large rooms. Secondly, in the interior of the mound, towards its southern end, the palace of Shalmaneser III. rebuilt by Tiglath-Pileser III. there was found together with several other things a series of slabs showing the victorious passages of arms of the rebuilder of the palace. In the south-west corner of the platform an uncompleted building of Esar-Haddon was found. This was made from the material taken from Tiglath-Pileser's buildings. Between this building and the north-west palace there was a small palace dating from about sixty years after the time of Assur-nasir-pal. The south-east palace was built by Assur-etil-ilanion; it dates from the end of the seventh century B.C. and was probably used as was the other building as a harem. A temple called E-zida, dedicated to Nebo, was found near the south-east palace, while two small temples of Assur-nasir-pal were found opposite this on the north-west corner. There were other buildings on the east side but these were all found to be ruined because the mound had been used as a cemetery and in later times as an underground granary. Kalakh was never a city of first rate importance. All the cities of Assyria lay within a day's journey of one another, and were overshadowed by Nineveh, but Kalakh owed its importance partly to the action of Shalmaneser and later simply to its official position as the military headquarters of a military power.

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KALAMATA (officially Καλάμαι, from an ancient town near the site), chief town of the modern Greek nomarchy of Messenia on the Nedon, about 1 mi. from the sea, seat of a court. Population (1928, last census before World War II) 28,955. On a hill behind the town is a mediaeval castle, but no ancient remains have been discovered; some identify the site with classical Pharae. During the middle ages it was for a time a fief of the Villehardouins; in 1685 it was captured by the Venetians; in 1770, and again in 1821, it was the revolutionary headquarters in the Morea; in 1825 it was sacked by Ibrahim Pasha. The harbour, though recently improved, offers little shelter; vessels are served by lighters; in the winter months the fishing craft take shelter in the haven of Armyro. The silk industry was formerly important; the local olives are noted; and the Messenian plain produces

currants and other fruit crops.

KALAMAZOO, a city of southwestern Michigan, U.S.A., between Detroit and Chicago, on the Kalamazoo river; the county seat of Kalamazoo county. It is on federal highways 12 and 131 and state highway 43; has a municipal airport; and is served by the Grand Trunk and Western railway and the Michigan Central division of the New York Central, and the Pennsylvania railways, and by electric interurban railways, motor coach and motor truck lines in every direction. The population was 48,487 in 1920 (83·5% native white) and was 54,097 in 1940 by the federal census, besides a large number in the contiguous suburbs. Beautiful wooded hills encircle the city, and there are many lakes in the vicinity. The region is famous for its celery, peppermint and fruits, especially grapes. Kalamazoo has a large wholesale and retail trade, and a large number of diversified and exceptionally stable manufacturing industries. Paper of many kinds is the outstanding product, ten large plants making 3,000,000 lb. daily. The total factory output in 1939 was valued at $80,364,031. Bank assets in 1939 amounted to $30,778,880. Since 1918 the city has operated under a commission-manager form of government. Under the "pay-as-you-go" policy there was no bonded or floating debt in 1941. Kalamazoo is the seat of Kalamazoo college (Baptist), established in 1833 as a "literary institute"; the Western State Teachers college (1903); a state hospital for the insane (1859); and a private home for the feeble-minded. The city was founded in 1829 by Titus Bronson, and was called Bronson until 1836. It was incorporated as a village in 1838 and chartered as a city in 1883. The site was an Indian rendezvous and trading post, and the name is said to mean "boiling pot."

KALAMEIN, in architecture, a type of window and door construction in which a core of wood of exactly the shape of the finished article desired is covered completely with steel or other sheet metal, so arranged as to conceal the seams. Kalamein doors and windows are very nearly fireproof and used frequently in fireproof construction as they are the least expensive form of finished metal-covered doors and windows.

KALAT, the capital of the Kalat state in Baluchistan agency, India, is situated in 29° 2′ N. and 66° 35′ E. about 6,780 ft. above sea level, and has a population (1941) of 2,463. The state includes the four main divisions of Mekran, Sarawan, Jhalawan and Kachhi and exercises a nominal suzerainty over the states of Kharan and Las Bela. Excluding Kharan and Las Bela, the area is 53,995 sq.mi. and pop. (1941) 253,305. The revenue in 1941 was £114,400 (Rs. 25¼ lacs). Kalat is the most picturesque fortress in the Baluch highlands. It crowns a low hill, round the base of which clusters the closely built mass of flat-roofed mud houses which form the insignificant town. A *miri* or citadel, having an imposing appearance, dominates the town, and contains within its walls the palace of the khan. It was in an upper room of this residence that Mehrab Khan, ruler of Baluchistan, was killed during the storming of the town and citadel by the British troops at the close of the first Afghan War in 1839. The valleys immediately surrounding the fortress are well cultivated and thickly inhabited, in spite of their elevation and the extremes of temperature to which they are exposed. Recent surveys of Baluchistan have determined the position of Hozdar or Khozdar, the former capital (27° 48′ N., 66° 38′ E.), to be about 50 mi. S. of Kalat. In spite of the rugged and barren nature of the mountain districts of the Kalat highlands, the main routes through them (concentrating on Khozdar rather than on Kalat) are comparatively easy. The old *Pathan vat,* the trade highway between Kalat and Karachi by the Hab valley, passes through Khozdar. From Khozdar another route strikes a little west of south to Wad, and then passes easily into Las Bela. This is the *Kohan vat.* A third route runs to Nal, and leads to the head of the Kolwa valley (meeting with no great physical obstruction), and then strikes into the open high road to Iran. Some of the valleys about Kalat are wide and fertile, full of thriving villages and strikingly picturesque, in spite of the great preponderance of mountain wilderness (often, however, the pasturage of sheep) existing in the Sarawan lowlands almost equally with the Jalawan highlands which explains the importance of the province, anciently called Turan (or Tubaran), in the eyes of mediaeval Arab geographers. The khans of Kalat are now believed to be of Arabic origin, rather than Brahuic extraction. They belong to the Ahmadzai branch of the Mirwari clan, which originally emigrated from Oman to the Kolwa valley of Mekran. The khan of Kalat is the leading chieftain in the Baluch Confederacy.

See G. P. Tate, *Kalat* (Calcutta, 1896); *Baluchistan District Gazetteer.* (T. H. H.)

KALAT-I-GHILZAI, a fort in Afghanistan. It is situated on an isolated rocky eminence 5,543 ft. above sea-level and 200 ft. above the plain, on the right bank of the river Tarnak, on the road between Kabul and Kandahar, 87 m. from Kandahar and 229 m. from Kabul. It is celebrated for its gallant defence by Captain Craigie and a sepoy garrison against the Afghans in the first Afghan War of 1842.

KALB, JOHANN ("BARON DE KALB") (1721–1780), German soldier in the American Revolution, was born in Hüttendorf, near Bayreuth, on June 29, 1721. He was of peasant parentage, and left home when he was 16 to become a butler. In 1743 he was a lieutenant in a German regiment in the French service, calling himself at this time Jean de Kalb. He served with the French in the War of the Austrian Succession, becoming captain in 1747 and major in 1756; in the Seven Years' War he was in the corps of the comte de Broglie, rendering great assistance to the French after Rossbach (Nov. 1757) and showing great bravery at Bergen (April 1759). As secret agent, appointed by Choiseul, he visited America in 1768–69 to enquire into the feeling of the colonists toward Great Britain. Late in 1775 he received permission to volunteer in the army of the American colonies, in which the rank of major-general was promised to him by Silas Deane. After many delays he sailed with 11 other officers on the ship fitted out by Lafayette, and arrived at Philadelphia in July 1777. His commission from Deane was disallowed, but the Continental Congress granted him the rank of major-general (dating from Sept. 15, 1777), and in October he joined the army, where his growing admiration for Washington soon led him to view with disfavour de Broglie's scheme for putting a European officer in chief command. Early in 1778, as second in command to Lafayette for the proposed expedition against Canada, he accompanied Lafayette to Albany before the expedition was abandoned. In April 1780 he was sent from Morristown, N.J., to relieve Charleston, but on arriving at Petersburg, Va., he learned that Charleston had already fallen. In his camp at Buffalo Ford and Deep river, Gen. Horatio Gates joined him on July 25; and next day Gates led the army by the short and desolate road directly towards Camden, S.C. On Aug. 11–13, when Kalb advised an immediate attack on Lord Rawdon, Gates hesitated, and it was not until after Cornwallis had occupied Camden (on Aug. 14) that he decided upon action. In the battle, which took place near Camden early in the morning of Aug. 16, the American left and centre gave way in disorder and Gates fled from the field, but Kalb, unhorsed and fighting fiercely at the head of his right wing, was wounded 11 times before he was taken prisoner. He was sent to Camden, where he received the kindest attention, but died on Aug. 19, 1780. Here, in 1825, Lafayette laid the corner-stone of a monument to him. In 1887 a statue of him by Ephraim Keyser was dedicated in Annapolis, Md.

See Friedrich Kapp, *Leben des amerikanischen Generals Johann Kalb* (Stuttgart, 1862; English version, privately printed, New York, 1870), which is summarized in G. W. Greene's *The German Element in the War of American Independence* (New York, 1876); and "Letters of Maj.-gen. Johann Kalb," in *American Historical Review,* vol. xv., pp. 562–567 (1910).

KALCKREUTH, LEOPOLD, COUNT VON (1855–1928), German painter, was born at Düsseldorf, received his training at Weimar from his father, the landscape painter Count Stanislaus von Kalckreuth (1820–94), and subsequently studied at the academies of Weimar and Munich. Although he painted some portraits remarkable for their power of expression, he devoted himself principally to depicting with relentless realism the monotonous life of fishing folk and peasants. His palette is joyless, and almost melancholy, and in his technique he is strongly influenced by the impressionists. He was one of the founders of the seces-

sionist movement. From 1885 to 1890 Count von Kalckreuth was professor at the Weimar art school. In 1890 he retired to his estate of Höckricht in Silesia, where he painted subjects drawn from the life of the country-folk. In 1895 he became a professor at the art school at Karlsruhe. From 1900 to 1905 he was director of the art school at Stuttgart. In 1903 he was elected first president of the German "Künstlerbund." He is represented in most German public galleries. The Neue Staats gallery in Munich has his "Rainbow" and the Dresden gallery his "Old Age." Among his chief works are the "Funeral at Dachau," "Homewards," "Wedding Procession in the Carpathian Mountains," "The Gleaners," "Old Age," "Before the Fish Auction," "Summer," and "Going to School." He was also an etcher and lithographer, and he illustrated several books. He died Dec. 1, 1928.

KALE, a cultivated variety of cabbage (*Brassica oleracea* var. *acephala*), which includes several forms. Common or Scotch and Buda kale are amongst the hardiest of the esculents. The plant consists of a stout central stem, which grows to a height of about 2 ft., the large thick-set leaves used for edible purposes being green, purplish or light red in colour. *See* CABBAGE.

KALEDIN, ALEXEI (1861–1918), Russian general, was born in 1861, and entered the army in 1882. For some years he served in the artillery and in 1889 was appointed on the general staff. When the World War broke out in 1914 he was at the head of the 12th Cavalry Division, with which he distinguished himself in the Galician campaigns of 1914–15. Later in 1915 he commanded the XII. Corps, and in the beginning of 1916 the VIII. Army. With this army, in 1916, he carried out the great offensive campaign of Lutsk. In May 1917, being out of sympathy with the policy of the Provisional Government, he resigned his post as an army commander and later in the same year was elected Ataman of the Don. His popularity among the Cossacks survived the conflict between Kornilov and Kerensky. After the seizure of power by the Bolsheviks, the influence he exercised over the Cossacks kept them at first from supporting the Revolution. But when all means of saving them from Bolshevism were exhausted, Kaledin shot himself on Feb. 11, 1918.

KALEIDOSCOPE, an instrument which produces a symmetrical set of images, by the to and fro reflections in a pair of plane mirrors meeting one another at an angle, which is an even submultiple of 360°. It was invented by Sir David Brewster, and patented by him in 1817. An attempt was made to discount the invention as being merely the same as the multiple mirrors of Kircher, Harris, Wood, Bradley and others; but none of these writers had described an arrangement that produced the beautifully symmetrical patterns that resulted from Brewster's design.

Essentially the instrument consists of two flat pieces of glass, with the edge of one surface meeting the other surface in a clean line; and with their planes inclined to one another at some such angle as 30° $\left(\frac{360}{12}\right)$, or $22\frac{1}{2}°$ $\left(\frac{360}{16}\right)$. The eye of the observer is applied at one end, close to the line of intersection of these glasses, and near the opposite end is placed any suitable object in the angular space between the mirrors. The backs of the glasses are blacked to cut off any reflection from them; or, preferably, the inner surfaces of the glasses may be silvered, or metal mirrors may be substituted. The mirrors are usually mounted in a tube, and they are cut somewhat tapering at the eye end, so that their line of intersection may conveniently be brought towards the centre of the tube, and the eye thus be able to look through an aperture central with the tube. The objects usually supplied are a number of pieces of coloured glass, mounted in a cell between a disc of clear glass, which is close to the end of the mirrors, and an outer disc of ground glass. On rotating this cell the pieces of glass fall about and form an infinite variety of patterns. Much more delightful effects are produced by a further device of Brewster. He mounted a convex lens of short focal length (two or three inches) in a sliding tube, which could then be adjusted to throw the image of any natural object in the plane of the ends of the mirrors.

The field of view is limited by the edges of the mirrors opposite to the eye. If, as is usually the case, the object is at a little distance from the end, unless the eye can be placed absolutely in the plane of the mirror, the edge of the mirror will cut the object and the image in different lines, and they will not appear to be perfectly symmetrical. A plane object, *e.g.*, a drawing, which is placed close against the far edges of the mirrors, or a solid object which is placed actually within the angle of the mirrors, and nearer the eye than the ends of the mirrors, will form a symmetrical pattern, independently of the position of the eye. Or if the eye could be placed in the line of intersection of the mirrors, so that it is in the plane of both mirrors, the pattern would always be symmetrical, even if the object is beyond the far end of the mirrors. In actual practice, the eye is arranged to be placed as close as possible to the angle of the mirrors, and the objects are also kept close to the ends of the mirrors. The pattern will then not be quite perfect, but will be sufficiently symmetrical to satisfy an ordinary observer, whose attention has not been specially directed to the want of symmetry.

From the remarks in the last paragraph, it is obvious that it is possible to form a perfectly symmetrical picture of a solid object, which can be seen in relief by the two eyes simultaneously. It is only necessary that the object shall be placed within the far ends of the mirrors, and if the latter are of sufficient size, it can be viewed by both eyes and appear symmetrical, even though the eyes are not close to the angle of the mirrors. A bunched-up handkerchief, or a coloured piece of silk, lighted strongly from one side, yields most beautiful designs, which look like exquisite exotic flowers.

The kaleidoscope is frequently used by designers to enable them to realise the effects that can be produced by symmetrical designs. In this case the mirrors are usually set up in a vertical plane, and supported a little above a table, on which any object can be placed.

Attempts have often been made to project kaleidoscopic patterns, but usually with indifferent success. If a pair of mirrors are merely interposed between the condenser and the projecting lens, it will be found impossible to illuminate the images formed by the successive reflections. A piece of ground glass placed immediately after the condenser will help to make the lighting more even, but at a great sacrifice of light. As many beams of light as there are reflected images are required, one beam being focussed upon each of the images of the projecting lens. This can be obtained by interposing a second pair of mirrors between the arc and the condenser, these mirrors making the same angle with one another as the front pair. The lines of intersection of each pair of mirrors and the axis of the condenser should all be coincident. A group of images of the arc arranged round a circle, will then be formed, and the condenser should focus these on the centres of the set of images of the projecting lens. (R. S. CL.)

KALERGIS, DIMITRI (DEMETRIOS) (1803–1867), Greek statesman, a Cretan by birth, studied medicine at Paris and on the outbreak of the War of Greek Independence went to the Morea and joined the insurgents. He fought under Karaiskakis, and was taken prisoner by the Turks before Athens; later he acted as aide de camp to the French philhellene Colonel Fabvier and to Count Capo d'Istria, president of Greece. In 1843, as commander of a cavalry division, he was the prime mover in the insurrection which forced King Otto to dismiss his Bavarian ministers. He was appointed military commandant of Athens and aide de camp to the king, but after the fall of the Mavrocordato ministry in 1845 was forced to go into exile, and spent several years in London, where he became an intimate of Prince Louis Napoleon. In 1848 he descended on the Greek coast, in the hope of revolutionizing the kingdom. He was captured, but soon released and, after a stay in the island of Zante, went to Paris (1853). At the instance of the Western Powers he was recalled on the outbreak of the Crimean War and appointed minister of war in the reconstituted Mavrocordato cabinet (1854). He was, however, disliked by King Otto and his consort, and in October 1855 was forced to resign. In 1861 he was appointed minister plenipotentiary in Paris, in which capacity he took an important part in the negotiations which followed the fall of the Bavarian dynasty and led to the accession of Prince George of Denmark

to the Greek throne.

KALEVALA or KALEWALA, the name of the Finnish national epos. It takes its name from the three sons of Kalewa (or Finland), viz., the ancient Väinämöinen, the inventor of the sacred harp Kantele; the cunning art-smith, Ilmarinen; and the gallant Lemminkainen, who is a sort of Arctic Don Juan. The adventures of these three heroes are wound about a plot for securing in marriage the hand of the daughter of Louhi, a hero from Pohjola, a land of the cold north. Ilmarinen is set to construct a magic mill, the Sampo, which grinds out meal, salt and gold, and as this has fallen into the hands of the folk of Pohjola, it is needful to recover it. The poem actually opens, however, with a very poetical theory of the origin of the world. The virgin daughter of the atmosphere, Ilmatar, wanders for seven hundred years in space, until she bethinks her to invoke Ukko, the modern Zeus, who sends his eagle to her; this bird makes its nest on the knees of Ilmatar and lays in it seven eggs. Out of the substance of these eggs the visible world is made. But it is empty and sterile until Väinämöinen descends upon it and woos the exquisite Aino. She disappears into space, and it is to recover from his loss and to find another bride that Väinämöinen makes his series of epical adventures in the dismal country of Pohjola. Various episodes of great strangeness and beauty accompany the lengthy recital of the struggle to acquire the magical Sampo, which gives prosperity to whoever possesses it. In the midst of a battle the Sampo is broken and falls into the sea, but one fragment floats on the waves, and, being stranded on the shores of Finland, secures eternal felicity for that country. At the very close of the poem a virgin, Mariatta, brings forth a king who drives Väinämöinen out of the country, and this is understood to refer to the ultimate conquest of Paganism by Christianity.

The poem is written in eight-syllabled trochaic verse, and an idea of its style may be obtained from Longfellow's *Hiawatha,* which is a pretty true imitation of the Finnish epic. Longfellow in fact borrowed his metre from a German translation of the *Kalevala* in the original metre.

Until the 19th century the *Kalewala* existed only in fragments in the memories and on the lips of the peasants. A collection of a few of these scattered songs was published in 1822 by Dr. Zacharius Topelius, but it was not until 1835 that anything like a complete and systematically arranged collection was given to the world by Dr. Elias Lönnrot. For years Dr. Lönnrot wandered from place to place in the most remote districts, living with the peasantry, and taking down from their lips all that they knew of their popular songs. Some of the most valuable were discovered in the governments of Archangel and Olonetz. After unwearied diligence Lönnrot was successful in collecting 12,000 lines. These he arranged as methodically as he could into thirty-two runes or cantos, which he published exactly as he heard them sung or chanted. Continuing his researches, Dr. Lönnrot published in 1849 a new edition of 22,793 verses in fifty runes. A still more complete text was published by A. V. Forsman in 1887. The importance of this indigenous epic was at once recognized in Europe, and translations were made into Swedish, German and French. Several translations into English exist, the latest being that by W. J. Kirby in 1907. The best foreign editions issued are those of Castren in Swedish (1844), Leouzon le Duc in French (1845 and 1868), Schiefner in German (1852).

KALGAN, an important depôt and gate-town, as its Mongolian name (halga=gate) signifies, on the Sino-Mongolian border (40° 53′ N. and 114° 50′ E.). The city lies at an altitude of 2,800 ft. on the extremity of a rich loess plain (Hsuan-Hua) within the belt of high scarps which separate the apex of the North China plain from the Mongolian plateau. It is situated at the point where the easiest and most frequented route from Peking to Urga, utilising the Nankow pass, penetrates the outer of the two sections into which the Great Wall of China is divided in this critical region. Hence it is called "The Gate to Mongolia" and "The Gateway of North China."

Under the Ming and Manchu dynasties Kalgan was a centre of great commercial and military importance and had been formerly included within the metropolitan province of Hopei. In 1914 Chahar was made an administrative district which in 1928 became a province. Kalgan was its capital and the chief entrepôt of the trade of inner Mongolia. It is served by the Peking-Suiyuan railway which was opened to traffic as far as Kalgan in 1911. There was also a motor-car service for trade and postal purposes between Kalgan and Urga, the capital of outer Mongolia, but camels remained the chief carriers of freight. As many as 100,000 camels used to be employed in carrying tea from Kalgan to Siberia and 1,200,000 camels and 300,000 bullock wagons were used on the inland caravan trade. Kalgan has long been the chief collecting and distributing centre for Mongolian wool destined for foreign export. It was also the focus for the fur trade and had more than 20 fur-dressing factories. Skins were brought there to be cleaned, sorted and sewn together, before being sent down to Tientsin. Goatskin, sheepskin, cowhide, horsehide and camel wool are imported from Mongolia. After 1933 the Japanese began their infiltration into Chahar as a part of their campaign into Inner Mongolia. At the outbreak of the war, 1937, Kalgan fell fully into Japanese hands.

KALGOORLIE, a town of Western Australia some 380 miles E. by N. of Perth. Kalgoorlie, Coolgardie, Boulder, Kanowna and some others form a group of mining towns fairly typical of south-western Australian conditions. The climate is arid (av. ann. temps.: 77.5°–51° F; av. ann. rainfall *c.* 9 in.). Gold began to be discovered from about 1888 onwards and settlements rapidly sprang up and swelled to great dimensions (Kalgoorlie pop. [1900] *c.* 30,000). Water shortage was a difficulty and led to the construction of the Goldfield Water Supply system, one of the greatest in existence, by which water is piped (since 1903) from the Darling Ranges (capacity 5,000,000 gal. per diem; distance *c.* 1,500 miles in all). The Goldfields had a most meteoric career. The main mines occur in quartz diabase, which has been chemically altered into a greenstone. The lodes occur as nearly vertical sheets.

The output of the East Coolgardie and of the Boulder mines alone totals some 34,650,000 fine oz. (*c.* £137,000,000), but the output has greatly declined (Kalgoorlie, pop. [1933] 9,088; Boulder, 5,808), the place of mining being to some extent filled by pastoral pursuits. The Trans-Australian railway passes through Kalgoorlie, and the line from Esperance (*q.v.*) via Norseman to Boulder—which may someday open up extensive (*c.* 8,000,000 ac.) new wheat areas—has been completed.

KĀLĪ, "dark" or Kālī Mai, "dark mother," in the late Epic Hindu mythology a cult-title of Durga, wife of Siva. The origin of her worship is obscure and her attributes enigmatical. Usually regarded as a goddess of death and destruction, she is depicted as black, four-armed, with red palms and eyes, her tongue, face and breasts blood-stained, matted hair and fang-like teeth. She wears a necklace of skulls, corpses as earrings, and a girdle of snakes. She was also incarnate as Chamunda (Skt. Chhinnamastaka, "headless"), a type of those who lay down their life for a cause. One of her shrines was Kālikshetra, near Kālighat (now Calcutta). There goats are slain as vicarious sacrifices to Kālī, at the Kālī-pūja, on the darkest night of November.

See Hastings' *E.R.E.* (Edinburgh, 1914, 7); *s.v.* Kalighat.

KĀLIDĀSA, the most illustrious name among the writers of the second epoch of Sanskrit literature, which, as contrasted with the age of the Vedic hymns, may be characterized as the period of artificial poetry. The extremely corrupt form of the Prākrit or popular dialects spoken by the women and the subordinate characters in his plays, as compared with the Prākrit in inscriptions of ascertained age, led Weber and Lassen to agree in fixing on the 3rd century A.D. as the approximate period of the writings of Kālidāsa.

He was one of the "nine gems" at the court of King Vikramaditya or Vikrama, at Ujjain, and the tendency is now to regard the latter as having flourished about A.D. 375; others, however, place him as late as the 6th century. Kālidāsa is in the first rank of Oriental poets. Kālidāsa's fame rests chiefly on his several dramas, but he is also distinguished as an epic as well as a lyric poet.

He wrote three plays, the most famous of which is *Sakuntalā*. There are two recensions of the text in India, the Bengalī and the Devanāgarī, the latter being generally considered older and purer. *Sakuntalā* was first translated into English by Sir William Jones (Calcutta, 1789), who used the Bengalī recension. It was soon after translated into German by G. Forster (1791; new ed. Leipzig, 1879). An edition of the Sanskrit original, with French translation, was published by A. L. Chézy at Paris in 1830. This formed the basis of a translation by B. Hirzel (Zürich, 1830); later trans. by L. Fritze (Chemnitz, 1876). Other editions of the Bengalī recension were published by Prema Chandra (Calcutta, 1860) for the use of European students and by R. Pischel (2nd ed., Kiel, 1886). The Devanāgarī recension was first edited by O. Böhtlingk (Bonn, 1842), with a German translation. On this were based the successive German translations of E. Meier (Tübingen, 1851) and E. Lobedanz (8th ed., Leipzig, 1892). The same recension has been edited by Dr. C. Burkhard with a Sanskrit-Latin vocabulary and short Prākrit grammar (Breslau, 1872) and by Professor Monier Williams (Oxford, 2nd ed. 1876), who translated the drama (5th ed., 1887). There is another translation by P. N. Patankar (Poona, 1888). There are also a South Indian and a Cashmir recension.

The *Vikramorvasī*, or *Urvasī won by Valour*, abounds with fine lyrical passages, and is of all Indian dramas second only to *Sakuntalā* in poetic beauty. It was edited by R. Lenz (Berlin, 1833) and translated into German by C. G. A. Höfer (Berlin, 1837), by B. Hirzel (1838), by E. Lobedanz (Leipzig, 1861) and F. Bollensen (Petersburg, 1845). There is also an English edition by Monier Williams, a metrical and prose version by Professor H. H. Wilson, and a literal prose translation by Professor E. B. Cowell (1851). The latest editions are by S. P. Pandit (Bombay, 1879) and K. B. Paranjpe (*ibid.* 1898).

The third play, entitled *Mālavikāgnimitra*, has considerable poetical and dramatic merit, but is confessedly inferior to the other two. It possesses the advantage, however, that its hero Agnimitra and its heroine Mālavikā are more ordinary and human characters than those of the other plays. It is edited by O. F. Tullberg (Bonn, 1840), by Shankar P. Pandit, with English notes (1869), and S. S. Ayyar (Poona, 1896); translated into German by A. Weber (1856), and into English by C. H. Tawney (2nd ed., Calcutta, 1898).

Two epic poems are also attributed to Kālidāsa. The longer of these is entitled *Raghuvamsa*, the subject of which is the same as that of the *Rāmāyana*, viz., the history of Rāma, but beginning with a long account of his ancestors, the ancient rulers of Ayodhya (ed. by A. F. Stenzler, London, 1832; and with Eng. trans. and notes by Gopal Raghunath Nandargikar, Poona, 1897, verse trans. by P. de Lacy Johnstone, 1902). The other epic is the *Kumārasambhava*, the theme of which is the birth of Kumāra, otherwise called Kārttikeya or Skanda, god of war (ed. by Stenzler, London, 1838; K. M. Banerjea, 3rd ed. Calcutta, 1872; Parvanikara and Parab, Bombay, 1893; and M. R. Kale and S. R. Dharadhara, ibid. 1907; Eng. trans. by R. T. Griffith, 1879). Though containing many fine passages, it is tame as a whole.

His lyrical poems are the *Meghadūta* and the *Ritusamhāra*. The *Meghadūta*, or the Cloud-Messenger, describes the complaint of an exiled lover, and the message he sends to his wife by a cloud. It is full of deep feeling, and abounds with fine descriptions of the beauties of nature. It was edited with free English translation by H. H. Wilson (Calcutta, 1813), and by J. Gildemeister (Bonn, 1841); a German adaptation by M. Müller appeared at Königsberg (1847), and one by C. Schütz at Bielefeld (1859). It was edited by F. Johnson, with vocabulary and Wilson's metrical translation (London, 1867); later editions by K. P. Parab (Bombay, 1891) and K. B. Pathak (Poona, 1894). The *Ritusamhāra*, or Collection of the Seasons, is a short poem, of less importance, on the six seasons of the year. There is an edition by P. von Bohlen, with prose Latin and metrical German translation (Leipzig, 1840); Eng. trans. by C. S. Sitaram Ayyar (Bombay, 1897).

Another poem, entitled the *Nalodaya*, or Rise of Nala, edited by F. Benary (Berlin, 1830), W. Yates (Calcutta, 1844) and Vidyasagara (Calcutta, 1873), is a treatment of the story of Nala and Damayanti, but describes especially the restoration of Nala to prosperity and power. It has been ascribed to the celebrated Kālidāsa, but was probably written by another poet of the same name. It is full of most absurd verbal conceits and metrical extravagances.

So many poems, partly of a very different stamp, are attributed to Kālidāsa that it is scarcely possible to avoid the necessity of assuming the existence of more authors than one of that name. It is by no means improbable that there were three poets thus named; indeed modern native astronomers are so convinced of the existence of a triad of authors of this name that they apply the term Kālidāsa to designate the number three.

On Kālidāsa generally, *see* A. A. Macdonell's *History of Sanskrit Literature* (1900), and on his date, G. Huth, *Die Zeit des K.* (Berlin, 1890). (A. A. MA.)

KALIMPONG, a subdivisional town of British India, in the Darjeeling district of Bengal, 3,933 ft. above sea-level. Pop. (1941) 11,958. It is a hill sanatorium in an early stage of development and also a frontier market to which wool and mules are brought from Tibet. An important agricultural fair is held in November. In 1900 Kalimpong was chosen by the Church of Scotland as the site of St. Andrew's Colonial homes, for the education and training of poor European and Eurasian children.

KALININ, MIKHAIL IVANOVICH (1875–1946), Russian statesman, son of a peasant of Tver (Kalinin) province, was born in 1875. He went to a village school, and was apprenticed in a munition factory, afterwards at the age of 16 going to St. Petersburg to work in the Putilovsk factory. In 1898 he joined the social-democratic party, was arrested 12 months later, and spent ten months in prison. After being transferred from town to town, he was again arrested in 1903 and sent to Siberia in 1904. He returned in 1905, working in St. Petersburg and Moscow, and in 1908 was banished from St. Petersburg. Like many another peasant-worker, during all these years he remained in touch with his home village, and kept his small-holding in cultivation. In 1913 he was again arrested and sentenced to exile in Eastern Siberia, but he escaped and remained illegally in St. Petersburg until the February revolution of 1917. He took active part in the October Revolution; in 1919 he was elected a member of the central committee of the Russian communist party, and in the same year became president of the central executive committee of the Soviet Government. A peasant himself, he was regarded as the peasants' representative in the Soviet Government. He was president of the Supreme Council of the U.S.S.R. from 1938 to 1946. He died on June 3, 1946.

KALINJAR, a town and hill fort of British India in the Banda district of the United Provinces. The fort stands on an isolated rock, the termination of the Vindhya range, at an elevation of 1,203 ft., overlooking the plains of Bundelkhand. Kalinjar is the most characteristic specimen of the hill-fortresses, originally hill-shrines, of central India. Its antiquity is proved by its mention in the *Mahābhārata*. It was besieged by Mahmud of Ghazni in 1023, and here the Afghan emperor Sher Shah met his death in 1545. Both the fort and the town, which stands at the foot of the hill, are of interest to the antiquary on account of their remains of temples, sculptures, inscriptions and caves.

KALIR (QALIR), ELEAZER, Hebrew liturgical poet, whose hymns (*piyyutim*) are among the festival prayers of the German synagogal rite. He is said by some authorities to have lived in the 6th, by others in the 10th century.

Some beautiful renderings of Kalir's poems may be found in the volumes of Davis & Adler's edition of the German Festival Prayers entitled *Service of the Synagogue*.

KALISCH, ISIDOR (1816–1886), Jewish divine, was born at Krotoschin in Prussia on Nov. 15, 1816, and was educated at Berlin, Breslau and Prague. In 1848 he came to London, but passed on in 1849 to America, where he ministered as rabbi in various cities. At Newark from 1875 he gave himself entirely to literary work, and exercised a strong influence as leader of the radical and reforming Jewish party.

Among his works are *Wegweisen für rationelle Forschungen in den biblischen Schriften* (1853).

KALISCH, MARCUS (or MAURICE) (1828–1885), Jewish scholar, was born in Pomerania in 1828, and died in England in 1885. He was one of the pioneers of the critical study of the Old Testament in England. At one time secretary to the Chief Rabbi, he became tutor in the Rothschild family in 1853 and enjoyed leisure to produce his commentaries and other works. The first instalment of his commentary on the Pentateuch was *Exodus* (1855); this was followed by *Genesis* (1858) and *Leviticus* in two parts (1867–1872). Kalisch wrote before the publication of Wellhausen's works, and anticipated him in some important points. Besides these works, Kalisch published in 1877–1878 two volumes of Bible studies (on *Balaam* and *Jonah*). He was also author of a once popular Hebrew grammar in two volumes (1862–1863). In 1880 he published *Path and Goal,* a brilliant discussion of human destiny. His commentaries are of permanent value, not only because of the author's originality, but also because of his erudition. No other works in English contain such full citations of earlier literature. (I. A.)

KALISPELL (Kăl-ĭs-pĕl′), a city of northwestern Montana, in the beautiful valley of the Flathead river, at an altitude of 2,959 ft., 10 mi. N.W. of Flathead lake, and 33 mi. from the western entrance to Glacier national park. It is on federal highways 2 and 93 and the Great Northern railway, and has a municipal airport. The population was 6,094 in 1930, and was 8,245 by the 1940 federal census. There are many lakes in the vicinity, and to the east is the beautiful Mission range. Kalispell is an important jobbing and trading centre and has elevators, flour mills, creameries, lumber and planing mills. The city was settled about 1892 and incorporated in 1893.

KALISZ, a town of Poland in the province of Lodz, situated 147 m. by rail W.S.W. of Warsaw, on the river Prosna. The population in 1938 was 68,300. It is one of the oldest and finest cities of Poland, is the seat of a Roman Catholic bishop, and possesses a castle and a large public park. The industrial establishments comprise a brewery, tanneries and factories for ribbons, cloth and sugar. It has been identified with the Galisia of Ptolemy, and its antiquity is indicated by the abundance of coins discovered on the site, as well as by the numerous burial mounds in the vicinity. It was the scene of a decisive Polish victory over the Swedes in 1706. Germany occupied it in World War II.

KÁLLAY, BENJAMIN VON (1839–1903), Austro-Hungarian statesman, was born at Budapest on Dec. 22, 1839, of an ancient Magyar family. At an early age Kállay manifested a deep interest in politics, and especially in the Eastern Question. He travelled in Russia, European Turkey and Asia Minor, gaining a thorough knowledge of Greek, Turkish and several Slavonic languages. He became as proficient in Serbian as in his native tongue. In 1867 he entered the Hungarian diet and in 1869 was appointed consul-general at Belgrade. Leaving Belgrade in 1875 he resumed his seat in the diet, and shortly afterwards founded the journal *Kélet Nepe* (Eastern Folk) in which he defended Andrássy's policy, which he had himself largely inspired. In 1878 he went to Philippopolis as Austro-Hungarian envoy extraordinary on the International Eastern Rumelian Commission. In 1879 he became second, and soon afterwards first, departmental chief at the foreign office in Vienna. In 1882 he was appointed Imperial minister of finance and administrator of Bosnia and Herzegovina, a post which he filled for 21 years. He governed on the whole with administrative ability and political skill. He did much for the economic development of the provinces. Politically he began by an attempt to create a special Bosnian nationality and language and to win the Muslim population for this idea. He was driven however, into gradually increasing opposition to the Orthodox Sects. Kállay died July 13, 1903. He was an author of talent and translated J. S. Mill and other writings into Magyar.

KALLIÓ, KYÖSTI (1873–1940), Finnish statesman, was originally a farmer and became a member of the Diet in 1904 and a senator in 1917. From 1919–22 he was minister of agriculture; from 1922–24 prime minister and minister of communications in 1925. On Dec. 31, 1925, Kallió formed a Coalition Government representing the Agrarian and the Finnish Coalition Party. It aimed to maintain the existing organization of society; a socialist government followed on Nov. 23, 1926. Kallió was again prime minister from 1929 to 1930, and from 1936 to Feb. 1937, when he was elected president of Finland. He remained in office despite failing health throughout the Russo-Finnish war in the winter of 1939–40 and directed the subsequent reconstruction. He resigned Nov. 28, 1940 and died December 19.

KALMAR, a seaport of Sweden on the Baltic coast, chief town of the district (*län*) of Kalmar, 250 m. S.S.W. of Stockholm by rail. Pop. (1943) 22,550. It lies opposite the island of Öland, mainly on two small islands, but partly on the mainland. Most of the houses are of wood, but the principal buildings are of limestone from Öland, including the 17th century cathedral. Kalmar, a town of great antiquity, was formerly strongly fortified. There remains the island-fortress of Kalmarnahus, dating partly from the 12th century, but mainly from the 16th and 17th, and containing the beautiful chamber of King Eric XIV. (d. 1577). The town gives name to the treaty (Kalmar Union) by which Sweden, Norway and Denmark were united into one kingdom in 1397. Kalmar has an artificial harbour, with a depth from 15 to 22 feet. There are match factories, the produce of which, with timber and oils, is exported. Shipbuilding is carried on.

KALMUCK, an Autonomous Soviet Socialist Republic, constituted 1935, extending from the right bank of the Volga to the Manich depression on the southwest, and the Dagestan A.S.S.R. on the southeast, and from the Ergeni hills on the west to the Caspian sea on the east. Area 28,649 sq.mi. Pop. (1939) 220,723 (urban 35,023, rural 185,700). It was created in 1920 from the former Kalmuck reservation of the province of Astrakhan. A tongue of the area thrusts west from long. 43° 5′ E. to about 41° 5′ E., to include the Manich lakes and the settlement of Bashanta. A tiny patch on the left bank of the Volga, in lat. 47° N. also belongs to the Kalmuck Area. Much of the Kalmuck steppe was formerly part of the Aral-Caspian sea, and is a plain 30–40 ft. below sea level, sloping gently southeast. Large areas of moving sands exist near Enotayevsk, where high dunes or *barkhans* have been formed. A narrow tract of land along the coast of the Caspian, "the hillocks of Baer," is covered with hillocks elongated from west to east, perpendicularly to the coast line, the spaces between them being filled with water or overgrown with thickets of reeds, various willows, elms and almond trees. An archipelago of little islands is thus formed close to the shore by these mounds, which are backed on the north and northwest by strings of partly desiccated salt lakes. The escarpments of the Ergeni Hills represent the former shore line of the Caspian. The hills are Tertiary, belonging to the Sarmatian division of the Miocene period and are covered with loess and black earth; the remainder of the region is salty, clayey or sandy soil, with islands of chestnut and light brown soils, favourable to agriculture if irrigated.

The water supply is poor. Streams from the eastern slopes of the Ergeni hills lose themselves in the sand, while those on the western slopes flow in spring only. Water on the steppe is obtainable from wells where sunk, but from no other source. About 50% of the steppe cannot be cultivated. Of the land available, 40% is pasture, 20% salt pasture, and ploughed land is less than 5%. This lies in the Ergeni region, where wheat, rye, barley, millet, oats, maize, sunflower seed, mustard and a few grapes are grown. Rainfall is 4—8 in. per annum; winter is severe, with average temperature much below freezing; summer temperatures average 85° F. Dust spouts and fierce winds are common, and the air is very dry and the sky cloudless. The chief occupation is nomad stock raising; sheep are the most numerous, draught cattle, goats, horses and camels are also bred, and there is some fishing. The administrative offices of Kalmuck are in the city of Elista. There are no large towns; agricultural villages exist in the west, but the Kalmucks are mainly tent-dwelling nomads. The Kalmucks, however, are in a semi-dying condition. Their region was an active centre during the civil war following the 1917 revolution, and their flocks and horses were requisitioned. Upon this followed the terrible Volga famine, when fugitives from other areas added to the starvation and distress consequent on the previous heavy depletion of their flocks. In 1909 only 3% of the nomads were without cattle; in 1924–25, 36% had none,

while only 10% had the minimum number necessary for productive stock raising.

The Soviet government encourages their settlement. Many of the Kalmucks have already settled down and work on the collective and state farms. On the seacoast fishing is developing. Large fish-canneries have been established on the Caspian coast.

The Kalmucks are a Mongol race, and are Buddhists. In the 16th century, under the name of *Oirat* (confederation), four tribes occupied a vast region in Central Asia, between the Altai and Tian-Shan, and the Desert of Gobi and Lake Balkhash. Internecine quarrels led to the migration of the western Kalmucks through the Kirghiz steppe into Russian territory. In 1636 they crossed the Emba river and settled in the Trans-Volga steppe, from which they raided the Russian colonies. By 1646, however, they had submitted to Russia, though retaining their own Khan and their own tribal methods of government. They furnished troops for the Russian army, which proved a valuable fighting asset in Peter the Great's campaign against the Persians. In the 18th century, the pressure of the increasing agricultural settlements limited the range of their nomad herders and attempts were made to convert them to Christianity. During the troubled sixties of the 18th century, discontent among the peasants and native tribes of the Volga came to a height, and the Kalmucks, alarmed by rumours of further oppression, and of sterner efforts to suppress their religion, determined to leave the Volga region and return to China. The emperor of China and the dalai lama of Thibet encouraged the conspirators, and the scheme was so successfully initiated that the first stages were taken before the Russians were aware of their decision. A vast horde of Kalmucks, men, women and children, taking their flocks and herds and *kibitkas* or felt tents with them, assembled on the east bank of the Volga on January 5th, 1771, after having destroyed all their villages in a general conflagration. By some accident, still unexplained, the Kalmucks of the western Volga were unable to join their brethren, and it is their descendants who still inhabit the western steppes. The hardships endured in this unprecedented exodus of a whole nation form one of the great tragedies of history. Thousands succumbed to the bitter frosts of the steppe and desert winter journey, and to the heat and drought of the southern deserts which they reached five months later. In addition, their sworn enemies, the Bashkirs and Kirghiz, pursued them throughout their journey, perpetually harrowing their rear, and they were attacked by the tribes of the countries they passed *en route;* for many years their path could be traced through the desert and steppe by the skeletons of the fallen. Barely a third of the 300,000 who started crossed the frontier into China, where the Chinese came to their help and drove off their Bashkir and Kirghiz persecutors. The survivors were settled in the fertile Ili basin of Chinese Turkistan, *See* MONGOLS.

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KALNÓKY, GUSTAV SIEGMUND, COUNT (1832–1898), Austro-Hungarian statesman, was born at Lettowitz, Moravia, on Dec. 29, 1832, of an old Transylvanian family. After spending some years in a hussar regiment, in 1854 he entered the diplomatic service without giving up his connection with the army, in which he reached the rank of general in 1879. He was secretary of embassy at London (1860–70), served next in Rome and Copenhagen, became ambassador at St. Petersburg (Leningrad) 1880 and Austro-Hungarian minister of foreign affairs, 1881–95. Essentially a diplomatist, Kalnóky confined his activities almost wholly to foreign affairs. His advice was generally conservative and somewhat unimaginative, but not unsuccessful, especially in the Balkans. He confirmed and renewed Austria's alliance with Germany, co-operated with Bismarck to secure Italy's adherence, followed by that of Rumania's (1883) and the secret treaty with King Milan of Serbia, whom he saved from disaster after Serbia's defeat by Bulgaria at Slivnitza (1885). At the same time he prevented Bulgaria from falling wholly under the influence of Russia, with whom he tried to improve Austria's relations, notably at the meeting of the three emperors at Skiernevice (Sept. 1884). A convinced Catholic, Kalnóky once caused some friction with Italy by stating in a speech to the delegations (1891) that the question of the pope was still unsettled, and his resignation in 1895 was due to Hungarian suspicion of his ultra-montane tendencies. He died at Prödlitz, Moravia, soon after (Feb. 13, 1898).

KALOCSA, a Hungarian town on the left bank of the Danube in the county of Pest-Pilis-Solt-Kis-Kun. Surrounded by marshy but fertile land, much of which is communal, its interests are mainly agricultural. Flax, hemp, cereals, fruit and vines are cultivated and supplemented by fishing and fowling. The town is one of the oldest in Hungary but has lost its former greatness, having suffered much from Turkish attacks in the 16th century and from fire in 1875. As the see of a Roman Catholic archbishop it still retains ecclesiastical importance and has in addition interesting educational institutions, *e.g.,* an observatory and training colleges for priests and teachers. The archbishopric, founded about 1135, is a development of a bishopric said to have been founded in the year 1000 by King Stephen the Saint. It suffered much during the XVI century from hordes of Ottomans who ravaged the country. Population 11,880.

KALONG, the name applied in the East Indies to fruit-eating bats of the genus *Pteropus.* (*See* FLYING FOX; CHIROPTERA.)

KALPI, a town of British India, in the Jalaun district of the United Provinces, on the right bank of the Jumna, 45 mi. S.W. of Cawnpore. Pop. (1941) 11,530. It was founded, according to tradition, by Vasudeva, at the end of the 4th century A.D. In 1196 it fell to Kutab-ud-din, the viceroy of Mohammed Ghori, and during the subsequent Mohammedan period it played a large part in the annals of this part of India. About the middle of the 18th century it passed into the hands of the Mahrattas. It was captured by the British in 1803, and since 1806 has remained in British possession. In May 1858 Sir Hugh Rose (Lord Strathnairn) defeated here a force of about 10,000 rebels under the rani of Jhansi. The old town, which is beside the river, has ruins of a fort, and several temples of interest, while in the neighbourhood are many ancient tombs. There is a lofty modern tower ornamented with representations of the battles of the *Ramayana.* The new town lies away from the river to the south-east, and is a centre of local trade (principally in grain, *ghi* and cotton).

KALUGA, formerly a province of the Russian S.F.S.R., surrounded by those of Moscow, Smolensk, Briansk, Orel and Tula. Area 9,918 sq.mi. Pop. 1,151,656. It is now included in the Tula region of the Russian S.F.S.R. Its surface is an undulating plain (800–900 ft.), deeply entrenched by rivers, the town of Kaluga lying at the junction of the valleys of the Ugra and the Oka. The province is mainly built up of Carboniferous deposits, with patches of soft Jurassic clays and limestones which formerly covered the whole region. Coal is mined along the railway running from Kaluga to the Oka River, but is smoky and not of very high calorific value; iron is mined in the south-west. Boulder clay covers the north, which is strewn with boulders brought from Finland and Olonets during the glacial period; in the centre are flint boulders, and to the south patches of loess. The soils are mainly of the grey forest type in the north, merging into black earth with a somewhat low humus content in the south. The climate is extreme, winter frost lasting for five months, and summer temperatures averaging 66° F; the rainfall, about 20 inches per annum, is adequate in view of temperature conditions. These soil and climate conditions are not ideal for agriculture, but are more favourable than in some provinces of Central Russia, and ploughed land here occupies about three times the area under meadow and grassland. Forest and shrub occupy 27.3% of the province, coniferous in the north and deciduous, with birch, ash and oak in the south.

The chief crops are rye (44·4%), oats (21·5%), and potatoes (8·2%). Grass, barley, buckwheat, flax and a little hemp are grown, and along the Oka river cucumbers, cabbages, onions and apples are cultivated. Flax, which demands much labour, is raised in greater quantity than in the Moscow province, where linen factories create a market for it, because there is more labour available, since there are fewer factories to draw off surplus hands. Stock raising includes sheep, working and milch cattle, horses and pigs; dairying is not much developed. In accordance with the better agricultural conditions of the loess area, peasant industries

are less important than in the provinces of poorer agricultural opportunities. They include the making of wooden articles (69%), leather (20%), cement, and chemicals in the Medynsk district. Fireclay, china-clay, chalk, grindstone, pure quartz sand, phosphorite and copper are extracted by peasant artels, and Medyn has a match factory. The province has a comparatively good railway net, and steam navigation is possible on 60% of its rivers.

Kaluga is the chief town of the province, situated on the left bank of the Oka, in 54° 35′ N., 36° 15′ E. Pop. (1939) 89,484. Its industries include saw-milling, smelting, brewing, sausage-manufacture, brick-making and the making of leather goods. It is a good trading centre, on a navigable river, and has railways, roads and telegraph lines radiating from it. The first historical mention of Kaluga occurs in 1389; its incorporation with the principality of Moscow took place in 1518. In 1607 it was held by the second false Demetrius and vainly besieged for four months by the forces of Shuisky. In 1619 Kaluga fell into the hands of the *hetman* or chief of the Zaporozhian Cossacks. Later two-thirds of its inhabitants were carried off by a plague; and in 1622 the whole place was laid waste by a conflagration. It recovered, however, in spite of several other conflagrations (especially in 1742 and 1754). On several occasions Kaluga was the residence of political prisoners; among others Shamyl, the Lesghian chief, spent his exile there (1859–1870).

KALYAN, a town of British India, in the Thana district of Bombay, situated where the two main lines of the Great Indian Peninsula railway diverge 33 m. N.E. of Bombay city. The population (31,356 in 1941) is increasing, owing to the proximity of the town to Bombay. The chief industries are rice husking and brick and tile making, and there are stone quarries in the neighbourhood. Kalyan is known to have been the capital of a kingdom and a centre of sea-borne commerce in the early centuries of the Christian era.

KĀMA or **KĀMADEVA,** in the Vedic Hindu mythology, "desire," the first seed of the mind. From it emanate the gods in the *Rig-Veda.* But in the *Atharva-Veda* Kāma is one of the titles of the Creator, who fulfils all desires. In post-Vedic writings he is the god of love.

See E. W. Hopkins, *Epic Mythology* (Strasbourg, 1915).

KAMAKURA, a coast village of Japan 12 mi. S. of Yokohama. Pop. (1940) 40,000. It was founded in the 7th century and was the established capital of the Minamoto shoguns. It is of great natural beauty and contains many important historical remains, including the famous Great Buddha or *Daibutsu.*

KĀMĀLA, a red powder formerly used in medicine as an anthelmintic and employed in India as a yellow dye. It is obtained from *Mallotus philippinensis,* Müll., a euphorbiaceous tree from 20 to 45ft. in height, distributed from southern Arabia in the west to north Australia and the Philippines in the east. In India kāmalā has several ancient Sanskrit names, one of which, kapila, signifies dusky or tawny red.

KAMCHATKA (kahm-chăt′ka), a province of the Far Eastern area, Russian S.F.S.R., including the peninsula of Kamchatka, and also that part of the mainland lying north of Cape Viligin (north of the town of Tumansk in 60° 40′ N., 156° 50′ E.), and east of a line going along the crest of the mountain range, and then across the ridge into the valley leading to Chaun Bay, west of the Pala river. The Arctic Ocean washes its northern shores from Chaun Bay eastwards, the Bering Strait, the Bering Sea and the Pacific Ocean its eastern shores, and the sea of Okhotsk its western shores.

Geography.—The peninsula of Kamchatka stretches south from the Koryak territory of the Anadir district for about 750 m. to the long, low, undulating Cape Lopatka. It varies in width from 80 to 300 m. (51° to 62° N. and 156° to 163° E.), and has an area of 104,260 sq.m. Its southern point is 7 m. from the northernmost point of the Kuril islands, belonging to Japan. The greater part of the peninsula is mountainous; the ranges have a general south-west and north-east trend. The tundra-covered plateau of Parapolski Dol separates them from the Stanovoi mountains, and they reappear to the north-east as the Polpol mountains of the Anadir region.

The two main ranges are the Central and the Eastern. The Central range (3,000 ft.), slopes sharply on the east to the upper Kamchatka river valley, but runs down to the sea on the west in long, low spurs. The Eastern or Miakovski range (4,000 to 4,800 ft.), a rugged mass containing many isolated volcanic peaks, is merged with the Central range around Lake Palanskoe north of the sources of the Tigil river in a confused mountain mass nearer to the west than the east coast, and from this point the Tigil Spur branches off from the Central range. North of the Lyesnaya river at the neck of the peninsula, the single range dies down, with the tundra covered plateau of the Parapolski to the north-west, and gentle slopes to the south-east. The Kamchatka river after flowing north for some distance between the Central and the Eastern chains turns eastward through a gap in the Eastern range. The Central and Eastern ranges towards the south approach one another, being separated by the Ganal tundra (1,200–1,300 ft.). South of this is a valley, with the Bistraya river flowing westward through it to join the Bolshaya river and south of this the peninsula is wild and rugged, with many volcanic peaks, and, as in the region farther north, a gentler slope westwards than eastwards.

The most striking feature of the peninsula is, however, the series of towering volcanoes which stretches on the east from Cape Lopatka to the neighbourhood of Syedanka, forming part of the Pacific ring of volcanic activity extending from Java and the Philippines, through Japan, the Kuril islands, Kamchatka and the Aleutian islands to North America. Forty volcanoes, 14 active and 26 extinct, have been located in Kamchatka, and more may be discovered when the peninsula has been completely surveyed. Signs of former volcanic activity are known to exist elsewhere; *e.g.,* the Lyesnaya district.

Volcanic activity is spasmodic and peaks believed to be extinct suddenly break out again; *e.g.,* the violent eruption of Koryatskaya (alt. 11,522 ft.) north of Petropavlovsk in 1895. Kluchevskaya (alt. 16,130 ft.) is the highest peak in Siberia and the highest active volcano in the old world. It is surrounded by several rows of terraces and lesser peaks and the circumference of its base measures about 200 mi. It is in a state of continuous activity, and notable eruptions occurred in 1729, 1737, 1841, 1853–54, 1896–97. In 1853 its lava outflow reached the Kamchatka river. Other volcanic peaks are Kronotskaya (alt. 10,808 ft.), Shiveluch (alt. 10,519 ft.), in the Yelovka district and Krestovskaya (alt. 9,392 ft.). In the north the mountains consist chiefly of Tertiary sandstones and interbedded volcanic rocks, thick Tertiary deposits, probably Miocene, overlie the middle portions of the west coast.

The southern parts of the peninsula are mainly granites, syenites, crystalline slates and recent volcanic deposits. Extensive layers of melaphyre and andesite, with conglomerates and volcanic tuffs, cover the middle portions. In 1899 glaciers were discovered on the Byelaya and Utkinskaya mountains (15,400 ft.).

Hot springs are found all over the peninsula, and 8 mi. above the village of Paratunka, on the Paratunka river, is the confluence of a deep river, formed by hot springs, which is navigable for canoes for 2 mi. It rises among hot lakes, one of which is 200 yd. long and 14 yd. wide, and is much resorted to by the natives for its medicinal qualities.

The Komandorski islands, Bering and Myedni, form part of the province and are long and mountainous (2,600 ft.).

Their main industry in the past was the hunting of the fur seal (*Otaria ursina*); the male seals arrive at the end of May or in early June, and the females in mid-June for breeding. The pups are black at birth, but get a fresh coat of grey fur in August. The promiscuous killing of fur seals in calf in the open sea greatly diminished their numbers and led to protracted disputes. In 1890, 55,435 reached the market, but in 1911 only 200. Hunting these animals in the open sea was forbidden by the Washington International Commission for 15 years and 1912–17 was observed as a close season in the islands themselves; the industry is slowly recovering. There are also reindeer and arctic foxes.

The islands have been inhabited for about a century by Aleuts. The chief settlement is Nikolskoe, on Bering island, where a wire-

less station is projected, and which has a steamer link in summer with Petropavlovsk. Karaginski island, opposite the Karaga river, also belongs to the province, from which it is separated by a channel 30 to 50 m. in breadth. Its mountains (2,000 ft.) form precipices off the north coast.

The Kamchatka River.—The chief river of the peninsula is the Kamchatka about 350 m. long, and its longitudinal valley, before it pierces the volcanic chain, is the least unfavourable region for agriculture. Carrots, potatoes and cabbages do well in the small vegetable gardens, and clover and flax crops ripen. But rye, sown in May, frequently fails to mature by August, and the crop is rarely successful, so that the country depends on imported grain. Dairy cattle and horses could be bred, but, though a few are kept for local needs, attempts to introduce a dairy industry for export have failed up to the present. The Kamchatka river rises in two streams, one in the Ganal tundra, and the other in a lake in the Central range; it discharges into the Kamchatka gulf over a low tundra, after receiving the overflow of Nerpiche lake. Where the broad river meets the sea there is a maelstrom and motor boats visiting the river during the short summer season frequently capsize, so that to effect a landing is a precarious undertaking. The Russian village of Ust-Kamchatsk is situated to the south of the river, while in the north are the Russo-Japanese fish canneries of Ust-Kamchatsk, which afford employment to 2,000 Japanese in the summer. About 10 m. south of the river are the Japanese "Nichiro" canneries, also employing 2,000 summer hands. Both canneries are idle in winter. A powerful wireless station on the north bank of the river communicates with the wireless station at Petropavlovsk.

For 20 m. or more from the mouth of the river, extends a swampy tundra, intersected by the countless arms of the river, with stunted willows and osier beds in places. The mouth freezes over towards the end of November, and thaws between April and the end of June; the upper course thaws in March and floods result. Of the numerous short streams running east and west the more important are:—the Tigil, 250 m., but navigable only in the tidal area, the Bolshaya, both on the west, and the Avacha, the Goligino, famous for its pearls, and the Oblukovino, which has gold in its upper reaches, on the east.

Climate.—Though much of the peninsula is situated in the same latitude as the British Isles, its climate is extremely severe. The short June to August summer is cooler than on the mainland of Siberia, particularly on the east, where the effect of the open ocean is emphasised by a cold current. Monsoonal rain is heavy at this season, and Bergman noted heavy snowdrifts lying in the south of the peninsula in the second week in June, 1920. Winter snowstorms are frequent and of such violence that travel in them is impossible. Coastal fogs are prevalent in summer. Winter temperatures are not so low as on the mainland. At Petropavlovsk the average January temperature is 13·8° F, July 58·3° F, while in the upper Kamchatka valley they are January 16° F, July 58°–64° F. The average annual precipitation is 40 in. or more and is excessive in view of the lack of evaporation. The rivers are frozen for 6 months or more.

Fauna and Flora.—Much of Kamchatka is tundra-covered; mosquitoes are a terrible plague in summer. In other places is the dense Alschovnik (*Alnus maximowiczi*) jungle coming quite close to the settlements, and notably to Petropavlovsk, often 7 ft. high in summer and difficult to penetrate even with an axe. The Kamchatkan bear makes tracks of which the natives avail themselves through this dense undergrowth, especially along the course of the Upper Kamchatka river. The slopes of the mountains are well wooded with alder, willow, birch, larch, poplar, Siberian fir and "cedar" and a species of mountain-ash. Crake, whortle and other berries are plentiful. Hunting and trapping in winter and fishing in summer are the main occupations of the natives, who rely mainly on fish for their diet and that of their dogs.

The principal kinds of salmon that visit the rivers are:—*Chavucha* (*S. orientalis*), weighing about 15–20 lb. and supplying good caviare, *Goltsi* (*S. collaris*), a kind of sea trout, *Keta* (*Onchorhynchus lagocephalus*), or dog salmon, commonest of all except in South Kamchatka, where the chavucha prevails, *Gorbusha* (*O. proteus*), the humpbacked or Alaskan pink salmon, *Krasnaya* (*O. lycoodon*), a red salmon which salts well, and *Kizhucha* (*O. sanguinolentus*). The keta weighs about 9 lb., and its skin gives the natives food, sails, clothes and boots, while its pale pink caviare is now much in demand. Herring and cod are numerous, but are not used by the natives except in Gizhiga and Penzhina bays, when salmon are scarce. Other fish, not much used by the natives, are *Mikisha* (*Salmo purpurateus*), *Korzhuka,* a kind of smelt, and *Uiki* (*S. socialis*). Crabs and lobsters are also found.

The two main fishing seasons are spring and mid-June. There are about 148 fishing stations in West Kamchatka and 61 in East Kamchatka. *Jukkola,* or sun-dried salmon, is the main winter food of many natives, especially in western Kamchatka; in eastern Kamchatka diet is more varied. The sledge dogs are fed entirely on *jukkola* through the winter. Canning under Japanese direction, with up-to-date machinery, has been successfully started; salmon caviare is prepared and over 2,000 tons per annum exported. A fish preserve called *balyk* is exported to Vladivostok and San Francisco. The chief markets for Kamchatka fish products are China and Japan, though tinned salmon finds a wider market,

Of fur-bearing animals the sable (*Mustela zibelliana*) is the most important for the Kamchatkan hunter. Other animals hunted are the fox, especially by the Koryaks (the blue fox is only found on Komandorski islands), the brown or Kamchatkan bear (*Ursus beringianus*), otters, marmots, hares, wolves, wolverines, chamois, the mountain horned sheep (*Ovis nivicola*), and the wild reindeer. Great precautions against forest fires are taken all over the peninsula in view of the dependence of the people upon hunting products. The Kamchadals remove the lemming's winter store of grain and roots and replace it by caviare and fish remains.

Bird life is abundant and varied and includes ptarmigan, capercailzie, swans, ducks, mallards, red-breasted merganser, pine grosbeak, nuthatches, woodpeckers, waxwings, coal-tits in the spruce forests, eagles, ravens, hawks, hawk owl, sea gulls and northern divers. In the tundra the snowy owl and gerfalcon are numerous, and carrion crows and magpies frequent the villages in winter.

Reindeer are bred in the north and the Koryaks rely on their reindeer herds for food, clothing and transport. Their birch bark reindeer sledges are held together by strips of undressed reindeer skin. The Lamuts keep reindeer, but also rely on hunting, and some Lamuts keep dogs for sledge purposes. Neither tribe milks the reindeer. Both these tribes are nomadic, the mosquitoes making the tundra unbearable for the reindeer in summer, so that they migrate north, often leaving the women and children behind.

The Population in 1926 was reckoned to be about 20 to 30 thousand, but the difficulties of estimating numbers of a nomad population in the climatic conditions of the peninsula are great.

The Koryak tribe extends from the Stanovoi mountains to the sea; and on the west side of Kamchatka as far south as 55° N. The Koryaks are closely related by race and language to the Chukchi, and are divided into the Reindeer Koryaks of Gizhiga and Petropavlovsk districts, and the Maritime Koryaks of the west; the former intermarry with the Chukchi, the latter with the Kamchadals. Jochelson describes the Koryaks as below average height, but square and muscular, with black hair, narrow eyes, bronze skin, broad cheekbones and with little facial hair. Their wood, ivory, whalebone and horn carvings are artistic and they make decorated basketwork and reindeer skin rugs. The reindeer Koryaks camp in tents and have four main annual migrations: (1) in October they remain in the river valleys under the protection of high banks among poplar and aspen groves (2) at the end of March, before the fawning, they descend to the open tundra (3) in July they climb the mountains to the sources of the rivers (4) in autumn, at the time of the fawn festival, they return from the ridges to the tundras and river valleys.

The Maritime Koryaks have underground or semi-underground dwellings. They use kayaks (one man boats) and in Northern Kamchatka, dugouts. In the intervals between famines and epidemics of syphilis, arctic hysteria, smallpox and measles, the population increases. But the absence of medical help, the smug-

gling of spirits and the use of fly-agaric as an intoxicant and their low standard of sanitation are great drawbacks to them.

They are, however, more prosperous than the Lamuts, a branch of the Tungus, who depend on the Koryaks for a supply of reindeer meat in time of famine. They appear to be dying out more rapidly than the Koryaks. The Kamchadals (*Itelmen; Konchalo*) are mainly half breeds between aborigines of a Mongolian type and Siberian emigrants or escaped convicts; their language, except near Penzhina bay, has been replaced by Russian and their numbers have been much diminished by drink and syphilis.

Of incoming races, the Russians, descendants of the Cossacks settled there from the Lena, before the Amur region was conquered, some colonists settled in later times; groups of religious exiles and escaped convicts form the larger proportion. There are also numerous Chinese and Koreans. The Japanese summer population for the fish canning numbers 4,000 to 5,000. Petropavlovsk (*q.v.*) is the chief town.

The development of the fishing industry has increased coastal communications; the season for steamer connections opens earlier and there are several sailings direct to Petropavlovsk, and others to various east and west Kamchatkan centres. It has also helped to raise the standard of living, and the east coast inhabitants especially have a better and more varied diet, since there are more vessels to bring grain. There are no railways and no roads. Dog sledges are the chief means of transport, but the dogs are wild and ill trained and tracks are difficult to find in the heavy winter snows. The installation of wireless and telegraphic communications is already spreading news among the natives and lessening their isolation.

The North.—The remainder of the province is little explored, and much of it lies within the Arctic circle. The Chukchi peninsula lies north of the line that would connect Chaun bay on the Arctic ocean with Kresta (Holy Cross) bay on the Anadir gulf. It is apparently mountainous, sloping more gradually to the north than to the south, but no reliance should be placed on maps of the inland district, as it has not all been topographically surveyed. Vilkitski's exploring expedition in the steamship "Tobol" in 1915 opened up fresh ground. Seals, walrus, lemmings and foxes are found and fishing is good in the rivers and coast lagoons.

The population consists of Chukchi and Eskimos, the latter having crossed from Alaska, and settled along Bering strait. The Chukchi belong to the aboriginal Palaeo-Siberian group. The number of Chukchi in the Chukchi peninsula was estimated at 2,000, but the Chukchi have spread beyond Chaun bay and through the Anadir region to Kamchatka, and their total number is probably 10,000 to 12,000. Their name means rich in reindeer, and they are mainly nomad reindeer breeders; some hunt the wild reindeer, when the latter cross from the Polpol mountains over the Anadir river to the north in June and return south in July. Wolves, bears and foxes are also trapped. The maritime Chukchi are mainly seal hunters, but also catch walrus and whale. They use walrus skin boats and harpoons or guns. Reindeer breeding is more profitable than fishing and the evidence seems to point to the development of the reindeer Chukchi at a later date from the original maritime Chukchi. The maritime Chukchi are gradually transferring themselves to reindeer breeding. In view of the importance of the reindeer, a veterinary station was established in the Chukchi peninsula near Cape Dezhnev in 1927.

The trading centres of the Chukchi peninsula are mainly in Bering strait; whalebone, walrus tusks, skins and fur boots are the main exports. Coal, graphite and silver exist, but the remoteness of the district and the severity of the climate prevent their exploitation. There is a wireless station near Cape Dezhnev (East cape).

The Anadir river, south of the Arctic circle, has a drainage area of about 330,000 sq.mi. It is frozen from the middle of October to June, and at Anadirsk (formerly Novo-Mariinsk) often to mid-July. It is navigable for 200 mi. up to Markovo during the summer and is rich in fish. The inhabitants of Markovo secure red salmon, in addition to whitefish, and stores of dried fish "onkolo" form their own and their dogs' winter food. In the Gulf of Anadir, pike, grayling, dorse and malma are fished and exported to Japan and Vladivostok, in addition to the supply for local needs. Gold mines were working at Bolshaya until 1907 and the gravels contained 240 grains of ore per ton. The region is rich in coniferous forests, and coal exists, but distance and climate prevent exploitation at present, though plans are being considered. There is no telegraph and only two steamers visit the Anadir per annum. There is a wireless station in 64° 34′ N. and 175° 35′ E.

The native tribes are Chukchi, Lamuts, Yukaghir and Chuvanzi. The Yukaghir and Chuvanzi are branches of a Palaeo-Siberian race, short, dark-haired, dark-eyed, yellow to brown in skin colour and have hairless faces; their eyes are not Mongolian in type. They are rapidly dying out, partly through drink and syphilis and partly through the limitation of their hunting of the wild reindeer by the increasing activities of the Chukchi. Markovo, at the centre of winter routes to Gizhiga, Kolima river, Chukchi peninsula and Anadirsk, is the chief settlement. There are a few horses, long-haired cows and pigs, but fishing is the chief occupation. There is a wireless station here, and at Anadirsk.

The country along the Pacific coast between the Polpol mountains and the Kerek villages to the south is altogether unknown and uninhabited. Dr. Bogoras crossed it in 1900. Mineral wealth reported from the Kamchatka province, in addition to that mentioned previously, includes lignite coal in Gizhiga and Penzhina bays and at Baron Korf gulf, wolfram near Klyuchevskaya, and iron, copper, iridium, palladium and osmium.

History.—In 1648 the Cossack Dezhnev, after whom East cape has been re-named Dezhnev, sailed round the Arctic coast and south to Anadir gulf, thus discovering Bering strait 80 years before Bering re-discovered it. Other Cossacks crossed from the Kolima river by land along the Anyui and over the watershed and joined him in the Anadir region. But quarrels ensued and Dezhnev remained a wanderer in the region until his disappearance about 1654.

In 1696 Vladimir Atlasov penetrated from the Anadir to Cape Lopatka, and established a fort at Verkhne-Kamchatka. His successors Kobelev and Zinovev further extended the Russian discoveries and a settlement was made at Nijne-Kamchatka. The natives burned the settlements and drove the Russians from the country in 1706, but Atlasov, who had been imprisoned, was released and returned to Kamchatka in 1707 and restored the Russian forts. The authorities at Yakutsk sent out expeditions in 1714 to find a shorter route to Kamchatka than that via Anadir and discovered the Aldan-Maya-Okhotsk route; this opened up quicker communication and ensured Russian rule in Kamchatka.

In 1720 a survey of the peninsula was undertaken; Bering's expedition visited it in 1725–30 and Krasheninnikov and Steller in 1733–45. From 1760 Kamchatka was governed by a naval officer from Okhotsk. In 1799 the Russian-American trading firm began to develop the district, and in 1803 it became a separate province.

Nijne-Kamchatka was the first administrative centre, Bolsheretsk succeeded it for a time, but in 1850 Petropavlovsk, with its fine harbour, became the centre of the Russian Pacific naval squadron.

In 1855 the French and English were defeated in an attack on the town, and in 1860 the squadron was transferred to Nikolaievsk and in 1872 to Vladivostok. Attempts at colonization, including the settlement of Cossacks from the Lena, were made during the period before the acquisition of the Amur region. They were not successful, and with the loss of the strategic importance of Kamchatka, the attempts were discontinued. Trading activities are reviving and the increased communications by sea will probably result in further development.

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KAME (a form of Scandinavian *comb,* hill), a more or less rounded hill or short ridge of sand and gravel which occurs associated with glacial deposits. Kames frequently occur in the outwash plain of a glacier and at the mouths of en-glacial streams and are formed by the deposition of the sediments carried by these streams. Kames are often situated directly behind a terminal moraine. They are common in the glaciated portions of the lower Scottish valleys. (*See* GLACIER.)

KAMENETS PODOLSKIY or **PODOLIAN KAMENETS,** a town in the Ukrainian S.S.R., in 48° 43′ N., 26° 35′ E., on a high, rocky bluff of the Smotrich, a left hand tributary of the Dniester. Pop. 35,035. It is on the Bessarabian frontier, opposite to the castle of Khotin. The town (Polish *Kamieniec*), shares in the industrial development of the Ukraine and is the terminus of a branch railway from the north. It has smelting works, makhorka tobacco factories and a brewing industry; there is a municipal electric plant. A Workers' Scientific institute has been established. Its history and the present variety of racial types reflect its border position. The Roman Catholic cathedral of St. Peter and St. Paul, built in 1361, was used as a mosque by the Turks (1672–99). The Greek cathedral of John the Baptist dates from the 16th century, but up to 1798 belonged to the Basilian monastery. Other buildings are the Orthodox Greek monastery of the Trinity, and the Catholic Armenian church (founded, 1398), possessing a 14th century missal and an image of the Virgin Mary that saw the Mongol invasion of 1239–42. Kamenets was laid waste by the Mongol leader Batu in 1240. In 1434 it was made the chief town of the province of Podolia. In the 15th and 16th centuries it suffered frequently from the invasions of Tatars, Moldavians and Turks; and in 1672 the hetman of the Cossacks, Doroshenko, assisted by Sultan Mohammed IV. of Turkey, made himself master of the place. Restored to Poland by the peace of Karlowitz (1699), it passed with Podolia to Russia in 1795. Here the Turks were defeated by the Poles in 1633, and here 20 years later peace was concluded between the same antagonists.

KAMENEV, LEO BORISOVICH (ROSENFELD), (1883–1936), Russian politician, born in 1883, son of an engineer, received a technical education, but in 1901 joined the Russian social-democratic party, and became a "professional revolutionary." While still a student in 1902 he was imprisoned for participapation in a political demonstration. From 1903 he was a member of the Bolshevik section of the R.S.D.P., devoting himself to organising, lecturing and writing on their behalf. In 1908 he was interdicted from living in St. Petersburg, and went to Paris. At the beginning of 1914 he was sent back to Russia by the Bolshevik party central committee, and as their representative in St. Petersburg directed all the party activities in Russia. He adhered to Lenin's revolutionary policy on the war question, and (1915) was arrested and sent to perpetual banishment in Siberia. He returned at the outbreak of the February 1917 revolution, and from March to October 1917 was a member of the praesidium of the Petrograd Soviet. In October he, with Zinoviev and others, was in opposition to Lenin on the question of the Bolshevik revolution, and also in his advocacy of a coalition government formed from all the socialist parties, and temporarily resigned his membership of the Bolshevik central committee. From 1918 he was president of the Moscow soviet, and in 1922 was elected vice-chairman of the soviet of people's commissars. On the death of Lenin in 1924 he was elected chairman of the council of labour and defence. On the development of the Trotskyist opposition in 1923 Kamenev was at first violently anti-Trotsky, but in 1926 he with Zinoviev and others went over to the opposition platform, being expelled from the communist party and losing his official positions in December 1927, for anti-party activities. Readmitted in 1928, and expelled in 1932, he was executed for alleged conspiracy Aug. 25, 1936.

KAMENZ, a town in the *Land* of Saxony, Germany, on the Black Elster, 21 mi. N.E. of Dresden, on a branch line of railway from Bischofswerda. Pop. (1939) 14,335. Built about 1200, it was known by the name Dreikretcham until the 16th century. In 1318 it passed to the mark of Brandenburg; in 1319 to Bohemia; and in 1635, after suffering much in the Hussite and Thirty Years' wars, it came into the possession of Saxony. In 1706 and 1842 it was almost entirely burned. The hospital is dedicated to the memory of Lessing, who was born here. The industries of Kamenz include wool-spinning, tanning and the manufacture of cloth, glass, crockery and stoneware.

KAMERLINGH ONNES, HEIKE: *see* ONNES, HEIKE KAMERLINGH.

KAMERUN: *see* CAMEROONS.

KAMES, HENRY HOME, LORD (1696–1782), Scottish lawyer and philosopher, was born at Kames, Berwickshire. Called to the bar in 1724, he employed his leisure in the compilation of *Remarkable Decisions in the Court of Session from 1716 to 1728* (1728). In 1752 he was appointed a judge in the court of session under the title of Lord Kames, and in 1763 he was made a lord of justiciary. He died at Edinburgh on Dec. 27, 1782.

In 1751 Lord Kames published *Essays on the Principles of Morality and Natural Religion,* in which he supported the doctrine of innate ideas, and conceded to man only apparent freedom of the will. The latter doctrine so alarmed certain clergymen of the Church of Scotland that it was withdrawn and man's delusive sense of freedom attributed not to a conviction implanted by God, but to the influence of the passions. His other works are *An Introduction to the Art of Thinking* (1761), *Elements of Criticism* (1762), *Sketches of the History of Man* (1774), and *The Gentleman Farmer,* a work on agriculture.

KAMIMURA, HIKONOJO, BARON (1849–1919), Japanese admiral, was born in Satsuma. He commanded the second squadron in the Russo-Japanese war and defeated the Russian Vladivostok squadron in August 1904. He was created baron in 1907.

KAMINISTIKWIA, a river of Ontario in Canada, rising in Lake Nipigon, flowing south and east and entering Lake Superior at Thunder Bay. The Kakabeka Falls on its course supply power to the twin cities of Fort William and Port Arthur and the deep water at its mouth makes these the great shipping ports for western wheat. *See* ONTARIO.

KAMLOOPS, chief town of the valley of the same name, British Columbia, Canada, situated at the junction of the north and south branches of the Thompson river. Pop. (1941) 5,959. Kamloops is the supply centre for a large mining, grazing and fruit-growing district, and is noted for its healthy climate. It is within the dry area of the southern interior of the province, having a mean annual rainfall of 11 inches. Its physical conditions have been compared with those of Bukhārā in central Asia, and in this connection it is notable that Karakul sheep have been introduced from that country. Kamloops is on the Canadian Pacific and Canadian Northern railways, is on the trans-Canada highway and has a civic airport. Among industries are brewing, cigar-making, brick-making, founding, and fruit-canning.

KAMMIN or **CAMMIN,** a town in the Prussian province of Pomerania, Germany, 2½ mi. from the Baltic, on the Kamminsche Bodden, a lake connected with the sea by the Dievenow. Pop. (1933) 5,852. Of Wendish origin, it obtained municipal privileges in 1274. From about 1200 till 1628 it was the seat of a bishopric, which at the latter date became a secular principality, being incorporated with Brandenburg in 1648. Machine and cement manufacture and brewing are carried on in the town, which has also some fishing and shipping. There is steamer communication with Stettin, about 40 mi. S.S.W.

KAMPEN, a town in the province of Overysel, Holland, on the Ysel, 4 mi. above its mouth, and a terminal railway station 8 mi. N.W. of Zwolle. It has steamboat communication with Zwolle, Deventer, Amsterdam and Enkhuizen. Pop. (1940) 20,612. The four turreted gateways furnish excellent examples of 16th and 17th

century architecture. The Bovenkerk ("upper church"), or church of St. Nicholas, begun in 1369, has double aisles, ambulatory and radiating chapels, and good carved woodwork. The Roman Catholic Buitenkerk ("outer church") is a 14th century building as is the town-hall, which was partly restored after a fire in 1543. The municipality derives revenues from the fertile delta-land, the Kampeneiland, which is always being built up at the mouth of the Ysel. There is a trade in hay and dairy produce.

KAMPTEE or **KAMTHI,** a town of British India in the Nagpur district of the Central Provinces on the Kanhan river, 10 mi. from Nagpur. It was founded in 1821, as a military cantonment in the neighbourhood of the then Mahratta capital of Nagpur, and became an important centre of trade, being the entrepôt for all produce coming from Seoni and Chhattisgarh. Since the extension of railways and the reduction of the cantonment most of the town's export trade has been diverted to Nagpur or transferred to the producing areas. The population has dwindled from 51,000 in 1881 to 22,249 in 1941, without cantonment.

KAMPTOZOA (*See* BRYOZOA, *Entoprocta*). An attempt has been made by C. J. Cori (W. Kükenthal's *Handbuch der Zoologie,* 1929) to establish a new phylum for the entoproctous Bryozoa, but there are numerous objections and this wide separation has not been generally accepted. (R. C. O.)

KAMRUP, a district of British India, in the Brahmaputra valley division of Assam. The headquarters are at Gauhati. Area, 3,840 sq.mi.; pop. (1941) 1,264,200. In the immediate neighbourhood of the Brahmaputra, where the land is low and exposed to annual inundation, reeds and canes flourish luxuriantly, and the only cultivation is that of rice. Away from the river banks the ground begins to rise in undulating knolls towards the mountains of Bhutan on the north, and towards the Khasi hills on the south. The hills south of the Brahmaputra in some parts reach the height of 800 ft. The Brahmaputra, which divides the district into two nearly equal portions, receives several tributaries. The chief of these are the Manas, Chaul Khoya and Barnadi on the north, and the Kulsi and Dibru on the south bank. Government reserved forests cover 300 sq.mi. The population is mostly rural, the only town with upwards of 15,000 inhabitants being Gauhati (29,598), near which the temples of Hajo and Kamākhya attract many pilgrims from all quarters. The staple crop of the district is rice.

KAMYSHIN, a town of the U.S.S.R., in the region of Stalingrad, on the right bank of the Volga, at its junction with the Kamyshin river. Population 23,000. Being the terminus of the railway to Tambov, Moscow and the Baltic ports, it is a port for the export of cereals and salt from the Volga, and it imports timber and wooden wares. It has an electric plant, a grain elevator and a radio station, and also timber and flour mills. It is famous for its water-melons. It was at first a settlement on the left bank of the river, much exposed to raids from the steppe, but in 1668 the inhabitants moved to the right bank.

KANAKA, a Polynesian word meaning "man," used by Polynesians to describe themselves, and by the French to describe all South Sea islanders, whether black or brown.

KANARA, the name of two adjoining districts, British India: North Kanara in the presidency of Bombay, South Kanara in that of Madras. Both are on the western coast.

North Kanara District forms part of the Southern division of Bombay. The administrative headquarters are at Karwar, which is also the chief seaport. Area 3,961 sq.mi.; pop. (1941) 441,157. Along the coast rice is the chief crop and coco-nut palms are grown. In the upland there are valuable gardens of areca palms, cardamoms and pepper. Teak is the chief product, sandalwood-carving, stone-quarrying and salt manufacture are carried on and manganese is worked. The range of the Western Ghats, running from north to south, divides the district into two parts, a lowland or coast strip (Payanghat), and an upland plateau (Balaghat). The coast-line is only broken by the Karwar headland in the north, and by the estuaries of four rivers and the mouths of many smaller streams, through which the salt water finds an entrance into numerous lagoons winding several miles inland. The breadth of the lowlands varies from 5 to 15 miles. From this narrow belt rise a few smooth, flat-topped hills; and at places it is crossed by lofty, rugged, densely wooded spurs, which, starting from the main range, maintain almost to the coast a height of not less than 1,000 ft. Among these hills lie well-tilled valleys of garden and rice land. The plateau of the Balaghat is irregular, varying from 1,500 to 2,000 ft. in height. In some parts the country rises into well-wooded knolls, in others it is studded by small, isolated, steep hills. Except on the banks of streams and in the more open glades, the whole is one broad waste of woodland and forest. Of the rivers flowing eastward from the watershed of the Sahyadri hills the only one of importance is the Wardha or Varada, a tributary of the Tungabhadra. Of those that flow westwards, the four principal ones, proceeding from north to south, are the Kali, Gungawali, Tadri and Sharavati. The last of these forms the famous Gersoppa falls. Extensive forests clothe the hills, and are conserved by the forest department.

South Kanara District has its headquarters at Mangalore. Area 4,045 sq.mi. Pop. (1941) 1,523,516. The district is intersected by rivers, none of which exceeds 100 miles in length, They all take their rise in the Western Ghats, and many are navigable during the fair weather for from 15 to 25 miles from the coast. Numerous groves of coco-nut palms extend along the coast, and green rice-fields are seen in every valley. The Western Ghats, rising to a height of 3,000 to 6,000 ft., fringe the eastern boundary. The forests are valuable and extensive. Pepper, ginger, spices, nuts, etc., are characteristic products. Coffee is the chief export, followed by areca nuts. The staple crop is rice. There are a number of tile factories and coffee works and saw and oil mills. Fishing and fish-curing are carried on. The Azhikal-Mangalore line of the Madras railway serves the district.

KANARESE, a language of the Dravidian family, spoken chiefly in Mysore, Hyderabad, and the adjoining districts of Madras and Bombay. It has an ancient literature, written in an alphabet closely resembling that employed for Telugu. The irregular forms in the alphabet are nearly the same as in Telugu, but it is closely related to Tamil.

BIBLIOGRAPHY.—Bishop Caldwell, *Comparative Grammar of the Dravidian Languages* (1875); *Linguistic Survey of India,* vol. iv. (1906) (with full bibliography).

KANARIS (or CANARIS), **CONSTANTINE** (1790–1877), Greek patriot, born on the little island of Psara, to the north-west of Chio. He first became prominent as the leader of the signal vengeance taken by the Greeks for the massacre at Chio in April 1822 by the Turkish Capitan Pasha. The commander sent to assail the Turkish fleet was the navarch Miaoulis, but it was Kanaris who executed the attack with the fireships on the flagship of the Capitan Pasha on June 18, 1822. Owing to the celebration of a religious festival by the Turks, Kanaris, at the head of a volunteer party, succeeded in attaching his fireships to the Turkish flagship, and escaping with his party. He repeated the feat at Tenedos in November of 1822, and his successful attacks at Samos and Mytilene in 1824 caused panic in the Turkish navy. His efforts to destroy the ships of Mehemet Ali at Alexandria in 1825 were defeated by contrary winds. When the Greeks tried to organize a regular navy he was appointed captain of the frigate "Hellas" (1826). In politics he was a follower of Capo d'Istria. He helped to upset the government of King Otho and to establish his successor, was prime minister in 1864–1865, came back from retirement to preside over the ministry formed during the crisis of the Russo-Turkish war, and died in office on Sept. 15, 1877. Kanaris is described as of small stature, simple in appearance, somewhat shy and melancholy. He is justly remembered as an honorable and clever leader.

KANAUJ, an ancient city of British India, in Farukhabad district, United Provinces, near the left bank of the Ganges. Pop. (1941) 21,994. Kanauj in early times formed the capital of a great Hindu kingdom, and its splendour culminated about the 6th century A.D. under Harsha. In 1019 it fell before Mahmud of Ghazni, and again in 1194 before Mohammed Ghori. The existing ruins occupy a semicircle fully 4 m. in diameter and have not yet been systematically excavated. Kanauj, which is traditionally said to be derived from *Kanyakubja* (=the crooked maiden), has given its name to an important division of Brahmans in north-

ern India. Kanauj is noted for the distilling of scents.

KANAVINO, a town of the U.S.S.R. in the Gorky province in 56° 20′ N., 43° 59′ E., on the navigable Oka river. It was given town status in 1925 and its population in 1926 was 64,877. It has sprung into importance with the development of peat fuel electric power. Its close proximity to Gorky provides a ready market for its products.

KANCHENJANGA, or **KINCHINJUNGA,** believed to be the third highest mountain in the world. It is a peak of the eastern Himalayas, situated on the boundary between Sikkim and Nepal, with an elevation of 28,146 ft. Kanchenjanga is best seen from the Indian hill-station of Darjeeling, where the view of this stupendous mountain, dominating all intervening ranges and rising from regions of tropical undergrowth to the altitude of eternal snows, is one of the grandest in the world.

KANDAHAR, the second city in Afghanistan, situated in 31° 37′ N. and 65° 43′ E., 3,400 ft. above sea, 370 mi. S.E. from Herat. The Indian railway system extends to New Chaman, within some 80 m. of Kandahar. Immediately round the city is a plain, highly cultivated and well populated to the south and west; but on the north-west barren, and bounded by a double line of hills, rising to about 1,000 ft. above its general level. To the north-west these hills form the watershed between the valleys of the Arghandab and the Tarnak, until they are lost in the mountain masses of the Hazarajat. On the south-west they lose themselves in the sandy desert of Registan. To the north-west stretches the road to Kabul. The best known road from Kandahar to India leads to the foot of the Kwaja Amran (Khojak) range, on the far side of which from Kandahar lies the valley of Peshin. The passage of the Kwaja Amran involves a rise and fall of some 2,300 ft., but the range has been tunnelled and a railway now connects the frontier post of New Chaman with Quetta. Several roads to India have been developed through Baluchistan, all dominated from Kandahar. Pop. (with suburbs) *c.* 60,000.

Kandahar is approximately square-built, with a wall of about 3¾ m. circuit, and from 25 to 30 ft. high, and 15 ft. broad. Outside the wall is a ditch 10 ft. deep. The city and its defences are entirely mud-built. The four main streets cross each other nearly at right angles, the central *chouk* being covered with a dome. These streets are wide and bordered with trees, and are flanked by shops with open fronts and verandas. There are no buildings of any great pretension in Kandahar, a few wealthy Hindus occupying the best houses. The tomb of Ahmad Shah is the only attempt at monumental architecture. This, with its rather handsome cupola, and the twelve minor tombs of Ahmad Shah's children grouped around, contains a few good specimens of fretwork and of inlaid inscriptions. The four streets of the city divide it into convenient quarters for the accommodation of its mixed population of Duranis, Ghilzais, Parsiwans and Kakars, numbering in all some 30,000 souls. Of these the greater proportion are the Parsiwans.

There are 1,600 shops and 182 mosques in the city. The mullahs of these mosques generally have considerable power. The walls are pierced by the four principal gates of "Kabul," "Shikarpur," "Herat" and the "Idgah," opposite the four main streets, with two minor gates, called the Top Khana and the Bardurani respectively, in the western half of the city. The Idgah gate passes through the citadel, a square-built enclosure with sides about 260 yd. long. The flank defences of the main wall are insufficient; indeed there is no pretence at scientific structure about any part of the defences; but the site of the city is well chosen for defence, and the water supply (drawn by canals from the Arghandab or derived from wells) is good.

About 4 mi. W. of the present city, stretched along the slopes of a rocky ridge, and extending into the plains at its foot, are the ruins of the old city of Kandahar, sacked and plundered by Nadir Shah in 1738. From the top of the ridge a small citadel overlooks the half-buried ruins. On the north-east face of the hill forty steps, cut out of solid limestone, lead upward to a small, dome-roofed recess, which contains some interesting Persian inscriptions cut in relief on the rock, recording particulars of the history of Kandahar, and defining the vast extent of the kingdom of the emperor Baber.

Kandahar is the most important trade centre in Afghanistan. No manufactures or industries are peculiar to Kandahar, but the long lines of bazaars display goods from England, Russia, Hindustan, Persia and Turkestan. The customs and town dues together amount to a sum equal to the land revenue of the Kandahar province, which is of considerable extent, stretching to Pul-i-Sangin, 10 m. south of Kalat-i-Ghilzai on the Kabul side, to the Helmund on the west, and to the Hazara country on the north. Although Farah has been governed from Kandahar since 1863, its revenues are not reckoned as a part of those of the province. The land revenue proper is assessed in grain, the salaries of government officials, pay of soldiers, etc., being disbursed by *barats* or orders for grain at rates fixed by government. The greater part of the English goods sold at Herat are imported by Karachi and Kandahar in view of the facility of the British railway to Chaman, and a very large trade in fresh fruit now comes to India and is specially catered for by special refrigerator trains. The imports consist chiefly of English goods, indigo, cloth, boots, leather, sugar, salt, iron and copper, from Hindustan, and of shawls, carpets, *barak* (native woollen cloth), postins (coats made of skins), shoes, silks, opium and carpets from Meshed, Herat and Turkestan. The exports are wool, cotton, madder, cummin seed, asafoetida, fruit, silk and horses.

Immediately south and west of Kandahar is well-irrigated and highly cultivated country, but the valley of the Arghandab is the most fertile in the district, with luxuriant orchards and vineyards. The pomegranates of Kandahar, with its *sirdar* melons and grapes, are famous. Vines are grown on artificial banks, probably for want of the necessary wood to trellis them—the grapes being largely exported in a semi-dried state. The art of irrigation is so well understood that the water supply is at times exhausted, no river water being allowed to run to waste. The plains about Kandahar are chiefly watered by canals drawn from the Arghandab near Baba-wali, and conducted through the same gap in the hills which admits the Herat road. The amount of irrigation and the number of water channels form a considerable impediment to the movements of troops. Irrigation by *karez* is also largely resorted to. The *karez* is a system of underground channelling which usually taps a sub-surface water supply at the foot of the rugged and apparently waterless hills. The water is carried over long distances by an underground channel or drain, constructed by sinking shafts at intervals along the required course and connecting the shafts by tunnelling. The general agricultural products of the country are wheat, barley, pulse, fruit, madder, asafoetida, lucerne, clover and tobacco.

History.—Kandahar has a stormy history. Sultan Mahmud of Ghazni took it in the 11th century from the Afghans who then held it. In the beginning of the 13th century it was taken by Jenghiz Khan, and in the 14th by Timur. In 1507 it was captured by the emperor Baber, but shortly afterwards it fell again into Afghan hands, to be retaken by Baber in 1521. Baber's son, Humayun, agreed to cede Kandahar to Persia, but failed to keep his word, and the Persians besieged the place unsuccessfully. Thus it remained in the possession of the Moguls till 1625, when it was taken by Shah Abbas. Aurangzeb tried to take it in 1649 with 5,000 men, but failed. Another attempt in 1652 was equally unsuccessful. It remained in Persian possession till 1708, when it was taken by the Afghans, but was besieged and retaken by Nadir Shah in 1737–8. Nadir Shah was assassinated in 1747, and immediately on hearing the news of his death Ahmad Shah (Abdali) seized Nadir Shah's treasure at Kandahar, and proclaimed himself king, with the consent, not only of the Afghans, but, strange to say, of the Hazaras and Baluchis as well. He at once changed the site of the city to its present position, and thus founded the Afghan kingdom, with modern Kandahar as its capital. Ahmed Shah died in 1773, and was succeeded by his son Timur, who died in 1793, and left the throne to his son Zaman Shah. This prince was deposed by his half-brother Mahmud, who was in his turn deposed by Shah Shuja, the full brother of Zaman Shah. After a short reign Shah Shuja was compelled to abdicate from his inability to repress the rising power of Fateh Khan, a Barakzai chief, and he took refuge first with Ranjit Singh, who then ruled the Punjab, and finally secured the protection of

British power. Afghanistan was now practically dismembered. Mahmud was reinstated by Fateh Khan, whom he appointed his vizier, and whose nephews, Dost Mahommed Khan and Kohn dil Khan, he placed respectively in the governments of Kabul and Kandahar. Fateh Khan was barbarously murdered by Kamran (Mahmud's son) near Ghazni in 1818; and in retaliation Mahmud himself was driven from power, and the Barakzai clan secured the sovereignty of Afghanistan. While Dost Mahommed held Kabul, Kandahar became temporarily a sort of independent chiefship under two or three of his brothers. In 1839 the cause of Shah Shuja was actively supported by the British. Kandahar was occupied, and Shah Shuja reinstated on the throne of his ancestors. Dost Mahommed was defeated near Kabul, and after surrender to the British force, was deported into Hindustan. The British army of occupation in southern Afghanistan continued to occupy Kandahar from 1839 till the autumn of 1842, when General Nott marched on Kabul to meet Pollock's advance from Jalalabad. The cantonments near the city, built by Nott's division, were repaired and again occupied by the British army in 1879, when Shere Ali was driven from power by the invasion of Afghanistan; nor were they finally evacuated till the spring of 1881.

KANDERSTEG (3,937 ft.), a town in the canton of Berne, Switzerland, in the centre of the Oberland. It is the highest station on the important railway line from Berne to Brig. It is a health resort and a centre for winter sports at the foot of the Blümlisalp. The place has a population of 3,554, German-speaking and, the majority, Protestant.

KANDY, a town near the centre of Ceylon, 75 mi. from Colombo by rail, formerly the capital of a kingdom of the same name, situated 1,602 ft. above sea level. Pop. (1931) 37,147. It was occupied by the Portuguese in the 16th century and by the Dutch in 1763; but the native kings maintained their independence. In 1814–15 the British got control. It lies round the margin of an artificial lake constructed by the last king of Kandy in 1806. There are Buddhist and Brahman temples, that of Dalada Malagawa being best known. The Royal Botanic Gardens are situated at Peradeniya, 3 mi. distant, and the district is renowned for its beauty. Kandy is an important centre of the tea plantation industry.

KANE, ELISHA KENT (1820–1857), American scientist and explorer, was born in Philadelphia on February 3, 1820. In 1842 he received the degree of M.D. from the University of Virginia, and in the following year entered the U.S. Navy as surgeon. In 1850 Kane was made surgeon and naturalist under Lieutenant de Haven, who commanded the ships "Advance" and "Rescue" in the first Grinnell expedition. After an absence of 16 months Kane returned in feeble health, but produced an account of the expedition in 1853, under the title of *The U.S. Grinnell Expedition in Search of Sir John Franklin.* He was determined not to give up the search for Franklin, but travelled the States, lecturing to obtain funds. The second expedition, financed by Henry Grinnell, set out in 1853 in the little brig "Advance," commanded by Kane. She passed up Smith sound at the head of Baffin bay and advanced into the enclosed sea which now bears the name of Kane basin, thus establishing the Polar route of many future Arctic expeditions. Here the expedition passed two winters, accomplishing much useful geographical as well as scientific work, including the attainment of what was to remain for 16 years the highest northern lat., 80° 35′ N. (June 1854). After enduring the greatest hardships, it was resolved to abandon the ship, Upernivik being reached on Aug. 5, 1855. From there a relief expedition brought the explorers home. Dr. Kane published *The Second Grinnell Expedition* in 1856. He died at Havana on Feb. 16, 1857.

See *Biography of E. K. Kane,* by William Elder (1858); *Life of E. K. Kane and other American Explorers,* by S. M. Smucker (1859); *The Love-Life of Dr. Kane, containing the Correspondence and a History of the Engagement and Secret Marriage between E. K. Kane and Margaret Fox* (1866); "Discoveries of Dr. Kane," in *Jour. of the Roy. Geog. Soc.,* vol. xxviii. (reprinted in *R.G.S. Arctic Papers* of 1875).

KANE, a borough of McKean county, Pa., U.S.A., in the north-western part of the State, in the midst of the Allegheny National Forest. It is on Federal highways 6 and 219, and is served by the Pennsylvania and (for freight) the Baltimore and Ohio railways. The population was 7,283 in 1920 (85% native white); 6,232 in 1930 and 6,133 in 1940 by federal census. It has an elevation of 2,200ft. above the sea, in a region producing oil, gas, lumber and silica. There are railroad repair shops in the borough, and its manufactures include glass, wood chemical products, screen doors, silk and silk garments, brush heads and handles, gun-cabinets, silver-ware, toys, brick and tile. Kane was settled in 1859 and incorporated as a borough in 1887. It was named after its founder, Gen. Thomas L. Kane (1822–83).

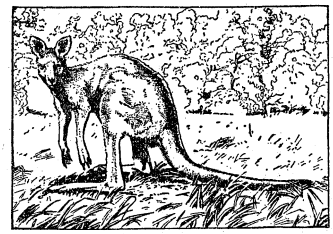
KANGAROO, an Australian pouched mammal (marsupial) with the hind limbs enlarged for hopping and a long thick tail. The enlarged median lower incisors point forward and are used in snipping grass and other vegetation, which is cut up by the sharp cross-crests of the molar teeth. The kangaroo (a native Australian word) was described in 1773 by Captain Cook, who saw some in what is now north Queensland.

The kangaroos belong to the order Marsupialia, one of whose characters is the possession of a pouch in which the young remain for a considerable time after birth. They belong in the suborder Diprotodontia or that group of marsupials having the two median lower incisor teeth enlarged and inclined forward. The nearest living relatives of the kangaroos are the phalangers, which inhabit the same region. The kangaroos differ, however, from the phalangers, which are slow-moving, arboreal forms, in that they are adapted to rapid progression on the ground by hopping on the enlarged hind limbs.

The largest living kangaroos have a head the size of that of a sheep and stand about 8ft. high. The largest extinct form had a head as large as that of a Shetland pony and stood 10ft. or more. *Hypsiprymnodon,* the tiny musk kangaroo, has a head smaller than that of a rabbit. The foot is greatly elongated and very narrow. The first toe or hallux is wanting (except in *Hypsiprymnodon*); the second and third toes are exceedingly slender and joined throughout their length by skin. These syndactylous digits have no function in locomotion but are of use in scratching and cleaning the fur. The straight, long fourth digit forms the principal part of the foot and is provided with a heavy claw. The fifth digit also takes part in locomotion; its metatarsal is closely appressed to that of the fourth digit but the toe diverges.

The tail is long, tapering and very heavy. It is used for balancing during rapid progression and when the animal moves slowly with its forefeet on the ground, the tail and forefoot together act as supports while the hind feet are moved forward. In standing and sitting with body erect and forefeet off the ground, the tail acts as a prop.

Except in *Hypsiprymnodon* the stomach is usually sacculated. The mouth opening is small and partly hidden by the lips. The dark brown eyes are of moderate size. The rounded ears are rather large and capable of being turned back and forth. The fur is soft and somewhat woolly in most large forms. In some rat kangaroos the pelage consists of stiff hairs and soft under fur.



BY COURTESY OF THE N.Y. ZOO. SOCIETY

THE GREAT GREY KANGAROO

In all kangaroos the pouch is well developed, opens forward and contains the four teats. As a rule there is but one young born at a time. In the colder parts of Australia the young are usually born at the beginning of the cold season. For an account of the birth of the young kangaroo, *see* MARSUPIALIA.

Among living mammals no other group affords a more striking example of the principle of adaptive radiation than do the *Macropodidae* or kangaroo family. The living kangaroos form an almost unbroken series illustrating the structural stages in the evolution of its members from the small forest-living type to the giant of the plains, to the hare-like forms of thickets and the secondarily arboreal forms of the tropical forests.

On the damp floor of the tropical rain forest of north Queensland lives the musk kangaroo (*Hypsiprymnodon moschatus*). This

form, the most primitive and generalized member of the *Macropodidae,* has a number of characters in common with the phalangers and stands near to the primitive diprotodonts from which both were derived. It also resembles the phalangers in its general arboreal heritage. From its peculiar characters *Hypsiprymnodon* is considered a distinct subfamily in which is included the somewhat larger Pleistocene *Propleopus.*

The bulky, heavy-jawed, short-headed and rather short-footed kangaroos of the Australian Pleistocene have been grouped together in the genus *Sthenurus.* All the short-footed kangaroos of the present time are forest-living animals; it is therefore assumed that the species of *Sthenurus* also lived largely in forests.

The New Guinean genus *Dorcopsis* is represented by many species, all living in tropical rain forest and none larger than a fox terrier. These are short-footed forms with rather short, partly naked tails, long heads and exceptionally long sectorial premolars. They are most closely allied to the tree-climbing kangaroos (*Dendrolagus*) of the rain forests of New Guinea and north-eastern Queensland. The tree kangaroos are about the same size as *Dorcopsis* but have shorter ears than any other kangaroos and longer, thinner tails and less disproportion between the fore and hind limbs, the toes of which are all provided with sharp, curved claws. The soles of the feet are broad and underlaid by a heavy pad of fat, modifications for climbing.

The pademelons (*Thylogale*) are stocky little animals resembling *Dorcopsis* except in their much shorter head. The sectorial teeth are also much smaller than in *Dorcopsis* and *Dendrolagus* and the third upper incisor tooth is grooved at the posterior edge. They range from New Britain, New Ireland, New Guinea and the Aru islands to eastern Australia, Tasmania and south-western Australia in places where there is suitable forest.

The next group (*Protemnodon*), sometimes referred to as the large wallabies, contains numerous species, most of which are primarily grass-land forms but others transitional in habitat, feeding at night in the open grass-lands and resting during the day in dense scrubs. They resemble the true kangaroos in their proportions and many of the species are commonly called kangaroo rather than wallaby, the name by which most of the smaller forms are known. *Protemnodon* is characterized by a long, tapering tail, moderately long feet, large ears, cheek and hip stripes, palatal vacuities and a groove on the external face of the third upper incisor that divides the tooth into anterior and posterior halves. Some fossil species are larger than any living kangaroos.

The typical kangaroos of the genus *Macropus* are all large forms with long, narrow hind feet. The best known are the great gray kangaroo of the grassy plains of the open Eucalyptus forests, the wallaroo, whose build is more robust and who prefers grass-covered, stony ridges, while the red kangaroo inhabits the interior of the continent where most of the terrain is level and the vegetation sparse. The rock wallabies (*Petrogale* and *Peradorcas*), which are as specialized in foot structure as the large kangaroos, usually spend their days among the crevices of rocks on ridges and beside gullies, as a rule near water-courses. They feed on grass, much of which they obtain at night. The nail-tailed wallabies (*Onychogale*) are among the most beautiful of the kangaroos. These small, graceful creatures of the semi-arid country are highly specialized in tooth and foot structure and have a peculiar, horny growth on the end of the tail resembling a nail. *Palorchestes,* the Pleistocene giant kangaroo, probably weighed as much as a small horse and to judge by its dentition also resembled a horse in feeding habits.

Branching off in another direction from a primitive type somewhat similar to *Hypsiprymnodon* there developed several genera of small size popularly known as rat-kangaroos. The most primitive of these is the potoroo (*Potorous*), about the size of *Hypsiprymnodon.* It has, however, lost its great toe or hallux. Apart from *Hypsiprymnodon* it is the only member of the family with the primitive plantar pads. The three more specialized genera (*Caloprymnus, Bettongia* and *Aepyprymnus*) inhabit more open country but still may be called thicket-living. The banded wallaby (*Lagostrophus*) and the hare wallaby (*Lagorchestes*) avail themselves of much the same sort of habitat as do the kangaroos. They hop about on the open plains and take refuge among bushes.

Thus the family Macropodidae may be divided into four subfamilies, the first and most generalized being the Hypsiprymnodontinae, including the genera *Hypsiprymnodon* and *Propleopus;* the second, the Potoroinae, including *Potorous, Bettongia, Caloprymnus* and *Aepyprymnus;* the third, by far the largest, the Macropodinae, including *Dorcopsis, Dendrolagus, Thylogale, Petrogale, Peradorcas, Protemnodon, Macropus* and *Onychogale;* the fourth, Sthenurinae, comprising *Sthenurus* and *Palorchestes.*

All the evidence indicates that the ancestors of the kangaroos were forest animals with an arboreal heritage. The members of the family now show various stages of specialization for terrestrial bipedal locomotion and for a vegetable diet. There is also a definite correlation between the foot and tooth structure of the animals and the type of habitat they occupy. The first two subfamilies feed principally on berries, roots, and fallen fruits in the forest or thickets and all have low-cusped molar teeth. The members of the third sub-family either browse on leaves of vines and saplings in the forest, in which case they have crested, short-crowned molars, or graze in the open grass-lands, in which case they have crested, long-crowned molar teeth; the crested molars being better adapted to grinding than the low-cusped type. The more specialized members of the Potorinae inhabit thickets in more open country and correlated with this is an elongation of the hind feet; thus these forms are exceedingly swift.

As recently revised the family of kangaroos comprises 21 genera, in which are included 158 species and subspecies; of these, five genera and 29 species are known only as Pleistocene fossils.

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KANGAROO RAT, a small North American jumping rodent (*Dipodomys*), belonging to the family Heteromyidae (*see* RODENTIA). Kangaroo rats resemble in appearance the gerbils and jerboas of the old world. They differ from these and other rodents, excepting pocket mice and pocket gophers, in having fur-lined cheek pouches, which they use to carry the seeds of grasses and other plants. Kangaroo rats are found on the great plains and southwestern deserts. About 50 species and subspecies are known, varying in length from 4 in. (tail 5¼ in.) to 6½ in. (tail 8½ in.), and from rich dark brown to pale buff in dorsal colour. The underside, a hip-stripe and the feet are white. The tail ends in a tuft; the sides of the tail are white, while the top and bottom are usually blackish. The name is sometimes used to denote small kangaroos, better called rat kangaroos and known technically as the Potoroinae (*see* MARSUPIALIA and KANGAROO). (J. E. HL.)

KANGAVAR, a small district of Iran on the high road about halfway between Hamadan and Kermanshah and since 1902 included in the latter province. It is fertile and comprises 35 villages of which the largest is Kangavar (pop. 5,000) which is also the headquarters of the district. On a hill above the main road are ruins of a Hellenistic columnar stone temple of Anahit, originally more than 660 ft. square and probably built in the 1st century.

See Coste, *Voyage en Perse* (1851–54) pp. 409, 410; Flandin, *Relation de Voyage* (1851–54) pp. 409, 410; Dieulafoy, *L'art antique de la Perse* (1885) pp. 7–14; Herzfeld, *Archaeological Hist. Iran,* p. 50: Le Strange, *Lands of the Eastern Caliphate,* pp. 188, 189; Reuther in Pope (ed.), *Survey of Persian Art,* vol. i, pp. 413, 414.

KANGRA, a town and district of British India, in the Punjab. The town, sometimes called Nagarkot, is situated 2,409 ft. above the sea. The Katoch rajas had a stronghold there, with a fort and rich temples. Mahmud of Ghazni took the fort in 1009 and from one of the temples carried off a vast treasure. In 1360 Kangra was again plundered by Feroz Shah. The temple of Devi was one of the oldest and wealthiest in northern India. It was destroyed, together with the fort and the town, by an earthquake on the 4th of April 1905 (when 1,339 lives were lost in this place alone, and about 20,000 elsewhere) but has since been restored. In 1855 the headquarters of the district were removed to the sanitarium of Dharmsala.

The district of Kangra besides some Rajput states, annexed

after the Sikh wars, includes Lahul, Spiti and Kulu, which are essentially Tibetan. Area, 9,979 sq.mi. Pop. (1941) 899,377. Tea cultivation was introduced into Kangra about 1850. The Palampur fair, established by government with a view to fostering commerce with central Asia, attracts a small concourse of Yarkandi merchants. Rice, tea, potatoes, spices, wool and honey are the chief exports.

KANG YU-WEI (1857–1927), Chinese scholar and writer. Born in Kwangtung he passed his literary examinations with high honours at an early age. He attained notoriety by his lectures and leaflets advocating reforms, and in 1898 was introduced to the Emperor Kwang Hsu by the Imperial Tutor Weng Tung-ho. The famous Reform Edicts of that year were due to his powerful influence over the young Emperor, and as a result, he incurred the displeasure of the Empress Dowager. Kang was proscribed and his execution ordered. He, however, succeeded in escaping, and for sixteen years resided abroad, travelling extensively in Europe and America. An ardent monarchist, he advocated the adoption of Confucianism as the State religion, but in neither aspiration made any headway. Upon his return to China, after the establishment of the Republic, he supported the unsuccessful attempt of General Chang Hsun to bring about the restoration of the Emperor Hsuan Tung, and accepted the office of Vice Minister of the Interior in the short-lived Cabinet formed in 1917. The administration lasted only a few weeks, and, after some fighting, the monarchist group were easily disarmed. Kang sought refuge in the Legation Quarter, and eventually retired to Shanghai. His fame as a scholar attained for him freedom from further molestation, and he spent the concluding ten years of his life in comparative affluence, lecturing throughout the country, and forming a collection of antique pottery and ancient Chinese porcelain.

KANISHKA, king of Kabul, Kashmir, and north-western India in the 2nd century A.D., was a Tatar of the Kushan tribe, one of the five into which the Yue-chi Tatars were divided. His dominions extended as far down into India as Madurā, and probably as far to the north-west as Bukhāra. Private inscriptions found in the Punjab and Sind, in the Yusufzai district and at Madurā, and referred by European scholars to his reign, are dated in the years five to twenty-eight of an unknown era. References by Chinese historians to the Yue-chi tribes before their incursion into India, together with conclusions drawn from the history of art and literature in his reign, render the date given the most probable. Kanishka's predecessors on the throne were pagans; but shortly after his accession he professed himself a Buddhist. He spent vast sums in the construction of Buddhist monuments; and under his auspices the fourth Buddhist council, the council of Jālandhara (Jullunder) was convened under the presidency of Vasumitra.

At this council three treatises, commentaries on the Canon, one on each of the three baskets into which it is divided, were composed. King Kanishka had these treatises when completed and revised by Aśvaghosha written out on copper plates, and enclosed the latter in stone boxes, which he placed in a memorial mound. For some centuries afterwards these works survived in India; but they exist now only in Chinese translations or adaptations. We are not told in what language they were written. It was probably Sanskrit (not Pali, the language of the Canon). This change in the medium of literary intercourse was partly the cause, partly the effect, of a complete revulsion in the intellectual life of India. The reign of Kanishka was certainly the turning-point in this remarkable change. It has been suggested that the wide extent of his domains facilitated the incursion into India of Western modes of thought; and thus led in the first place to the corruption and gradual decline of Buddhism, and secondly to the gradual rise of Hinduism.

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KANKAKEE (Kăng-kạ-kē′), city, Illinois, U.S.A., 56m. S. of Chicago, on the Kankakee river; county seat of Kankakee county. It is on Federal highway 45, and five State highways, and is served by the Illinois Central and the New York Central railways. The population was 16,753 in 1920 (86% native white) and was 22,241 by the 1940 federal census. The city has important manufactures, including furniture, agricultural implements, stoves, stokers, metal beds, hosiery, overalls, paints and varnishes, foundry products and office supplies. Kankakee is also a shipping point for corn, oats, wheat and livestock. There are large limestone quarries and coal deposits near by. The Kankakee State Hospital for the Insane (1879) and a state armoury are situated here. At Bourbonnais, 3 mi. N., one of the oldest French settlements in the middle west, is Olivet college (Church of the Nazarene, 1940). Kankakee was settled in 1832; platted in 1853, as the town of Bourbonnais; and chartered as the city of Kankakee in 1855.

KANKER, a feudatory state of India within the Central Provinces. Area 1,413 sq.mi.; pop. (1941) 149,471. It is a hilly tract lying between the Raipur district and the Bastar state, containing the head waters of the Mahanadi river. The residence of the rajah, who comes of an old Rajput family, though his subjects are mostly Gonds, is at Kanker (pop. 1941, 5,173), 40 mi. south of Dhamtari station on the branch line from Raipur. It is the only state in the C.P. which pays no tribute. The chief crops are rice and small millets, and the forests produce good timber.

KANNSTATT, a town of Germany in the *Land* of Württemberg, situated on both banks of the Neckar, 2½ mi. from Stuttgart, with which it has been incorporated since 1904. Population 21,276.

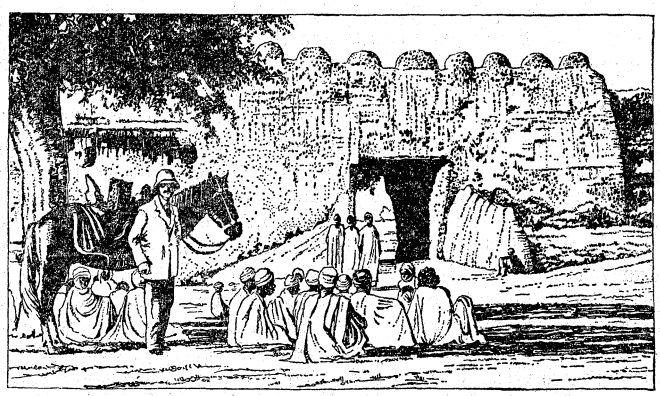
Kannstatt is mentioned early in the 8th century as the place where a great court was held by Charlemagne for the trial of the rebellious dukes of the Alamanni and the Bavarians. From the emperor Louis the Bavarian it received the same rights and privileges as were enjoyed by the town of Esslingen, and until the middle of the 14th century it was the capital of the county of Württemberg. The town is famous for its mineral springs, known since Roman times. Railway supplies, automobiles and machinery are manufactured; spinning and weaving are carried on; and there are chemical works. Near by are the palaces of Rosenstein and Wilhelma; the former contains one of the world's best libraries of books on World War I.

KANO, the name of a city and province of Northern Nigeria, British West Africa. Area of the province, 17,602 sq.m.; pop. (1931) 2,436,844. The people are Hausa, with a considerable admixture of Fula. Situated roughly midway between the Niger and Lake Chad, it is mainly undulating plains, park-like in aspect. Nearly all the province drains to Lake Chad, and through it flows from west to north-east the Hadejia (or Challowa) river. In the north, towards the border of the French Niger colony, semi-arid conditions prevail. The greater part of the province is highly cultivated "and the hedged or fenced roads and fields give an impression of civilization and ordered industry which is almost unparalleled in tropical Africa." (From the official report for 1926.) This description applies particularly to the Kano emirate, which forms the greater part of the province and has a population of 153 per square mile. The province also includes four small emirates, grouped as the Northern division. Katsina emirate and Katagum emirate were transferred respectively to the Zaria and Bauchi provinces in 1926.

Kano was one of the original seven Hausa States. Written annals carry the record of its kings back to about A.D. 900. Legendary history goes back much further. It was conquered by the Songhoi (Songhay) in the early part of the 16th century, and more than once appears to have made at least partial submission to Bornu. Mohammedanism was introduced not later than the 14th century; probably as early as the 12th century. The Hausa system of government and taxation was adopted by the Fula when, in the early part of the 19th century, they overran the Hausa States (*see* SOKOTO).

The capital is the city of KANO situated in 12° N. and 8° 20′ E., 500 m. N.E. of Lagos, in a direct line, and 705 m. by railway.

Pop. (1931) 89,162. It is built on an open plain, and is encompassed by a wall 11 m. in perimeter and pierced by 13 gates. The wall is from 30 to 50 ft. high and about 40 ft. thick at the base. Round the wall is a deep double ditch, a dwarf wall running along its centre. The gates are simply cow-hide, but are set in massive entrance towers. Only about a third of the area (7¼ sq.m.) enclosed by the walls is inhabited, the intention of the



BY COURTESY OF THE PHELPS-STOKES FUND

OUTSIDE ONE OF THE GATES OF KANO, SHOWING PART OF THE MUD WALL BUILT AROUND THE CITY SEVERAL HUNDRED YEARS AGO

founders of the city being to wall in ground sufficient to grow food for the inhabitants during a siege. Within the walls are two steep hills, one, Dala, on the north-west, about 120 ft. high, being the most ancient quarter of the town. To its east was a great pond, the Jakara, 1½ m. long, and by its north-east shore is the market of the Arab merchants. Here also was the slave market. The palace of the emir, in front of which is a large open space, consists of a number of buildings covering 33 ac. and surrounded by a wall 20 to 30 ft. high. The houses of Kano are built of clay with (generally) flat roofs impervious to fire. Traces of Moorish influence are evident and the horseshoe arch is common. The audience hall of the emir's palace—25 ft. square and 18 ft. high—is decorated with designs in black, white, green and yellow, the yellow designs (formed of micaceous sand) glistening like gold. The dome-shaped roof is supported by 20 arches.

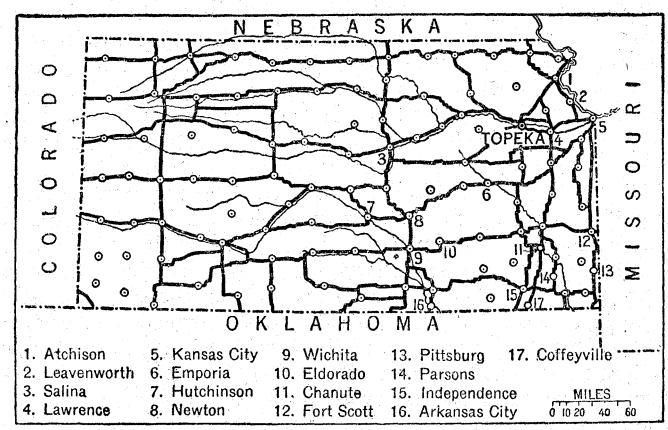
Kano is the greatest commercial city in the west-central Sudan and is pre-eminent as a manufacturing centre. The chief industry is the weaving and embroidery of cloth from native grown cotton. Leather goods of all kinds are also manufactured, and from Kano come most of the "morocco leather" goods on the European markets. Dyeing is another large trade, as is the preparation of indigo. In Kano itself is a great market for livestock; camels, horses, oxen, asses and goats being on sale. The trade with the south received a great impetus on the opening of the railway in 1911. About 1½ m. E. of Kano is Nassawara. Formerly the emir's suburban residence, it is now the headquarters of the British resident.

The city of Kano appears on the map of the Arab geographer, Idrisi, A.D. 1145, and the hill of Dala is mentioned in the earliest records as the original site of Kano. Barth, however, concluded that the present town does not date earlier than the second half of the 16th century, and that before the rise of the Fula power (*c.* 1800) scarcely any great Arab merchant ever visited Kano. The present town may be the successor of an older town occupying a position of similar pre-eminence. Kano submitted to the Fula without much resistance, and under them, in the first half of the 19th century, flourished greatly. It was visited by Hugh Clapperton, an English officer, in 1824, and in it Barth lived some time in 1851 and again in 1854. Barth's description of the wealth and importance of the city attracted great attention in Europe, and Kano was subsequently visited by several travellers, missionaries, and students of Hausa, but none was permitted to live permanently in the city. In the closing years of the century, Kano became the centre of resistance to British influence, and the emir, Alieu, was the most inveterate of Fula slave raiders. In Feb. 1903 the city was captured by a British force under Col. T. L. N. Morland, and a new emir, Abbas, a brother of Alieu, installed. Abbas was succeeded, in 1919, by Usuman dan Abdullahi, who was one of the great chiefs to receive the prince of Wales on his visit to Kano in 1925. In 1926 Usuman died, and the council of chiefs chose as emir Abdullahi Chiroma Baiyero, a son of the ex-emir Abbas.

See the works of Clapperton, Lander and Barth; F. D. Lugard in *Geog. Jnl.*, vol. xxii. (1904); Lady Lugard, *A Tropical Dependency* (1905); C. Larymore, *A Resident's Wife in Nigeria* (1908); O. Temple, *Notes on the Tribes, Provinces, Emirates and States of the Northern Provinces of Nigeria* (1922); H. F. Backwell (ed.), *The Occupation of Hausaland* (Lagos, 1927).

KANSAS, popularly known as the "Sunflower State," is the central commonwealth of the United States, lying between 37° and 40° N. and 94° 38′ and 102° 1′ 34″ W. It is bounded on the north by Nebraska, on the east by Missouri, on the south by Oklahoma, and on the west by Colorado. The State is nearly rectangular in shape, with a breadth of about 210 mi. from north to south and a length of about 410 mi. from east to west; the total area is 82,276 sq.mi., 163 of which are water surface.

Physical Features.—Three physiographic regions may be distinguished within the State—the first, a small portion of the Ozark uplift in the extreme south-east corner; the second, the Prairie plains, covering approximately the eastern third of the State; the third, the Great plains, covering the remaining area. Between the latter two there is only the most gradual transition. The entire State is indeed practically an undulating plain, gently sloping from west to east at an average of about 7ft. per mile. There is also an inclination in the eastern half from north to south, as indicated by the course of the rivers, most of which flow south-easterly (the Kansas, with its general easterly course, is the principal exception), the north-west corner being the highest portion of the State. The lowest point in the State, in its south-east part, in Montgomery county, is 700ft. above sea-level. The maximum elevation, 4,135ft., is attained on the western boundary in Greeley and Wallace counties The mean elevation for the State is nearly 2,000ft., but somewhat more than half the total area is below that elevation. The gently rolling prairie surface is diversified by an endless succession of broad plains, isolated hills and ridges and moderate valleys. In places there are terraced uplands, and in others the undulating plain is cut by erosion into low escarpments. The bluffs on the Missouri are in places 200ft. high, and the valley of the Cimarron, in the south-west, has deep cuts, almost gorges. The west central portion has considerable irregularities of contour, and the north-west is distinctively hilly. In the south-west, below the Arkansas river, is an area of sand-hills, and the Ozark plateau region, as above stated, extends into the south-



MAP OF MAIN ROADS OF KANSAS

east corner, though not there much elevated. The great central valley is traversed by the Kansas (or Kaw) river, which, inclusive of the Smoky Hill branch, extends the entire length of the State, with lateral valleys on the north. Another broad valley is formed in the south half of the State by the Arkansas river, with lateral valleys on the north and south. The south-east portion contains the Neosho and smaller valleys. In the extreme south-west is the valley of the Cimarron, and along the south boundary is a network of the south tributaries of the Arkansas. Numerous small affluents of the Missouri enrich and diversify the north-east quar-

ter. The streams of Kansas are usually fed by perennial springs, and, as a rule, the east and middle portions of the State are well watered. Most of the streams maintain a good flow of water in the driest seasons, and in case of heavy rains many of them "underflow" the adjacent bottom lands, saturating the permeable substratum of the country with the surplus water, which in time drains out and feeds the subsiding streams. This feature is particularly true of the Saline, Solomon and Smoky Hill rivers. The west part is more elevated and water is less abundant.

The soil of the upland prairies is generally a deep rich clay loam of a dark colour. The bottom lands near the streams are a black, sandy loam; and the intermediate lands, or "second bottoms," are a rich and deep black loam, containing little sand. These soils are very easily cultivated, free from stones, and exceedingly productive. There are exceptional spots on the upland prairies composed of stiff clay not as easily cultivated, but highly productive when properly managed and enriched. The southwest section is distinctively sandy.

Climate.—The climate of Kansas is exceptionally salubrious. Extremes of heat and cold occur, but as a rule the winters are dry and mild, while the summer heats are tempered by the perpetual prairie breezes, and the summer nights are usually cool and refreshing. The average annual temperature of the State for a period of years was 54·3°, the warmest mean being 56·0°, the coldest mean 52·6°. The absolute extremes were 116° and −34°. The dryness of the air tempers exceedingly to the senses the cold of winter and the heat of summer. The temperature over the State is much more uniform than is the precipitation, which diminishes somewhat regularly westward. In the above period of years the yearly means in the west part of the State varied from 11·93 to 29·21in. (av. 19·21), in the middle from 18·58 to 34·30in. (av. 26·68), in the east from 26·00 to 45·71in. (av. 34·78); the mean for the State ranging from 20·12 to 35·50 (av. 27·12). The precipitation in the west is not sufficient for confident agriculture in any series of years, since agriculture is practically dependent upon the mean fall; a fact that has been and is of profound importance in the history of the State. The line of 20in. fall (about the limit of certain agriculture) approximately bisects the State in dry years. The precipitation is very largely in the growing season. Freshets and droughts at times work havoc. Freshets signalized the years 1844, 1858 and 1903, and droughts 1860, 1874, 1894 and 1932–36. Tornadoes are also a not infrequent infliction. There are 150 to 175 "growing days" for crops between the frosts of spring and autumn, and eight in ten days are bright with sunshine—half of them without a cloud.

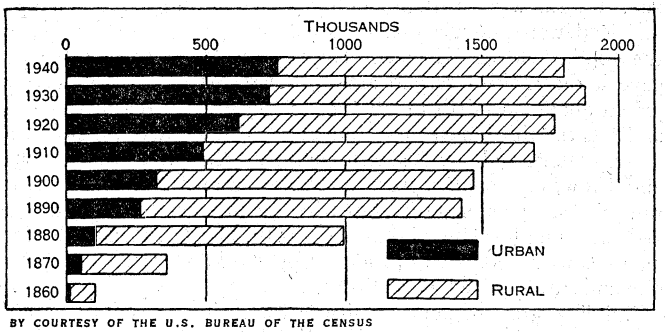
Government.—Kansas, in 1941, was still governed by her original constitution, which was adopted at Wyandotte in July 1859, was ratified by the people on Oct. 4, 1859, and came into effect on Jan. 29, 1861. More than 30 amendments have been added since that time. An amendment may be proposed by either branch of the legislature, and, if approved by two-thirds of the members elected to each house, as well as by a majority of the electors voting on it at a general election, it is adopted. A constitutional convention to revise or amend the constitution may be called in the same manner. Kansas was the first State to grant women municipal suffrage as well as the right to hold municipal offices (1887). Full suffrage was extended to women in 1912, and under pressure of the World War the suffrage was limited in 1918 to citizens of the United States. General elections to State, county and township offices are biennial, in even-numbered years, and take place on the first Tuesday after the first Monday in November. The State executive officers are a governor, lieutenant-governor, secretary of State, auditor, treasurer, attorney general, superintendent of public instruction, superintendent of insurance, and State printer, all elected for a term of two years. The governor appoints, with the approval of the senate, certain administrative boards; he may veto any bill from the legislature, and the bill cannot thereafter become a law unless approved by two-thirds of the members of each house.

The legislature, consisting of a senate and a house of representatives, meets in regular session at Topeka, the capital, on the second Tuesday of January in odd-numbered years. The membership of the senate is limited to 40, and that of the house of representatives to 125. Senators are elected for four years, and representatives for two years. The judicial power is vested in one supreme court, 39 district courts, one probate court and a juvenile court for each county and two or more justices of the peace for each township. All justices are elected: those of the supreme court, seven in number, for six years, two or three of them every two years; those of the district courts for four years; and those of the probate courts and the justices of the peace for two years. An act of 1913 provides for the nomination and election of judges by separate ballots without party designation.

The more important affairs of each county are managed by a board of three commissioners, who are elected by districts for four years, but each county elects also a clerk, a treasurer, a probate judge, a register of deeds, a sheriff, a superintendent of public instruction, an assessor, a coroner, an attorney, a clerk of the district court and a surveyor, for terms of two years. A county auditor is appointed by the district court for each county having a population in excess of 45,000. The township officers, all elected for two years, are a trustee, a clerk, a treasurer, two or more justices of the peace, two constables and one road overseer for each road district. Cities are divided into three classes according to size, and the government is different for each class. Those having a population of more than 15,000 constitute the first class; those having a population of more than 2,000 but not more than 15,000 constitute the second class; and those having a population not exceeding 2,000 constitute the third class. Municipal elections are far removed from those of the State, being held in odd-numbered years in April. A great number of municipalities have abandoned the old city-council form of government. An act passed in 1907 and amended in 1909 and 1913 authorized the adoption of a commission form of government in cities of the first and second class. Until 1917 54 cities reorganized under this law. In 1917 the legislature authorized the city-manager plan. All cities that have reorganized since then have adopted this plan. In 1908 a direct primary law was passed, applicable to all nominations except for presidential electors, school district officers, and officers in cities of fewer than 5,000 inhabitants; like public elections, the primaries are made a public charge; nomination is by petition, signed by a certain percentage of the party vote. Since 1910 the administration of the State has become centralized to a high degree. The first step was taken in 1913 in reference to the various educational institutions. In 1916, during the administration of Governor Capper, all of the State educational, charitable and penal institutions were brought under a single board called the board of administration, and in 1925 all the higher educational institutions were put under the control of a single board called a board of regents, consisting of nine members appointed by the governor for terms of four years and electing their own chairman. A provision that part of the board retire annually is intended to give it permanence and remove it from political control. An attempt, made by Governor Capper in 1917 and renewed by Governor Allen in 1921, to consolidate on a similar plan the various bureaus that composed the state board of agriculture, did not succeed. In 1911 the state board of railroad commissioners was superseded by a public utilities commission, which was abolished when the state corporation was created in 1933. The legislature in 1920 created a three-member court of industrial relations with broad powers for regulation of hours, wages and working conditions. The right of collective bargaining was recognized, but strikes were prohibited. The courts annulled many sections of the law and the legislature subsequently repealed it in its entirety. A commission of labour and industry administers all labour laws. In 1933 many boards and commissions were consolidated for the sake of efficiency and economy. In 1939 the state tax commission, state vehicle department and various other supervisory and collection agencies were consolidated into the state commission of revenue and taxation. Supervision of the state charitable institutions was transferred to the state board of social welfare. The state board of administration was relieved of all duties except those in connection with penal institutions. The state corporation commission regulates and supervises the

petroleum and natural gas industries, and has regulatory powers over all corporations doing business in the state, including the public utilities. The consolidation of departments and bureaus during the depression years materially reduced administrative expenses. Progress was made in codification of laws. The corporation code was adopted in 1937 and the probate code in 1939. Taxation and school codes were considered by the 1941 legislature but were not enacted. In 1933 a legislative council was created to examine existing laws and recommend amendments thereto. This council serves as a permanent committee of the legislature and maintains a research department. A merit system for selection of state employees was established in 1941.

Population.—The population of Kansas in 1860 was 107,206; in 1880, 996,096; in 1910, 1,690,949; and in 1940, 1,801,028. This last figure represents a decrease of 4·3% from the population in 1930. The population per square mile was 21·9, as compared with 44·2 for the United States as a whole. Of the 1940 population, 753,941, or 41·9%, lived in urban places, that is, in cities of 2,500 or more. The number of occupied dwelling units returned in the housing census of 1940 was 511,414, which is approximately the same as the number of families. The average population per family (occupied dwelling unit) declined from 3·9 in 1930 to 3·5 in 1940. The white population of Kansas formed 96·3% of the total in 1940, as well as in 1930, practically all the nonwhite population being Negro. The number of males per 100 females in the entire population of the state was 102·5, though there was a marked excess of females in the urban population, the sex ratio being 93·4 for the urban and 109·6 for the rural population. The population of the state and of its principal cities is summarized for recent censuses in the following table:



BY COURTESY OF THE U.S. BUREAU OF THE CENSUS

URBAN AND RURAL POPULATION OF KANSAS, 1860–1940

Area	Population			Percent of increase	
	1940	1930	1920	1930–40	1920–30
The State	1,801,028	1,880,999	1,769,257	−4·3	6·3
Urban	753,941	729,834	617,964	3·3	18·4
Rural	1,047,087	1,151,165	1,151,293	−9·0	−0·1
Percent urban	41·9	38·8	34·9	..	..
Principal cities:					
Kansas City	121,458	121,857	101,177	−0·3	20·4
Wichita	114,966	111,110	72,217	3·5	53·9
Topeka	67,833	64,120	50,022	5·8	28·2

Finances.—The state derives revenue from a general property tax, income tax, general sales tax and fees collected for special services. Assessed property valuation declined from $3,666,275,513 in 1932 to $2,791,045,299 in 1940. Sales tax revenue amounting to $10,000,000 annually is distributed to the counties for relief and school purposes. Other important sources of revenue, segregated for highway construction and maintenance, were motor vehicle licence fees, motor carrier mileage tax, and a gasoline tax of 3 cents per gallon. Revenue receipts, including $54,152,099 federal aid, were $163,664,983 in 1940. The total gross debt of the state and its subsidiaries, less sinking fund assets, amounted to $115,876,417. A state budget system was established in 1917. A proposal to establish a department of finance was defeated in the 1941 legislature. The state's only bonded debt was $14,800,000 for soldiers' bonus.

Education.—Kansas ranks very high among the states in its small percentage of illiteracy (inability to write). In 1939 only 1·2% of persons at least ten years of age were illiterate; and the percentages of illiteracy for native whites, foreign whites and Negroes were respectively 0·5%, 5·9% and 5·9%. The public school system has as its head a superintendent of public instruction; the schools of each county are under a county superintendent; and each district has a board of directors known as a school board. In rural districts the school board consists of three members; in cities it has six members.

The total population in 1938 between the ages of five and 21 years, inclusive, was 520,740. Of this number, 417,100, or 80%, were enrolled in the public schools. For the same year there were 32,312 pupils enrolled in private and parochial schools. The distribution of the public school enrolment was 315,928 in the kindergarten and elementary grades and 101,172 in secondary schools. Of all state and local expenses, 35% go for schools. The state government collected $47,997,272 in 1940, distributing $10,291,238 for educational purposes, of which $3,885,228 was for aid to rural and high school districts. Local school districts budgeted $27,120,339 for support of schools.

Of higher educational institutions, the state supports the University of Kansas at Lawrence (1866); an agricultural college at Manhattan (1863, aided by the U.S. government), to which are attached agricultural experiment stations at Hays, Garden City, Colby and Tribune; State Teachers' colleges at Emporia (1875), Hays (1902), and Pittsburg (1903); Western university, for Negroes, at Kansas City; and the Kansas Vocational school at Topeka. In 1899 the state university established a school of medicine in Kansas City.

In addition to the state schools, various flourishing private or denominational institutions are maintained. Those institutions recognized by the U.S. office of education as universities or colleges, in 1941, were: Kansas Wesleyan university at Salina; Baker university at Baldwin City; Washburn Municipal university at Topeka; Southwestern college at Winfield; College of Emporia at Emporia; Bethany college at Lindsborg; St. Mary college at Leavenworth; Ottawa university at Ottawa; Sterling college at Sterling; St. Benedict's college at Atchison; McPherson college at McPherson; Bethel college at Newton; Friends university at Wichita; and the Municipal University of Wichita at Wichita. There are also ten junior colleges, chiefly operated as parts of public school systems, and a number of small business and professional schools. Haskell institute (1884), near Lawrence, is maintained by the United States government as a school for Indians, which is very successful.

Charities and Houses of Correction.—State charitable institutions are supervised by the state board of social welfare. Hospitals for the insane are maintained at Topeka, Larned and Osawatomie, and a hospital for epileptics at Parsons. Other charitable institutions are the school for feeble-minded youths at Winfield; State tubercular sanatorium at Norton; State orphans' home at Atchison; State soldiers' home at Ft. Dodge; Mother Bickerdyke home at Ellsworth; industrial school for girls at Beloit and a similar school for boys at Topeka. The school for the blind at Kansas City, and the school for the deaf at Olathe were placed under the state board of regents in 1939. The State penitentiary at Lansing, and reformatory at Hutchinson are governed by the state board of administration, which also is the state parole board. Since the advent of federal and state relief agencies many counties have abolished their poor farms. The state contributes to many institutions on a private basis.

Industry, Trade and Transportation.—Kansas is preeminently rural, and agriculture is one of the chief industries. The U.S. census of agriculture in 1940 showed that 48,173,635 ac., or 91·7% of the total area, were in farms, and that 17,816,498 ac. were crop land. The total farm acreage was 46,975,647 ac. in 1930, but the number of farms decreased from 166,042 in 1930 to 156,327 in 1940. Of the total number of farms in 1940, 85,475 were operated by owners and 70,222 by tenants. The value of all farm property had decreased from $2,281,101,631 in 1930 to $1,421,387,464 in 1940, when the average value per farm was $9,092. The total farm population decreased from 704,601 in 1930 to 604,078 in 1940. The total value of all crops, exclusive of livestock, was $441,522,240 in 1930. Due to changed

economic conditions this decreased to $338,802,934 in 1940. Winter wheat was by far the most important farm crop. In 1940 a wheat acreage of 8,832,000 produced 123,648,000 bu. valued at $77,878,000. Spring wheat has been discarded as a farm crop in favour of barley, which is drought resistant. The sorghums for grain and forage displaced Indian corn in all but the eastern counties during the drought period of 1934 to 1936. In 1934 the total yield of corn was but 892,355 bu., but in 1940, 41,028,860 bu. were produced from 2,647,000 ac. The cereal third in importance is oats, 12,643,000 bu. having been produced in 1940. Development of power-farming as a substitute for horses and mules curtailed the market for oats and hay. These crops were no longer of great importance compared to former years. In 1940 the oats crop totalled 43,596,000 bu. The hay crop was 2,202,000 tons. The drought years stimulated interest in water conservation and irrigation. From 1934 to 1940 about 5,000 farm ponds were constructed. The 1941 legislature enacted a law authorizing the formation of reclamation districts to build reservoirs in stream valleys where irrigation is feasible. Vast areas of land broken out for wheat were replanted to grass. Contour and strip farming were widely practised to prevent erosion by water and wind. Irrigation from streams and wells enabled farmers to produce sorghums and other feed crops when rainfall was subnormal.

In 1939 the U.S. census of agriculture reported 5,370,096 ac. abandoned as failure. In the same year 4,846,054 ac. were idle or fallow.

Production of livestock and dairy products had become important on farms in 1940 following repeated crop failures. Livestock produced for meat and other non-dairy uses was valued at $110,500,000 in 1940. Dairy products added $40,905,000 to farm income. Poultry and eggs totalled $28,036,000. Failure of the corn crop for a number of years greatly reduced the number of hogs produced. Improvement in markets due to better economic conditions in 1940 increased the number of hogs to 1,519,000. Dairying was increasing in importance under stimulation of better buying power in the cities. Condensaries and cheese making plants in the eastern third of the state provided outlets for milk. The western ranges, where insufficient rainfall makes impossible certain and profitable cultivation of cereals other than wheat, were being planted to grass. Beef cattle and sheep were grazed on the wheat fields during winter and early spring, then removed to pastures in summer.

Distance from markets prevented dairying, other than for local consumption, in most of the western counties.

Fruits grow well in Kansas where rainfall is sufficient; but with the exception of apples none has more than local commercial value.

Potatoes, flax, alfalfa, soybeans, broomcorn and garden vegetables are important commercial crops.

There should be taken into consideration, when comparing the statistics of the 1940 census of agriculture with those of previous censuses, the influence of the severe drought of 1934 as well as the general economic conditions prevailing throughout the country. The number of acres listed as "crop failures" on account of the destruction of crops by wind, hail, drought, floods, insects, and so forth amounted to 7,435,680 in 1934 as compared with 5,385,000 in 1941. Soil conservation practices and better farming methods increased production in the semiarid years of 1935, 1936, 1937 and 1938. A majority of the farmers participated in the Agricultural Adjustment administration programs, though most of them were not enthusiastic. By 1939, when rainfall again approached normal, compliance was mainly in the wheat-producing western counties where government loans enabled owners to save their land from foreclosures. Row crops became more popular and approximately 3,200,000 ac. were seeded to native grasses. To prevent a recurrence of wind erosion, trees were planted in shelter belts across most western counties. By 1941 moisture had returned to normal, and pastures had been restored. The number of stock cattle had increased to 2,155,000, hogs to 1,550,000 and sheep to 690,000.

In mineral production Kansas ranked 8th among the states of the union in 1940. The chief products in the order of their values were: petroleum, zinc, coal, cement and natural gas. Petroleum was discovered about 1865 in Miami and Bourbon counties, and about 1892 in Neodesha, Wilson county. There was only slight commercial exploitation before 1900. In 1914 the production was only 3,000,000 barrels, but by 1918 it had jumped to 45,500,000 barrels. A decline then set in which was not checked until new pools were discovered in Cowley and Russell counties in 1924. Production rose from 28,836,000 bbl. in 1924 to 64,124,244 bbl. in 1940. Additional pools discovered in central and western Kansas made that the chief producing area. The old fields in the southeast are now classed as shallow wells, producing insignificant amounts of oil. The conservation division of the state corporation commission estimated the potential production from 20,000 wells at approximately 5,000,000 bbl. a day. Under proration regulations the average allowable in 1941 was 250,000 bbl. per day. Kansas was fourth among the states in oil production. Zinc and lead were produced in Cherokee county, an overlapping of the Joplin field of Missouri. The state's output of zinc in 1940 gave it the rank of second among the states. Coal, which comprised about one-sixth of all the mining enterprises in the state and was the third most important mineral industry, was produced in six eastern and southeastern counties—the mines of Cherokee and Crawford counties were most important. Kansas, in 1940, ranked fourth among the states in the production of salt. The beds are found in Hutchinson, Ellsworth, Harper, Rice and Kingman counties. Some was produced by the kiln process, while the remainder was mined as rock salt.

Building stone of good quality is found in the central part of the state, and the supply of material for cement seems inexhaustible.

The chief products and their quantities for 1934 and 1938 are given in the following table:

Product	Quantity, 1934	Quantity, 1938
Petroleum	46,555,000 bbls.	60,064,000 bbls.
Zinc	38,261 Short tons	73,024 short tons
Coal	2,217,622 " " ('33)	2,654,141 " "
Cement	2,201,182 bbls. (1933)	3,217,497 bbls.
Lead	6,805 short tons	15,239 short tons
Salt	768,133 " "	597,909 " "
Natural gas—gasoline	22,900,000 gals. (1933)	55,988,000 gals.
Gypsum	68,655 short tons	No separate figures

The larger manufacturing interests of Kansas are based upon the products of the farm. The largest is the slaughtering and packing of meat, which in 1939 had a product valued at $143,885,891—approximately one-tenth of the total output of the United States. Another important industry was the milling of flour, which is widely distributed over the state. The flour and grist mill industry in 1939 gave employment to 2,418 persons and had a product valued at $69,858,640. In the same year the 21 petroleum refineries operating within the state had an output valued at $89,437,983.

Lesser manufacturing interests in 1939 were automobiles and equipment ($6,708,000); manufacture of butter, cheese and condensed milk ($26,376,222); printing and publishing newspapers and periodicals ($12,856,754); foundry and machine shop products ($4,206,477); cement ($6,137,101); bakery products ($8,251,617).

Kansas had, according to the 1939 census of manufactures, 1,494 industries giving employment to 65,742 persons and products valued at $464,353,506.

Kansas City, centre of the meat-packing industry, is by far the chief industrial centre of the state. Wichita has a number of aeroplane factories.

Kansas ranks first in flour milling.

Kansas is exceedingly well supplied with steam railway facilities, with an aggregate mileage in 1935 of 9,003. The most important systems are the Atchison, Topeka and Santa Fe; the Missouri Pacific; the Chicago, Rock Island and Pacific; the Union Pacific; the Missouri, Kansas and Texas; the Chicago, Burlington and Quincy; and the St. Louis and San Francisco. These roads give excellent connections with Chicago, the Gulf of Mexico and the Pacific. The first train entered Kansas on the Union Pacific in

1860. In 1923 there were 13 electric interurban and street railways, operating 582 mi. of track within the state. With the building of hard-surfaced roads, motorbus lines have superseded electric railways. The state highway department controlled 9,335 mi. of roads at the end of 1940. Of this total 6,412 mi. were surfaced. The total motor vehicle registration for 1934 was 528,664; motor vehicle registration fees in that year totalled $3,130,000.

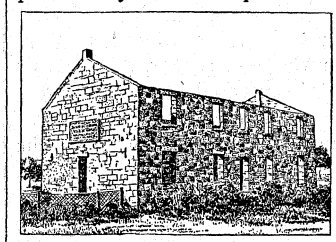
History.—The territory now included in Kansas was first visited by Europeans in 1541, when Francisco de Coronado led his Spaniards from New Mexico across the buffalo plains in search of the wealth of "Quivira," a region located, by Bandelier and other authorities, in Kansas north-east of the Great Bend of the Arkansas. Thereafter, save for a brief French occupation, 1719–25, and possibly slight explorations equally inconsequential, Kansas remained in undisturbed possession of the Indians until, in 1803, it passed to the United States (all save the part west of 100° long. and south of the Arkansas river) as part of the Louisiana Purchase. The explorations for the United States of Z. M. Pike (1807) and S. H. Long (1819) tended to confirm old ideas of sandy wastes west of the Mississippi. But with the establishment of prairie commerce to Santa Fé (New Mexico), the waves of emigration to the Mormon land and to California, the growth of traffic to Salt Lake, and the explorations for a transcontinental railway, Kansas became well known and was taken out of that mythical "Great American Desert" in which, thanks especially to Pike and to Washington Irving, it had been supposed to lie. The trade with Santa Fé began about 1804, although regular caravans were begun only about 1825. This trade is one of the most picturesque chapters in border history; and picturesque in retrospect, too, is the army of emigrants crossing the continent in "prairie schooners" to California or Utah, of whom almost all went through Kansas.

But this movement of hunters, trappers, traders, Mormons, miners and home-seekers left nothing to show of settlement in Kansas. Before 1854 Kansas was an Indian land, although on its Indian reservations (created in its east part for eastern tribes removed thither after 1830) some few whites resided—missionaries, blacksmiths, agents, farmers supposed to teach the Indians agriculture, and land "squatters"—possibly 800 in all. Ft. Leavenworth was established in 1827, Ft. Scott in 1842, Ft. Riley in 1853. Methodist (1829), Baptist, Quaker, Catholic and Presbyterian missions were active by 1837. Importunities to Congress to institute a territorial government began in 1852. This was realized by the Kansas-Nebraska Act of 1854.

By that act Kansas, which from 1854 to 1861 included a large part of Colorado, became, for almost a decade, the storm centre of national political passion, and her history of prime significance in the unfolding prologue of the Civil War. Despite the Missouri Compromise, which had prohibited slavery in the Louisiana Purchase north of 36° 30′ N. lat. (except in Missouri), slaves were living at the missions and elsewhere, among Indians and whites, in 1854. The "popular sovereignty" principle of the Kansas-Nebraska Act involved a sectional struggle for the new territory. Time showed that the winning of Kansas was a question of the lightest-footed immigrant. Slave-holders were not foot-loose; they had all to lose if they should carry their blacks into Kansas and should nevertheless fail to make it a slave State. Thus the South had to establish slavery by other than actual slave-holders, unless Missouri should act for her to establish it. Although Missouri did not move her slaves, her proximity encouraged border partisans to seek such establishment even without residence—by intimidation, election frauds and outrage. This determined the nature and outcome of the Kansas struggle.

In the summer of 1854, Missouri "squatters" began to post claims to border lands and warn away intending anti-slavery settlers. The immigration of anti-slavery people from the North was fostered in every way, notably through the New England Emigrant Aid company (*see* LAWRENCE, A. A.), whose example was widely imitated. Lawrence (Wakarusa) and Topeka, free-State centres, and Leavenworth, Lecompton and Atchison, pro-slavery towns, were among those settled in 1854.

At the first election (Nov. 1854), held for a delegate to Congress, about 1,700 armed Missourians invaded Kansas and stuffed the ballot boxes; and this intimidation and fraud was practised on a much larger scale in the election of a territorial legislature in March 1855. The resultant legislature (at Pawnee, later at Shawnee Mission) adopted the laws of Missouri almost *en bloc,* made it a felony to utter a word against slavery, made extreme pro-slavery views a qualification for office, declared death the penalty for aiding a slave to escape, and in general repudiated liberty for its opponents. The radical free-State men thereupon began the importation of rifles. Furthermore, a free-State "government" was set up, the "bogus" legislature at Shawnee being "repudiated." Perfecting their organization in a series of popular conventions, they adopted (Dec. 1855) the Topeka constitution—which declared the exclusion of negroes from Kansas—elected State officials, and sent a contestant delegate to Congress. The Topeka "government" was simply a craftily impressive organization, a standing protest. It met now and then, and directed sentiment, being twice dispersed by U.S. troops; but it passed no laws, and did nothing that conflicted with the territorial Government countenanced by Congress. On the other hand, the laws of the "bogus" legislature were generally ignored by the free-State partisans.



THE FIRST CAPITOL OF KANSAS, ERECTED AT PAWNEE IN 1855

The "Border War."—In the almost bloodless "Wakarusa war" that now began, Lawrence was threatened by an armed force from Missouri, but was saved by the intervention of Governor Shannon. Up to this time, the initiative and the bulk of outrages lay assuredly heavily on the pro-slavery side; thereafter they became increasingly common and more evenly divided. In May 1856 another Missouri force entered Lawrence without resistance, destroyed its printing offices, wrecked buildings and pillaged generally. These outrages fired Northern passion and determination. In Kansas they were a stimulus to the most radical elements. Immediately after the sack of Lawrence, John Brown (*q.v.*), and a small band murdered and mutilated five pro-slavery men, on Pottawatomie creek; a horrible deed, showing a new spirit on the free-State side, and of ghastly consequence—for it contributed powerfully to widen further the licence of highway robbery, pillage and arson, the ruin of homes, the driving off of settlers, and all sorts of outrages that made the following months a welter of lawlessness and crime, until Governor Geary—by putting himself above all partisanship, repudiating Missouri, and using Federal troops—put an end to them late in 1856. In the isolated south-eastern counties, however, they continued through 1856–58, mainly to the advantage of the "jay-hawkers" of free-State Kansas and to the terror of Missouri.

The struggle now passed into another phase, in which questions of State predominate. But something may be remarked in passing of the leaders in the period of turbulence. John Brown wished to deal a blow against slavery, but did nothing to aid any conservative political organization to that end. James H. Lane was another radical, and always favoured force. He assuredly did much for the free-State cause; meek politics was not alone sufficient in those years in Kansas. The leader of the conservative free-soilers was Charles Robinson (1818–94), who in 1854 had come to Kansas as an agent of the Emigrant Aid company. He was the author of the Topeka "government" idea, or at least was its moving spirit, serving throughout as the "governor" under it; though averse to force, he would use it if necessary, and was first in command in the "Wakarusa war." His partisans say that he saved Kansas, and regard Lane as a fomenter of trouble who accomplished nothing. Andrew H. Reeder (1807–64), who showed himself a pro-slavery sympathizer as first territorial governor, was removed from office for favouring the free-State party; he became a leader in the free-State cause. Reeder and Shannon fled the territory in fear of assassination by the pro-slavery party, with which at first they had had most sympathy. Among the pro-slavery leaders was David Rice Atchison (1807–86), U.S. Senator

in 1843–55, who accompanied both expeditions against Lawrence.

In June 1857 delegates were elected to a constitutional convention. The election act did not provide for any popular vote upon the constitution they should form, and was passed over Governor John W. Geary's veto. A census, miserably deficient (largely because of free-State abstention and obstruction), was the basis of apportionment of delegates. The free-State party demanded a popular vote on the constitution. On the justice of this, Governor Robert J. Walker and President Buchanan were at first unequivocally agreed, and the governor promised fair play. Nevertheless, only pro-slavery men voted, and the convention was thus pro-slavery. The document it framed is known as the Lecompton Constitution. Before the convention met, the free-State party, abandoning its policy of political inaction, captured the territorial legislature. On the constitutional convention rested, then, all hope of saving Kansas for slavery; and that would be impossible if they should submit their handiwork to the people. The convention declared slave property to be "before and higher than any constitutional sanction" and forbade amendments affecting it; but it provided for a popular vote on the alternatives, the "constitution with slavery" or the "constitution with no slavery." If the "constitution with no slavery" should be adopted, slavery should cease "except" that the right to property in slaves in the territory should not be interfered with. The free-State men regarded this as including the right to property in offspring of slaves, and therefore as pure fraud. Governor Walker stood firmly against this iniquitous scheme. But President Buchanan, under Southern influence, repudiated his former assurances. He abandoned Walker, who left Kansas; and he dismissed Acting-Governor Frederick P. Stanton for convoking the (now free-State) legislature. This body promptly ordered a vote on the third alternative, "Against the Constitution."

The free-State men ignored the alternatives set by the Lecompton Convention; but they participated, nevertheless, in the provisional election for officers under the Lecompton Government, capturing all offices, and then, the same day, voted overwhelmingly against the constitution (Jan. 4, 1858).

Nevertheless, Buchanan, against the urgent counsel of Governor Denver, urged on Congress (Feb. 2) the admission of Kansas under the Lecompton Constitution. He was opposed by Senator Stephen A. Douglas, the leader of the Northern Democracy. The senate upheld the president; the house of representatives voted down his policy; and finally both houses accepted the English bill, by which Kansas was virtually offered some millions of acres of public lands if she should accept the Lecompton Constitution[1]. On Aug. 21, 1858, by a vote of 11,300 to 1,788, Kansas resisted this temptation. The plan of the Administration thus effectually miscarried, and its final result was a profound split in the Democratic Party.

The free-State men framed an anti-slavery constitution at Leavenworth in March–April 1858, but the origins of the convention were illegal. On July 29, 1859, still another constitution was therefore framed at Wyandotte, and on Oct. 4 it was ratified by the people. On Jan. 29, 1861, Kansas was admitted to the Union under the Wyandotte Constitution. The United States census of 1860 gave her a population of 107,206 inhabitants. The struggle in Kansas was of paramount importance in the breaking up of the Whig Party, the first establishment of an uncompromising anti-slavery party, the sectionalization of the democracy, and the general preparation of the country for the Civil War.

Drought and famine came in 1860, and then upon the impoverished State came the strain of the Civil War. Nevertheless, Kansas furnished proportionally a very large quota of men to the Union armies. Military operations within her own borders were largely confined to a guerrilla warfare, carrying on the bitter neighbourhood strife between Kansas and Missouri. The Confederate officers began by repressing predatory plundering from Missouri; but after James H. Lane, with an undisciplined brigade, had crossed the border, sacking, burning and killing in his progress, Missouri "bushrangers" retaliated in kind. Freebooters trained in territorial licence had a free hand on both sides. William C. Quantrell, after sacking various small Kansas towns along the Missouri river (1862–63), in Aug. 1863 took Lawrence (*q.v.*) and put it mercilessly to fire and sword—the most ghastly episode in border history. In the autumn of 1864, the Confederate general, Sterling Price, aiming to enter Kansas from Missouri, but defeated by Gen. Pleasanton's cavalry, retreated southward, zigzagging on both sides of the Missouri-Kansas line. This ended for Kansas the border raids and the war. Indian raids and wars troubled the State from 1864 to 1878. The tribes domiciled in Kansas were rapidly moved to Indian territory after 1868.

After the Civil War, the Republicans held uninterrupted supremacy in national elections, and almost as complete control in the State Government, until 1892. From about 1870 onward, however, elements of reform and of discontent were embodied in a succession of radical parties of protest. The movement of the Patrons of Industry (1874), growing into the Grange, Farmers' Alliance, and finally into the People's party, commonly known as the Populist party, was perhaps of greatest importance. In conjunction with the Democrats, the Populists controlled the State Government in 1892–94 and 1896–98. These two parties decidedly outnumbered the Republicans at the polls from 1890 to 1898, but they could win only by fusion. In 1892–93, when the Populists elected the governor and the senate, and the Republicans (as the courts eventually determined) the house of representatives, political passion was so high as to threaten armed conflicts in the capital.

Legislation.—The manufacture and sale of intoxicating liquors except for medical, scientific and mechanical needs were prohibited by a constitutional amendment in 1880. The Murray liquor law of 1881, for the enforcement of the amendment, was declared constitutional by the State supreme court in 1883. At many sessions of the legislature its enemies vainly attempted its repeal. The enforcement of the law varied enormously according to the locality. In 1906–7 a fresh crusade to enforce the law was begun by the attorney general, who brought ouster suits against the mayors of Wichita, Junction city, Pittsburg and Leavenworth for not enforcing the law and for replacing it with the "fine" system, which was merely an irregular licence. In 1907 the attorney general's office turned its attention to outside brewing companies doing business in the State, and secured injunctions against the continuance of such operations within the State and the appointment of receivers of their property. The provisions of the law permitting the sale of whisky for medicinal, scientific or mechanical purposes were repealed by a law of 1909 prohibiting the sale, manufacture or barter of spirituous, malt, vinous or any other intoxicating liquors within the State. The severity of this law was ascribed to efforts of the liquor interests to render it objectionable; however, State prohibition continued to exist until strengthened by the 18th (Prohibition) amendment to the Federal Constitution.

An eight-hour labour law was passed in 1891, and was upheld by the State supreme court. In 1909 a law was passed requiring that any corporation acting as a common carrier in the State must receive the permission of the State board of railway commissioners for the issue of stocks, bonds or other evidences of indebtedness. An exception to the general trend of legislation at that time was the "blue sky" law for the regulation of investment companies, passed in 1911 and amended in detail in 1913 and 1915. It prohibited the sale in the State of stock not approved by a board consisting of the secretary of State, the attorney general and the State bank commissioner, and thus prevented the floating of worthless securities. It has been extensively copied by other States. In 1919 a general strike in the coalfields suspended production and threatened a coal famine in the midst of an exceptionally severe winter. Governor Allen took

[1]The English bill was not a bribe to the degree that it has usually been considered to be, inasmuch as it "reduced the grant of land demanded by the Lecompton ordinance from 23,500,000ac. to 3,500,000ac., and offered only the normal cession to new States." But this grant of 3,500,000ac. was conditioned on the acceptance of the Lecompton Constitution, and Congress made no promise of any grant if that constitution were not adopted. The bill was introduced by William Hayden English (1822–96), a Democratic representative in Congress in 1853–61.

over the coal mines and operated them with volunteer labour. A law of 1920 creating a court of industrial relations was later held unconstitutional by the U.S. Supreme Court. The depression and the drought hit the state hard, sharply reducing agricultural income and forcing 30,000 farms out of cultivation. An income tax amendment (1933) and law (1934) put the principle of graduation only partially into effect. The voters refused to repeal state prohibition but, in 1935, restored capital punishment for murder in the first degree; the latter had been abolished by law in 1907. Normally Republican, Kansas voted for Wilson in 1912 and 1916 and elected Democratic governors for single terms in 1913, 1923 and 1931. In the last case, Gov. H. H. Woodring, by a determined attack on the gas rates, roused a strong opposition. F. D. Roosevelt carried the state's electoral vote in 1932. Gov. Alfred M. Landon was chosen Republican candidate for the presidency in 1936, but was defeated in the election. The state went Republican in the presidential election of 1940.

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(A. CA.; M. TA.)

KANSAS CITY, the largest city of Kansas, U.S.A., and the county seat of Wyandotte county, on the eastern boundary of the state, at the confluence of the Kansas (Kaw) river with the Missouri, adjoining Kansas City, Mo., from which it is separated only by the state line. It is on federal highways 24, 40, 69, 169; has a well-equipped municipal airport; and is served by 12 trunk-line railways, including the Chicago Great Western, the Missouri Pacific, the Rock Island, the Santa Fe and the Union Pacific railways, and by several interurban motorbus lines. The population in 1930 was 121,857 and it was 121,458 in 1940 by the federal census. The city has a total area of 20.4 sq.mi. (land, 19.2 sq.mi.) in rectangular shape, rising from the level bottom land between the two rivers (altitude 720 ft.) to bluffs 947 ft. above sea level, where the principal residential districts are located. It has a waterfront of 8.5 mi., and is the western terminus of the present program of improvements on the inland waterways system. The stockyards, which are the centre of its economic life, lie on the state line, with about 62% of their area on the Kansas side. A massive steel and concrete viaduct, $1\frac{3}{4}$ mi. long, spans the Kaw valley, and connects the bluffs of the two cities. There are 300 ac. in the public parks; 25 mi. of connecting boulevards, and 50 mi. more planned; and 24 small playgrounds scattered through the city. A fine courthouse of limestone, with a Greek portico upheld by columns over 7 ft. in diameter and 48 ft. high, was completed in 1927. The municipal memorial building, a tribute to the men who have lost their lives in the wars of the country, contains an auditorium seating 4,000, a chapel, a memorial hall, a banquet hall and a kitchen, and is so arranged that a parade can pass through the auditorium. In 1924 the city adopted a comprehensive city plan and zoning ordinance, prepared by a volunteer commission, which will shape its development for 40 years. Building permits in the five years 1935–40, inclusive, represented values aggregating $8,766,805. The assessed valuation of property as of Nov. 1, 1940 was $92,940,667.

There are five industrial districts of distinctive character in different parts of the city, each one flanked by residential sections. The Armourdale district, a level stretch extending west from the Missouri state line and served by five railways, contains many of the large industries, including the stockyards, packing plants, soap factories, foundries, flour mills and lumber mills. A district under development along the Santa Fe, in the southwestern part of the city and extending several miles into the country, has grain elevators, steel plants, ice factories and car shops. In the Fairfax industrial district, on a bend in the Missouri river, at the northeastern boundary of the city, is the Fairfax Municipal airport of approximately 800 ac., only 2 mi. from the post office. Natural gas from the Kansas fields has been available since 1906.

The public school system has 41 elementary, 5 junior and 4 senior high schools with an enrolment of 28,833 and a teaching staff of 628. There are 20 parochial schools. The school of medicine of the University of Kansas (established 1899) has been located in Kansas City (except for the work of the first year and a half of the four-year course, which is still given at Lawrence) since 1905, when three older medical colleges were merged with it. Among the other institutions of higher education are the Kansas City, Kansas, Junior college; the Kansas City Baptist theological seminary (1902) and Woman's training school (which prepares for missionary work); and two training schools for nurses in connection with two of the six hospitals. The state school for the blind is there. There are two mineral springs in the city, one of which is used for the treatment of rheumatism. The private charitable agencies of the city are financed through a "community chest" which raised $132,925 in 1940. The principal daily paper, the *Kansan,* is one of several owned by Sen. Arthur Capper. Since 1909 the city has operated under a commission form of government.

Kansas City is the principal industrial centre of the state, and ranked 29th among the cities of the United States in the value of its manufactured products in 1933.

The output of the 131 establishments included in the federal census of manufactures in 1933 was valued at $117,597,371.

Slaughtering and meat-packing, in which Kansas City stands second only to Chicago, overshadows all other industries, contributing 72% of the total value of factory products. Next in importance are flour and grain milling, foundry and machine-shop products and railroad cars. In the manufacture of hog serum and of black walnut lumber Kansas City ranks first in the country; in the manufacture of soap and flour, third; and in the capacity of its grain elevators, fifth. The stockyards handle nearly 10,000,000 head annually, and the market for stock and feed cattle and stock hogs is the largest in the country. Bank debits to individual accounts amounted in 1939 to $198,208,000.

The site of Kansas City was the starting point for many early explorations westward, including that of Lewis and Clark. The first permanent settlement, Wyandotte, was made in 1843 by the Wyandotte Indians from Ohio. In 1855 they sold their lands to the federal government, stipulating that their burial ground, now in the heart of the city, should be preserved, as it has been. Wyandotte was plotted and settled by whites in 1857, and in 1858 was incorporated as a city, with a population of 1,259. The convention that drafted the first constitution of the state of Kansas met here in July 1859. Wyandotte was a pro-slavery town. Quindaro, a free state settlement a few miles up the Missouri, of which nothing remains but ruins, was its commercial rival until after the Civil War. In 1869 a town called Kansas City was founded on the bottomlands between the Kansas river and the Missouri state line; in 1872 Rosedale was plotted on the southern boundary of the county; in 1880 Argentine was laid out (a smelting town; the name derived from the Latin word *argentum*) on the south bank of the Kansas, and Armourdale on the north bank. Meanwhile, a small community called Armstrong had grown up on the hills south of Wyandotte. The modern Kansas City was formed in 1886 by the consolidation of Wyandotte, Armourdale, Armstrong and the original Kansas City. Argentine was annexed in 1910; Rosedale in 1922. The population was 51,418 in 1900; 82,331 in 1910; 101,177 in 1920; 121,857 in 1930; 121,458 in 1940, a loss of 0.3% for the decade 1930–40 as compared with a gain of 20.4% for 1920–30. The packing industry began in 1867; the first large packing plant was established by Armour and Co., 1871. In June 1903, a flood, the highest since 1844, swept away 12 of the 13

bridges spanning the Kaw, and did much damage to other property. The entire area affected is now thoroughly protected by concrete dikes.

KANSAS CITY, a city of Jackson county, Missouri, U.S.A., on the Missouri river, at the mouth of the Kansas (locally called the "Kaw"), adjoining Kansas City, Kan.; a port of entry and the second city of the state in size and importance. It is on federal highways 24, 40, 50, 69, 71, 73 and 169; is served by three air lines with 54 schedules daily; by 12 railroads: the Burlington, the Alton (B. & O.), the Chicago Great Western, the Chicago, Milwaukee, St. Paul and Pacific, the Frisco, the Kansas City Southern, the Missouri-Kansas-Texas, the Missouri Pacific, the Rock Island, the Santa Fe, the Union Pacific and the Wabash, and by interurban motorbus lines in every direction. The Kansas City Terminal Railway company operates the Union station and passenger and freight terminals, serving all the steam roads entering the city over a system of depressed tracks; and the Kansas City Connecting railroad transfers livestock between all the roads and the stockyards.

The population was 399,178 in 1940, of whom 7·1% were Negroes and 6·1% were foreign-born whites. The city retained its position as 19th city in the United States. "Greater Kansas City," including both cities of that name and immediate suburbs, had a population of 627,235 in 1940.

Near the geographical centre of the United States, "the gateway to the southwest," Kansas City is one of the great markets and transportation centres of the country. Over 7,000,000 passengers enter and leave the city annually by the numerous railways, which handle over 40,000,000 tons of freight and 5,000,000 express packages.

The Union Passenger station, built in 1914 at a cost of $6,000,000, is the largest in the United States, outside of New York and Chicago, and one of the best appointed for the comfort of travellers.

The main building is 510 x 150 ft. in area; the grand lobby has a ceiling 90 ft. high; the main waiting room, 410 ft. long, is built over 32 tracks, by which 300 trains arrive and leave daily. Facing the station, across a plaza to the south, stands the Liberty memorial, completed in 1925, the cost of which ($2,500,000) was raised in one week by popular subscription. A column 280 ft. high, with a fire burning continuously at the top, is flanked by two low buildings in classic style, one of which is a hall of records and the other a meeting place for the veterans. Through the centre of the city extends from north to south for 8·5 mi. the Paseo parkway, 250 ft. wide.

There are over 3,400 ac. in public parks (including Swope park, of 1,354 ac. lying south of the city limits), all connected by a boulevard system of 116 miles.

The diversified character of the terrain has made possible drives commanding panoramas of unusual beauty and interest, notably Cliff drive, 3·5 mi. long. The business section of the city was occupied originally by high bluffs and deep ravines, which were graded down and filled up to the present level. South and west of this high land, along the Kansas river, is a low, level tract, occupied chiefly by railway yards, stockyards, wholesale houses and manufacturing establishments. North and east are the Missouri river valley lands, which also have railway yards and factories, as well as grain elevators and districts of wage earners' homes.

Much high and dry "made" land has been reclaimed from the river flood-plain. Three great railway bridges cross the Missouri, and in 1927 the city and Clay county (on the other side of the river) jointly bought a highway bridge and opened it free to the public.

Across the valley of the Kaw, from bluff to bluff, extends a great interstate viaduct, also free of toll charges. The area within the corporate limits of the city is 59·65 sq.mi., and the assessed valuation of property for 1941 was $507,123,360. A city plan was adopted in 1922, and a comprehensive zoning ordinance was enacted in 1923.

By the provisions of the present charter (the fifth it has had), adopted in 1926 by a vote of more than 4 to 1, the city is under a council-manager form of government. A council of 9 members (including the mayor) is elected on a nonpartisan ballot. The council appoints the auditor and the city clerk, and a city-manager, who is responsible for the administrative departments of the government. The mayor appoints the board of park commissioners, the city-plan commission, and the municipal art commission. The police department is under a board of two members appointed by the governor of the state, with the mayor as chairman *ex officio*. A new water-supply system was completed in 1928, at a cost of $11,000,000. The water comes from the north side of the Missouri river, above the mouth of the Kaw, and is brought in to the city through two parallel tunnels 6·5 ft. in diameter, through solid rock under the bed of the river. The water plant has been owned by the city since 1895, but all other public utilities are under private ownership. Coal comes from fields in Missouri, Kansas, Iowa, Arkansas and Illinois; fuel oil from the mid-continent field not 200 mi. away; and natural gas from Kansas has been available since 1906. The public-school system includes 75 elementary, 9 senior high and 5 junior high schools, a teachers' college, a junior college, 2 trade schools and a part-time school. There are also 3 colleges, besides 50 Catholic schools and colleges, and several institutions for professional training. The public library in 1940 had 571,364 volumes, and maintained 15 branch stations.

There are 270 churches. The Nelson Gallery of Art has an endowment of $15,000,000. The charitable agencies are financed jointly through a community chest which raised $1,020,741 during the 1940–41 campaign.

Kansas City is the seat of the Federal Reserve bank of the tenth district. Debits to individual accounts in the local banking institutions in 1940 aggregated $3,885,857,000. Though primarily a commercial centre, Kansas City has become also an important manufacturing city. Its economic life is closely bound up with that of its neighbour across the state line (*see* KANSAS CITY, Kansas). Greater Kansas City has a wholesale trade which amounted to $801,778,000 in 1940, and a factory output valued at $549,272,606 in 1937, of which 23% was in packing-house products. It is the largest market in the country for stock and feed cattle; it also ranks first in distribution of agricultural implements, seeds, kaffir corn and milo maize, and as a primary winter wheat market; ranks second as a horse and mule market, in receipt and distribution of fruits and vegetables and in capacity of grain elevators; third in distribution of butter, eggs and poultry, in production of flour and soap, and as a general grain market. The Missouri city, ranking 19th in population (1940), stood twelfth in postal receipts and ninth in bank clearings in 1940.

Manufacturing was increased after the war of 1914–18 by the establishment of branch plants by many eastern firms, by the making of open-hearth steel and by a great development in the oil refining and the milling industries. In 1940 the grain elevators had a capacity of 62,182,000 bu.; receipts of grain totalled 89,520,600 bu.; the output of the flour mills was 6,212,670 bbl. Receipts of livestock reached 3,640,481 head in 1940.

The American Royal Livestock Show, held each November, is one of the largest horse and livestock exhibitions in the United States.

Its pavilion, erected in 1922, is a two-story building of reinforced concrete, containing over 7 ac. of floor space.

The Kansas City Livestock Exchange is the largest livestock exchange building in the United States.

Because of its central position Kansas City is an advantageous meeting place for national conferences. The hotels have 14,381 guest rooms. In the heart of the city is the municipal auditorium, one of the finest public buildings in the country, completed in 1936 at a cost of approximately $6,500,000. It seats a total of 24,000 persons, in 32 separate units, all of which may be knit together by means of a public address system. The main arena seats 14,000.

The first permanent settlement within the present limits of Kansas City was established by French fur traders about 1821. Westport—a residential district of Kansas City—was a rival of Independence in the Santa Fe trade, and succeeded to most of it after the great Missouri flood of 1844 destroyed the

landing used by Independence. Meanwhile Westport Landing, on the river, increased in importance and overshadowed Westport. In 1838 lots were surveyed and the name Town of Kansas (from the Kansas river) was adopted. It was incorporated as a town in 1850, chartered under its present name in 1853, rechartered in 1875, and adopted new charters under its power of home rule in 1889, 1908 and 1925. Before 1850 it was practically the exclusive eastern terminus on the river for the Santa Fe trade, and a great outfitting point for emigrants to California. Whiskey, groceries, prints and notions were staples sent to Santa Fe. Wool, buffalo robes and dried buffalo meat, Mexican silver coin, gold and silver dust and ore came in return. In 1860 the trade employed 3,000 wagons and 7,000 men, and amounted to millions of dollars. During the Civil War both Independence and Westport were the scene of battles. There was no fighting at Kansas City, but her trade went to Leavenworth, where it had the protection of an army post and a quiet frontier. After the war the railways took away the traffic to Santa Fe, and other cities, farther up the Missouri, took over the trade to the upper river valley. In 1866 the first railway reached Kansas City from Saint Louis; in 1867 the packing industry had its beginning; and in 1869 a railway bridge across the Missouri assured Kansas City predominance over Leavenworth and Saint Joseph. The population grew from 4,418 in 1860 to 32,260 in 1870, and by 1880 it had reached 55,785. Between 1880 and 1900 it increased threefold, and between 1900 and 1920 it doubled.

KANSK, a town in the Siberian Area of the Russian S.F.S.R. on the trans-Siberian railway 151 m. E. of Krasnoyarsk, in 56° 20′ N., and 95° 37′ E. Pop. (1935) 24,628. It is subject to floods from the Kan river, a tributary of the Yenisei, on which it stands; the Kan is not navigable. It is situated near gold, coal and iron fields and has an iron foundry, an electric plant, distilleries and leather factories. It was founded in 1628 by Dubensky, the *voivoda* of Krasnoyarsk, but remained a mere village until the coming of the railway.

KANSU, the most north-westerly province of China. In shape it constitutes a long wedge thrust forward between Tibet on the south and Mongolia on the north. Its south-eastern border, adjoining Shensi province, is 900 miles inland from Shanghai. The greater part of it is drained by the Hwang-ho, part of whose upper course runs through the province from south-west to north-east. With the exception of a few sandy plains mainly in the north, Kansu is dominated by high mountains, rising to 10,000 feet or more in many of the ranges. Those in the north-west are known collectively as the Nan-shan and represent the prolongation of the northern loop of the Kun-lun ranges of Tibet, which in the south of the province are directly continued from west to east in the Sik'ing-shan and Min-shan. For the most part, especially in the east, the province is characterised by rich loess terraces, deeply dissected by the Wei-ho river-system. The climate naturally shows great extremes. In winter, intensely dry cold winds blow from the tableland of Mongolia while in summer, which is the rainy season, the temperature sometimes rises above 100° F. The southern part of the province is at all times milder and wetter than the northern, but Kansu as a whole, because of its isolation, severe climate, and rugged topography, is one of the wildest regions of China.

Kansu in its present form as a province has only been recently constituted, but as a corridor region between China and the West its history probably dates back to the beginnings of Chinese civilization. From earliest times the Chinese have had contact with Turkestan by way of the natural passage afforded by the Wei-ho valley and the corridor along the northern base of the Nan-shan mountains, the alignment and continuity of these two sections of the route being preserved by intermediate tributary valleys of the Hwang-ho.

From the third century B.C. when China, consolidated under the Chin Dynasty, organised a defensive scheme against the steppeland nomads the function of the Kansu corridor as the key to the defence of the Western borderland becomes increasingly conspicuous. Under the strong dynasties, notably those of the Han and the Tang, the corridor was kept open and military colonies placed at strategic points along it. At such times too new influences from the West such as Buddhism and Nestorian Christianity reached China by this avenue of entry and overland trade with the West flowed through it, particularly under the Yuan (Mongol) Dynasty. But during times of disintegration and weakness in China, numerous Tartar invasions penetrated along the route, and Lanchow-fu, the only early bridge-point on the Upper Hwang-ho, was an important base for further conquest in North China. As a separate province Kansu dates only from 1911. Prior to that it had for some years been united with Shensi, the two provinces being known as Shên-kan, and before 1882 it had been administered with Sinkiang as one province. The inclusion in the new Kansu of the long arm to the north-west was intended to secure the critical lowland approach to China from the Tarim Basin. In the middle of the nineteenth century Kansu was richer and more populous than it is to-day. It suffered severely from the great Muslim rebellions of that period and particularly from the revolt of 1861–77.

Pop. (1940), 6,255,467; area, 151,160 sq.mi. (density, 41 per sq.mi., lowest in intramural China). Over one-half are Mohammedans, including Chinese Mohammedans. The province experienced many Mohammedan rebellions, one shortly before the outbreak of the Sino-Japanese war in 1937. As a result, the cultivated acreage decreased from 4,300,000 in 1923 to 2,900,000 in 1937. Only after the wartime capital was moved into Szechwan province was order restored and a new development begun. The north-western districts and the area around Ningsia-fu, on the borders of the Ordos, are mainly Mongol in character. Along the western border there are many Tanguts and there too has occurred an overflow from north-east Tibet. In the mountains north-east of Sining-fu are some 50,000 "aborigines" speaking tribal dialects. The largest single element in the population is Chinese and there has been immigration in recent years from Szechwan. Corresponding to the diversity of racial elements is the variety of languages in Kansu, especially in the west and north-west but Mandarin is spoken throughout the greater part of the province. The mountainous character of Kansu and the precarious nature of the rainfall handicap agriculture, but in the limited sandy plains, where irrigation is possible, abundant crops of millet, sorghum and Indian corn, as well as fruits, are grown. For years Kansu has been one of the chief opium-producing provinces of China; the poppy was everywhere grown save in the Mohammedan western sections. Animal husbandry is dominant on the dry grassland, unsuited for cultivation, giving rise to the export of pastoral products such as hides, furs and wool, and the direct manufacture of coarse woollens and cloths. Leather-tanning and the woollen industry show great promise of future development. After the outbreak of the war in 1937, Lanchow, the capital city, became suddenly important as a vital depot on the new north-western highway to Russia which was completed in 1939. It also became a major Chinese military air base. The partly completed Lung Hai railway from Paochi to Tienshui in southern Kansu was planned to be continued to Lanchow. Kansu was also connected with the neighbouring province of Szechwan by the Lanchow-Chengtu highway. During the war new irrigation projects increased the acreage and cotton growth was expanded with the help of the Kansu Agricultural Experiment station. Mineral oil was known since ancient times and used from freely flowing mountain creeks. Modern prospecting was begun in 1938 by the National Resources commission and production was started for gasoline with the establishment of a cracking plant. The development of such resources as iron, coal, gold, salt, mercury and China clay was delayed by the difficulties of transportation.

KANT, IMMANUEL (1724–1804), German philosopher, was born at Königsberg on April 22, 1724. His grandfather was an emigrant from Scotland. His father was a master-saddler in Königsberg, then a stronghold of Pietism, to the strong influence of which Kant was subjected in his early years. In his tenth year he was entered at the Collegium Fredericianum with the definite view of studying theology. His inclination at this time was towards classics, and he was recognized, with his school-fellow, David Ruhnken, as among the most promising classical scholars of the

college. His taste for the greater Latin authors, particularly Lucretius, was never lost, and he acquired at school an unusual facility in Latin composition. With Greek authors he does not appear to have been equally familiar. During his university course, which began in 1740, Kant was principally attracted towards mathematics and physics. Though he attended courses on theology, and even preached on one or two occasions, he appears to have given up the intention of entering the church. His father died in 1746, and for nine years he earned his own living as a private tutor.

In 1755 Kant became tutor in the family of Count Kayserling. By the kindness of a friend named Richter, he was enabled to resume his university career, and in the autumn of that year he graduated as doctor and qualified as *Privatdozent*. For 15 years he remained a *Privatdozent,* his fame as writer and lecturer steadily increasing. Though twice he failed to obtain a professorship at Königsberg, he steadily refused appointments elsewhere. The only academic preferment received by him during the lengthy probation was the post of under-librarian (1766). His lectures, at first mainly upon physics, gradually expanded until nearly all descriptions of philosophy were included under them.

In 1770 he obtained the chair of logic and metaphysics at Königsberg, and delivered as his inaugural address the dissertation *De mundi sensibilis et intelligibilis forma et principiis.* Eleven years later appeared the *Kritik der reinen Vernunft* (1781; 2nd enl. ed. 1787), the work towards which he had been steadily advancing, and of which all his later writings are developments. In 1783 he published the *Prolegomena,* intended as an introduction to the *Kritik,* which had been found to stand in need of some explanatory comment.

In spite of its frequent obscurity, its novel terminology, and its declared opposition to prevailing systems, the Kantian philosophy made rapid progress in Germany. In the course of 10 or 12 years from the publication of the *Kritik der reinen Vernunft,* it was expounded in all the leading universities, and it even penetrated into the schools of the Church of Rome. J. Schulz in Königsberg, J. G. Kiesewetter in Berlin, Jakob in Halle, Born and A. L. Heydenreich in Leipzig, K. L. Reinhold and E. Schmid in Jena, Buhle in Göttingen, Tennemann in Marburg, and Snell in Giessen, with many others, made it the basis of their philosophical teaching, while the theologians Tieftrunk, Stäudlin, and Ammon eagerly applied it to Christian doctrine and morality. Young men flocked to Königsberg as to a shrine of philosophy. The Prussian Government even undertook the expense of their support. Kant was hailed by some as a second Messiah. He was consulted as an oracle on all questions of casuistry—as, for example, on the lawfulness of inoculation for the small-pox. This universal homage for a long time left Kant unaffected; it was only in his later years that he spoke of his system as the limit of philosophy, and resented all further progress. He still pursued his quiet round of lecturing and authorship, and contributed from time to time papers to the literary journals. Of these, among the most remarkable was his review of Herder's *Philosophy of History,* which greatly exasperated that author, and led to a violent act of retaliation some years after in his *Metakritik der reinen Vernunft.* Schiller at this period in vain sought to engage Kant upon his *Horen.*

In 1792 Kant, in the full height of his reputation, was involved in a collision with the Government on the question of his religious doctrines. Naturally his philosophy had excited the declared opposition of all adherents of historical Christianity, since its plain tendency was towards a moral rationalism, and it could not be reconciled to the literal doctrines of the Lutheran Church. After the first part of his book, *Die Religion innerhalb der Grenzen der blossen Vernunft,* had appeared in the *Berlin Journal,* the publication of the remainder, which treats in a more rationalizing style of Christianity, was forbidden. Kant, thus shut out from Berlin, availed himself of his local privilege, and, with the sanction of the theological faculty of his own university, published the full work in Königsberg (1793). The Government, probably influenced as much by hatred and fear of the French Revolution, of which Kant was supposed to be a partisan, as by love of orthodoxy, resented the act; and a secret cabinet order was received by him intimating the displeasure of the king, Frederick William II., and exacting a pledge not to lecture or write at all on religious subjects in future. With this mandate Kant, after a struggle, complied, and kept his engagement till 1797, when the death of the king, according to his construction of his promise, set him free. The incident depressed his spirits. He withdrew in 1794 from society; next year he gave up all his classes but one public lecture on logic or metaphysics; and in 1797, before the removal of the interdict on his theological teaching, he ceased his public lectures, after an academic course of 42 years. In that year he had finished his treatises *Die Metaphysik der Ethik,* which, with his *Anthropologie,* completed in 1798, were the last considerable works that he revised with his own hand. His lectures on logic, on physical geography, on paedagogics, were edited during his lifetime by his friends and pupils. By way of asserting his right to resume theological disquisition, he also issued in 1798 his *Streit der Fakultäten,* in which all the strongest points of his work on religion were urged afresh.

From the date of his retirement from the chair Kant declined in strength, and gave tokens of intellectual decay. His memory began to fail, and a large work at which he wrought night and day, on the connection between physics and metaphysics, was found to be only a repetition of his already published doctrines. After 1802, finding himself attacked with a weakness in the limbs attended with frequent fits of falling, he mitigated the Spartan severity of his life, and consented to receive medical advice. A constant restlessness oppressed him; his sight gave way; his conversation became an extraordinary mixture of metaphors; and it was only at intervals that gleams of his former power broke out, especially when some old chord of association was struck in natural science or physical geography. A few days before his decease, with a great effort he thanked his medical attendant for his visits in the words, "I have not yet lost my feeling for humanity." On Feb. 12, 1804, he died, having almost completed his 80th year. His stature was small, and his appearance feeble. He was little more than five feet high; his breast was almost concave, and, like Schleiermacher, he was deformed in the right shoulder. His senses were quick and delicate, and, though of weak constitution, he escaped by strict regimen all serious illness.

His life was arranged with mechanical regularity; and, as he never married, he kept the habits of his studious youth to old age. His man-servant, who awoke him summer and winter at five o'clock, testified that he had not once failed in 30 years to respond to the call. After rising he studied for two hours, then lectured two hours, and spent the rest of the forenoon, till one, at his desk. He then dined at a restaurant, which he frequently changed, to avoid the influx of strangers, who crowded to see and hear him. This was his only regular meal; and he often prolonged the conversation till late in the afternoon. He then walked out for at least an hour in all weathers, and spent the evening in lighter reading, except an hour or two devoted to the preparation of his next day's lectures, after which he retired between nine and ten to rest. In his earlier years he often spent his evenings in general society, where his knowledge and conversational talents made him the life of every party. His social circle included J. G. Hamann, the friend of Herder and Jacobi, who was thus a mediator between Kant and these philosophical adversaries.

Kant cared comparatively little for the history of speculation, but his acquaintance with books of science, general history, travels and *belles lettres* was boundless. He was well versed in English literature, chiefly of the age of Queen Anne, and had read English philosophy from Locke to Hume, and the Scottish school. He was at home in Voltaire and Rousseau, but had little or no acquaintance with the French sensational philosophy. He was familiar with all German literature up to the date of his *Kritik,* but ceased to follow it in its great development by Goethe and Schiller. It was his habit to obtain books in sheets from his publishers Kanter and Nicolovius; and he read over for many years all the new works in their catalogue, in order to keep abreast of universal knowledge.

As a lecturer, Kant avoided altogether that rigid style in which his books were written. He sat behind a low desk, with a few jottings on slips of paper, or textbooks marked on the margin, before him, and delivered an extemporaneous address, opening up the subject by partial glimpses, and with many anecdotes or

familiar illustrations, till a complete idea of it was presented. His voice was extremely weak, but sometimes rose into eloquence, and always commanded perfect silence. Though kind to his students, he refused to remit their fees, as this, he thought, would discourage independence. It was another principle that his chief exertions should be bestowed on the intermediate class of talent, as the geniuses would help themselves, and the dunces were beyond remedy.

Simple, honourable, truthful, kind-hearted and high-minded as Kant was in all moral respects, he had little sentiment. He had no enthusiasm for the beauties of nature, and indeed never sailed out into the Baltic, or travelled more than 40 miles from Königsberg. Music he disregarded, and all poetry that was more than sententious prose. His ethics have been reproached with some justice as setting up too low an ideal for the female sex. Though a faithful friend, he could not bear to visit his friends in sickness, and after their death he repressed all allusion to their memory.

On Feb. 12, 1904, the 100th anniversary of Kant's death, a Kantian society (*Kantgesellschaft*) was formed at Halle under the leadership of H. Vaihinger to promote Kantian studies; it supports the periodical *Kantstudien* (founded 1896).

KANTIAN PHILOSOPHY, the philosophy of Immanuel Kant (*q.v.*), and, less accurately, the developments of that philosophy by Kant's followers.

Pre-critical.—In any complete account of the Kantian system it is necessary that there should be constant reference, on the one hand, to the peculiar character of the preceding 18th-century philosophy, and, on the other hand, to the problems left for renewed treatment to more modern thought. Fortunately the development of the Kantian system itself furnishes such treatment as is necessary of the former reference. For the critical philosophy was a work of slow growth. In the early writings of Kant we are able to trace with great definiteness the successive stages through which he passed from the notions of the preceding philosophy to the new and comprehensive method which gives its special character to the critical work. Scarcely any great mind, it has been said with justice, ever matured so slowly. In the early essays we find the principles of the current philosophies, those of Leibniz and English empiricism, applied in various directions to those problems which serve as tests of their truth and completeness; we note the appearance of the difficulties or contradictions which manifest the one-sidedness or imperfection of the principle applied; and we can trace the gradual growth of the new conceptions which were destined, in the completed system, to take the place of the earlier method. To understand the Kantian work it is indispensable to trace the history of its growth in the mind of its author.

Of the two preceding stages of modern philosophy, only the second, that of Locke and Leibniz, seems to have influenced practically the course of Kant's speculation. With the Cartesian movement as a whole he shows little acquaintance and no sympathy, and his own philosophic conception is never brought into relation with the systematic treatment of metaphysical problems characteristic of the Cartesian method. The fundamental question for philosophic reflection presented itself to him in the form which it had assumed in the hands of Locke and his successors in England, of Leibniz and the Leibnizian school in Germany. The transition from the Cartesian movement to this second stage of modern thought had doubtless been natural and indeed necessary. Nevertheless the full bearings of the philosophic question were somewhat obscured by the comparatively limited fashion in which it was then regarded. The tendency towards what may be technically called subjectivism, a tendency which differentiates the modern from the ancient method of speculation, is expressed in Locke and Leibniz in a definite and peculiar fashion. However widely the two systems differ in details, they are at one in a certain fundamental conception which dominates the whole course of their philosophic construction. They are throughout individualist, *i.e.*, they accept as given fact the existence of the concrete, thinking subject, and endeavour to show how this subject, as an individual conscious being, is related to the wider universe of which he forms part.

In dealing with such a problem, there are evidently two lines along which investigation may proceed. It may be asked how the individual mind comes to know himself and the system of things with which he is connected, how the varied contents of his experience are to be accounted for, and what certainty attaches to his subjective consciousness of things. Regarded from the individualist point of view, this line of inquiry becomes purely psychological, and the answer may be presented, as it was presented by Locke, in the fashion of a natural history of the growth of conscious experience in the mind of the subject. Or, it may be further asked, how is the individual really connected with the system of things apparently disclosed to him in conscious experience? what is the precise significance of the existence which he ascribes both to himself and to the objects of experience? what is the nature of the relation between himself as one part of the system, and the system as a whole? This second inquiry is specifically metaphysical in bearing, and the kind of answer furnished to it by Leibniz on the one hand, by Berkeley on the other, is in fact prescribed or determined beforehand by the fundamental conception of the individualist method with which both begin their investigations. So soon as we make clear to ourselves the essential nature of this method, we are able to discern the specific difficulties arising in the attempt to carry it out systematically, and thus to note with precision the special problems presented to Kant at the outset of his philosophic reflections.

Consider, first, the application of the method on its psychological side, as it appears in Locke. Starting with the assumption of conscious experience as the content of the individual mind, Locke proceeds to explain its genesis and nature by reference to the real universe of things and its mechanical operation upon the mind. The result of the interaction of mind, *i.e.*, the individual mind, and the system of things, is conscious experience, consisting of ideas, which may be variously compounded, divided, compared, or dealt with by the subjective faculties with which the entity, mind, is supposed to be endowed. Matter of fact and matter of knowledge are thus at a stroke dissevered. The very notion of relation between mind and things leads at once to the counter notion of the absolute restriction of mind to its own subjective nature. That Locke was unable to reconcile these opposed notions is not surprising; that the difficulties and obscurities of the *Essay* arise from the impossibility of reconciling them is evident on the slightest consideration of the main positions of that work. Of these difficulties the philosophies of Berkeley and Hume are systematic treatments. In Berkeley we find the resolute determination to accept only the one notion, that of mind as restricted to its own experience, and to attempt by this means to explain the nature of the external reality to which obscure reference is made. Any success in the attempt is due only to the fact that Berkeley introduces alongside of his individualist notion a totally new conception, that of mind itself as capable of reflection upon the whole of experience and of reference to the supreme mind as the ground of all reality.

It is only in Hume that we have definitely and completely the evolution of the individualist notion as groundwork of a theory of knowledge; and it is in his writings, therefore, that we may expect to find the fundamental difficulty of that notion clearly apparent. It is not a little remarkable that we should find in Hume, not only the sceptical dissolution of all fixity of cognition, which is the inevitable result of the individualist method, but also the clearest consciousness of the very root of the difficulty. The systematic application of the doctrine that conscious experience consists only of isolated objects of knowledge, impressions or ideas, leads Hume to distinguish between truths reached by analysis and truths which involve real connection of the objects of knowledge. The first he is willing to accept without further inquiry, though it is an error to suppose, as Kant seems to have supposed, that he regarded mathematical propositions as coming under this head (*see* HUME, DAVID); with respect to the second, he finds himself hopelessly at fault. No real connections between isolated objects of experience are perceived. No single matter of fact necessarily implies the existence of any other. In short, if the difficulty be put in its ultimate form, no existence can transcend itself,

or imply relation to any other existence. If the parts of conscious experience are regarded as distinct things, there is no possibility of connecting them other than contingently, if at all. If the individual mind be really thought of as individual, it is impossible to explain how it should have knowledge at all. "In short," says Hume, "there are two principles which I cannot render consistent, nor is it in my power to renounce either of them, viz., *that all our distinct perceptions are distinct existences,* and *that the mind never perceives any real connection among distinct existences.* Did our perceptions either inhere in something simple or individual, or did the mind perceive some real connection among them, there would be no difficulty in the case" (App. to *Treatise of Human Nature*).

Thus, on the one hand, the individualist conception leads to the total negation of all real cognition. If the real system of things, to which conscious experience has reference, be regarded as standing in casual relation to this experience there is no conceivable ground for the extension to reality of the notions which somehow are involved in thought. The same result is apparent, on the other hand, when we consider the theory of knowledge implied in the Leibnizian individualism. The metaphysical conception of the monads, each of which is the universe *in nuce,* presents insuperable difficulties when the connection of the monads is in question, and these difficulties obtrude themselves when the attempt is made to work out a consistent doctrine of cognition. For the whole mass of cognizable fact is contained *impliciter* in each monad, and the several modes of apprehension can only be regarded as so many stages in the developing monad. Sense and understanding, real connection of facts and analysis of notions, therefore, differ only in degree. The same fundamental axioms, the logical principles of identity and sufficient reason, are applicable in explanation of all given propositions. It is true that Leibniz himself did not work out any complete doctrine of knowledge, but in the hands of his successors the theory took definite shape in the principle that the whole work of cognition is in essence analytical. The process of analysis might be complete or incomplete. For finite intelligences there was an inevitable incompleteness so far as knowledge of matters of fact was concerned. In respect to them, the final result was found in a series of irreducible notions or categories, the analysis and elucidation of which was specifically the business of philosophy.

It will be observed that, in the Leibnizian as in the empirical individualism, the fundamental notion is still that of the abstract separation of the thinking subject from the materials of conscious experience. From this separation arise all the difficulties in the effort to develop the notion systematically, and in tracing the history of Kant's philosophical progress we are able to discern the gradual perception on his part that here was to be found the ultimate cause of the perplexities which became apparent in considering the subordinate doctrines of the system. The successive essays composing Kant's precritical work are not so many imperfect sketches of the doctrines of the *Kritik.* They are essentially tentative, and exhibit the manner in which the difficulties of a received theory force on a more comprehensive view.

Logical and Real Ground.—The particular problem which gave the occasion to the first of the precritical writings is the question to which the *Kritik* is an answer. What is the nature of the distinction between knowledge gained by analysis of notions and knowledge of matters of fact? Kant seems never to have been satisfied with the Wolffian identification of logical axioms and of the principle of sufficient reason. The tract on the *False Subtlety of the Four Syllogistic Figures,* in which the view of thought as analytic is clearly expressed, closes with the significant division of judgments into those which rest upon the logical axioms of identity and contradiction and those for which no logical ground can be shown. Such immediate judgments, it is said, abound in our experience. They are the foundations for all judgments regarding real existence. It was impossible that the question regarding their nature and legitimacy and their distinction from analytic judgments should not present itself to him. The three tracts belonging to the years 1763–64 bring forward the essential opposition between the two classes of judgments. In the *Essay on Negative Quantities,* the fundamental thought is the total distinction in kind between logical opposition and real opposition. For the one adequate explanation is found in the logical axiom of analytical thinking; for the other no such explanation is to be had. Logical ground and real ground are distinct. "I can understand perfectly well," says Kant, "how a consequence follows from its reason according to the law of identity, since it is discoverable by mere analysis of the notion contained in it. . . . But how something follows from another thing and not according to the law of identity, this I should gladly have made clear to me. . . . How shall I comprehend that, since something is, something else should be?" Real things, in short, are distinct existences and not necessarily connected in thought.

The prize essay *On the Principles of Natural Theology and Morals* brings forward the same fundamental opposition. Here, for the first time, appears definitely the distinction between synthesis and analysis, and in the distinction is found the reason for the superior certainty and clearness of mathematics as opposed to philosophy. Mathematics proceeds synthetically, for in it the notions are constructed. Metaphysics is analytical in method; in it the notions are given, and by analysis they are cleared up. Kant does not, in this place, raise the question as to the reason for assuming that the arbitrary synthesis of mathematical construction has any reference to reality. The deeper significance of synthesis has not yet become apparent.

In the *Only Possible Ground of Proof for the Existence of God,* the argument, though largely Leibnizian, advances one step farther towards the ultimate inquiry. For there Kant states precisely his fundamental doctrine that real existence is not a predicate to be added in thought to the conception of a possible subject. So far as thought is concerned, possibility, not real existence, is contained in judgment.

The year 1765 was marked by the publication of Leibniz's posthumous *Nouveaux Essais,* in which his theory of knowledge is more fully stated than in any of his previous tracts. Kant gave some attention to this work, though no reference to it occurs in his writings, and it may have assisted to give additional precision to his doctrine. In the essay, *Dreams of a Clairvoyant,* published 1766, he emphasizes his previous conclusion that connections of real fact are mediated in our thought by ultimate notions, but adds that the warrant for such notions can be furnished only by experience. He is inclined, therefore, to regard as the function of metaphysics the complete statement of these ultimate, indemonstrable notions, and therefore the determination of the limits to knowledge by their means. Even at this point, the difficulty raised by Hume does not occur to him. He still appears to think that experience does warrant the employment of such notions, and when there is taken into account his correspondence with Lambert during the next few years, one would be inclined to say that the *Architektonik* of the latter represents most completely Kant's idea of philosophy.

On another side Kant had been shaking himself free from the principles of the Leibnizian philosophy. According to Leibniz, space resulted from the relations of monads to one another. But Kant began to see that such a conception did not accord with the manner in which we determine directions or positions in space. In the essay, *On the Ground of distinguishing Particular Divisions in Space,* he pointed out that the idea of space as a whole is not deducible from the experience of particular spaces, or particular relations of objects in space, that we only cognize relations in space by reference to space as a whole, and finally that definite positions involve reference to space as a given whole.

Sense and Understanding.—The whole development of Kant's thought up to this point is intelligible when regarded from the Leibnizian point of view, with which he started. Even in the *Dissertation* of 1770 the really critical question is not involved. Sense and understanding, according to the *Dissertation,* are the two sources of knowledge. The objects of the one are things of sense or *phenomena;* the objects of the other are *noumena.* These are absolutely distinct, and are not to be regarded as differing only in degree. In *phenomena* we distinguish *matter,* which is given by sense, and *form,* which is the law of the order of sensations

Such form is twofold—the order of space and time. Sensations formed by space and time compose the world of appearance, and this when treated by the understanding, according to logical rules, is *experience*. But the logical use of the understanding is not its only use. Much more important is the *real* use, by which are produced the pure notions whereby we think things as they are. These pure notions are the laws of the operation of the intellect; they are *leges intellectus*.

Apart, then, from the expanded treatment of space and time as subjective forms, we find in the *Dissertation* little more than the very precise and definite formulation of the slowly growing opposition to the Leibnizian doctrines. That the pure intellectual notions should be defended as springing from the nature of intellect is not out of harmony with the statement of the *Träume eines Geistersehers*, for there the pure notions were allowed to exist, but were not held to have validity for actual things except on grounds of experience. Here they are supposed to exist, dissevered from experience, and are allowed validity as determinations of things in themselves.

The stage which Kant had now reached in his philosophical development was one of great significance. The doctrine of knowledge expressed in the *Dissertation* was the final form which the Wolffian rationalism could assume for him, and, though many of the elements of the *Kritik* are contained therein, it was not really in advance of the Wolffian theory. The doctrine of space and time as forms of sense-perception, the reference of both space and time and the pure intellectual notions to the laws of the activity of mind itself, the distinction between sense and understanding as one of kind, not of degree, with the correlative distinction between phenomena and noumena,—all of these reappear, though changed and modified, in the *Kritik*. But the real import of Hume's sceptical problem had not yet dawned upon Kant.

Up to the stage indicated by the *Dissertation* he had been attempting, in various ways, to unite two radically divergent modes of explaining cognition—that which would account for the content of experience by reference to affection from things without us, and that which viewed the intellect itself as somehow furnished with the means of pure, rational cognition. He now discovered that Hume's sceptical analysis of the notion of cause was really the treatment of one typical instance of the much more general problem. If experience, says Hume, consists solely of states of mind somehow given to us, each of which exists as an effect, and therefore as distinct from others, with what right do we make the common assumption that parts of experience are necessarily connected? The only possible answer, drawn from the premises laid down, must be that there is no warrant for such an assumption. Necessity for thought implies something more than is given in experience—for that which is given is contingent—and rests upon an *a priori* or pure notion. But *a priori* notions, did they exist, could have no claim to regulate experience. Hume, therefore, for his part, rejected entirely the notion of cause as being fictitious and delusive, and professed to account for the habit of regarding experience as necessarily connected by reference to arbitrarily formed custom of thinking. Experience, as given contingent material, had a certain uniformity, and recurring uniformities generated in us the habit of regarding things as necessarily connected.

The Critique of Pure Reason.—The dogmatic or individualist conception of experience had thus proved itself inadequate to the solution of Hume's difficulty regarding the notion of cause. The perception of its inadequacy in this respect, and the consequent generalization of Hume's problem, are the essential features of the new critical method. For Kant was now prepared to formulate his general inquiry in a definite fashion. His reflection on the Wolffian doctrine of knowledge had made clear to him that synthetic connection, the essence of real cognition, was not contained in the products of thinking as a formal activity of mind operating on material otherwise supplied. On the other hand, Hume's analysis enabled him to see that synthetic connection was not contained in experience regarded as given material. Thus neither the formal nor the material aspect of experience, supplied any foundation for real knowledge, whether *a priori* or empirical. An absolutely new conception of experience was necessary, if the fact of cognition was to be explained at all, and the various modes in which Kant expresses the business of his critical philosophy were merely different fashions of stating the one ultimate problem. How is it possible for the individual thinking subject to connect together the parts of his experience in the mode we call cognition?

The problem of the critical philosophy is, therefore, the complete analysis of experience from the point of view of the conditions under which such experience is possible for the conscious subject. The central ideas are thus self-consciousness, as the supreme condition under which experience is subjectively possible, and the manifold details of experience as a varied and complex whole. The solution of the problem demanded the utmost care in keeping the due balance between these ideas; and it can hardly be said that Kant was perfectly successful.

In any detailed exposition of the critical system it would be requisite in the first place to state with some fullness the precise nature of the problems immediately before Kant, and in the second place to follow with some closeness the successive stages of the system as presented in the three main works, the *Critique of Pure Reason*, the *Critique of Practical Reason* and the *Critique of Judgment*, with the more important of the minor works, the *Metaphysic of Nature* and the *Metaphysic of Ethics*. It would be necessary, also, in any such expanded treatment, to bring out clearly the Kantian classification of the philosophical sciences, and to indicate the relation between the critical or transcendental investigation of the several faculties and the more developed sciences to which that investigation serves as introduction. As any detailed statement of the critical system, however compressed, would be beyond the limits of the present article, it is proposed here to select only the more salient doctrines, and to point out in connection with them what advance had been effected by Kant, and what remained for subsequent efforts at full solution of the problems raised by him.

The doctrine from which Kant starts in his critical or transcendental investigation of knowledge is that to which the slow development of his thought had led him. The essence of cognition or knowledge was a synthetic act, an act of combining in thought the detached elements of experience. Now synthesis was explicable neither by reference to pure thought, the logical or elaborative faculty, which in Kant's view remained analytic in function, nor by reference to the effects of external real things upon our faculties of cognition. For, on the one hand, analysis or logical treatment applied only to objects of knowledge as already given in synthetic forms, and, on the other hand, real things could yield only isolated effects and not the combination of these effects in the forms of cognitive experience. If experience is to be matter of knowledge for the conscious subject, it must be regarded as the conjoint product of given material and synthetic combination. Form and matter may indeed be dealt with in isolation for purposes of critical inquiry, but in experience they are inseparably united. The problem of the *Kritik* thus becomes the complete statement of the elements necessarily involved in synthesis, and of the processes by which these elements are realized in individual consciousness. He is not asking, with Locke, whence the details of experience arise; but he is endeavouring to state exhaustively what conditions are necessarily involved in knowledge, *i.e.*, in any synthetic combination of parts of experience by the conscious subject.

So far as the elements necessarily involved in conscious experience are concerned, these may be enumerated briefly thus:—given data of sense, inner or outer: the forms of perception, *i.e.*, space and time; the forms of thought, *i.e.*, the categories; the ultimate condition of knowledge, the identity of the pure ego or self. The self is the central unity in reference to which alone is any part of experience cognizable. But the consciousness of self is the foundation of knowledge only when related to given material. The ego has not in itself the element of difference, and the essence of knowledge is the consciousness of unity in difference. For knowledge, therefore, it is necessary that difference should be *given* to the ego. The modes under which the isolated data can be synthetically combined so as to form a cognizable whole make up the form of cognition, and upon this form rests the possibility of any *a priori* or rational knowledge.

Data of sense-affection do not contain in themselves synthetic combination. The first conditions of such combination are found by Kant in the universal forms under which alone sense-phenomena manifest themselves in experience. These universal forms of perception, space and time, are necessary, *a priori,* and in characteristic features resembling intuitions, not notions. They occupy, therefore, a peculiar position, and one section of the *Kritik,* the *Aesthetik,* is entirely devoted to the consideration of them. It is only through *a priori* character of these perceptive forms that rational science of nature is at all possible. Kant is here able to resume, with fresh insight, his previous discussions regarding the synthetic character of mathematical propositions. In his early essays he had rightly drawn the distinction between mathematical demonstration and philosophic proof, referring the certainty of the first to the fact that the constructions were synthetic in character and entirely determined by the action of constructive imagination. It had not then occurred to him to ask, With what right do we assume that the conclusions arrived at from arbitrary constructions in mathematical matter have applicability to objects of experience? Might not mathematics be a purely imaginary science? To this question he is now enabled to return an answer. Space and time, the two essential conditions of sense-perception, are not data given by things, but universal forms of intellect into which all data of sense must be received. Hence, whatever is true of space and time regarded by imagination as objects, *i.e.,* quantitative constructions, must be true of the objects making up our sense-experience. The same forms and the same constructive activity of imagination are involved in mathematical synthesis and in the constitution of objects of sense-experience. The foundation for pure or rational mathematics, there being included under this the pure science of movement, is thus laid in the critical doctrine of space and time.

The *Aesthetik* isolates sense-perception, and considers its forms as though it were an independent, complete faculty. A certain confusion, arising from this, is noticeable in the *Analytik* when the necessity for justifying the position of the categories is under discussion, but the real difficulty in which Kant was involved by his doctrine of space and time has its roots even deeper than the erroneous isolation of sensibility. He has not in any way "deduced" space and time, but, proceeding from the ordinary current view of sense-experience, has found these remaining as residuum after analysis. The relation in which they stand to the categories or pure notions is ambiguous; and, when Kant has to consider the fashion in which category and data of sense are to be brought together, he merely places side by side as *a priori* elements the pure connective notions and the pure forms of perception, and finds it, apparently, only a matter of contingent convenience that they should harmonize with one another and so render cognition possible. To this point Fichte was the first to call attention.

Affection of sense, even when received into the pure forms of perception, is not matter of knowledge. For cognition there is requisite synthetic combination, and the intellectual function through which such combination takes place. The forms of intellectual function Kant proceeds to enumerate with the aid of the commonly received logical doctrines. For this reference to logic he has been severely blamed, but the precise nature of the debt due to the commonly accepted logical classification is very generally misconceived. Synthetic combination, Kant points out, is formally expressed in a judgment, which is the act of uniting representations. At the foundation of the judgments which express the types of synthetic combination, through which knowledge is possible, lie the pure general notions, the abstract aspect of the conditions under which objects are cognizable in experience. General logic has also to deal with the union of representations, though its unity is analytic merely, not synthetic. But the same intellectual function which serves to give unity in the analytic judgments of formal logic serves to give unity to the synthetic combinations of real perception. It appeared evident, then, to Kant that in the forms of judgment, as they are stated in the common logic, there must be found the analogues of the types of judgment which are involved in transcendental logic, or in the theory of real cognition. His view of the ordinary logic was wide and comprehensive, though in his restriction of the science to pure form one can trace the influence of his earlier training, and it is no small part of the value of the critical philosophy that it has revived the study of logic and prepared the way for a more thorough consideration of logical doctrines. The position assigned to logic by Kant is not, in all probability, one which can be defended; indeed, it is hard to see how Kant himself, in consistency with the critical doctrine of knowledge, could have retained many of the older logical theorems, but the precision with which the position was stated, and the sharpness with which logic was marked off from cognate philosophic disciplines, prepared the way for the more thoughtful treatment of the whole question. (*See* LOGIC, HISTORY OF.)

Categories.—Formal logic thus yields to Kant the list of the general notions, pure intellectual predicates, or categories, through which alone experience is possible for a conscious subject. (*See* CATEGORY.) It has already been noted how serious was the error involved in the description of these as notions, without further attempt to clear up their precise significance. Kant, indeed, was mainly influenced by his strong opposition to the Leibnizian rationalism, and therefore assigns the categories to understanding, the logical faculty, without consideration of the question—which might have been suggested by the previous statements of the *Dissertation*—what relation these categories held to the empirical notions formed by comparison, abstraction and generalization when directed upon representations of objects. But when the categories are described as notions, *i.e.,* formed products of thought, there rises of necessity the problem which had presented itself to Kant at every stage of his pre-critical thinking—with what right can we assume that these notions apply to objects of experience? The answer which he proceeds to give altogether explodes the definition of the categories as formed products of thought, and enables us to see more clearly the nature of the new conception of experience which lies in the background of all the critical work.

The unity of the ego, as an element entering into the synthesis of cognition, is a unity of a quite distinct and peculiar kind. That the ego to which different parts of experience are presented must be the same ego, if there is to be cognition at all, is analytically evident; but the peculiarity is that the ego must be conscious of its own unity and identity, and this unity of self-consciousness is only possible in relation to difference not contained in the ego but given to it. The unity of apperception, then, as Kant calls it, is only possible in relation to synthetic unity of experience itself, and the forms of this synthetic unity, the categories, are, therefore, on the one hand, necessary as forms in which self-consciousness is realized, and, on the other hand, restricted in their application and validity to the data of given sense, or the particular element of experience. Thus experience presents itself as the organic combination of the particular of sense with the individual unity of the ego through the universal forms of the categories. Reference of representations to the unity of the object, synthetic unity of apperception, and subsumption of data of sense under the categories, are thus three sides or aspects of the one fundamental fact.

In this deduction of the categories there appears for the first time an endeavour to connect together into one organic whole the several elements entering into experience. It is evident, however, that much was wanting before this essential task could be regarded as complete. Kant has certainly brought together self-consciousness, the system of the categories and data of sense. He has shown that the conditions of self-consciousness are the conditions of possible experience. But he has not shown, nor did he attempt to show, how it was that the conditions of self-consciousness are the very categories arrived at by consideration of the system of logical judgments. He does endeavour to show, but with small success, how the junction of category and data of sense is brought about, for according to his scheme these stood, to a certain extent at least, apart from and independent of one another.

Kantian Imperfections.—The mode in which Kant endeavours to show how the several portions of cognition are subjectively realized brings into the clearest light the inconsistencies and imperfections of his doctrine. Sense had been assumed as furnishing the particular of knowledge, understanding as furnishing the universal; and it had been expressly declared that the particular was

cognizable only in and through the universal. Still, each was conceived as somehow in itself complete and finished. Sense and understanding had distinct functions, and there was wanting some common term, some intermediary which should bring them into conjunction. Data of sense as purely particular could have nothing in common with the categories as purely universal. But data of sense had at least one universal aspect—their aspect as the particular of the general forms, space and time. Categories were in themselves abstract and valueless, serviceable only when restricted to possible objects of experience. There was thus a common ground on which category and intuition were united in one, and an intermediate process whereby the universal of the category might be so far individualized as to comprehend the particular of sense. This intermediate process—which is really the junction of understanding and sense—Kant calls productive imagination, and it is only through productive imagination that knowledge or experience is actually realized in our subjective consciousness. The specific forms of productive imagination are called *Schemata,* and upon the nature of the schema Kant gives much that has proved of extreme value for subsequent thought.

Productive imagination is thus the concrete element of knowledge, and its general modes are the abstract expression of the *a priori* laws of all possible experience. The categories are restricted in their applicability to the schema, *i.e.,* to the pure forms of conjunction of the manifold in time, and in the modes of combination of schemata and categories we have the foundation for the rational sciences of mathematics and physics. Perception or real cognition is thus conceived as a complex fact, involving data of sense and pure perceptive forms, determined by the category and realized through productive imagination in the schema. The system of principles which may be deduced from the consideration of the mode in which understanding and sense are united by productive imagination is the positive result of the critical theory of knowledge, and some of its features are remarkable enough to deserve attention. According to his usual plan, Kant arranges these principles in conformity with the table of the categories, dividing the four classes, however, into two main groups, the mathematical and the dynamical.

The mathematical principles are the abstract expression of the necessary mode in which data of sense are determined by the category in the form of intuitions or representations of objects; the dynamical are the abstract expression of the modes in which the existence of objects of intuition is determined. The mathematical principles are constitutive, *i.e.,* express determinations of the objects themselves; the dynamical are regulative, *i.e.,* express the conditions under which objects can form parts of real experience. Under the mathematical principles come the general rules which furnish the ground for the application of quantitative reasoning to real facts of experience. For as data of sense are only possible objects when received in the forms of space and time, and as space and time are only cognized when determined in definite fashion by the understanding through the schema of number (quantity) or degree (quality), all intuitions are extensive quantities and contain a real element, that of sense, which has degree.

Under the dynamical principles, the general modes in which the existence of objects are determined, fall the analogies of experience, or general rules according to which the existence of objects in relation to one another can be determined, and the postulates of experience, the general rules according to which the existence of objects for us or our own subjective existence can be determined. The analogies of experience rest upon the order of perceptions in time, *i.e.,* their permanence, succession or coexistence, and the principles are respectively those of substance, causality and reciprocity. Kant in the expression of these analogies reaches the final solution of the difficulty as to the relation of the pure connective notions to experience. These notions are not directly applicable to experience, nor do we find in experience anything corresponding to the pure intellectual notions of substance, cause and reciprocity. But experience is for us the combination of data of sense in the forms of productive imagination, forms determined by the pure intellectual notions, and accordingly experience is possible for us only as in modes corresponding to the notions. The permanent in time is substance in any possible experience, and no experience is possible save through the determination of all changes as in relation to a permanent in time. Determined sequence is the causal relation in any possible experience, and no experience is possible save through the determination of perceived changes as in relation to a determined order in time. So with coexistence and reciprocity.

The postulates of experience are general expressions of the significance of existence in the experience of a conscious subject. The element of reality in such experience must always be given by intuition, and, so far as determination of existence is assumed, external intuition is a necessary condition of inner intuition. The existence of external things is as certain as the existence of the concrete subject, and the subject cannot cognize himself as existing save in relation to the world of facts of external perception. Inner and outer reality are strictly correlative elements in the experience of the conscious subject.

Throughout the positive portion of his theory of cognition, Kant has been beset by the doctrine that the categories, as finished, complete notions, have an import or significance transcending the bounds of possible experience. Moreover, the manner in which space and time had been treated made it possible for him to regard these as contingent forms, necessary for intelligences like ours, but not to be viewed as absolutely necessary. The real meaning of these peculiarities is hardly ever expressed by him, though it is clear that the solution of the matter is to be found in the inadequacy of the positive theory to meet the demands of reason for completed explanation. But the conclusion to which he was led was one of the greatest importance for the after development of his system. Cognition is necessarily limited. The categories are restricted in their application to elements of possible experience to that which is presented in intuition, and all intuition is for the ego contingent. But to assert that cognition is limited and its matter contingent is to form the idea of an intelligence for whom cognition would not be limited and for whom the data of intuition would not be given, contingent facts, but necessarily produced along with the pure categories. This idea of an intuitive understanding is the definite expression for the complete explanation which reason demands, and it involves the conception of a realm of objects for such an understanding, a realm of objects which, in opposition to the *phenomena* of our relative and limited experience, may be called *noumena* or things-in-themselves. The *noumenon,* therefore, is in one way the object of a non-sensuous intuition, but more correctly is the expression of the limited and partial character of our knowledge. The idea of a noumenon is thus a limiting notion.

Assuredly, the difficult section of the *Kritik,* on the ground of the distinction between phenomena and noumena, would not have led to so much misconception as it has done, had Kant then brought forward what lies at the root of the distinction, his doctrine of reason and its functions. Understanding, as has been seen, is the faculty of cognition strictly so called; and within its realm, that of space, time and matter, positive knowledge is attainable. But the ultimate conception of understanding, that of the world of objects, quantitatively determined, and standing in relation of mutual reciprocity to one another, is not a final ground of explanation. We are still able and necessitated to reflect upon the whole world of phenomena as thus cognized, and driven to inquire after its significance. In our reflection we necessarily treat the objects, not as phenomena, as matters of positive, scientific knowledge, but as things-in-themselves, as noumena. The distinction between phenomena and noumena is, therefore, nothing but the expression of the distinction between understanding and reason, a distinction which, according to Kant, is merely subjective.

The specific function of reason is the effort after completed explanation of the experience presented in cognition. But in such effort there are no notions to be employed other than the categories, and these, as has already been seen, have validity only in reference to objects of possible experience. We may expect, then, to find the transcendent employment of the categories leading into various difficulties and inconsistencies. The criticism of reason in its specific aspect throws fresh light on the limits to human knowledge and the significance of experience.

Experience has presented itself as the complex result of relation between the ego or subject and the world of phenomena. Reason may therefore attempt a completed explanation either of the ego or of the world of phenomena or of the total relation between them. The three inquiries correspond to the subjects of the three ancient metaphysical sciences, rational psychology, rational cosmology, rational theology. It is readily seen, in regard to the first of them, that all attempts to determine the nature of the ego as a simple, perdurable, immaterial substance rest upon a confusion between the ego as pure logical unity and the ego as object of intuition, and involve a transcendent use of the categories of experience. It profits not to apply such categories to the soul, for no intuition corresponding to them is or can be given. The idea of the soul must be regarded as transcendent. So too when we endeavour, with the help of the categories of quantity, quality, relation and modality, to determine the nature and relation of parts of the world, we find that reason is landed in a peculiar difficulty. Any solution that can be given is too narrow for the demands of reason and too wide for the restrictions of understanding. The transcendent employment of the categories leads to antinomy, or equally balanced statements of apparently contradictory results. Due attention to the relation between understanding and reason enables us to solve the antinomies and to discover their precise origin and significance. Finally, the endeavour to find in the conception of God, as the supreme reality, the explanation of experience, is seen to lead to no valid conclusion. There is not any intuition given whereby we might show the reality of our idea of a Supreme Being. So far as knowledge is concerned, God remains a transcendental ideal. (*See* TRANSCENDENTALISM; RATIONALISM; KNOWLEDGE, THEORY OF.)

The Critique of Practical Reason.—The criticism of the transcendental ideas, which is also the examination of the claims of metaphysic to rank as a science, yields a definite and intelligible result. These ideas, the expression of the various modes in which unity of reason may be sought, have no objects corresponding to them in the sphere of cognition. They have not, therefore, like the categories, any *constitutive* value, and all attempts at metaphysical construction with the notions or categories of science must be resigned as of necessity hopeless. But the ideas are not, on that account, destitute of all value. They are supremely significant, as indicating the very essence of the function of reason. The limits of scientific cognition become intelligible, only when the sphere of understanding is subjected to critical reflection and compared with the possible sphere of reason, that is, the sphere of rationally complete cognition. The ideas, therefore, in relation to knowledge strictly so called, have *regulative* value, for they furnish the general precepts for extension and completion of knowledge, and, at the same time, since they spring from reason itself, they have a real value in relation to reason as the very inmost nature of intelligence. Self-consciousness cannot be regarded as merely a mechanically determined result. Free reflection upon the whole system of knowledge is sufficient to indicate that the sphere of intuition, with its rational principles, does not exhaust conscious experience. There still remains, over and above the realm of nature, the realm of free, self-conscious spirit; and, within this sphere, it may be anticipated that the ideas will acquire a significance richer and deeper than the merely regulative import which they possess in reference to cognition.

Where, then, are we to look for this realm of free self-consciousness? Not in the sphere of cognition, where objects are mechanically determined, but in that of will or of reason as practical. That reason is practical or prescribes ends for itself is sufficiently manifest from the mere fact of the existence of the conception of morality or duty, a conception which can have no corresponding object within the sphere of intuition, and which is theoretically, or in accordance with the categories of understanding, incognizable. The presence of this conception is the datum upon which may be founded a special investigation of the conditions of reason as practical, a *Kritik* of pure practical reason, and the analysis of it yields the statement of the formal prescripts of morality.

The realization of duty is impossible for any being which is not thought as free, *i.e.*, capable of self-determination. Freedom, it is true, is theoretically not an object of cognition, but its impossibility is not thereby demonstrated. The theoretical proof rather serves as useful aid towards the more exact determination of the nature and province of self-determination, and of its relation to the whole concrete nature of humanity. For in man self-determination and mechanical determination by empirical motives coexist, and only in so far as he belongs and is conscious of belonging both to the sphere of sense and to the sphere of reason does moral obligation become possible for him. The supreme end prescribed by reason in its practical aspect, namely, the complete subordination of the empirical side of nature to the prescripts of morality, demands, as conditions of its possible realization, the permanence of ethical progress in the moral agent, the certainty of freedom in self-determination, and the necessary harmonizing of the spheres of sense and reason through the intelligent author or ground of both. These conditions, the postulates of practical reason, are the concrete expressions of the three transcendental ideas, and in them we have the full significance of the ideas for reason. Immortality of the soul, positive freedom of will, and the existence of an intelligent ground of things are speculative ideas practically warranted, though theoretically neither demonstrable nor comprehensible. (*See* ETHICS, HISTORY OF.)

The Critique of Judgment.—Thus reason as self-determining supplies notions of freedom; reason as determined supplies categories of understanding. Union between the two spheres, which seem at first sight disparate, is found in the necessary postulate that reason shall be realized, for its realization is only possible in the sphere of sense. But such a union, when regarded *in abstracto,* rests upon, or involves, a notion of quite a new order, that of the adaptation of nature to reason, or, as it may be expressed, that of end in nature. Understanding and reason thus coalesce in the faculty of *judgment,* which mediates between, or brings together, the universal and particular elements in conscious experience. Judgment is here merely *reflective;* that is to say, the particular element is given, so determined as to be possible material of knowledge, while the universal, not necessary for cognition, is supplied by reason itself. The empirical details of nature, which are not determined by the categories of understanding, are judged as being arranged or ordered by intelligence, for in no other fashion could nature, in its particular, contingent aspect be thought as forming a complete, consistent, intelligible whole.

The investigation of the conditions under which adaptation of nature to intelligence is conceivable and possible makes up the subject of the third great *Critique,* the *Critique of Judgment.* The general principle of the adaptation of nature to our faculties of cognition has two specific applications, with the second of which it is more closely connected than with the first. In the first place, the adaptation may be merely *subjective,* when the empirical condition for the exercise of judgment is furnished by the feeling of pleasure or pain; such adaptation is aesthetic. In the second place, the adaptation may be objective or logical, when empirical facts are given of such a kind that their possibility can be conceived only through the notion of the end realized in them; such adaptation is teleological, and the empirical facts in question are organisms.

Aesthetics, or the scientific consideration of the judgments resting on the feelings of pleasure and pain arising from the harmony or want of harmony between the particular of experience and the laws of understanding, is the special subject of the *Critique of Judgment,* but the doctrine of teleology there unfolded is the more important for the complete view of the critical system. For the analysis of the teleological judgment and of the consequences flowing from it leads to the final statement of the nature of experience as conceived by Kant. The phenomena of organic production furnish data for a special kind of judgment, which, however, involves or rests upon a quite general principle, that of the contingency of the particular element in nature and its subjectively necessary adaptation to our faculty of cognition. The notion of contingency arises, according to Kant, from the fact that understanding and sense are distinct, that understanding does not determine the particular of sense, and, consequently, that the principle of the adaptation of the particular to our understanding is merely supplied by

reason on account of the peculiarity or limited character of understanding. End in nature, therefore, is a subjective or problematic conception, implying the limits of understanding, and consequently resting upon the idea of an understanding constituted unlike ours—of an intuitive understanding in which particular and universal should be given together. The idea of such an understanding is, for cognition, transcendent, for no corresponding fact of intuition is furnished, but it is realized with practical certainty in relation to reason as practical. For we are, from practical grounds, compelled with at least practical necessity to ascribe a certain aim or end to this supreme understanding. The moral law, or reason as practical, prescribes the realization of the highest good, and such realization implies a higher order than that of nature. We must, therefore, regard the supreme cause as a moral cause, and nature as so ordered that realization of the moral end is in it possible. The final conception of the Kantian philosophy is, therefore, that of ethical teleology.

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KANURI or **BERIBERI,** an African tribe of mixed origin, the dominant race of Bornu. They are large-boned and coarse-featured, with a strain of Fula blood. Beriberi (or Berberi) is the name given them by the Hausa.

See C. K. Meek, *Northern Nigeria* (1925).

KAOLINITE. A hydrated aluminium silicate having the formula $Al_2O_3 \cdot 2SiO_2 \cdot 2H_2O$. This mineral was so named, by S. W. Johnson and T. M. Blake, in 1867 from Kaolin (*see* under CHINA CLAY) of which it is the principal ingredient. It occurs in scales which are crystalline but too minute for identification under the microscope. The silvery-white powder, found at Almwich in Anglesea, is described by A. Dick as consisting of minute hexagonal plates, with perfect basal cleavage, which belong to the monoclinic system. Kaolinite is a decomposition product of many aluminium silicates (*e.g.,* albite, orthoclase, leucite, scapolite, beryl and topaz); but all large deposits of china clay are due to the decomposition of orthoclase felspar in granite. Ball clay, or potters' clay and common clay are also mixtures of kaolinite, or lithomarge and halloysite, which are compact or colloidal varieties of the same mineral, with other decomposition products and minerals which resist weathering such as quartz, muscovite and other silicates. Kaolin is used as a pigment; in pencil manufacture, for mixing with graphite; and as a filler for paper and textiles. (F. H. HA.)

KAPELLMEISTER, the German name for a conductor or musical director. Originally it meant literally, as the name implies, chapel-master, or the official responsible for the music in a church or chapel, equivalent terms with the same meaning being *Maître de chapelle* in French and *maestro di capella* in Italian. In the course of time, however, the meaning of the term has been extended to include any kind of musical director, and it was in this sense that Wagner used it when he coined the sarcastic name *Kapellmeistermusik* as a synonym for music of a commonplace and conventional character.

KAPOK (*Ceiba pentandra,* var. *indica*), a tree of the bombax family (Bombaceae) cultivated in Java, and less extensively in the Philippines, Federated Malay States and Ceylon, for the production of down, commercially called kapok. The tree is native to the West Indies and other parts of tropical America. Grown under widely different conditions, it has developed numerous strains or varieties. In the American, African and Asiatic tropics there are now known 54 different species of trees of the bombax family which yield down similar, and in some cases apparently superior, to that of Java kapok. The species now known include 11 species of the genus Ceiba, 25 species of Bombax, 7 of Chorisia and 11 of Gossampinus. There has been little systematic selection in production, less than 10% of the Java kapok trees being grown on exclusively kapok plantations. The tree begins to produce fibre when from 5 to 7 years old, and with reasonable care may yield satisfactory crops for 50 years or longer. Not a textile fibre, kapok does not compete with cotton for yarn or woven fabrics. But it is very resilient, buoyant and water-resisting, and highly moisture-proof. Because of these qualities, it is valuable for stuffing mattresses, pillows and life preservers, for use in bathing suits and water wings and for temperature insulation. Its popularity is growing, especially in the U.S., which imports from 6,000 to 10,000 tons of kapok per year. The seeds of the tree yield kapok oil, a yellowish-green oil of pleasant odour and taste, used for food and in soapmaking. (B. B. R.)

KAPP, GISBERT (1852–1922), electrical engineer, was born at Mauer, near Vienna, in 1852. His father was German and his

mother Scottish. Kapp studied at Zürich, and after travelling in Europe and north Africa he took a post in 1875 with Messrs. Crompton and company, at Chelmsford. In conjunction with Crompton, Kapp invented a system of compound winding for direct current dynamos. From 1894 to 1904 he lived in Berlin, when he was secretary of the German association of electrical engineers, lecturer at the Technische Hochschule, Charlottenburg, and editor of the *Electrotechnische Zeitschrift*. He also lectured at various universities and acted as a consulting engineer on matters concerning electric lighting, power and traction. In this latter capacity he advised a number of European towns. He was appointed professor of electrical engineering at Birmingham university in 1904 and retired in 1918; he died on Aug. 10, 1922. Kapp developed a dynamo which has been used to a great extent but has now been superseded by a more modern type of machine. He designed power stations and transformers and invented many laboratory methods of electrical testing. Kapp applied mathematics to problems of electrical engineering and worked out a number of simple and original theorems for practical use. He worked out the phase difference between an alternating potential difference and the resulting current and wrote a paper on boosters for return currents in electric railway plant. Kapp was awarded a number of honorary degrees and other honours, including the Telford medal. He was the author of *Principles of Electric Engineering, Vector Analysis of Alternating Currents, Dynamos, Alternators and Transformers* and *Electric Transmission of Energy*.

KAPP, WOLFGANG (1868–1922), German politician, was born in New York on July 24, 1868. He was the son of Friedrich Kapp, a national liberal member of the reichstag in Bismarck's time, and grew up under the Bismarckian influences. Having held various minor official posts, he founded the agricultural credit institute in East Prussia, which achieved great success in promoting the prosperity of landowners and farmers. He was consequently in close touch with the Junkers of East Prussia and during World War I made himself their mouthpiece in an attack on Bethmann Hollweg (*Die Nationalen Kreise und der Reichskanzler* [1916]). He was also one of the founders of the "Vaterslandspartei." For a brief period in 1918 he was a conservative member of the reichstag.

Kapp remained in the background till March 12, 1920, when the republican government suddenly issued an order for his arrest, which was not, however, executed. It became known that he had organized, with General von Lüttwitz and other officers and civilians, a conspiracy to occupy the government offices, and assume power in Berlin. This he actually succeeded in doing on the morning of March 13. The ministers withdrew to Dresden, and then to Stuttgart, and Captain Ehrhardt marched in from Döberitz, and occupied the government buildings. Kapp styled himself "chancellor of the *Reich*," and appointed Lüttwitz minister of war. But he had no real plans. The working classes of Berlin rendered the continuance of the Kapp regime impossible by declaring a universal strike, and on the evening of March 17 Kapp and Lüttwitz fled from Berlin. Warrants were issued for their arrest, but Lüttwitz disappeared completely, and Kapp eventually escaped by aeroplane to Sweden. In April 1922 he returned to Germany and was immediately arrested for high treason, but he died on June 12 before the case was heard.

KAPUNDA: *see* KOORINGA.

KAPURTHALA, an Indian state, within the Punjab. Area, 645 sq.mi.; pop. (1941) 378,380; estimated gross revenue, £280,000. The Kapurthala family is descended from Jassa Singh, who by his intelligence and bravery made himself the leading Sikh of his day. At one time it held possessions on both sides of the Sutlej, and also in the Bari Doab. The cis-Sutlej estates and scattered tracts in the Bari Doab were forfeited owing to the hostility of the chief in the first Sikh war; but in recognition of the loyalty of Raja Randhir Singh during the mutiny of 1857, when he led to Oudh a contingent which did good service, he received a grant of land in Oudh, 700 sq.mi. in extent, with gross rental £98,000. In Oudh, however, the chief has no sovereign powers, but only the status of a large landholder. Maharaja Sir Jagatjit Singh, the present ruler, was born in 1872, and succeeded his father in 1877. The state has a large export trade in wheat, sugar, tobacco and cotton.

Kapurthala contributed liberally for World War I and its troops served with distinction in East Africa. The town of Kapurthala is 11 miles from Jullundur; pop. (1941), 26,067.

KARACHAEV, an autonomous district, U.S.S.R., of the North Caucasian area, lying west of the Kabardino-Balkarian autonomous area and extending westwards as far as about longitude 41°, its western boundary running parallel with, but east of the Laba river, and the main ridge of the Caucasus forming its southern boundary. From 1922 to 1926, the Cherkess autonomous area to the north, between the Teberda and the Great Zelenchuk rivers, was included with it, but in 1926 the two areas were given separate administration, and the town of Batalpashinsk was transferred to the Armavir province of the North Caucasian area.

The Karachaev area occupies about 4,169.9 sq.mi. The population, including the Cherkess area with Batalpashinsk, was 149,925 in 1939 (urban 10,623, rural 139,302).

The snow and glacier-covered peaks of the Caucasus encircle it on the south, and the region is one of mountain valleys and high peaks, with alpine and sub-alpine meadows, forest clad slopes, and the torrent valleys of the upper Kuban and its tributaries, the most important being the Teberda; others are the upper courses of the Marka, Aksaut, Maruk, Great Zelenchuk, Kefar and Urun.

There are a few passes into Svanetia and Abkhasia, Tchiper Ayatz 10,717 ft., Tchiper Karachi 10,801 ft., Makhar 9,617 ft. and Klukhor 9,450 ft.—the last was used by Byzantine merchants in the 10th century. The watershed between the Kuban and some tributaries of the Terek, including the sources of the Kuma and Podkoumok, lies within the northeast of the area.

The climate varies with the height and aspect of the valleys, but the valleys of the upper streams of the Zelenchuk, Maruk, Aksaut, Teberda and Kuban are drier than the remaining valleys and are specially suitable for development as health resorts and sanatoria, having high insolation, pine woods, clear atmosphere and mineral springs. Capital expenditure on railways and buildings is planned for this purpose.

The town of Teberda on the Teberda river is already known as a health resort.

The Karachaevs are a Turco-Tatar people who came from the Crimea in the 15th century and settled in the valley of the Great Laba, and afterwards moved into the valley of the Great Zelenchuk and finally into the valley of the Baksan, a tributary of the Terek. They were driven thence by the Kabardians and then settled in their present location. Their language is closely allied to Balkarian and Nogai. Their wanderings led to much racial intermixture, especially with the Osetins, Abkhasians, Kabardians and Svanetians. Under the influence of the Kabardians they became Sunnite Mohammedans, but retained much of their original nature worship. Their main occupation is sheep and cattle rearing; before World War I they were employed on hunting expeditions by Russian sportsmen, the bear, wild boar and aurochs being found in these regions. Very little attention is paid to agriculture, a little maize and some potatoes being grown in a primitive way. The main food of the people is milk and meat; "kefir," a lactic ferment is made in the district, and fermented milk is the staple drink. Efforts are being made to improve the breeds of sheep and goats, and to raise the stamina of the draught cattle and horses by introducing the use of winter foods in place of reliance on nomad pastures. If the plan for developing the health resorts is successful, dairying should be valuable. There is already a milk and dairy *artel* supplying Teberda, and there are two cheese factories. The valuable timbers are little worked because of lack of transport facilities. In pre-revolution times silver, lead and zinc ore were worked by the Elbrus Mining company on the upper Kuban, and the mines have been re-opened and expanded. *Kustar* (peasant) industries are undeveloped, except spinning and weaving wool, and leather work for local necessities.

Means of communication are extremely poor; there is no railway and roads are almost non-existent for freightage purposes.

The rivers are too rapid for navigation. It is possible to get into the country either by the Mariinski pass from Kislovodsk or from Batalpashinsk along the Sukhum military highway; on the latter motor transport is possible as far as Teberda. Plans have been devised for a railway from Nevinnomyssk station on the main railway line, where it crosses Kuban river, south to Teberda, thence to Sukhum. In 1927, Kamennomost, at the junction of the Teberda and Kuban rivers, was made the administrative centre, under the name of Mikoyan-Shakhar, and the central government made a grant to the Karachaevs for the purpose of erecting government buildings, a primary and secondary school, a hospital, a cinema and a theatre.

A grammar of the Karachaev language exists, and some books in the vernacular. The Latin script has been adopted instead of the Turkish.

KARACHI (kŭ-rah′chē), a seaport city on the west coast of India, immediately to the north of the Indus delta. It is at once the headquarters town of the district of Karachi, the capital of Sind province, administrative, commercial and military, and the third port of India. Its population, which was 359,492 in 1941, has almost doubled since 1901 and continues to increase rapidly.

Neither the actual site nor the immediate surroundings of Karachi suggest conditions favourable to the emergence of a city of such importance. It stands on a backwater opening south on the east-west stretch of coast which marks a sharp change in direction of the shore line between Cape Monze and the Indus delta. Westward this backwater is screened from the sea by the rocky point of Manora, cemented to the mainland by a sand-spit. On its eastern side it is defined by what was once the island of Kiamari but which, as a result of the construction of the Napier Mole (1850) and subsequent reclamation undertakings, no longer retains its insular identity. Formerly the harbour could be entered from both sides of Kiamari. The western approach, passing under Manora point has always been the principal, and today is the only one; the eastern was closed when Chinna creek was finally blocked in 1873. Prior to improvements following upon British occupation the backwater filled and emptied with every tide, and presented at low water a stretch of mud flats and mangrove swamps. The deep water anchorage lay off Kiamari and here ships had to unload into small boats which proceeded with the tide up to Karachi.

To the landward there is desert. A line drawn from the city of Karachi to Tatta roughly divides Karachi district into two physical divisions. To the north is a thirsty, prevailingly hilly landscape (Kohistan), the limestone spurs of the Kirthar range breaking down southwards into sandy wastes. Crossing the line into the southern division the Indus delta is entered. This is a monotonous expanse of recent alluvium riddled by creeks and passing seaward into mangrove swamp. Physically divergent, the two divisions are alike in that they afford little support to human life.

On the whole, Karachi district is agriculturally one of the poorest in Sind. Yet something may be credited to the natural endowment of Karachi.

The natural scour of the backwater under the action of currents on either side of Kiamari was a real asset along a coast prone to suffer severely from silting, and the port owes its foundation and early development by Hindu merchants, two and a half centuries ago, primarily to this. About that time the port at the outfall of the Habb river in the neighbourhood of Cape Monze, serving Baluchistan, became choked, while a similar fate was always overtaking ports at the mercy of the shifting Indus. The natural protection against monsoon storms afforded by Manora headland may be noted also, and the fact too that it furnished an excellent site for the defense of the harbour. Thus the Mirs, who gained Karachi from the khan of Kalat in 1795, erected a permanent fort on it, eventually demolished by British guns in 1839. Finally, the location of the port, apart from, but in immediate proximity to, the Indus delta and established ports at its head, offered possibilities which the trading genius and rare diplomacy of its founders exploited from the outset. Karachi soon came to short circuit the tidal creeks of the great river by establishing direct connections, road and water, eastwards with centres upstream.

Yet it remains true that the "arrival" of Karachi is due to its key situation in the scheme of empire space relationships, strategic and economic. Its strategic value in relation to the North-West Frontier, near east, and the all-red route via Suez, is obvious.

Karachi is the nearest Indian port to Europe, being 6,077 miles from London, via Suez; 200 miles nearer than Bombay, the only other developed first-class harbour on the west coast of India.

The development of international air transport between 1918–39 increased Karachi's importance. It has both an R.A.F. cantonment and a large, modern airport covering more than 600 ac. which was extensively used by Imperial Airways, K.L.M. and Air France. It forms an important link in air communications between all parts of Europe, India, Malaya, China and Australia. Meteorological observations are carried out over a wide area.

Proximity to oil fuel, abundant space at sea level, immunity from floods and heavy rains, minimum frequency of low cloud all favour Karachi from an aerial standpoint, and it is largely for climatic reasons that it has been preferred as a main base over Bombay and Calcutta.

During World War II, Karachi's air facilities were greatly extended and its geographical position between India as a great supply base and the near eastern theatres of war made it a vital air base.

The hinterland served by the port embraces the whole of Sind, Baluchistan, Afghanistan, Punjab and expanding areas in the United Provinces and Rajputana; in addition it handles goods for Iran and central Asia.

It is dependent primarily upon the North Western railway, but is also linked, through Hyderabad, with the metre-gauge railway serving Rajputana.

The greatest single stimulus to the growth of modern Karachi has certainly been the expansion of irrigation colonies in Punjab, devoted primarily to raising wheat largely for European consumption, but also yielding increasing quantities of cotton acceptable to western markets.

Karachi handles more than 95% of the total quantity of wheat and rapeseed respectively shipped by India, and usually more than two-thirds of the gram. In terms of value, raw cotton is easily its main export.

It is significant as indicating present tendencies, that Karachi registered large increases in the receipt of bales from both the United Provinces and Rajputana at the expense of Bombay.

Hides, skins, and raw wool are other characteristic exports. The principal imports in order of value are cotton manufactures, sugar, iron and steel goods.

At present Karachi harbour has a depth of 29 ft. It provides 8,600 ft. of wharfage embracing 17 berths in line, and moorings for 20 ocean steamers; this excludes wharfage for coasting steamers and country craft, respectively, and a bulk oil pier.

The extension of irrigation under the Sukkur barrage and Sutlej valley schemes (*see* INDIAN DESERT) would increase demand on Karachi.

The Port trust was meeting this demand. Under the "West Wharfage scheme" the construction of six new berths was begun in 1923 and ten more were planned for construction as required. In addition the existing ship channel was widened from 600 ft. to 1,200 ft. and deepened to take vessels drawing 32 ft. at any state of tide, the city also doubling its water supply.

Security reasons due to World War II prevented details concerning the completion of these plans from being given.

(A. V. W.)

KARAGEORGE (*c.* 1766–1817), Serbian revolutionary leader and founder of the Serb dynasty of Karageorgević, was born in 1766 or 1788, the son of a peasant of the name of Petrini. His own name, "Black George," was derived from his swarthy complexion and morose disposition: he signed himself indifferently in the Turkish or Serb versions as Kara George Petrovic or Georg

Petrović Cerai. After an apprenticeship with a Turkish brigand named Fazli-Bey, he settled down on a farm; but having killed a Turk, fled to the Austrian military frontier, where he served two years as forest guard to a monastery, then enlisting in a frontier regiment. He served as sergeant in the Austrian war against Turkey (1788–91), then deserted and returned to Serbia, settling in Topola as a dealer in cattle and swine. At the same time he took part in irregular "haiduk" warfare against the Turks, and so distinguished himself that when the Serbs *rayah* rose against the janissaries in 1804, a meeting of the various insurgent leaders at Orašac in Feb.–March 1804 elected Karageorge supreme leader.

For the story of the subsequent wars *see* SERBIA: *History*. Karageorge's chief part was that of military leader, as which he displayed real practical and strategical genius combined with dauntless personal courage, so that his mere appearance was said to suffice to turn defeat into victory for the Serbs. The diplomatic negotiations were largely conducted by others; but it is remarkable with what tenacity Karageorge, perhaps influenced by his past experience, begged Austria to proclaim a protectorate over Serbia. At first, too, he maintained his loyalty to the sultan against the latter's rebellious janissaries; only later, relying on Russian promises, did he aim at complete independence for Serbia. His troops had repeatedly defeated the Turks, and cleared Serbia of them; and in 1808, when the Serb leaders suspected that Russia was attempting to gain an excessive influence in Serbia, they determined "to honour Karageorge so that the Russians too should respect him," and on Dec. 26, 1808 the National Council (Soviet) swore "to recognize Karageorge Petrović and his lawful descendants as rulers," while he swore to care for the people as a father, and to issue his commands through and in agreement with the Soviet.

In the following years Karageorge maintained his reputation as a soldier; but his position and autocratic methods aroused the jealousy of the rival voivodes, which was fostered by the Russian agent, Rodofinikin. When the Treaty of Bucharest (1812) freed Turkey's hands, and she advanced in 1813 against the Serbs, Karageorge was sick of typhus. The unsupported Serb forces were defeated, and Karageorge took refuge in Hungary (Sept. 20, 1813). He was interned in Graz and later settled in Hotin (Bessarabia) on a pension provided by the tsar. In the summer of 1817, he reappeared suddenly and alone, near Surederevo, apparently with the object of organizing a general Balkan rising in conjunction with the Greek Hetairia. The new Serbian leader, Miloš Obrenović I. (*q.v.*) reported his presence to the pasha of Belgrade, who demanded Karageorge's surrender, alive or dead. Karageorge was murdered in his sleep, and his head sent to Constantinople. From this act the responsibility for which, has not, however, been absolutely brought home to Obrenović, sprang the feud between the rival dynasties, which distracted Serbia for a century.

Karageorge was feared rather than loved. His temper was morose and choleric, and he punished the slightest transgression by death. He is believed to have killed his own father in a fit of anger when the old man refused to follow him in his flight to Hungary at the beginning of his career. He hanged his brother for rape, and forbade his mother to go into mourning for him. Even by his admirers he is admitted to have killed by his own hand no fewer than 125 men who provoked his anger. Yet he was a military genius of the very highest order, a man of unsurpassed energy and valour, and the true founder of Serbian independence; and even in civilian matters, if his hand was heavy, he was just and even magnanimous.

See SERBIA; also Ranke, *Die serbische Revolution;* M. G. Militye-vich, *Karadyordye* (Belgrade, 1904); S. Novakovic, *Vaskzhs srpske drzhave* (Belgrade, 1904); *Die Wiedergeburt des Serbischen Staates* (Serajevo, 1912).

KARA-HISSAR ("Black Castle"). (1) AFIUN QARAHISAR (*q.v.*). (2) ICHJE, or ISCHA KARA-HISSAR (anc. *Docimium*), a small village about 14 m. N.E. of No. 1. Docimium was a Macedonian colony established on an older site. It was a self-governing municipality, striking its own coins, and stood on the Apamea-Synnada-Pessinus road, by which the celebrated marble called Synnadic, Docimian and Phrygian was conveyed to the coast. The quarries are $2\frac{1}{2}$ m. from the village, and the marble was carried thence direct to Synnada (Chifut Kassaba).

See W. M. Ramsay, *Hist. Geog. of Asia Minor* (London, 1890); Murray, *Hbk. to Asia Minor* (1893).

KARA-HISSAR SHARKI [*i.e.*, "eastern Kara-Hissar"], also called Shabin Kara-Hissar from the alum mines in its vicinity, the chief town of a vilayet in Turkey. Population 18,483. It is the Roman *Colonia,* which gradually superseded Pompey's foundation, *Nicopolis,* whose ruins lie at Purkh, about 12 mi. W. (hence Kara-Hissar is called Nikopoli by the Armenians). In later Byzantine times it was an important frontier station, and did not pass into Ottoman hands till twelve years after the capture of Constantinople. The town, altitude 4,860 ft., is built round the foot of a rock, upon which stand the ruins of the Byzantine castle, *Mauro-castron,* the Kara-Hissar Daula of early Moslem chroniclers. It is connected with its port, Giresun, and with Sivas, Erzingan and Erzerum by carriage roads.

KARAISKAKIS, GEORGES (1782–1827), leader in the War of Greek Independence, was born at Agrapha in 1782. During the earlier stages of the war he served in the Morea, where he shared in the intrigues which divided the Greek leaders. But he saw the necessity of providing the country with a government, was a steady supporter of Capo d'Istria, and gave honourable service in the middle and later stages of the war. He helped to raise the first siege of Missolonghi in 1823, and did his best to save the town in the second siege in 1826. In that year he commanded the patriot forces in Rumelia, and though he failed to co-operate effectually with other chiefs, or with the foreign sympathizers fighting for the Greeks, he gained some successes against the Turks. He took a share in the unsuccessful attempts to raise the siege of Athens in 1827, and made an effort to prevent the disastrous massacre of the Turkish garrison of fort S. Spiridion. He was shot in action on May 4, 1827.

See G. Finlay, *History of the Greek Revolution* (London, 1861).

KARAITES: *see* QARAITES.

KARAJICH, VUK STEFANOVICH (1787–1864), the father of modern Serbian literature, was born on Nov. 6, 1787, in the Serbian village of Trshich, on the Bosnian border. Having learnt to read and write in the old monastery Tronosha (near his native village), he was engaged as writer and reader of letters to the commander of the insurgents of his district at the beginning of the first Serbian rising against the Turks in 1804. Mostly in the position of a scribe to different voyvodes, sometimes as schoolteacher, he served his country during the first revolution (1804–13), at the collapse of which he left Serbia, but instead of following Karageorge and other voyvodes to Russia he went to Vienna. There he was introduced to the great Slavonic scholar Yerney Kopitar, who encouraged him to collect the poems and popular songs, write a grammar of the Serbian language, and, if possible, a dictionary.

His first book, *Mala Prostonarodna Slaveno-Serbska Pyesmaritsa* (Vienna, 1814), contains 100 lyric songs, sung by the peasant women of Serbia, and six poems about heroes, or as the Serbs call them *Yunachke pesme,* which are generally recited by the blind bards or by peasants. From that time Karajich's literary activity moved on two parallel lines: to give scientific justification and foundation to the adoption of the vernacular Serbian as the literary language; and, by collecting and publishing national songs, folk-lore, proverbs, etc., to show the richness of the Serbian people's poetical and intellectual gifts, and the wealth and beauty of the Serbian language. By his reform of the Serbian alphabet and orthography, his Serbian grammar and his Serbian dictionary, he established the fact that the Serbian language contains 30 distinct sounds, for six of which the Old Slavonic alphabet had no special letters. He introduced new letters for those special sounds, at the same time throwing out of the Old Slavonic alphabet 18 letters for which the Serbian language had no use. This reform was strenuously opposed by the church and many conservative authors, who went so far as to induce the Serbian Government to prohibit the printing of books in new letters, a

prohibition removed in 1859. Karajich's alphabet facilitated his reform of orthography, his principle being: *write as you speak, and read as it is written!* Hardly any other language in the civilized world has such a simple, logical, scientific spelling system and orthography as the Serbian has in Karajich's system. His first grammatical essay was published in Vienna in 1814, *Pismenitsa Serbskoga yezika po govoru prostoga naroda* ("The grammar of the Serbian language as spoken by the common people"). An improved edition appeared in Vienna in 1818, together with his great work *Srpski Ryechnik* (Lexicon Serbico-Germanico-Latinum). This dictionary—containing 26,270 words—was full of important contributions to folk-lore, as Karajich never missed an opportunity to add to the meaning of the word the description of the national customs or popular beliefs connected with it. A new edition of his dictionary containing 46,270 words, was published at Vienna in 1852.

Meanwhile he gave himself earnestly to the work of collecting the "creations of the mind of the Serbian common people." He travelled through Serbia, Bosnia, Herzegovina, Montenegro, Dalmatia, Syrmia and Croatia, and the result was shown in a largely augmented edition of his *Srpske Narodne Pyesme* (Leipzig, 3 vols., 1823; vol. iv., Vienna, 1833). *Popular Stories and Enigmas* was published in 1821, and *Serbian National Proverbs* in 1836. From 1826 to 1834 he was the editor of an annual, called *Danitsa* (The Morning Star), which he filled with important contributions concerning the ethnography and modern history of the Serbian people. In 1828 he published a historical monograph, *Milosh Obrenovich, Prince of Serbia;* in 1837, in German, *Montenegro and Montenegrins;* in 1867, *The Serbian Governing Council of State.* He supplied Leopold Ranke with the materials for his *History of the Serbian Revolution.* He also translated the New Testament into Serbian, for the British and Foreign Bible Society (Vienna, 1847). Karajich died in Vienna on Feb. 6, 1864; and his remains were transferred to Belgrade in 1897 with great solemnity and at the expense of the Government. (C. Mij.; X.)

KARA-KALPAK, an autonomous part of the Uzbek S.S.R., N. of the Khiva oasis and stretching S.E. from the shores of the Aral sea along the right bank of the Amu-Darya. Its area is 46,130 sq.mi. and for the most part it consists of the Kizil-kum (*q.v.*)(red sand) desert, vast plains having an elevation of about 160 ft. near the Sea of Aral and rising gradually towards the southeast.

Near the Aral sea, the Kizil-kum is covered with sand dunes from 30 to 60 ft. high, mostly arranged in parallel lines. In the intervening spaces are clay covered belts. During the short spring, there is rich pasture available for the nomad Kirghiz flocks. But in summer the great heat and the lack of water, combined with strong winds raising hot sandstorms, make it almost impassable; a sudden heavy rain storm is even more disastrous in the clay area, reducing it to a trackless sea of mud. The average annual rainfall is 4 inches. Farther east are dunes covered with a species of sedge forming food for sheep, and saksaul trees, used as fuel and from which charcoal is made and sent to Bokhara. The climate is continental in type and very dry. At Turt-Kul (Petro-Alexandrovsk) the average January temperature is 5·0° C, average July 29·0° C, though temperatures as high as 43·4° C and as low as 28·4° C have in the past been recorded.

The region of the right bank of the Oxus or Amu-Darya and the right portion of its delta have much fertile alluvial soil, and irrigation is successfully practised here from Turt-Kul (Petro-Alexandrovsk) to the sea. Figs, melons, pomegranates, grapes and other fruits and vegetables grow luxuriously. Wheat forms 33·5% of the harvest, maize 16·5%, lucerne 12·6%, cotton 11·5% and millet 8%. Transport across the river to Khiva is by flat-bottomed boats towed through the channels between the numerous islands; at some places swamps make landing difficult. Steam navigation on the Amu-Darya is just possible for military purposes from Charjui onwards, and a fleet of steel-built steamers carrying 200 tons of cargo and with a draught of 2 ft. was inaugurated in 1887, but for purposes of commerce it is impracticable, since the channel is constantly shifting and sandbanks may appear and disappear in a couple of hours. The Oxus once bifurcated at Kohna Urgani, 70 m. S. of the river, and a branch flowed south-westwards to the Caspian, entering Balkhan bay. At some period in the 15th or 16th centuries, either because of an artificial dam raised by the Khivans, or through some natural obstruction, this branch was diverted and entered the Sea of Aral. Projects for re-opening the exit to the Caspian have at various times been discussed, but have never materialized.

The region came under Russian rule in 1867, forming part of the Turkistan province created after the successful campaigns of General Kaufmann, when Tashkent and Kokhand were captured. In 1873 Khiva was subdued and made a protected native state of Russia, losing the irrigated right bank areas of the Amu-Darya. The river swings perpetually to the right, and thus favours the Kara-Kalpak irrigation systems at the expense of the left bank Khivan district. The population in 1926 was 303,470, and consisted of 37·7% Kara-Kalpaks, Kirghiz-Kazaks 28·9%, Uzbeks 27·3%, Turks 3·0% and Russians 1·6%. The Kara-Kalpaks, or Black Bonnets, so called from their sheepskin hats, are a tribe allied to the Kirghiz-Kazaks. They followed Attila in his raiding expeditions in the 5th century and probably settled on the east of the Sea of Aral after their migration from the Volga region. Little, however, is known of this period of their history. There is a definite record that they were settled and practising cultivation and sheep raising on the eastern side of the Sea of Aral in the early 18th century, and were divided into an Upper and a Lower Horde. A Khan of the Kara-Kalpaks made friendly overtures to the Russians in 1722. They are taller and larger eyed than the Kazaks, and prefer a settled agricultural life. They were much persecuted by their nomad neighbours, so that some returned to the Volga and settled in the Astrakhan district, whilst others crossed the Dzungharian gate into Mongolia. The literacy rate amongst them is barely 3%.

The Kara-Kalpak area is entirely dependent on caravan routes for communication with the outside world, and Kungrad on a left bank arm of the delta of the Amu-Darya, is an important starting point for caravans, whilst other routes link up with Kazalinsk and Kizil-Orda on the Orenburg-Tashkent railway. Chimbai, on the delta, pop. (1926) 5,426, is the administrative centre, and the only other towns are Kungrad (*q.v.*), pop. (1926) 3,098, and Turt-Kul, formerly Petro-Alexandrovsk, a fort built by the Russians on the site of a house and gardens formerly belonging to the family of the khan of Khiva. Its population is barely 1,000, mainly occupied in gardening, though a cotton factory has recently been built.

KARAKOL, a town of Asiatic Russia in the Kirghiz S.S.R., in 42° 30′ N., 78° 20′ E., 8 m. S.E. of Lake Issyk-kul. The original name of the town was Karakol, but it was renamed in 1889 after the Russian explorer Nikolai Prjevalsky (*q.v.*), who died here in that year. Recently it has reverted to its former name. It is a centre of routes to the east and north, and the products of the district are brought to it for the steamer route on Lake Issyk-kul.

KARAKORUM, a great mountain region between the western Himalaya on the south and the western branch of the Kuenlun on the north. It includes (1) the Northern Foreland, including the region of the Karakorum pass; (2) the main chain of high summits north of the great glaciers, extending westward to the south Hindu Kush and eastward into the Tibetan highland; (3) the Southern Karakorum; (4) the Cadok chain. The south part is mainly granite and syenite and reaches down to the Indus valley, metamorphic rocks of uncertain age and supposedly Triassic limestones are included. In the region of the high peaks, eruptive, metamorphic and sedimentary rocks are mingled; the last are specially important. On the Karakorum pass Liassic and Cretaceous rocks have been identified. In the east the Jurassic strata are of continental formation, and so is the Tertiary, but there is evidence of a Cretaceous maritime transgression. Many peaks are extraordinarily steep, and 60 summits rise about 22,000 ft., K_2 (28,250 ft.) being the highest. The glaciers reach lower in the west (10,500 ft.) than in the east (12,000–16,000 feet).

KARAKORUM, the famous capital of the Mongol confederacy whose ruins lie in what is now northern or Outer Mongolia. This forms a belt of open steppe lying between the Gobi desert on the south and the Siberian forest on the north, and has been occupied for ages by pastoral peoples. During the later decades of the 12th century Jenghiz, a Mongol chief, gradually acquired dominion not only over all the Mongols but also over the related peoples of the whole steppe from the Altai to the Khingan. He placed, at some date between 1206 and 1219, the capital of the new confederacy in the central part of the belt of steppe, which is also the more fertile. This was Karakorum. It lay by the Orchon, a river draining north to Lake Baikal, on a tributary of which now stands Urga, the modern capital of Outer Mongolia. Long before, in the 8th century, there had been, only 25 m. away, the capital of the Uighur kingdom, and this also was known as Karakorum. These successive capitals mark out the upper valley of the Orchon as the focus of the Mongolian steppe. It was from this base that the Mongol conquests spread out to embrace the Old World from China to eastern Europe. So long as the expansion of Mongol power was in progress, under the grand khans from Jenghiz to Kublai, his grandson, Karakorum remained the capital. But when the richness of the conquered lands around the periphery, in contrast to the comparative poverty of the steppe homeland in the centre, began to act as a centrifugal force, the far-flung Mongol domain split up into several khanates. Even Kublai, the grand khan, moved his capital in 1267 from Karakorum to Cambaluc (the modern Peking) in the lowlands of China, the richest and most long-lived of all the Mongol conquests. Karakorum then sunk to the level of the capital of a subordinate province, and soon afterwards, on the insurrection of its khan, was razed to the ground, and has never been restored.

KARA-KUL, the name of two lakes ("Great" and "Little") of Asiatic Russia, situated on the Pamir plateau, in the Autonomous Mountain Badakshan Area of the Tajik S.S.R. Great Kara-kul, 12 m. long and 10 m. wide (formerly much larger), is under 39° N., to the south of the Trans-Alai range, and lies at an altitude of 13,200 ft.; it is surrounded by high mountains, and is reached from the north over the Kyzyl-art pass (14,015 ft.). A peninsula projecting from the south shore and an island off the north shore divide it into two basins, a smaller eastern one which is shallow, 42 to 63 ft., and a larger western one, which has depths of 726 to 756 ft. It has no drainage outlet. Little Kara-kul lies in the north-east Pamir, or Sarikol, north-west of the Mustagh-ata peak (25,850 ft.), at an altitude of 12,700 ft. It varies in depth from 79 ft. in the south to 50 to 70 ft. in the middle, and 1,000 ft. or more in the north.

KARA-KUM ("Black Sands"), a flat desert occupying most of the Turkmenistan S.S.R. and extending on the north-west into the Kazakstan A.S.S.R. Its area is nearly 110,000 sq.m.; it is bounded on the north-west by the Ust-urt plateau, between the Sea of Aral and the Caspian sea, on the north-east by the Amu-darya, on the south by the Turkmen oases, and on the west it nearly reaches the Caspian sea. Only part of this surface is covered with sand. There are broad expanses (*takyrs*) of clay soil upon which water accumulates in the spring; in the summer these are muddy, but later quite dry, and merely a few Solanaceae and bushes grow on them. There are also *shors,* similar to the above but encrusted with salt and gypsum, and relieved only by Solanaceae along their borders. The remainder is occupied with sand, which, according to V. Mainov, assumes five different forms: (1) *Barkhans,* chiefly in the east, which are mounds of loose sand, 15 to 35 ft. high, hoof-shaped, having their gently sloping convex sides turned towards the prevailing winds, and a concave side, 30° to 40° steep, on the opposite slope. They are disposed in groups or chains, and the winds drive them at an average rate of 20 ft. annually towards the south and south-east. Some grass (*Stipa pennata*) and bushes of *saksaul* (*Haloxylon ammodendron*) and other steppe bushes (e.g., *Calligonium, Halimodendron* and *Atraphaxis*) grow on them. (2) Mounds of sand, of about the same size, but irregular in shape and of a slightly firmer consistency, mostly bearing the same bushes, and also *Artemisia* and *Tamarix;* they are chiefly met with in the east and south. (3) A sandy desert, slightly undulating, and covered in spring with grass and flowers (*e.g.,* tulips, *Rheum,* various Umbelliferae), which are soon burned by the sun; they cover very large spaces in the south-east. (4) Sands disposed in waves from 50 to 70 ft., and occasionally up to 100 ft. high, at a distance of from 200 to 400 ft. from each other; they cover the central portion, and their vegetation is practically the same as that of the preceding division. (5) Dunes on the shores of the Caspian, composed of moving sands, 35 to 80 ft. high and devoid of vegetation.

A typical feature of the Kara-kum is the number of "old river beds," which may have been either channels of tributaries of the Amu and other rivers, or depressions which contained elongated salt lakes. Water is found only in wells, 10 to 20 m. apart—sometimes as much as 100 m.—which are dug in the *takyrs* and give saline water, occasionally unfit to drink, and in pools of rain-water retained in the lower parts of the *takyrs.* The population of the Kara-kum, consisting of nomad Kirghiz and Turkmen, is very small. The region in the north of the province of Syr-darya, between Lake Aral and Lake Chalkar-teniz, is also called Kara-kum.

KARAMAN (anc. *Laranda*), a kaza in the Konia vilayet of Turkey, situated in the plain north of Mount Taurus. Pop. (1940) 12,489. It has few industries and little trade, but there are the mediaeval walls, castle and mosques, and the old Seljuk *medresse,* or college. Karaman is connected with Konia by railway, having a station on the first section of the Baghdad railway. Little is known of its ancient history except that it was destroyed by Perdiccas about 322 B.C., and afterwards became a seat of Isaurian pirates. It was occupied by Frederick Barbarossa in 1190; in 1466 it was captured by Mohammed II., and in 1486 by Bayezid II.

KARAMANIA, formerly an independent inland province in the south of Asia Minor, named after Karaman, the son of an Armenian convert to Islam, who married a daughter of Ala ed-Din Kaikobad, the Seljuk sultan of Rum, and was granted Laranda in fief, and made governor of Selefke, 1223–1245. The name Karaman is, however, Turkoman and that of a powerful tribe, settled apparently near Laranda. The Armenian convert must have been adopted into this. On the collapse of the Seljuk empire, Karaman's grandson, Mahmud, 1279–1319, founded a state, which included Pamphylia, Lycaonia and large parts of Cilicia, Cappadocia and Phrygia. Its capital, Laranda, superseded Konia. This state was frequently at war with the kings of Lesser Armenia, the Lusignan princes of Cyprus and the knights of Rhodes. It was also engaged in a long struggle for supremacy with the Osmanli Turks, which only ended in 1472, when it was definitely annexed by Mohammed II. The Osmanlis divided Karamania into Kharij north, and Ichili south, of the Taurus, and restored Konia to its metropolitan position. The name Karamania is now often given to Ichili only; but so far as it has had any exact significance in modern times, it has stood for the whole province of Konia. Before 1864, when Turkey was divided into vilayets, Karamania was the vilayet of which Konia was the capital, and it did not extend to the sea, the whole littoral from Adalia eastward being under the pasha of Adana. Nevertheless, in Levantine popular usage, "Karamania" signifies the coast from Adalia to Messina.

KARAMNASA, a river of northern India, tributary to the Ganges on its right bank, forming the boundary between Bengal and the United Provinces.

KARA MUSTAFA (d. 1683), Turkish vizier, surnamed "Merzifunli," was a son of Uruj Bey, a notable Sipahi of Merzifun (Marsovan), and brother-in-law to Ahmed Kuprili, whom he succeeded as grand vizier in 1676. After conducting an unsuccessful campaign in Poland, he responded to the appeal for aid made by the Hungarians under Imre Thököly (*q.v.*) when they rose against Austria, his hope being to form out of the Habsburg dominions a Mohammedan empire of the West, of which he should be the sultan. The plan was foiled by the heroic resistance of Vienna and its timely relief by John Sobieski, king of Poland.

Kara Mustafa was beheaded at Belgrade in 1683 and his head was brought to the sultan on a silver dish.

KARAMZIN, NIKOLAI MIKHAILOVICH (1765–1826), Russian historian, critic, novelist and poet, was born at the village of Mikhailovka, in the government of Orenburg, and not at Simbirsk as many of his English and German biographers incorrectly state, on Dec. 1 (old style) 1765. His father was an officer in the Russian army, of Tatar extraction. He was sent to Moscow to study under Prof. Schaden, whence he afterwards removed to St. Petersburg (Leningrad). After residing there some time, he went to Simbirsk, where he lived in retirement till induced to revisit Moscow. In 1789 he resolved to travel, and visited Germany, France, Switzerland and England. On his return he published in the *Moscow Journal,* which he edited, his *Letters of a Russian Traveller,* afterwards collected and issued in six volumes (1797–1801). In this magazine appeared some of his prose tales, one of which, "Poor Liza," is famous in the history of Russian literature as being the first example of "sensibility" in Russia, the first fruits of the teaching of Rousseau. In 1794 and 1795 Karamzin abandoned his literary journal, and published a miscellany in two volumes, entitled *Aglaia,* in which appeared, among other things, "The Island of Bornholm" and "Ilia Muromets," a story based upon the adventures of the hero of many a Russian legend. In 1797–99 he issued another miscellany or poetical almanac, *The Aonides,* in conjunction with Derzhavin and Dmitriev. In 1798 he compiled *The Pantheon,* a collection of pieces from the works of the most celebrated authors ancient and modern, translated into Russian. Many of his lighter productions were subsequently printed by him in a volume entitled *My Trifles.* In 1802 and 1803 Karamzin started the monthly *European Messenger,* which he abandoned in 1804 to make the necessary researches for his *History of the Russian State* (1819–26). In 1816 he removed to St. Petersburg, where he spent the happiest days of his life, enjoying the favour of Alexander, and submitting to him the sheets of his great work, which the emperor read over with him in the gardens of the palace of Tsarkoë Selo. He only reached the 11th volume, carrying his work as far as the accession of Michael Romanov in 1613. He died on May 22 (old style) 1826, in the Taurida palace. A monument was erected to his memory at Simbirsk in 1845.

The style of his history is elegant and flowing, modelled rather upon the easy sentences of the French prose writers than the long periodical paragraphs of the old Slavonic school. Karamzin left his mark on the vocabulary and the syntax of the Russian language, and introduced many Gallicisms. Perhaps he may justly be censured for the romantic colouring given to the early Russian annals, concealing the coarseness and cruelty of the native manners; in this respect he recalls Sir Walter Scott, whose writings probably had their influence upon him. Karamzin appears openly as the panegyrist of the autocracy; indeed, his work has been styled the "Epic of Despotism." He does not hesitate to avow his admiration of Ivan the Terrible, and considers him and his grandfather Ivan III as the builders of Russian greatness, a glory which in his earlier writings, perhaps at that time more under the influence of western ideas, he had assigned to Peter the Great. The characters of many of the chief personages in the Russian annals are drawn in firm and bold lines.

As a historian, Karamzin has deservedly a very high reputation. Till the appearance of his work little had been done in this direction in Russia. The preceding attempt of Tatistchev was merely a rough sketch, inelegant in style, and without the true spirit of criticism. Karamzin was most industrious in collecting materials and the notes to his volumes are mines of curious information.

In the battle pieces (*e.g.,* the description of the field of Koulikovo, the taking of Kazan, etc.) we find considerable powers of description. As a critic, he was undoubtedly of great service to his country; in fact he may be regarded as the founder of the review and essay (in western style) in Russia.

KARANGA, a collective name applied to many of the indigenous Bantu-speaking tribes of southern Rhodesia. They all keep cattle and goats, and raise crops of millet and maize. Each tribe occupies its own territory under its own chief, who is assisted in his government by a council of influential heads of households. Within the tribe the people are organized into exogamous patrilineal clans which are totemic. Marriage is polygamous, and involves the payment of a bride price. Cross-cousin marriage is practised. Ancestor worship is the main form of religious cult, but there is also a belief in a supreme being known as *Mwari,* who is associated with the phenomena of weather. (*See* AFRICA: *Anthropology and Ethnology: South Africa.*)

See F. W. Posselt, *A Survey of the Native Tribes of Southern Rhodesia* (1927); C. Bullock, *Mashona Laws and Customs* (1913) and *The Mashona* (1928).

KARA SEA, demarcated by Novaya Zemlya, Vaygach Island and the Siberian coast. It is approached from the west by three straits—Matochkin, between the two islands of Novaya Zemlya, and Kara and Yugor to the north and south of Vaygach Island respectively. On the southeast Kara bay penetrates deeply into the mainland, and to the west of this the short Kara river enters the sea. The sea is shallow, the deepest parts lying off Vaygach I and the north part of Novaya Zemlya. After Johannesen had demonstrated its accessibility in 1869, and Nordenskiöld had crossed it in 1875, it was considered a possible route between European Russia and the north of Siberia. But the open season is very short, and the western straits are sometimes icebound during the entire year.

KARASU-BAZAR, a town in the Crimean A.S.S.R. in 45° 3′ N., 34° 35′ E., 25 mi. E.N.E. of Simferopol. Pop. (1897), 12,961, (1926) 7,625 consisting of Tatars, Armenians, Greeks, Qaraite Jews and about 200 so-called Krymchaki, *i.e.,* Jews who have adopted the Tatar language and dress, and who live chiefly by making morocco leather goods, knives, embroidery and so forth. The site is low, but the town is surrounded by hills, which afford protection from the north wind. Placed on the high road between Simferopol and Kerch, and in the midst of a country rich in corn land, vineyards, and gardens, Karasu-Bazar used to be a chief seat of commercial activity in the Crimea; but it is gradually declining in importance, though still a considerable centre for the export of fruit.

The caves of Akkaya close by give evidence of early occupation of the spot. When in 1736 Khan Feta Chirai was driven by the Russians from Bakhchi-sarai, he settled at Karasu-Bazar, but the next year the town was captured, plundered and burned by the Russians.

KARATEGHIN, a former dependency of Bukhara, now included in the Tajik A.S.S.R. (*q.v.*). Pop. (1926) 125,800.

KARAULI, an Indian state in the Rajputana agency. Area, 1,227 sq.mi.; pop. (1941), 152,413. Almost the entire territory is composed of hills and broken ground, with the Chambal river flowing along the southeast boundary of the state. Iron ore and building stone comprise the mineral resources. The prevailing agricultural products are millets, which form the staple food of the people. The only manufactures consist of a little weaving, dyeing, wood-turning and stone-cutting. The feudal aristocracy of the state consists of Jadu Rajputs connected with the ruling house. They pay a tribute in lieu of constant military service, but in case of emergency or on occasions of state display they are bound to attend on the chief with their retainers. The maharaja is the head of the clan, which claims descent from Krishna. His ancestors founded the state in the 11th century. It passed, like so many of its neighbours, under the yoke of the Mogul empire, and then of the Mahrattas, until in 1817 it was taken under British protection. The present Maharaja Sir Bhom Pal Deo Bahadur Yadukul Chandra Bhal, K.C.S.I., who was born in 1866 and succeeded in 1927, has a salute of 17 guns.

The town of KARAULI had a population in 1941 of 19,177. It dates from 1348, and is well situated in a position naturally defended by ravines on the north and east, while it is further protected by a great wall. The palace of the maharaja is a handsome block of buildings dating mainly from the middle of the 18th century.

KARBALA, a town in 'Iraq situated in 32° 40′ N., 44′ E. 60 mi. S.S.W. of Baghdad on the Husainya canal, 20 mi. W. of the Hindiya branch of the Euphrates, on the edge of the Syrian

desert. The population amounted at the census of 1935 to 65,000, practically all Shiah Moslems, Persians and Arabs; as in Najaf only Moslems may reside in the town. A branch line joins the Baghdad-Basra railway north of Hilla. The town is the capital of the liwa (province) of Karbala with a population of 124,290 in 1935. The town is a centre of pilgrimage of all Shiah Moslems. It is second only in holiness to Mecca and Najaf and is visited by the old and infirm and by pious pilgrims bearing their dead, for burial in these holy places is a certain way to paradise. Being both a pilgrim centre and a "desert port" considerable trade is done, the exports consisting principally of dates, hides, wool and pious oojects. In return Karbala buys Manchester goods, carpets, candles, spices, coffee and tea.

The country round the town is fertile and well irrigated and there are considerable groves of date palms. The outer town has broad streets, but the inner town (within the walls almost destroyed by the Turks in 1843) is of the usual narrow streeted and crooked lane type of all old oriental cities. It was here that Husain, the Moslem martyr and son of Ali, was murdered by the soldiers of Yasid in A.D. 680. The town centres around his shrine, which includes a gilded dome and three gilded minarets.

Like Najaf the ecclesiastical revenues of the town are very great, but Karbala, owing to its position on the edge of the alluvial plain, is able not only to act as an entrepôt for desert goods, but also to raise agricultural products. In addition to being itself a holy place, it acts as a stopping place on the way for pilgrims both to Najaf and to Mecca.

KAREL, RUDOLF (1880–), Czech composer, was born at Plzen (Pilsen) and studied at Prague, where he was a pupil of Dvořák, one of whose distinguished successors he may be considered. He spent the years before World War I in composition, but happened to be in Russia in Aug. 1914. He was consequently interned, but presently was made professor in the Conservatoire at Rostov. He joined the Czechoslovak Legion in 1917, and with them eventually returned to Prague. Among his works may be mentioned an opera, *Ilsea's Heart* (Op. 10), first played at the National theatre, Prague, in 1924, though written 15 years before; a symphony (Renaissance) (Op. 15, in E flat minor, unpublished); a *Theme with variations for piano* (Op. 13); two string quartets; and some vocal and choral music.

KARELIA, now KARELO-FINNISH REPUBLIC within the U.S.S.R., was created March 31, 1940. It is bounded on the west by Finland, on the north by the Murmansk region, on the east by the White sea and the Archangel region, and on the south by the Leningrad region. It lies mainly between 60° 40′ N. and 67° 40′ N., and 29° 46′ E. and 38° E. Orographically and geologically it is closely linked with Finland; its western hills rise to about 1,000 ft., and numerous small ridges run from northwest to southeast. The remainder of the region is dotted with marshes and lakes, the latter being about 2,500 in number, of which Lake Onega (*q.v.*), area 3,764 sq.mi., is the largest. The geological structure is varied. Granites, syenites and diorites, covered with Laurentian metamorphic slates, occur northwest of Lake Onega, and nearer the lake they are overlain with Devonian sandstones and limestones, yielding marble and sandstone for building. The whole region is sheeted with boulder clay, the bottom moraine of the great ice sheet of the Glacial period, and bears traces of glaciation, either in the shape of scratchings and elongated grooves on the rocks, or of *eskers* (*äsar, selgas*) running parallel to the glacial striations. The soil and climate are unfavourable for agriculture, and the republic is mainly either *taiga* forest or marsh land. The summers are cool and rainy and the winters severe, though they are somewhat modified by nearness to the Baltic and the Gulf Stream drift. Rivers and lakes are frozen for 180 to 200 days. Kem on the White sea coast has an average temperature in Jan. of 12.4° F. and an average in July of 58.3° F. The average annual rainfall is 15 in., adequate in view of the short summer and lack of evaporation. Cyclones of the westerlies influence the climate. Late springs and early frosts are adverse to small quantities of rye and barley sown, which often fail to mature, and manure is difficult to obtain. The three-field system of agriculture prevails, rye in the north and oats in the south alternating with rape and hemp. Potatoes and turnips are grown near the towns. The insufficiency of horses, cattle and sheep is a factor in the poor harvests, since manure is necessary for the crops. A few pigs are kept. The reindeer herds have markedly diminished of late years.

The republic never produces sufficient grain for its needs; only 0.3% of the land is under crops. Fishing occupies the coastal inhabitants, who are called *Pomortsi* (those by the sea) and are descendants of migrants from the province of Novgorod who reached Onega in the 11th and 12th centuries, and are much more prosperous than the Karelians. The chief fish are herring and salmon and they are preserved in a frozen state, without salting or smoking, for winter use. Seals are sometimes caught off the coast. Many of the *Pomortsi* migrate to the Murman fisheries in summer. Ptarmigan, grouse and ducks are plentiful and bears, foxes and squirrels are hunted for their skins. Of the population 41.4% are occupied either in fishing or hunting. The forests are the main wealth of Karelia, though at present only 16.3% of the population are employed in the industries dependent on the forest, timber felling, saw-milling, preparing tar, pitch and turpentine and wood pulp for paper. The two factors militating against development have been lack of motor power and lack of means of transport. An electric plant was built in 1928 at Kondopoga on the railway and on the west shore of Lake Onega which has a capacity of 5,000 kilowatts, and this supplies electricity to the regions round, and especially to a large paper factory. Roads are difficult to make in this marshy country and transport in the past was only possible in winter. But the construction in 1917 through Karelia of the line linking Leningrad with Murmansk brought new life to the colonization and economic development of the country, and since the project of linking Belomorsk on the west coast of the Gulf of Onega with the Kotlas-Vyatka railway was carried out, the development of the region may be rapid. The making of clothes, distilling, brewing, flour-milling, and the making of small metal goods are carried on to some extent. The capital is Petrozavodsk (*q.v.*) on the western shore of Lake Onega. It has metal, carpentry, saw-milling, brewing and flour-milling industries, and its population and importance have greatly increased with the coming of the railway. Kem is a small port at the mouth of the Kem river, the inhabitants of which are occupied in saw-milling and fishing.

Before the Murmansk railway was built through the town in 1916 it was practically deserted in summer, but now cataracts near the town have been used to provide electricity and the harbour has been arranged to provide accommodation for ships. It has a wireless station. Belomorsk, another small port on the mouth of the Vig river has also been improved since the coming of the railway, and from it a branch railway line is being constructed southwards along the coast. The population consists of Russians 57%, and Karelians 38%, the remainder being of various nationalities; the Russians are mainly settled on the coast and in the towns. The Karelians, whose name is said to mean "cowherd," are closely allied to the Finns; their language is a Russianized Finnish dialect. It was among them that the great Finnish epic Kalevala (*Kalewala*) (*q.v.*) was collected. They are slighter and better proportioned than the Finns, and have as a rule gray eyes and brown hair. Their houses are built on platforms reached by a ladder and the space beneath is used as a shelter for cattle and sheep. The Karelians are first mentioned in the 9th century; the tribe to which they belong overran most of the southwest coast of the White sea until the 14th century, when some of them moved eastward. Like the Vots and the Vepses to whom they are closely related, they have gradually assimilated in speech, religion and customs to the Russians. Education in the republic is partly in Russian and partly in Karelian, but the proportion of illiteracy is higher among the Karelians than among the Russians, and the school provision for them is more inadequate because they are more scattered. The medical and sanitary provision is poor though improving, and the Karelians are in special need of such help, owing to the prevalence of tuberculosis, scurvy and colic, probably due to inadequate diet; bark and straw are used to eke out flour.

KAREN, the collective name for a group of tribes of variant culture comprising perhaps a sixth of the population of Burma and occupying much of eastern Burma between the Shan States and Siam, and found also in the Irrawaddy delta. Most Karens of Lower Burma are divided into the *Sgaw* and *Pwo* (*i.e.*, "male" and "female") Karens, while in Upper Burma the name of *Bghai* (or *Bwe*) has been given to the tribes known as Red Karens, White Karens, Padaungs, Bres, Loilong Karens, Sawntüngs, Banpas, Zayeins and others. The Taungthus (*i.e.*, hillmen) are also a branch of the Karens. Their religion is animistic, and they worship stones and practice fertility ceremonies. Marriage is said to be endogamous but this refers perhaps to the linguistic or tribal group only; the Padaung branch practice exogamy, many Karens permit marriage only between near relatives (? cross-cousin marriage). The bachelors' hall exists; slavery and the practice of blood-brotherhood formerly existed. Antique bronze drums of unusual type are cherished as sacred objects. The Red Karens used to have a rising sun tattooed on the back. (*Cf.* IGOROT.) The Padaung women wear a succession of brass coils round their necks which are thereby preposterously elongated. Guns, spears, daos, cross-bows and poisoned arrows are used as weapons, and a blow-gun with poisoned darts as a quasi-toy by children. Teeth are blackened; the dead are buried or exposed in boat-shaped coffins; chicken-bones are used for divining, and tabu is prevalent. The Karens have a migration legend involving a river of sand (*cf.* KACHIN), which has been taken to refer to the Gobi desert, and a river flowing up to its source interpreted by McMahon (*Karens of the Golden Chersonese,* 1876) as referring to currents in the Bay of Bengal. They have a belief in the continuity of life, the soul of a deceased person taking material form as essential matter which dissolves over the ground, enters growing crops, and thence animals and human beings, and continues the cycle. They are supposed to be the descendants of Chinese tribes driven southwards by the pressure of the Shan races before they were again made to retire into the hills by the expansion of the Môn power.

See Marshall, *Karen People of Burma* (Ohio, 1922).

KAREN LANGUAGES. Considerable interest attaches to these pre-Chinese languages which are spoken in Lower Burma and on the borders of Siam. A number of forms exists, such as Karenni or Reo Karen in the north, Pwo and Sgaw of the south, and Taungthu. The relationship of these languages has not been satisfactorily determined, and their detailed examination by the Linguistic Survey of Burma should yield relevant material.

See *Linguistic Survey of India,* vol. i. (1927); *Gazetteer of Upper Burma,* vol. i., part 1; *Census of Burma* (1921).

KAREN-NI, the country of the Red Karens, a collection of small States, formerly independent, but now feudatory to Burma. It is situated approximately between 18° 50′ and 19° 55′ N. and between 97° 10′ and 97° 50′ E. The tract is bounded on the north by the Shan States of Möng Pai, Hsahtung and Mawkmai; on the east by Siam, on the south by the Salween district of Burma; and on the west a stretch of mountainous country, inhabited by the Bre and various other small tribes, formerly in a state of independence, divides it from the districts of Toungoo and Yamethin.

It is divided in a general way into eastern and western Karen-ni; the former consisting of one State Kantarawadi, with an approximate area of 4,519 sq.mi.; the latter of the two small States of Kyebogyi, area about 700 sq.mi.; and Bawlake 565 sq.mi. The total population in 1941 was 70,493. Formerly western Karen-ni had several small states all subject to Bawlake.

Karen-ni consists of two widely differing tracts of country which roughly mark now, and formerly actually did mark, the division into east and west. Kantarawadi has, however, encroached westwards beyond the boundaries which nature would assign to it. The first of these two divisions is the southern portion of the valley of the Bilu, or Balu stream, an open, fairly level plain, well watered and in some parts swampy. The second division is a series of chains of hills, intersected by deep valleys, through which run the two main rivers, the Salween and the Pawn, and their feeder streams. Many of the latter are dried up in the hot season and flow freely only during the rains. The whole country being hilly, the most conspicuous ridge is that lying between the Pawn and the Salween, which has an average altitude of 5,000 feet. It is crossed by several tracks, passable for pack-animals, the most in use being the road between Sawlon and Möng Maü. The principal peak east of the Salween is on the Loi Lan ridge, 7,109 ft. above mean sea level.

The Nam Pawn is a large river, with an average breadth of 100 yd., but is unnavigable owing to its rocky bed. Even timber cannot be floated down it without the assistance of elephants. The Salween throughout Karen-ni is navigated by large native craft.

Its tributary, the Me Pai, on the eastern bank, is navigable as far as Mehawnghsawn in Siamese territory. The Balu stream flows out of the Inle lake, and is navigable from that point to close on Lawpita, where it sinks into the ground in a marsh or succession of funnel holes. Its breadth averages 50 yd., and its depth is 15 ft. in some places.

The chief tribes are the Red Karens, Bres and Padaungs. The administration of Karen-ni is controlled by the commissioner of the Federated Shan States. (*See* SHAN STATES.) Little of the history of the Red Karens is known; but it appears to be generally admitted that Bawlake was originally the chief State of the whole country, east and west, but eastern Karen-ni under Papaw-gyi early became the most powerful. Slaving raids far into the Shan States brought on invasions from Burma, which, however, were not very successful.

Eastern Karen-ni was never reduced until Sawlapaw, having defied the British Government, was overcome and deposed by Gen. Collett in early 1889.

Sawlawi was appointed myoza (minor chief), and received a *sanad,* or patent of appointment, on the same terms as the chiefs of the Shan States. The independence of the Western Karen-ni States had been guaranteed by the British Government in a treaty with King Mindon in 1875. They were, however, formally recognized as feudatories in 1892 and were presented with *sanads* on Jan. 23 of that year. Kantarawadi pays a regular tribute or "nazar" of Rs. 5,025 yearly. Bawlake, Rs. 225; and Kyèbogyi, Rs. 100.

The Mawchi mines have undergone great and profitable development. Karen-ni also exports some lac, cutch and hides. The output of teak has almost ceased. The largest and most important forests were those on the left bank of the Salween. Others lie on both banks of the Nam Pawn, and in western Karen-ni on the Nam Tu. Rice, areca-nuts, and betel-vine leaf are the chief agricultural products.

The birth rate of the people is considered to exceed the death rate by very little, and the Red Karen habit of life is most unwholesome. The population of Karen-ni has grown slowly. A few enlist in the Burma military police but there are various opinions as to their value. Rubies and spinels of inferior value are found in the Upper Tu valley.

See *Report on the Administration of the Shan and Karen-ni States* (annual).

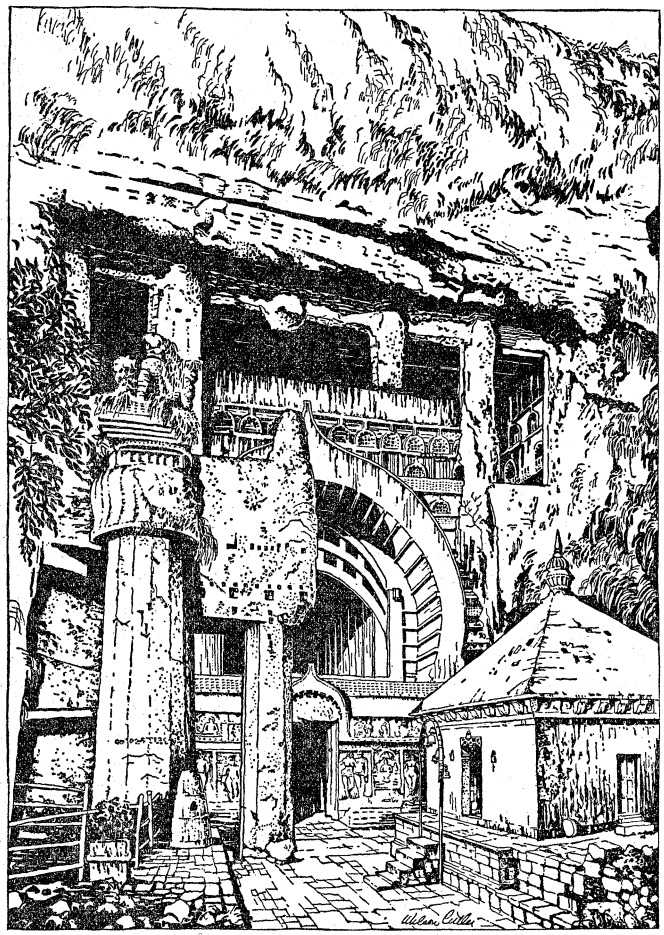
KARIKAL, a French settlement in India, on the southeast coast, within the limits of Tanjore district, with an area of 53 sq.mi. The population in 1941 was estimated at 60,555; the density is high. The site was promised to the French by the Tanjore raja in 1738, in return for services rendered, but was only obtained by them by force in 1739. It was captured by the British in 1760, restored in 1765, again taken in 1768, and finally restored in 1817. The town is neatly built on one of the mouths of the Cauvery, and carries on a brisk trade with Ceylon and the Straits Settlements, though the port is an open roadstead. It is connected by a short line with Peralam on the Mayavaram-Tiruvalur railway. A *chef de l'administration,* subordinate to the government at Pondicherry, is in charge of the settlement, and there is a tribunal of first instance and 6 municipal councils.

KARIRIAN, a small group of tribes of South American Indians, forming an independent linguistic stock. They lived in the vicinity of the lower San Francisco river, in the provinces of

Bahia and Pernambuco in eastern Brazil. By the end of the 19th century they appear to have become nearly extinct. They were not warlike, and lived as sedentary agricultural folk, in small scattered groups. Their houses had walls of poles plastered with clay, and thatched roofs. They made excellent pottery and textiles. Their weapons were the bow, javelin, spear and club.

See C. F. P. von Martius, *Beiträge zur Ethnographie und Sprachenkunde Amerika's,* etc. (Leipzig, 1867); L. Adam, *Materiaux pour servir a l'establissement d'une grammaire comparée . . . famille Kariri* (Paris, 1897).

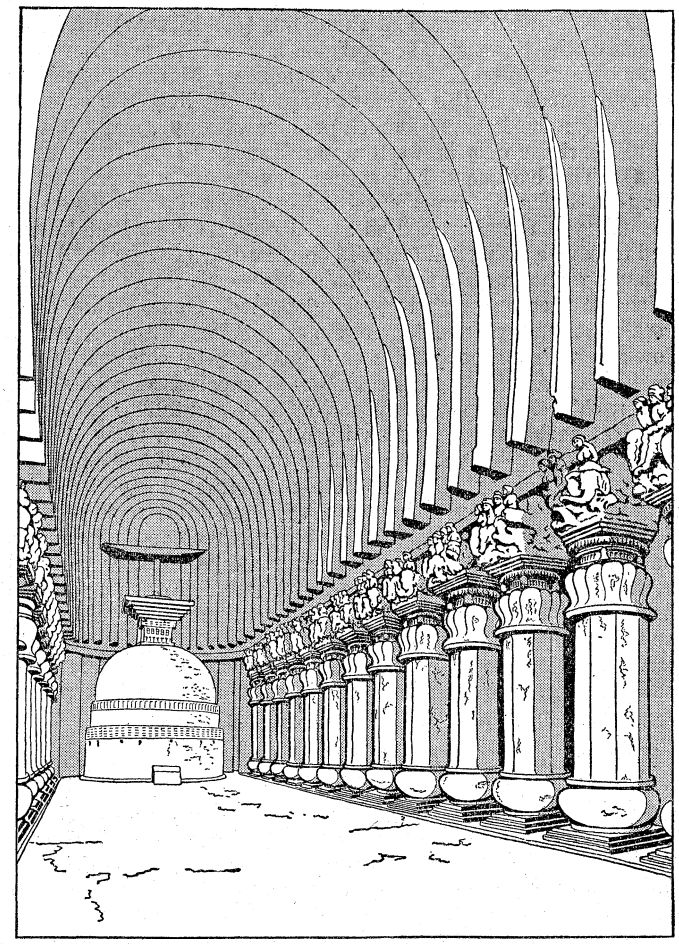
KARLI, a village of British India, in the Poona district of the Bombay presidency, 4 m. from a station on the great Indian Peninsular railway. It is famous for its rock caves. The great cave of Karli, excavated at a time when the style was in its greatest purity, and splendidly preserved, is the largest and finest *chaitya* cave in India. The great hall is 126 ft. long, 45 ft. 7 in. wide, and about 46 ft. high. A row of ornamental columns rises on either side to the ribbed teak roof, and at the far end of the nave is a massive *dagoba.* The cave, which dates from the beginning of the Christian era or earlier, has a wooden roof in a remarkable state of preservation.



EXTERIOR OF CHAITYA OR ROCK TEMPLE AT KARLI, THE LARGEST CAVE TEMPLE IN INDIA. THE WINDOW OVER ENTRANCE LIGHTS THE BUILDING

KARLOVAC (German, *Karlstadt*), a town of Croatia-Slavonia, Yugoslavia, occupied by Italy in 1941. Pop. (1931) 21,210. The town, built in 1579, retains portions of its old fortress and walls, beneath which the skulls of 900 Turks are said to be interred, their attacks having been successfully repulsed. There are Orthodox and Roman Catholic cathedrals, a Franciscan monastery, law courts, a popular university, and several large schools, including one for military cadets. Karlovac has a considerable transit trade in timber, grain, wine, spirits and honey, and there are in the town woollen mills, leather tanneries, boot factories, a chemical factory, and distilleries for the manufacture of a liqueur called *rosoglio.*

KARLOWITZ (Serbo-Croatian, *Karlovci*) a city of Croatia-Slavonia, Yugoslavia, occupied by Italy in 1941, during World War II. Population (1931) 5,572. Karlowitz is the seat of an Orthodox metropolitan. The fruit farms and vineyards of the Fruska Gora, a range of hills to the south, yield excellent plum brandy and red wine. An obelisk at Slankamen, 13 mi. E. by S., commemorates the defeat of the Turks by Louis of Baden in 1691. The treaty of Karlowitz between Austria, Turkey, Poland and Venice, was concluded in 1699. In 1848–49 the city was the headquarters of the Serbian opposition to Hungary.



INTERIOR VIEW OF THE CHAITYA, KARLI, WHICH, HEWN OUT OF THE ROCK, DATES FROM THE 1ST CENTURY B.C. THE ROOF IS OF TEAK

KARLSEFNI, THORFINN: *see* THORFINN KARLSEFNI.

KARLSKRONA or CARLSCRONA, a seaport of Sweden, on the Baltic coast, chief town of the district (*län*) of Blekinge, and headquarters of the Swedish navy. Population (1943) 31,496. It is 290 mi. S.S.W. of Stockholm by rail. The harbour is capacious and secure, and deep enough for the largest vessels. The principal entrance, and the only one practicable for large vessels, is to the south of the town, and is defended by forts at Drottningskär on the island of Aspö and on the islet of Kungsholm. The large dry docks are cut out of the solid granite. There is slip-accommodation for large vessels. Karlskrona has a navy-arsenal and hospital. The town became the naval headquarters in 1680. There are factories for naval equipments, galvanized metal goods, felt hats, canvas, leather and rice, and breweries and granite quarries. Exports are granite, dairy produce and timber; imports, coal, flour, provisions, hides and machinery.

KARLSRUHE or CARLSRUHE, a city of Germany, capital of the *Land* of Baden, 33 mi. S.W. of Heidelberg, on the railway Frankfort-on-Main-Basel, and 30 mi. W.N.W. of Stuttgart. Pop. (1939) 189,850. It stands on an elevated plain, 5 mi. E. of the Rhine and on the fringe of the Hardtwald. Karlsruhe takes its name from Karl Wilhelm, margrave of Baden, who, owing to disputes with the citizens of Durlach, erected here in 1715 a hunting

seat, around which the town has been built. The Schloss, built in 1751–76 on the site of the previous erection, was a plain building in the old French style. In front were government offices. The older city has a fan-like plan. Other notable buildings are the town hall; the hall of representatives; the mint; the law courts; and the hall of fine arts. The Evangelical town church was the burial-place of the margraves of Baden. During World War II, Karlsruhe was bombed by the royal air force. On Sept. 3, 1942, third anniversary of Britain's entry into war, a particularly severe air raid, carried out by hundreds of bombers, set fire to the Schloss and left much of the city a smoking shambles.

Since 1870 the industry of the city has grown rapidly, as well as the city itself. There are large railway workshops; and the principal branches of industry are the making of locomotives, carriages, tools and machinery, watches, surgical instruments, furniture, gloves, cement, carpets, perfumery, tobacco and beer. Maxau, on the Rhine, serves as the river port of Karlsruhe and is connected with it by a canal finished in 1901.

KARLSTAD, a town of Sweden, capital of the district (*län*) of Värmland, on the island of Tingvalla near the estuary of the Klar, 205 mi. W. of Stockholm by Oslo rail. Pop. (1943) 30,134. Karlstad was founded in 1584, and is the seat of a bishop and has a cathedral. Turbines and paper-making machinery are manufactured, and there are numerous iron works. Trade is carried on by way of Lake Väner and the Göta canal. There are match and stockinet factories, and a mineral spring rich in iron. Under the constitution of united Sweden and Norway, in the event of the necessity of electing a Regent and the disagreement of the parliaments of the two countries, Karlstad was indicated as the meeting-place of a delegation for the purpose. Here, in August 1905 the conference met to decide upon the severance of the union between Sweden and Norway.

KARMA, sometimes written KARMAN, a Sanskrit noun (from the root *kṛi,* to do), meaning deed or action. As applied to the action of a conscious being, it is the doctrine that every deed, good or bad, receives due retribution. The theory often appears unconvincing in view of the events of one life, but in Hindu thought it has been combined with the doctrine of transmigration, and this makes it possible to explain any apparently undeserved pleasure or pain by the theory that the karma causing them was performed in a previous existence. The doctrine is not found in the earliest Vedic thought, but it appears in the Brāhmaṇas, and is fully developed in the earliest Upanishads. It has always remained an essential part of the Indian religions that accept the doctrine of transmigration. Both the Jains and the Buddhists accepted it, and the former worked it out most consistently by making the extinction of karma essential to the attainment of salvation. The Buddhists offer a kind of evidence for the doctrine in their belief that the enlightened *arhat* can remember his past births and see the destinies of departed individuals. In all sects it remains a powerful ethical argument, used especially in the tales invented to illustrate its effects (*see* AVADĀNA; JĀTAKA).

KÁRMÁN, JOZSEF (1769–1795), Hungarian author, was born at Losoncz on March 14, 1769, the son of a Calvinist pastor. He was educated at Losoncz and Pest, whence he migrated to Vienna. There he met the beautiful and eccentric Countess Markovics, who was for a time his mistress, but not, as has often been supposed, the heroine of his novel *Fanni Hagyománai* (Fanny's testament). Subsequently he settled as a lawyer in Pest. In 1792, together with Count Ráday, he founded the first theatrical society at Buda. He maintained that Pest, not Pressburg, should be the literary centre of Hungary, and in 1794 founded the first Hungarian quarterly, *Urania.* It met with little support and ceased to exist in 1795, after three volumes had appeared. The most important contribution to *Urania* was his romantic novel, *Fanni Hagyománai,* the most exquisite product of Hungarian prose in the 18th century and one of the finest psychological romances in the literature.

Kármán's collected works were published in Abafi's *Nemzeti Könyvtár* (Pest, 1878), etc., preceded by a life of Kármán. *See* F. Baráth, *Joseph Kármán* (Hung. Vas. Ujs. 1874).

KARNAK, a village in Upper Egypt which has given its name to the northern half of the ruins of Thebes on the east bank of the Nile, the southern being known as Luxor (*q.v.*). The Karnak ruins comprise three great enclosures built of crude brick. The northernmost and smallest of these contained a temple of the god Mentu, built by Amenhotep III., and restored by Rameses II. and the Ptolemies. Except a well-preserved gateway dating from the reign of Ptolemy Euergetes I., little more than the plan of the foundations is traceable. Its axis, the line of which is continued beyond the enclosure wall by an avenue of sphinxes, pointed down-stream (north-east). The southern enclosure contained a temple of the goddess Mūt, also built or continued by Amenhotep III., and almost as ruinous as the last, but on a much larger scale. At the back is the sacred lake in the shape of a horse-shoe. The third and greatest enclosure is of vast dimensions, forming approximately a square of 1,500 ft., and it contains the greatest of all known temples, the Karnak temple of Amen.

Inside and outside each of these enclosures there were a number of subsidiary temples and shrines, mostly erected by individual kings to special deities. The triad of Thebes was formed by Amen, his wife Mūt and their son Khansu. The large temple of Khansu is in the enclosure of the Amen temple, and the temple of Mūt is connected with the latter by an avenue of rams. The Mentu temple, on the other hand, is isolated from the others and turned away from them.

It is probable that a temple of Amen existed at Karnak under the Old Kingdom, if not in the prehistoric age. Slight remains of a considerable temple of the Middle Kingdom survive behind the shrine of the great temple, and numbers of fine statues of the XIIth and later dynasties have been found buried in a great pit, which has yielded an enormous number of valuable and interesting monuments reaching to the age of the Ptolemies. The axis of the early temple lay from east to west, and was followed by the main line of the later growth; but at the beginning of the XVIIIth Dynasty, Amenhotep I. built a temple south of the west front of the old one, and at right angles to it. Thothmes I. built a court round the temple of the Middle Kingdom, entered through a pylon (No. V.), and later added the pylon No. IV. with obelisks in front of it. Queen Hatshepsu placed a splendid obelisk (the largest in Egypt) between the Pylons IV. and V., and built a shrine in the court of Thothmes I., in front of the old temple. Thothmes III., greatest of the Pharaohs, remodelled the buildings about the obelisks of his co-regent Hatshepsu with the deliberate intention of hiding them from view, and largely reconstructed the surroundings of the court. At a later date, after his wars were over, he altered Hatshepsu's sanctuary, engraving on the walls about it a record of his campaigns. The small innermost pylon (No. VI.) is likewise the work of Thothmes III. Amenhotep III., though so great a builder at Thebes, seems to have contented himself with erecting a great pylon (No. III.) at the west end. The closely crowded succession of broad pylons here is explained by a trace of a quay found by Legrain in 1905 near the southern line of pylons, indicating how close was the channel of the Nile, which may have limited their growth. Thothmes III. continued on the southern axis and erected a larger pylon (No. VII.) to the north of Hatshepsu's sanctuary, to which Haremheb added two great pylons and the long avenue of ram-figures, changing the axis slightly so as to lead direct to the temple of Mūt built by Amenhotep III. All of these southern pylons are well spaced. In the angle between these pylons and the main temple was the great rectangular sacred lake. By this time the temple of Karnak had attained to little more than half of its ultimate length from east to west.

With the XIXth Dynasty there is a notable change. No more was added on the southern line of building, but westward Rameses I. erected pylon No. II. at an ample distance from that of Amenhotep III., and Seti I. and Rameses II. utilized the space between for their immense Hall of Columns, one of the wonders of the world. Rameses III. built a fine temple, still well preserved, to Amen at right angles to the axis westward of pylon No. II.; Shishak I. (XXIInd Dynasty) commenced a great colonnaded court in front of the pylon, enclosing part of this temple and a smaller

triple shrine built by Seti II. In the centre of the court Tirhaka (Tirhaka, XXVth Dynasty) set up huge columns 64 ft. high, rivalling those of the central aisle in the Hall of Columns, for some building now destroyed. A vast unfinished pylon at the west end (No. I.), 370 ft. wide and 142½ ft. high, is of later date than the court, and is usually attributed to the Ptolemaic age. It will be observed that the successive pylons diminish in size from the outside inwards.

Besides the kings named above, numbers of others contributed in greater or less measure to the building or decoration of the colossal temple. Alexander the Great restored a chamber in the festival hall of Thothmes III., and Ptolemy Soter built the central shrine of granite in the name of Philip Arrhidaeus. The walls throughout, as usually in Egyptian temples, are covered with scenes and inscriptions. Many of these, such as those which record the annals of Thothmes III., the campaign of Seti I. in Syria, the exploit of Rameses II. at the battle of Kadesh and his treaty with the Hittites, and the dedication of Shishak's victories to Amen, are of great historical importance. Several large stelae with interesting inscriptions have been found in the ruins, and statues of many ages of workmanship. In December 1903 M. Legrain, who had been engaged for several years in clearing the temple area systematically, first tapped an immense deposit of colossal statues, stelae and other votive objects large and small in the space between pylon No. VII. and the great hypostyle hall. They were found lying in the utmost confusion; in date they range from the XIIth Dynasty to the Ptolemaic period.

The inundation annually reaches the floor of the temple, and the saltpetre produced from the organic matter about the ruins, annually melting and crystallizing, has disintegrated the soft sandstone in the lower courses of the walls and the lower drums and bases of the columns. There is moreover no solid foundation in any part of the temple. Slight falls of masonry have taken place from time to time, and the accumulation of rubbish was the only thing that prevented a great disaster. Repairs have gone on side by side with the clearance, especially since the fall of many columns in the great hall in 1899. All the columns which fell in that year were re-erected by 1908 and systematic restoration, both of the Hypostyle Hall and generally, has been continuously carried on. The whole temple area is now enclosed by a restoration of the old walls of the temenos.

The temple of Khansu, in the south-west corner of the great enclosure, is approached by an avenue of rams, and entered through a fine pylon erected by Euergetes II. It was built by Rameses III. and his successors of the XXth Dynasty. Excavations in the opposite south-east corner have revealed flint weapons and other sepulchral remains of the earliest periods, proving that the history of Thebes goes back to a remote antiquity.

KARNAL, a town and district of British India, in the Ambala division of the Punjab. The town is 7 mi. from the right bank of the Jumna, with a railway station 76 mi. N. of Delhi. Pop. (1941) 35,422. There are manufactures of cotton cloth and boots, besides considerable local trade and an annual horse fair.

The DISTRICT OF KARNAL stretches along the right bank of the Jumna, north of Delhi. It is entirely an alluvial plain, but is crossed by the low uplift of the watershed between the Indian Ocean and the Bay of Bengal. Area, 3,126 sq.mi.; pop. (1941), 994,575. The principal crops are millet, wheat, pulse, rice, cotton and sugar-cane. There are several factories for ginning and pressing cotton. The district is traversed by the Delhi-Umballa-Kalka railway, and also by the Western Jumna canal.

No district of India can boast of a more ancient history than Karnal, as almost every town or stream is connected with the legends of the *Mahabharata.* The town of Karnal itself is said to owe its foundation to Raja Karna, the mythical champion of the Kauravas in the great war which forms the theme of the national epic. Panipat, in the south of the district, is said to have been one of the pledges demanded from Duryodhana by Yudisthira as the price of peace in that famous conflict. In historical times the plains of Panipat have three times proved the theatre of battles which decided the fate of Upper India. It was here that Ibrahim Lodi and his vast host were defeated in 1526 by the veteran army of Baber; in 1556 Akbar reasserted the claims of his family on the same battlefield against the Hindu general of the house of Adil Shah, which had driven the heirs of Baber from the throne for a brief interval; and at Panipat too, on the 7th of January 1761, the Mahratta confederation was defeated by Ahmad Shah Durani. During the troublous period which then ensued the Sikhs managed to introduce themselves, and in 1767 one of their chieftains, Desu Singh, appropriated the fort of Kaithal. Under British control Karnal was for a time an important cantonment, but was abandoned on account of its unhealthiness.

KARNEBEEK, HERMAN ADRIAAN VAN (1874–1942), Dutch statesman, son of A.P.C. Karnebeek (1836–1925), who was foreign minister in 1884–88, was born at The Hague on Aug. 21, 1874. He was Netherlands delegate to the second Peace Conference at The Hague in 1907. In 1911 he became burgomaster of The Hague, holding this position until 1918, when he was appointed foreign secretary. In 1921 he presided at the Second Assembly of the League of Nations. As minister of foreign affairs Van Karnebeek presented the Dutch case with regard to the revision of the international conventions governing the Schelde estuary to the Supreme Council of the Allies in Paris in 1919, and he finally concluded with Belgium the treaty of 1920. The question of the ratification of this document, deferred until 1925, caused a serious internal crisis. In 1928 he became governor of South Holland province, and in 1934 he headed a trade and good-will mission to South America.

See his *Memorie von Antwoord* (1927).

KÁROLYI, MIHÁLY, COUNT (1875–), Hungarian politician, was born on March 4, 1875, and descended from a famous and wealthy family. First elected as a Liberal in the parliament of 1905, Károlyi entered public life definitively in 1909, when he became president of the Hungarian Agricultural Society, and worked for the creation of an agrarian Centre party. He then resigned from the conservative Agricultural Society and, having come under the influence of the writings of Karl Marx, became leader of the Radical wing of the Independence party, and led the Parliamentary opposition against Count Stephen Tisza, then Prime Minister, with whom he fought a duel.

In his autobiography Károlyi admitted that it was Tisza who drove him into a democratic camp, but maintained that his political ambitions were to break the relations between Austria and Hungary, substituting for them a Russo-Hungarian *rapprochement,* and also to destroy the capitalist system. In order to provide party funds for these purposes he entered into secret negotiations with the French Government and visited America. His return from that country coincided with the outbreak of World War I. He was interned in France, but was soon released on the understanding that on reaching Hungary he would do his best to bring the War to a speedy conclusion. He then founded the Károlyi party for the purpose of breaking with the Germans and entering into a separate treaty of peace.

On Oct. 25, 1918, when the War was clearly lost, Count Károlyi founded the National Council composed of his own personal supporters, Social Democrats and Radicals. The Werkerle Cabinet resigned, and Count Hadik was appointed Premier by King Charles. On Oct. 30 there was a revolution, led by the Soldiers' Council and supporters of the National Council, who occupied practically all strategic points in Budapest. The next day Count Hadik resigned and in the name of King Charles Archduke Joseph appointed Count Károlyi as Prime Minister, who then took the oath of allegiance to the King. The same day Count Tisza was assassinated. On Nov. 16 the Hungarian People's Republic was proclaimed, and full powers were entrusted to the Cabinet of which Károlyi was Prime Minister. On Jan. 11, 1919, the National Council formally proclaimed Károlyi as President of the People's Republic.

Károlyi attempted to introduce the reforms which he had advocated and to negotiate with the Entente and with Hungary's noblemen; but the situation was too difficult for him, and on March 21, 1919, he handed over the Government to the Soviet of Béla Kun. He remained in the country unmolested until the eve of the collapse of terrorism and then left Hungary for Czecho-

slovakia. Later he was expelled from Italy for Communist propaganda and made his headquarters in Paris.

The High Court of Hungary found, after public trial at which Count Károlyi was legally represented, that on account of his actions during the War and in organising the revolution he was guilty of high treason and felony. His estates were confiscated, a large portion of them being divided under Land Reform, among some 5,000 smallholders. It was further officially maintained that by negotiating a separate armistice with Gen. Franchet d'Esperey at Belgrade Károlyi deprived Hungary of many territorial and other rights to which she was entitled under an armistice previously concluded by Gen. Diaz on the Italian front with the Austro-Hungarian armies.

See Károlyi's own autobiography *Fighting the World* (1926).

KAROSS, a cloak made of sheepskin, or the hide of other animals, with the hair left on. It is properly confined to the coat of skin without sleeves worn by the Hottentots and Bushmen of South Africa. These karosses are now often replaced by a blanket. The chiefs wore karosses of the skin of the wild cat, leopard or caracal. The word is also loosely applied to the cloaks of leopard-skin worn by the chiefs and principal men of the Kafir tribes. Kaross is probably either a genuine Hottentot word, or else an adaptation of the Dutch *kuras,* a cuirass.

KARPATHOS, an island about 30 m. south-west of Rhodes (Ital. *Scarpanto*), in that part of the Mediterranean which was called, after it, the Carpathian Sea (*Carpathium Mare*). It was both in ancient and mediaeval times closely connected with Rhodes; it was held by noble families under Venetian suzerainty, notably the Cornari from 1306 to 1540, when it was acquired by the Turks. In 1912 it passed into Italian occupation. From its remote position Karpathos has preserved many peculiarities of dress, customs and dialect, the last resembling those of Rhodes and Cyprus. Area, 118 sq.mi.; pop. (1936) 7,770.

KARR, ALPHONSE (1808–1890), French critic and novelist, was born in Paris, and became a teacher at the Collège Bourbon. His first novel, *Sous les tilleuls* (1832), partly autobiographical in character, was followed by other stories, of which *Voyage autour de mon jardin* (1845) was most popular. In 1839 he became editor of *Le Figaro,* and he also started a monthly journal, *Les Guêpes,* which brought him the reputation of a somewhat bitter wit. His epigrams were frequently quoted; *e.g.,* "plus ça change, plus c'est la même chose," and, on the proposal to abolish capital punishment, "je veux bien; que messieurs les assassins commencent." In 1848 he founded *Le Journal.* In 1855 he went to live at Nice, where he indulged his love of gardening, and gave his name to more than one new variety of flower. He practically founded the trade in cut flowers on the Riviera. His reminiscences, *Livre de bord,* were published in 1879–80. He died at St. Raphaël (Var) on Sept. 29, 1890.

KARROO, two extensive plateaus in the Cape province, South Africa, known respectively as the Great and Little Karroo. Karroo is a corruption of *Karusa,* a Hottentot word meaning dry, barren, and its use as a place-name indicates the character of the plateaus so designated. The Little (also called Southern) Karroo is bounded north by the Zwaarteberg, which separates it from the Great Karroo. From west to east the Little Karroo has a length of some 200 m., whilst its average width is 30 m. West of the Zwaarteberg the Little Karroo merges into the Great Karroo. Eastward it is limited by the hills which almost reach the sea in the direction of St. Francis and Algoa Bays. The Great Karroo is of much larger extent. Bounded south, as stated, by the Zwaarteberg, further east by the Zuurberg (of the coast chain), its northern limit is the mountain range which, under various names, such as Nieuwveld and Sneeuw Bergen, forms the wall of the inner plateau. To the south-west and west it is bounded by the Hex River mountains and the Cold Bokkeveld, eastward by the Great Fish river. West to east it extends fully 350 m. in a straight line, varying in breadth from more than 80 to less than 40 m. Whilst the Little Karroo is divided by a chain of hills which run across it from east to west, and varies in altitude from 1,000 to 2,000 ft., the Great Karroo has more the aspect of a vast plain and has a level of from 2,000 to 3,000 ft. The total area of the Karroo plateau is stated to be over 100,000 sq.m. The plains are dotted with low ranges of *kopjes.* The chief characteristics of the Karroo are the absence of running water during a great part of the year and the consequent parched aspect of the country. There is little vegetation save stunted shrubs, such as the mimosa (which generally marks the river beds), wild pomegranate, and wax heaths, known collectively as Karroo bush. Such parts of the Karroo as are under perennial irrigation are among the most productive lands in South Africa. The Karroo is admirably adapted to sufferers from pulmonary complaints. In a looser sense the term Karroo is also used of the vast northern plains of the Cape which are a part of the inner table-land of the African continent and which give it a distinctive physical character. (*See* CAPE PROVINCE.)

KARS, a vilayet of Turkey. It is a mountainous, or rather a highland, country, being in reality a plateau, with ranges of mountains running across it. The northern border is formed by the Arzyan range, a branch of the Ajari Mts., which attains altitudes of over 9,000 ft. In the south the Kara-dagh reach 10,270 ft. in Mount Ala-dagh, and the Agry-dagh 10,720 ft. in Mount Ashakh; and in the middle Allah-akhbar rises to 10,215 ft. The passes which connect valley with valley often lie at considerable altitudes, the average of those in the south-east being 9,000 ft. Chaldir-gol (altitude 6,520 ft.) and one or two other smaller lakes lie towards the north-east; the Chaldir-gol is overhung on the south-west by the Kysyr-dagh (10,470 ft.). The east side of the province is throughout demarcated by the Arpa-chai, which receives from the right the Kars river, and as it leaves the province at its south-east corner joins the Aras. The Kura rises within the province not far from the Kysyr-dagh and flows across it westwards, then eastwards and north-eastwards, quitting it in the north-east. The winters are very severe. The towns of Kaghyshman (4,620 ft.) and Sarykamish (7,800 ft.) have a winter temperature like that of Finland, and at the latter place, with an annual mean (35°) equal to that of Hammerfest in the extreme north of Norway, the thermometer goes down in winter to 40° below zero and rises in summer to 99°. The annual mean temperature at Kars is 40.5° and at Ardahan, farther north, 37°. The Alpine meadows (*yailas*) reach up to 1,000 ft. and afford excellent pasturage in spring and summer. The province is almost everywhere heavily forested. Firs and birches flourish as high as 7,000 ft., and the vine up to above 3,000 ft. Cereals ripen well, and barley and maize grow up to considerable altitudes. Large numbers of cattle and sheep are bred. Extensive deposits of salt occur at Kaghyshman and Oltu. The population in 1940 was 356,534. In remote antiquity the province was inhabited by Armenians, the ruins of whose capital, Ani, attest the ancient prosperity of the country. The Turks followed the Armenians, while Kurds invaded the Alpine pasturages above the valley of the Aras; and after them Kabardians, Circassians, Ossetes and Kara-papaks successively found a refuge in this highland region. After the Russo-Turkish War of 1877–78, this region was transferred to Russia by the treaty of Berlin; it was returned to Turkey by treaty with the Union of Soviet Socialist Republics in 1921.

KARS, the capital of a Turkish vilayet on the border of Russian Transcaucasia. It is situated in 40° 37′ N. and 43° 6′ E., 185 m. by rail S.W. of Tiflis, on a dark basalt spur of the Soghanlidagh, above the deep ravine of the Kars-chai, a sub-tributary of the Aras. Pop. (1940) 24,755. During the 9th and 10th centuries the seat of an independent Armenian principality, Kars was captured and destroyed by the Seljuk Turks in the 11th century, by the Mongols in the 13th, and by Timur (Tamerlane) in 1387. The citadel, it would appear, was built by Sultan Murad III. during the war with Persia, at the close of the 16th century. It was strong enough to withstand a siege by Nadir Shah of Persia, in 1731, and in 1807 it successfully resisted the Russians, surrendering to them, however, in 1828 and again in 1855. The fortress was stormed by the Russians in the war of 1877–78, and on its conclusion was transferred to Russia. It was returned to Turkey by the Union of Socialist Soviet Republics in 1921. The town has three considerable suburbs—Orta-kapi to the south, Bairam Pasha to the east, and Timur Pasha on the western side

of the river. At the north-west corner of the town, overhanging the river, is the ancient citadel, in earlier times a strong military post, but completely commanded by the high ground around. Coarse woollens, carpets and felt are manufactured.

KARSHI: *see* BEK-BUDI KENIMEKH.

KARST, in the limited sense the name given to the limestone mountain belt which extends from the River Isonzo toward the Gulf of Fiume, northeast of the peninsula of Istria in Italy, called by the Italians Carso (*q.v.*). By extension the term is also applied by physical geographers to the type of scenery characteristic of areas in which massive, well-jointed limestone rocks predominate. Such karst lands occur not only throughout a large part of the Dinaric Alps and other chains of the Balkan peninsula, but in the Causses of France, in the Jura, on a small scale in the Pennine region of England and in many other parts of the earth's surface. Karstic phenomena have been studied in most detail in the Balkan region, both because of their wide prevalence there and because of their marked effects on human life.

The essential feature is that owing to the solubility of limestone in rain water, and the percolation of water along joints enlarged by solution, land-forms are determined mainly by subterranean drainage. Over large areas, even where the rainfall is considerable, surface streams may be totally absent. When they occur they tend to run in deep, steep-sided, canyon-like gorges, often ending blindly at either end. At the upper end the river may originate from powerful springs rising at the base of limestone cliffs, and at the lower may sink into a deep chasm. Equally characteristic are the closed depressions, often rounded or elliptical with a sink or swallow-hole down which surface water flows (dolines), or much larger (reaching a length of 6–12 m.), flat-bottomed and elongated (poljen). Dolines and poljen alike have usually a covering of soil (*terra rossa*) representing the insoluble residue of limestone rocks. Thus within them cultivation is usually possible, while the intervening plateau areas may be composed of bare limestones, with at best a scanty plant cover where soil accumulates in fissures and cracks. Some of the poljen of the Dinaric Alps are traversed by streams which emerge from one bounding wall and disappear again at another. During the winter rainy season the supply of water may be too great to be carried off by the underground channel and the polje becomes a temporary lake. Cases of seasonal reversal of drainage are also frequent, a chasm at one period absorbing water and at another functioning as a spring. Whether or not the floor of the polje is periodically flooded the water table is usually near the surface, so that poljen are well suited for the growth of maize and other water-demanding plants. As a corollary to these surface features there is in Karst lands a great development of underground channels and caves, which often results in the collapse, partial or complete, of the overlying rocks, producing chaotic surface relief.

See de Martonne, *Traité de Géographie Physique,* iv. ed., t. ii. (1926, bibl.).

KARTEL: *see* CARTEL.

KĀRTIKEYA, in epic Hindu mythology Skanda, god of war. He has been regarded as a deification of Alexander, but this is quite uncertain, and he is unimportant in the early epics. Siva, it would seem, needing a new battle-leader chose Kumāra (Skanda), son of Agni, for that post, making him his own son. One of the many myths about his birth says that Siva was his sole parent, and that he was mothered by the Krittikas, the Pleiades, the asterism of battle, whence he was called Kārtikeya. In order that he might be suckled by these six nymphs he was endowed with as many faces; but another tale is that he was miraculously born as the six sons of as many spinsters (*krittika* possibly meaning "web" or "sword"-maidens), and that Parvati, Siva's wife, hugged him in her arms so that he became one, with six faces, 12 arms, etc. His vehicle is the peacock. His title in South India, Subramanya, is post-epic.

See A. A. Macdonell and A. B. Keith, *Vedic Index,* i., *s.v. Nakshatna;* E. W. Hopkins, *Epic Mythology* (Strasbourg, 1915).

KARUN, an important river of Persia. Its head-waters are in the mountain cluster known since at least the 14th century as Zardeh Kuh (13,000 ft.), and situated in the Bakhtiari country about 100 miles W. of Isfahan. In its upper course, until it emerges from the hills above Shushter it is called Ab-i-Kurang.

From the junction of the two principal sources in the Zardeh Kuh at an altitude of about 8,000 ft., the Ab-i-Kurang is a powerful stream, full, deep, and flowing with great velocity for most of its upper course between precipices varying in height from 1,000 to 3,000 ft. The steepness and height of its banks here make it useless for local irrigation purposes. From its principal sources to Shushter the distance as the crow flies is only about 75 m., but the course of the river is so tortuous that it travels 250 m. before it reaches that town.

Besides being fed on its journey through the Bakhtiyal country by many mountain streams, it receives several tributaries, the most important being the Ab-i-Bazuft from the right and the Ab-i-Bar from the left. At Shushter it divides into two streams, one the Ab-i-Gargar, a channel, in part artificial, cut in olden times and flowing east of the town; the other, and main stream, the Ab-i-Shatait, flowing west. The two streams unite, after a run of about 50 m. at Band-i-Qir, 24 m. S. of Shushter, where the Ab-i-Diz (river of Dizful) also comes in, on the right bank.

From Band-i-Kir to a point two miles above Mohammerah the river is called Karun and is navigable from thence to its mouth except for a distance of about 2 miles just below Ahwaz, where a series of cliffs and rocky shelves cross the river and cause rapids. Between Ahwaz and Band-i-Qir (46 m. by river 24 m. by road) the river has an average depth of about 20 ft., but below Ahwaz down to a point a few miles above Mohammerah it is in places very shallow and in the summer vessels with a draught exceeding 3 ft. are liable to ground. About 12 miles above Mohammerah and branching off to the left, is a choked-up river bed called the "Blind Karun," by which the Karun found its way past Qubban to the sea, until about 1766. Ten miles lower down a channel called the Bahmishir takes off from the left bank and flows southward. It is navigable to the sea for small craft. The main river, here about a quarter of a mile broad and 20 to 30 ft. deep, now flows west and after passing Mohammerah enters the Shatt-al-Arab about 20 m. below Basra.

This part of the river, from the Bahmishir to the Shatt, is a little over 3 m. in length, and as its name Hafar (dug) implies, is an artificial channel. We learn from the Arab geographer Muqaddasi (A.D. 986) that it was dug about A.D. 980 to facilitate water communication between Ahwaz and Basra. The total length of the Karun is 460 to 470 m. while the distance from its sources to its junction with the Shatt is only 160 m. as the crow flies. The Karun up to Ahwaz was opened to international navigation on Oct. 30, 1888, and Messrs. Lynch of London established a fortnightly steamer service on it immediately afterwards. River steamers now ply between Mohammerah and Nasiri and there is a daily service of motor bellums to Ahwaz. A boat of the Mesopotamia Persia Corporation runs four times a month from Ahwaz to Shalili and back, and one of the Nasiri Company three times. The shipping on the lower Karun has in the last few years become increasingly important, on account of the activities of the Anglo-Persian Oil Co.'s Oil Fields in south-west Persia.

To increase the water supply of Isfahan, Shah Tahmasp I. (1524–1576) and Shah Abbas I. (1587–1629), undertook some works for diverting the Kurang into a valley which drains into the river of Isfahan, by tunnelling through a narrow rocky ridge separating the two river systems. The result of many years work, a cleft 300 yd. long, 15 broad and 18 deep, can be seen at the junction of the two principal sources of the Kurang.

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KARYOKINESIS ("nucleus-movement"), is defined as indirect nuclear division, involving the formation and longitudinal splitting of spireme-threads and chromosomes, and of an achromatic spindle. Karyokinesis is also often applied to the indirect division of the cell as a whole.

In its more restricted sense, karyokinesis is practically equivalent to mitosis, which is fully described and illustrated in detail in the article CYTOLOGY.

KASAI or CASSAI, a river of Africa, the chief southern affluent of the Congo. It enters the main stream in 3° 10′ S. 16° 16′ E. after a course of over 800 miles. The Kasai river-system as a whole consists of innumerable consequent streams which have remarkably parallel courses and flow from south to north rising in the highlands which stretch from Angola along the southern boundary of the Belgian Congo and which form the watershed between the Zambesi and the Congo. The chief rivers of the Kasai system which flow in this direction are the Sankuru, Lulua, Kasai, Luembe, Chiumbe, Longachimo, Chikapa, Lovua, Loange, Kwilu, Kwengo, Inzia, Wamba and the largest, the Kwango. In their upper courses, as they flow over the Archaean massif, these streams occasionally assume a subsequent direction, but it is not until they reach the northern plain that this direction becomes dominant. The Sankura, whose waters are a bright yellow colour, is the first to flow westward near Bena Dibele and this stream, which at Basongo is joined by the Kasai and by which name it is henceforward known, intercepts the others or those of them which have been formed by the confluence of several.

Numerous falls and rapids occur in the upper reaches of all the streams thus preventing navigation upon most of the tributaries. The Kasai and its tributaries are navigable for over 1,500 m. by steamer. Navigation is possible on the Sankuru to above the town of Lusambe; on the Kasai it is stopped by the Wissmann falls a few miles below its confluence with the Lovua; the other tributaries are navigable for only short distances whilst even on the Kwango navigation does not proceed very far. Apart from those already mentioned the only important right bank tributary is the Mfini, known above Lake Leopold II. into which it flows, as the Lukenie, which, rising in the eastern Belgian Congo, flows westward and joins the Kasai 450 m. from its mouth. Near its mouth, the Kasai, in its lower course a broad stream strewn with islands, is narrowed to about half a mile on passing through a gap in the inner line of the West African highlands, by the cutting of which the old lake of the Kasai basin must have been drained. The Kasai enters the Congo with a minimum depth of 25 ft. and a breadth of 700 yd., at a height of 942 ft. above the sea. The confluence is known as the Kwa mouth, Kwa being an alternative name for the lower Kasai.

The Kwango affluent of the Kasai was the first of the large affluents of the Congo known to Europeans, being reached by the Portuguese in the 16th century, but of its lower course they were ignorant. The first accurate knowledge of the river basin was obtained by David Livingstone, who reached the upper Kasai from the east and explored in part the upper Kwango (1854–1855). V. L. Cameron and Paul Pogge crossed the upper Kasai in the early '70s. The Kwa mouth was seen in 1877 by H. M. Stanley, who in 1882, ascended the river to the Kwango-Kasai confluence and then proceeded up the Mfini and discovered Lake Leopold II. In 1884 George Grenfell journeyed up the river beyond the Kwango confluence. The systematic exploration of the main stream and its chief tributaries was, however, mainly the work of Hermann von Wissmann, Ludwig Wolf, Paul Pogge, Major Von Mechou, Grenfell and Holman Bentley, Captain C. Lemaire and E. Torday. *See* CONGO.

KASBEK: *see* KAZBEK.

KASHAN, a small province and town of Iran, the former being situated between the provinces of Qum on the north and Isfahan on the south, on the Iranian plateau. The revenue in 1926–27 amounted to 1,110,799 krans (about £24,684). The administrative centre is Kashan, in 34° N. and 51° 27′ E., 150 mi. from Tehran, at an elevation of 3,190 ft. Pop. (census of 1940) 44,994. The town lies on a caravan route somewhat eastward of the Isfahan-Qum-Tehran road, passable by motors.

The summer heat is excessive—a mean maximum in July of 100° was recorded for the period 1881–84—and water, which is scarce, is brought by an aqueduct from a spring at the garden of Fin, 4 mi. W. of the town, one of the most beautiful in the country.

The melons and figs of Kashan are greatly esteemed. Manufactures are copper utensils, embroidered silks, plain stuffs and a kind of velours. The trade in velvets and brocades, at the end of the 19th century, had been almost killed by the competition of European machine-made stuffs, but the textile skill of the natives was largely concentrated on woollen and silk carpets. These are some of the finest Persia can produce. Prosperity partly revived but has again declined, due partly to the relocation of the main north-south road which now by-passes Kashan.

Kashan was the most important centre of the ceramic art in Persia, producing the finest decorated pottery as well as glazed tiles that were exported throughout the near east. Its lustrewares were especially famous. Kashan also exports rose water made in the villages around; and cobalt is obtained from the mine at Kamsar, 19 mi. south.

KASHER: *see* KOSHER.

KASHGAR (SHUFU), city of Chinese Turkistan, situated at an altitude of over 4,000 ft., in 39° 30′ N., 75° 63′ E., on the Kyzyl Su or Kashgar Darya, originally a tributary of the Tarim but now often losing itself in the marshes before it reaches that river. The town is the ancient Su-leh of the Chinese, which perhaps represents an original Solek or Sorak. Kashgar lies to the east of the nodal point from which the Tien Shan runs northeast, the Alai range runs west and the Kashgar or Sarikol mountains curve southeast along the eastern edge of the Pamirs, fingering out in the eastward running Altyn Tagh. The route from Kashgar to the fertile Ferghana valley to the west of the Alai range lies to the north across the Terek Pass (alt. 12,730 ft.) and the journey can be accomplished in a few days. The Kyzyl Art (14,015 ft.) also links it with the west, and through Khotan to the southeast it links via the Karakorum Pass (18,300 ft.) with northern India. The Urumchi gap (2,790 ft.) and the Otun-koza (2,390 ft.) give access to Urumchi and the Ili valley to the northeast.

The loess oasis of which Kashgar is the centre depends entirely on irrigation from the Kyzyl Su (Red River) and the Tuman Su, its tributary; grain and fruit grow luxuriously and settlement in the oasis is very ancient. The volume of water available for irrigation depends on the amount of snow in the mountains, which is apparently gradually diminishing; a cold summer in the Pamirs (*e.g.*, 1915) may delay thawing and thus limit the quantity of water at the time of sowing. Summer is intensely hot, the three summer months having a maximum av. temp. of 90° F and a minimum of 62° F, while the maximum av. temp. for the three winter months is 38° F and the minimum 17° F. The scanty rainfall averages 3·34 in. per annum and is irregularly distributed throughout the year; in 1915 practically no rain fell during spring and summer. The prevailing westerly winds bring clouds of dust from the Takla Makan desert, so that the Kashgar oasis is enveloped in a cloud of dust for more than 200 days in the year.

History.—The first recorded link between China proper and Chinese Turkistan is the possibly legendary visit of Mon Wang, an emperor of the Chou dynasty, to Khotan in 1000 B.C. Under the Han dynasty in the 3rd century B.C., the Hiung Nu or Huns moved west from Mongolia and drove the Indo-Scythian Yue-chi then living in Kansu, Kokonor and the southern half of the Gobi from their homes, and one branch, the Great Yue-chi, settled in the Kashgar oasis, driving out the Sacae in 163 B.C. Following on the perpetual strife between the Huns and the Chinese, the latter in the first century B.C. conquered Chinese Turkistan, including Su-leh or Kashgar. (Ptolemy speaks of a *Kasia regio,* included in Scythia beyond the Imaus, possibly an indication of the origin of the word Kashgar), and from 51 B.C. the Chinese exacted tribute from the nomad tribes inhabiting the region between Shensi and the Caspian. Pan Chao, a famous Chinese warrior of the first

century A.D. is said to be buried in Kashgar and a temple exists on the supposed site of his tomb, overlooking the springs of Pan Chao whose origin legend attributes to him. Later the Yue-chi reasserted their authority in Kashgar as Chinese influence waned. During the 2nd century A.D. the vine was introduced into China via this route, and the Yue-chi introduced Buddhism into China and some elements of Chinese civilization into India; they are also credited with the introduction of the pear and peach into China.

Turkish and Mongol hordes repeatedly swept through the region in the centuries that followed, though the Chinese had a garrison in Kashgar in the 8th century, which struggled against the Tibetans and the Arabs and finally succumbed to the Western Turks. In the 10th and 11th centuries Kashgar formed part of the Turkish Uighur kingdom, overthrown by the Kara-Kitais, another westward moving Turkish tribe, in the early 12th century. In 1219 Jenghiz Khan invaded the district and the sweeping away of local tribal boundaries by his famous empire later resulted in an impetus to trade, witnessed by the visit of the Venetian merchant, Marco Polo, to Kashgar about 1275. In the 14th century the oasis was ravaged by the troops of Timur (Tamerlane), though a last march planned by him through the region in an effort to conquer China was never carried out, owing to his death in 1405. In the succeeding centuries Kashgar suffered many attacks, being completely destroyed in 1514 by Mirza Ababakar, who built a new fortress with massive defenses higher up the Tuman river.

The dynasty of the Jagatai khans collapsed in 1572 and from then till 1759 strife between the White and Black Mountaineers (Ak and Kara Taghluk), with interventions by the Dzungarian Kalmucks raged in the region. In 1759 a Chinese army from Ili (Kulja), which had been recaptured by the Chinese in 1755, conquered Kashgaria, settled Chinese emigrants there and established a garrison at Kashgar, which, except for Mohammedan risings, remained in Chinese hands until the great insurrection of the Chinese Mohammedans (the so-called Dungani) in 1862. After this Kashgar and the other cities of the Tarim basin remained under the rule of Yakub Beg until 1877, when the Chinese recaptured their ancient dominion. Yakub Beg was a general in the army of Buzurg Khan, a chief of Khokand, who, just before the Russians captured Khokand in 1866, took advantage of the rebellion of the Chinese Mohammedans, who formed 94% of the population of Kashgar, to proclaim himself king of Kashgar in 1865. Buzurg Khan proved himself an incapable ruler and his general Yakub Beg, a man of extraordinary ability, usurped the throne, and secured recognition from many other governments, including the Russians and the British; the latter were apprehensive of the spread of Russian rule into the region. The Chinese army under General Tso Tsung-t'ang, sent against Yakub Beg, had to march 4,000 miles without any supply and transport service; they met the difficulty by sending on advance troops who sowed cereals and vegetables in each oasis so that provisions were ready by the following year, when the rear troops reached the next oasis. Their advance under these circumstances was necessarily slow and occupied more than two years, but the spirit of determination evidenced by their procedure carried them through a successful campaign and the region was afterwards treated with marked restraint. Most of the horses in the region were commandeered in order to prevent mobility in case of further rebellions, but otherwise very little vengeance was exacted and Kashgaria has remained loyal with the exception of the revolt of General Ma in the 1930s. After the revolution which began in China in 1911, the Taoyin of Kashgar acknowledged the authority of the new republic and, though disturbances broke out temporarily and Russian troops were sent to the town, these latter were soon withdrawn and Kashgar settled down again under Chinese rule.

Industries.—Kashgar is an important, though not the administrative, centre of Sinkiang, or the New Dominion, as the Chinese call it; many other names have been given at various times to this province, *e.g.*, Chinese Turkistan, Lesser Bukhara, Moghulistan, Tartary, High Tartary, the Six Cities and Kashgaria. Kashgar is the headquarters of one of the nine district officials each of whom has charge of a circuit in the New Dominion and is responsible to the governor whose headquarters are at Urumchi. After the suppression of General Ma's rebellion the military control reverted to the provincial government at Tihwa (Urumchi). The chief vegetable products of the oasis are maize, wheat, barley, rice, cotton, millet and peas, with fruits such as apricots, peaches, melons, mulberries and grapes. The inhabitants also dress skins and furs and make leather goods and pottery. Homespun cotton cloth (kham), woollen goods and felt are also made. Primitive mining of the rich red, black and green copper ore found north and west-northwest of Kashgar is also carried on, but the art of chemical refining of copper is quite unknown.

The "Ferghana series" of oil-bearing strata extends into Kashgaria through Kanjigan, along the foot of the Tien Shan, past Aksu and right up to Kuchar. Boring and refining were unknown until recently, the crude oil being scooped out of surface wells and holes. But gasoline, kerosene, machine oil, grease and mineral wax (ozokerite) were produced in a primitive way, the chief refineries being at Kashgar. Just before the Russian revolution trade between Ferghana and Kashgaria had developed rapidly and was ousting the trade with India across the difficult Karakorum route, for the trade route from Kashgar to Russia involves only an eight days' caravan route, with the crossing of a single pass (the Terek) to Osh, the railhead of the Russian line up the Ferghana valley.

After the death of the Chinese governor Yang Tseng-hsin in 1928, the Mohammedans in Kashgar and the other oases of the south rebelled under General Ma Chung-ying against the Chinese provincial administration. This rebellion was eventually suppressed in 1937 by the governor Sheng Shih-tsai with the help of White Russian troops and soviet air and land support. From 1937 until 1942 the soviet government had strong economic and military control over the province and began the development of its oil and other resources ejecting foreign missionaries and other influences from Kashgar and Yarkand. But in Jan. 1943, the Russians withdrew and Chinese influence was fully restored. The increased trade with Russia, which consisted, aside from oil, of the exports from Kashgar of war wool, cotton, tea, sheep and English products imported from India against machinery, furs, milk, etc., was disrupted by the Russian withdrawal. So was temporarily the delivery of Russian support to China via the Turkestan road.

A postal connection exists between Urumchi and Kashgar, covering the 1,000 mi. in 13 or 14 days, and there is telegraphic communication between Urumchi, Kashgar and the Russian frontier. In 1922–23 a wireless station was erected at Kashgar by the Marconi company on behalf of the Chinese government. Kashgar has no railway connection at the present time (1944). The population is estimated at 80,000, but no census figures are available. The region is liable to destructive earthquakes. Yanghi Shahr, the modern town, was built in 1838 and is of an oblong shape running from north to south, entrance being by a single gateway. The whole is surrounded by a deep, wide ditch, which could be filled by the river, though this might mean bringing down the whole mud structure on its porous sandy soil. Kuhna Shahr is the small, clay-walled fortress built on the Tuman river after the destruction of old Kashgar in 1514. The ruins of this old city, Aski Shahr, may still be seen on each side of the Tuman river. Two miles to the north, beyond the river, is the shrine of Hazrat Afak, the saint king of the country who died and was buried here in 1693. It is a handsome mausoleum, faced with blue and white glazed tiles, and silver poplars are planted round it. The college, mosque and monastery, surrounded by orchards, fruit gardens and vineyards, erected by Yakub Beg, are situated in its vicinity.

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KASHI or **KASI,** formerly the Persian word for all glazed and enamelled pottery irrespectively; now the accepted term for certain kinds of enamelled tilework, including brickwork and tile-mosaic work, manufactured in Persia and parts of Mohammedan India, chiefly during the 16th and 17th centuries.

Undoubtedly originating in the Semitic word for glass, *kas*, it is quite possible that the name *kashi* is immediately derived from Kashan, a town in Persia noted for its *faïence*. This ancient pottery site, in turn, probably receives its name from the old-time industry; as a "city of the plain" it would obviously have no claim to the farther-eastern suffix *shan*, meaning a mountain.

Kashi work consisted of two kinds: (*a*) Enamel-faced tiles and bricks of strongly fired red earthenware, or terra-cotta; (*b*) enamel-faced tiles and tesserae of lightly fired "lime-mortar," or sandstone. Tile-mosaic work is described by some authorities as the true *kashi*. From examination of figured tile-mosaic patterns, it would appear that, in some instances, the shaped tesserae had been cut out of enamelled slabs or tiles after firing; in other examples to have been cut into shape before receiving their facing of coloured enamel. Conventional representations of foliage, flowers, fruit, intricate geometrical figures, interlacing arabesques and decorative calligraphy—inscriptions in Arabic and Persian—constitute the ordinary *kashi* designs. The colours chiefly used were cobalt blue, copper blue (turquoise colour), lead-antimoniate yellow (mustard colour), manganese purple, iron brown and tin white. A colour-scheme, popular with Mogul and contemporary Persian *kashigars*, was the design, in cobalt blue and copper blue, reserved on a ground of deep mustard yellow.

In India the finest examples of *kashi* work are in the Punjab and Sind provinces. At Lahore, amongst many beautiful structures, the most notable are the mosque of Wazir Khan (A.D. 1634) and the gateways of three famous pleasure gardens, the Shalamar Bagh (A.D. 1637), the Gulabi Bagh (A.D. 1640), and the Charburji (*c.* A.D. 1665). At Tatta the Jami Masjid, built by Shah Jahan (*c.* A.D. 1645), is a splendid illustration; whilst in that "vast cemetery of six square miles" on the adjacent Malki plateau are numerous Mohammedan tombs (A.D. 1570–1640) with extraordinary *kashi* ornamentation. Delhi, Multan, Jullundur, Shahdara, Lahore cantonment, Agra and Hyderabad (Sind), all possess excellent monuments of the best period, viz., those erected during the reigns of Akbar and Jahangir (A.D. 1556–1628).

In Persia at Isfahan, Kashan, Meshed and Kerman are a few buildings and ruins showing the old *kashi* work; the palace of Chehel Sitùn in Isfahan, built during the reign of Shah Abbas I. (*c.* A.D. 1600), is a magnificent specimen of this art.

Occasional revivals of the manufacture have taken place both in India and Persia. Mohammed Sharíf, a potter of Jullundur in the Punjab, reproduced the Mogul enamelled tile-work in 1885, and there is a manuscript record of a certain Ustad Ali Mahommed, of Isfahan, who revived the Persian processes in 1887.

KASHMIR, a state in India, including much Himalayan country of the Punjab. Famed for its beauty, it is the chief health resort for Europeans in India, while politically it is important as guarding one of the approaches to India on the N.W. frontier. The former name of the state was Jammu and Kashmir. Estimated area 82,258 sq.mi. Pop. (1941) 4,021,616. It includes the provinces of Jammu (including the jagir of Punch), Kashmir, Ladakh, Baltistan and Gilgit; the Shin states of Yaghistan, of which the most important are Chilas, Darel and Tangir, are nominally subordinate to it, and the two former pay a tribute of gold dust.

The following are the statistics for the main divisions of the state:—

	Area in sq.mi.	*Pop. in 1941*
Kashmir	69,903	3,945,090
Frontier Illaqas in Gilgit	12,355	76,526

Physical Conformation, Geology and Climate.—The country, mountainous save for the continuation of the plains of the Punjab in the S.W., is divisible into:—(1) The outer hills and the central mountains of Jammu district. (2) The valley of Kashmir. (3) The far side of the great central range, including Ladakh, Baltistan and Gilgit.

The hills forming the northern half-circuit of the Kashmir valley, and running beyond, include many high mountain masses and peaks, the most conspicuous of which, a little outside the confines of Kashmir, is Nanga Parbat, 26,182 ft. above the sea, with a large glacier on its E. face. The great ridge thrown off by Nanga Parbat rises, at a distance of 12 m., to another summit 20,740 ft. in height, from which run S.W. and S.E. the ridges which are the N. water-shed boundary of Kashmir. The former range, after running 70 m. S.W. between the valleys of the Kishenganga and the Kunhar or Nain-sukh, turns S., closely pressing the river Jhelum, after it has received the Kishenganga, with a break a few miles farther S. which admits the Kunhar. The highest summits are 16,487 and 15,544 ft. above sea. The range which runs S.E. from the junction peak above mentioned divides the valley of the Kishenganga from that of the Astor and other tributaries of the Indus. The highest point on this range, where it skirts Kashmir, is 17,202 ft. above sea. For more than 50 m. from Nanga Parbat there are no glaciers on this range; thence eastward they increase; one, near the Zoji-la pass, is only 10,850 ft. above sea. The mountains at the E. end of the valley, running nearly N.-S., drain inwards to the Jhelum, and on the other side to the Wardwan, a tributary of the Chenab. The highest part of this eastern boundary is 14,700 ft. There are no glaciers. The highest point on the Panjal range, which forms the S. and S.W. boundary, is 15,523 ft. above sea-level.

The river Jhelum (*q.v.*) or Behat (Sanskrit *Vitasta*)—the Hydaspes of Greek historians and geographers—flows N.W. through the middle of the valley. After a slow and winding course it expands about 25 m. below Srinagar over a slight depression in the plain, and forms the Wular lake and marsh, about 12½ m. by 5 m. in extent, surrounded by the lofty mountains which tower over the N. and N.E. of the valley. Leaving the lake on the S. W. side, near Sopur, the river flows slowly S.W. about 18 m. to the gorge at Baramulla. From this point the stream is more rapid through the narrow valley which conducts it W. 75 m. to Muzaffarabad, where it turns sharply S., joined by the Kishenganga. At Islamabad, about 40 m. above Srinagar, the river is 5,400 ft. above sea-level, and at Srinagar 5,235 ft. It has thus a fall of about 4 ft. per mile in this part of its course. For the next 24 m. to the Wular lake, and thence to Baramulla, its fall is only about 2¼ ft. in the mile. On the 80 m. of the river in the flat valley between Islamabad and Baramulla, there is much boat traffic; but none below Baramulla till the river comes out into the plains.

On the N.E. side of this low narrow plain of the Jhelum is a broad hilly tract between which and the higher boundary range runs the Kishenganga River. Near the east end of this interior hilly tract, and connected with the higher range, is one summit, 17,839 ft., possessing many small glaciers. These heights look down on one side into the beautiful valley of the Sind River, and on another into the valley of the Lidar, which join the Jhelum. Among the hills north of Srinagar rises one conspicuous mountain mass, 16,903 ft. in height, from which on its north side descend tributaries of the Kishenganga, and on the south the Wangat River, which flows into the Sind. By these rivers and their numerous affluents the whole valley of Kashmir is watered abundantly.

Geology.—The general strike of the beds, and of the folds which have affected them, is from N.W. to S.E., parallel to the mountain ranges. Along the S.W. border lies the zone of Tertiary beds which forms the Sub-Himalayas. Next to this is a great belt of Palaeozoic rocks, through which rise the granite, gneiss and schist of the Zanskar and Dhauladhar ranges and of the Pir Panjal. In the midst of the Palaeozoic area lie the alluvium and Pleistocene deposits of the Srinagar valley, and the Mesozoic and Carboniferous basin of the upper part of the Sind valley. Beyond the great Palaeozoic belt is a zone of Mesozoic and Tertiary beds which commences at Kargil and extends S.E. past the Kashmir boundary to Spiti and beyond. Finally, in Baltistan and the Ladakh range there is a broad zone composed chiefly of old gneiss and schist.

Climate.—The valley of Kashmir, sheltered from the S.W. monsoon by the Panjal range, has not the periodical rains of India. Its rainfall is irregular, greatest in the spring months. Occasionally storms in the monsoon pass over the crests of the Panjal and give heavy rain on the elevated plateaus on the Kashmir side. And again clouds pass over the valley and are arrested by the higher N.E. hills. Snow falls on the surrounding hills at intervals from October to March. As a health resort Kashmir, excluding Srina-

gar, which is insanitary and relaxing, has no rival anywhere in the neighbourhood of India. Its climate is admirably adapted to the European constitution, and in consequence of the varied range of temperature and the facility of moving about the visitor is enabled with ease to select places at elevations most congenial to him. Formerly only 200 passes a year were issued by the government, but now no restriction is placed on visitors, and their number increases annually. The railway to Rawalpindi, and a driving road thence to Srinagar make the valley easy of access. When the temperature in Srinagar rises at the beginning of June, there is a general exodus of visitors to Gulmarg, a fashionable hill-station. This great influx of visitors has resulted in a corresponding diminution of game. Special game preservation rules have been introduced and *nullahs* are let out for stated periods with a restriction on the number of head to be shot. The wild animals of the country include ibex, markhor, oorial, the Kashmir stag, and black and brown bears.

Many sportsmen cross into Ladakh and the Pamirs.

People and Industries.—The great majority of the inhabitants of Kashmir are professedly Mohammedans, but they are still strongly influenced by their ancient superstitions. At the census of 1941 out of a total population of the whole state of 4,021,616, there were 807,549 Hindus, 3,073,540 Moslems, 3,079 Indian Christians, 29,374 tribes and 108,074 others.

Up to recent times flood, fire and epidemics were very serious troubles; the cultivator lived under a system of *begar,* which entitled an official to take either labour or commodities free of payment from the villages. Having no security of property, the people had no incentive to effort, and with no security for life they lost the independence of free men. But the land settlement of 1889 swept many abuses away. Restrictive monopolies, under which bricks, lime, paper and certain other manufactures were closed to private enterprise, were abolished. In consequence of this improvement in their conditions of life and of the influx of wealth into the country brought by visitors, the Kashmiri grows every year in material prosperity and independence of character. The state contributed materially in men and money to World War I.

The language spoken in Kashmir is akin to that of the Punjab, though marked by many peculiarities. It possesses an ancient literature, which is written in a special character (*see* KASHMIRI LANGUAGE).

Crops.—The staple crop of the valley is rice, which forms the chief food of the people. Indian corn comes next; wheat, barley and oats are also grown. Every kind of English vegetable thrives well, especially asparagus, artichoke, seakale, broad beans, scarlet-runners, beetroot, cauliflower and cabbage. Fruit trees are met with all over the valley, wild but bearing fruit, and the cultivated orchards yield pears, apples, peaches, cherries, etc., equal to the best European produce. The chief trees are deodar, firs and pines, *chenar* or plane, maple, birch and walnut. A complete list of the flora and fauna of the valley will be found in Sir Walter Lawrence's book on Kashmir.

Industries.—The chief industry of Srinagar was formerly the weaving of the celebrated Kashmir shawl, which dates back to the days of the emperor Baber. These shawls first became fashionable in Europe in the reign of Napoleon III., when they fetched from £10 to £100; but the industry received a blow at the time of the Franco-German War, and the famine of 1877 scattered the weavers. The place of the Kashmir shawl has to some extent been taken by the Kashmir carpet, but the most thriving industry now is that of silk-weaving. Srinagar is also celebrated for its silver-work, papier mâché and wood-carving.

History.—The history is enshrined in four Sanskrit books. The *Rajatarangini,* commencing with traditional history of very early times, comes down to the reign of Sangrama Deva, 1006; the second work, by Jonaraja, takes up the history in continuation and, entering the Mohammedan period, gives an account of the reigns down to that of Zain-ul-ab-ad-din, 1412. P. Srivara carried on the record to the accession of Fah Shah, 1486. The fourth work, called *Rajavalipataka,* by Prajnia Bhatta, completes the history to the time of the incorporation of Kashmir in the dominions of the Mogul emperor Akbar, 1588.

In the *Rajatarangini* it is stated that the valley of Kashmir was formerly a lake, and that it was drained by the great *rishi* or sage, Kasyapa, son of Marichi, son of Brahma, by cutting the gap in the hills at Baramulla (Varaha-mula). When Kashmir had been drained, he brought in the Brahmans to occupy it. In the 7th century Kashmir is said by the Chinese traveller Hsuan Tsang to have included Kabul and the Punjab, and the hill region of Gandhara, the country of the Gandarae of classical geography.

At an early date the Sanskrit name of the country became *Kásmír.* The earliest inhabitants, according to the *Rajatarangini,* were the people called Naga, a word which signifies "snake." The other races mentioned as inhabiting this country and the neighbouring hills are Gandhari, Khasa and Daradae. The Khasa people are supposed to have given the name Kasmir. In the *Mahabharata* the Kasmira and Daradae are named together among the Kshattriya races of northern India.

In the time of Asoka, about 245 B.C., one of the Indian Buddhist missions was sent to Kashmir and Gandhara. After his death Brahmanism revived. Then in the time of the three Kushan princes, Huvishka, Jushka and Kanishka, who ruled over Kashmir about the beginning of the Christian era, Buddhism was to a great extent restored, though for several centuries the two religions existed together in Kashmir, Hinduism predominating. In this Hindu-Buddhist period, and chiefly between the 5th and 10th centuries of the Christian era, were erected the Hindu temples in Kashmir. In the 6th and 7th centuries Kashmir was visited by some of the Chinese Buddhist pilgrims to India. The country is called *Shie-mi* in the narrative of To Yeng and Sung Yun (578). One of the Chinese travellers of the next century was for a time an elephant-tamer to the king of Kashmir. Hsuan Tsang spent two years (631–633) in Kashmir (*Kia-chí-mí-lo*). He entered by Baramula and left by the Pir Panjal pass. In the following century the kings of Kashmir appear to have paid homage and tribute to China, though this is not alluded to in the Kashmir chronicle. Hindu kings continued to reign till about 1294, when Udiana Deva was put to death by his Mohammedan vizier, Amir Shah, who ascended the throne under the name of Shams-ud-din.

Of the Mohammedan rulers mentioned in the Sanskrit chronicles, one, who reigned about the close of the 14th century, has made his name prominent by his active opposition to the Hindu religion, and his destruction of temples. This was Sikandar, known as *But-shikan,* or the "idol-breaker." It was in his time that India was invaded by Timur, to whom Sikandar made submission and paid tribute. The country fell into the hands of the Moguls in 1588. In the time of Alamgir it passed to Ahmad Shah Durani, on his third invasion of India (1756); and from that time it remained in the hands of Afghans till it was wrested from them by Ranjit Singh, the Sikh monarch of the Punjab, in 1819. Eight Hindu and Sikh governors under Ranjit Singh and his successors were followed by two Mohammedans similarly appointed, the second of whom, Shekh Imam-ud-din, was in charge when the battles of the first Sikh war (1846) brought about new relations between the British Government and the Sikhs.

Gulab Singh, a Dogra Rajput, had from a humble position been raised to high office by Ranjit Singh, who conferred on him the small principality of Jammu. On the final defeat of the Sikhs at Sobraon (Feb. 1846), Gulab Singh was called to take a leading part in arranging conditions of peace. The treaty of Lahore (March 9, 1846) sets forth that, the British Government having demanded, in addition to a certain assignment of territory, a payment of a crore and a half of rupees ($1\frac{1}{2}$ millions sterling), and the Sikh government being unable to pay the whole, the maharaja (Dhulip Singh) cedes, as equivalent for one crore, the hill country belonging to the Punjab between the Beas and the Indus, including Kashmir and Hazara. The governor-general, Sir Henry Hardinge, considered it expedient to make over Kashmir to the Jammu chief, securing his friendship while the British Government was administering the Punjab on behalf of the young maharajah. Gulab Singh was well prepared to make up the payment in default of which Kashmir was ceded to the British; and so, in consideration of his services in restoring peace, his inde-

pendent sovereignty of the country made over to him was recognized, and he was admitted to a separate treaty. Gulab Singh had already, after several extensions of territory east and west of Jammu, conquered Ladakh (a Buddhist country, and till then subject to Lhasa), and had then annexed Skardo, which was under independent Mohammedan rulers. He had thus by degrees half encircled Kashmir, and by this last addition his possessions attained nearly their present form and extent. Gulab Singh died in 1857, and was succeeded by his son, Ranbir Singh, who died in 1885. The next ruler, Maharaja Partab Singh, G.C.S.I. (1850–1925), on his accession inaugurated the settlement reforms already described. His rule was remarkable for the reassertion of the Kashmir sovereignty over Gilgit (*q.v.*). In 1925 Colonel H. H. Maharajah Sir Hari Singh, K.C.I.E., K.C.V.O., born 1895, succeeded to the title of Maharajah of Jammu and Kashmir.

See Drew, *Jammu and Kashmir* (1875); M. A. Stein, *Kalhana's Rajatarangini* (1900); W. R. Lawrence, *The Valley of Kashmir* (1895); Colonel A. Durand, *The Making of a Frontier* (1899); R. Lydekker, "The Geology of the Kashmir and Chamba Territories," *Records of the Geological Survey of India,* vol. xxii. (1883); J. Duke, *Kashmir Handbook* (1903); C. F. Tyndale Biscoe, *Kashmir in Light and Shade* (1922) and the annual *Administration Report.*

KASHMIR GOAT, a goat often confounded with the Angora on account of its exceptional wool-bearing qualities. The Kashmir goat has a short, neat head, a delicate skin, small bones and a long heavy coat composed of two materials. The upper coat is coarse and varies according to the individual but the under coat or *pashm* is much valued as an article of commerce. This undercoat is of a fluffy description resembling down and forms the material from which the far-famed cashmere shawls are manufactured. *See* GOAT.

KASHMIRI LANGUAGE (properly *Kāśmīrī*), the name of the vernacular spoken in the valley of Kashmir (properly *Kaśmīr*) and in the hills adjoining. By origin it is the most southern member of the Dard group of the Dardic languages (*see* INDO-ARYAN LANGUAGES). The other members of the group are Shinā, spoken to its north in the country round Gilgit, and Kōhistānī, spoken in the hill country on both sides of the River Indus before it debouches on to the plains of India. The Dardic languages also include Khōwār, the vernacular of Chitral, and the Kāfir group of tongues, of which the most important is the Bashgali of Kafiristan. Kashmiri alone possesses a literature, or indeed an alphabet. The whole family occupies the three-sided tract of country between the Hindu-Kush and the north-western frontier of British India.

The Dardic languages are Aryan, but are neither Iranian nor Indo-Aryan. They have developed a phonetic system of their own, while they have retained unchanged forms of extreme antiquity that have long passed out of current use both in Persia and in India. They thus represent a stage of linguistic progress later than that of Sanskrit, and earlier than that recorded in the Iranian Avesta.

The language has lost most of its original Dardic character, and is now a mixed form of speech. Sanskrit has been actively studied in Kashmir for many centuries, and the Kashmiri vocabulary, and even its grammar, are now largely Indian.

Kashmiri has few dialects. The only important variety is Kishtwārī, spoken in the hills south-west of Kashmir. Smaller dialects, such as Pogul and Rāmbanī of the hills south of the Banihāl pass, may also be mentioned.

General Character of the Language.—The two principal features are the numerous epenthetic changes of vowels and consonants, and the employment of pronominal suffixes. In both cases the phenomena are perfectly plain, cause and effect being presented in the complicated systems of declension and conjugation. The Indo-Aryan languages proper long ago passed through this stage, and a study of Kashmiri explains a number of difficulties found by the student of Indo-Aryan vernaculars.[1]

In the following account the contractions employed are: D=Dardic; Ksh.=Kashmiri; Skr.=Sanskrit; Sh.=Shinā.

A. *Vocabulary.*—The vocabulary of Kashmiri is mixed. At its basis it has a large number of words which are also found in the neighbouring Shinā, such as connote the most familiar ideas and are in most frequent use. Thus, the personal pronouns, the earlier numerals, the words for "father," "mother," "fire," "sun," are all closely connected with corresponding Shinā words. There is also a large Indian element, consisting partly of words derived from Sanskrit vocables introduced in ancient times, and partly of words borrowed in later days from the vernaculars of the Punjab. Finally, there is a considerable Persian (including Arabic) element owing to the long Muslim domination of the Happy Valley. Many of these have been considerably altered in accordance with Kashmiri phonetic rules, so that they sometimes appear in strange forms. The difference of religion has strongly influenced the vocabulary. The Muslims employ Persian and Arabic words with great freedom, while the Hindus, or "Pundits" as they are called, borrow almost entirely words derived from Sanskrit. The literary class being mostly Hindu, Kashmiri literature, taken as a whole, hardly represents the actual language spoken by the mass of the people.

B. *Written Characters.*—The Persian character is quite unsuited for representing the very complex Kashmiri vowel system. Hindus employ the Śāradā alphabet, of Indian origin and akin to the well known Nāgarī. Kashmiri vowel sounds can be recorded very successfully in this character, but there is, unfortunately, no fixed system of spelling. The Nāgarī alphabet is also coming into use in printed books, no Śāradā types being yet in existence.

C. *Phonetics.*—There is, as compared with Sanskrit, a considerable extension of the vowel system. Ksh. possesses the vowels *a, ā, i, ī, u, ū, r, ē, ai, ō, au,* and the nasal symbol ', a flat *ă* (like the *a* in "hat"), a flat *ĕ* (like the *e* in "met"), a short *ŏ* (like the *o* in "hot"), and a broad *å* (like the *a* in "all"); also a series of what natives call "*mātrā*-vowels," which, though slightly heard, yet exercise a great influence on the sound of the preceding syllable. The back-action of these *mātrā*-vowels is technically known as *umlaut* or "epenthesis," and is the most striking feature of the Kashmiri language.

With one important exception, common to all Dardic languages, Kashmiri employs every consonant found in the Sanskrit alphabet. The exception is the series of aspirated consonants, *gh, jh, ḍh, dh* and *bh,* which are wanting in Ksh., the corresponding unaspirated consonants being substituted for them. There is a tendency to use dental letters where Hindī employs cerebrals. Cerebral letters are, however, owing to Sanskrit influence, on the whole better preserved in Ksh. than in the other Dardic languages. The cerebral *ṣ* has almost disappeared, *ś* being employed instead. The only common word in which it is found is the numeral *ṣah,* six, which is merely a learned spelling for *sáh,* due to the influence of the Skr. *ṣaṭ.* From the palatals *c, ch, j,* a new series of consonants has been formed, viz., *ts, tsh* (aspirate of *ts,* i.e., *ts*+*h,* not *t*+*sh*), and *z* (as in English, not *dz*). The sibilant *ś,* and occasionally *s,* are frequently represented by *h.* When such an *h* is followed by a palatal letter the *ś* returns.

The palatal letters *i, e, ū-mātrā* and *y* often change a preceding consonant. These changes are each subject to certain rules. Cerebral letters (*ṭ, ṭh, ḍ*), change only before *i, ĕ* or *y,* and not before *ū-mātrā.* The others change before *ĕ, y* or *ū-mātrā.*

No word can end in an unaspirated surd consonant. If such a consonant falls at the end of a word it is aspirated.

GRAMMAR

D. *Declension.*—If the phonetic rules are borne in mind, declension in Kashmiri is a fairly simple process.

Nouns substantive and adjective have two genders, a masculine and a feminine. Words referring to males are masculine, and to females feminine. Inanimate things are sometimes masculine and sometimes feminine. Pronouns have three genders, arranged on a different principle. One gender refers to male living beings, another to female living beings, and a third (or neuter) to all inanimate things whether they are grammatically masculine or feminine. Nouns ending in *ŏ* are masculine, and most, but not all,

[1] *See* G. A. Grierson, "On Pronominal Suffixes in the Kāçmīrī Languages," and "On the Radical and Participial Tenses of the Modern Indo-Aryan Languages," in *Journal of the Asiatic Society of Bengal,* vol. lxiv. (1895), pt. i. pp. 336 and 352.

of those ending in ^{i}, ^{u}, *ĕ* or *ñ* are feminine. Of nouns ending in consonants, some are masculine, and some are feminine. No rule can be formulated regarding these, except that all abstract nouns ending in *ar* (a very numerous class) are masculine. There are four declensions. The first consists of masculine nouns ending in a consonant, in *a*, *ĕ* or *ū* (very few of these last two). The second consists of the important class of masculine nouns in ^{u}; the third of feminine nouns in ^{i}, ^{u} or *ñ* (being the feminines corresponding to the masculine nouns of the second declension); and the fourth of feminine nouns ending in ^{a}, *ĕ* or a consonant.

The noun possesses two numbers, a singular and a plural, and in each number there are, besides the nominative, three organic cases, the accusative, the case of the agent, and the ablative. The accusative, when not definite, may also be the same in form as the nominative.

Other cases are formed by the addition of postpositions, some of which are added to the accusative, while others are added to the ablative case. The genitive terminations, and also the dative termination *ḳiṭ^{u}*, are adjectives, and agree with the governing noun in gender, number and case and are declined regularly as substantives, the masculine ones belonging to the second declension and the feminine ones to the third.

Adjectives ending in ^{u} (second declension) form the feminine in $^{\breve{u}}$, with the usual changes of the preceding consonant. Other adjectives do not change for gender. All adjectives agree with the qualified noun in gender, number and case, the postposition, if any, being added to the latter word of the two.

The first two personal pronouns are *bŏh*, I; *mĕ*, me, by me; *ạs^{i}*, we; *asĕ*, us, by us; and *tṣ^{a}h*, thou; *tsĕ*, thee, by thee; *tŏh^{i}*, ye; *tŏhĕ*, you, by you. Possessive pronouns are employed instead of the genitive. For the third person, we have sing. masc. *suh*, fem. *sŏh*, neut. *tih;* acc. sing. (masc. or fem.) *tamis* or *tas*, neut. *tath;* agent sing. masc. neut. *tam^{i}*, fem. *tami*. The plural is of common gender throughout. The possessive pronoun is *tasạnd^{u}*, of him, of her; *tamyuk^{n}*, of it; *tihạnd^{u}*, of them. The neuter gender is used for all things without life.

Kashmiri makes very free use of pronominal suffixes, which are added to verbs to supply the place of personal terminations. These represent almost any case.

Before these the verbal terminations are often slightly changed for the sake of euphony, and, when necessary for the pronunciation, the vowel *a* is inserted as a junction vowel.

Another set of suffixes is commonly added to verbs, with an adverbial force. Of these *na* negatives the verb, *ā* asks a question, *ti* adds emphasis, and *tyā* asks a question with emphasis. Two or three suffixes may be employed together.

E. *Conjugation.*—The conjugation of the verb is mainly participial. Three only of the old tenses, the present, the future and the imperative have survived, the first having become a future, and the second a past conditional. These three we may call radical tenses. The rest, viz., the Kashmiri present, imperfect, past, aorist, perfect and other past tenses are all participial.

The verb substantive, which is also used as an auxiliary verb, has two tenses, a present and a past. The former is made by adding the pronominal suffixes of the nominative to a base *chu* (*h*), and the latter by adding the same to a base *ạ̄s^{u}*.

As for the finite verb, the modern future (old present), and the past conditional (old future) do not change for gender, and do not employ suffixes, but retain relics of the old personal terminations of the tenses from which they are derived.

For the imperative we have second person singular, *kar*, plur. *kariv;* third person singular and plural *karin*.

The present participle is formed by adding *ān* to the root. It does not change for gender. From this we get a present and an imperfect, formed by adding respectively the present and past tenses of the auxiliary verb.

There are several past participles, all of which are liable to change for gender, and are utilized in conjugation.

In the strong past participle and the pluperfect participle, the final *v* and *y* are only added for the sake of euphony. There are three conjugations. The first includes all transitive verbs. These have both the weak and the strong past participles. The second conjugation consists of 66 common intransitive verbs, which also have both of these participles. The third conjugation consists of the remaining intransitive verbs. These have only the strong past participle. The weak past participle in the first two conjugations refers to something which has lately happened, and is used to form an immediate past tense. The strong past participle is more indefinite, and is employed to form a tense corresponding to the Greek aorist. The pluperfect participle refers to something which happened a long time ago, and is used to form the past tense of narration. As the third conjugation has no weak past participle, the strong past participle is employed to make the immediate past, and the pluperfect participle is employed to make the aorist past, while the new pluperfect participle is formed to make the tense of narration.

The corresponding tenses are formed by adding pronominal suffixes to the weak, the strong or the pluperfect participle. In the last two the final *v* and *y*, being no longer required by euphony, are dropped. In the case of transitive verbs the participles are passive by derivation and in signification, and hence the suffix indicating the subject must be in the agent case. If the thing made is feminine the participle must be feminine, and similarly if it is plural it must be plural. The past participles of intransitive verbs are not passive, and hence the suffix indicating the subject must be in the nominative form. These suffixes may be piled one on another.

Tenses corresponding to the English perfect and pluperfect are formed by conjugating the auxiliary verb, adding the appropriate suffixes, with the compound past participle.

Many verbs have irregular past participles. Others must be learnt from the regular grammars.

The infinitive is formed by adding *-un* to the root. It is declined like a somewhat irregular noun of the first declension. There are three forms of the noun of agency.

The passive is formed by conjugating the verb *yi*, come, with the ablative of the infinitive. A root is made active or causal by *-anaw*, *-āw*, or *-^{a}rāw*. Some verbs take one form and some another, and there are numerous irregularities, especially in the case of the last.

F. *Indeclinables.*—Indeclinables (adverbs, prepositions, conjunctions and interjections) must be learnt from the dictionary. The number of interjections is very large, and they are distinguished by minute rules depending on the gender of the person addressed and the exact amount of respect due to him.

Literature.—Kashmiri possesses a small literature, which has been very little studied. The very popular *Lallā-vākyāni*, a collection of verses on Saiva philosophy by a woman named *Lallādēvī*, is said to be the oldest work in the language which has survived. Another esteemed work is the *Siva Pariṇaya* of Krishna Rājānaka, a living author.

BIBLIOGRAPHY.—*See* vol. viii., pt. ii. *Linguistic Survey of India.* The only printed lexicographical work is a short vocabulary by W. J. Elmslie (1872). K. F. Burkhard brought out a grammar of the Muslim dialect in the *Proceedings of the Royal Bavarian Academy of Science* for 1887–89, translated by G. A. Grierson in the *Indian Antiquary* of 1895 and the following years (reprinted as a separate publication, Bombay, 1897). The more complete works of the kind in English are G. A. Grierson's *Essays on Kāçmīrī Grammar* (1899), and *Manual of the Kāshmīrī Language* (1911). A valuable native grammar in Sanskrit, the *Kaśmīraśabdāmrta* of Iśvara Kaula, has been edited by the same writer (Calcutta, 1888). For an examination of the origin of Kashmiri grammatical forms and the Dardic question generally, *see* G. A. Grierson's "On certain Suffixes in the Modern Indo-Aryan Vernaculars" in the *Zeitschrift für Vergleichende Sprachforschung auf dem Gebiete der Indogermanischen Sprachen* for 1903 and *The Piśāca Languages of North-Western India* (1906).

The only important texts that have been published are Burkhard's edition, with a partial translation, of Mahmūd Gāmī's "Yūsuf and Zulaikhā" in the *Zeitschrift der Deutschen Morgenländischen Gesellschaft* for 1895 and 1899; G. A. Grierson's edition of the *Siva Parinaya* (1924); the *Lallā Vākyāni*, edited and translated by the same writer and L. Barnett (1920). The *Srī-Krsnâvatara-lī-lā* of Dīnanātha, edited and translated by G. A. Grierson.

Under the title of "The Word of Lalla the Prophetess" (1924) R. C. Temple has provided a metrical translation into English of the *Lallā Vākyāni*, with notes and an elaborate historical introduction.

See also vol. i, *Linguistic Survey of India* (1927).

KASHUBES, a Slavonic people living on the borders of West Prussia, along the Baltic coast between Danzig and Lake Garden, and inland as far as Konitz. They consist of peasants and fishermen. Their language in some points is quite independent of Polish, in some it offers a resemblance to the language of the Polabs (*q.v.*). In Kashube, as against Polish, all the vowels can be nasal instead of *a* and *e* only, it has preserved quantity and a free accent, has developed several special vowels, *e.g., ö, oe, ü,* and has preserved the original order, *e.g., gard* as against *grod.* The consonants are very like Polish. (*See* also SLAVS.)

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KASIMOV, a town of the Russian S.F.S.R. in the region of Ryazan, on the Oka river, in 54° 58′ N. and 41° 23′ E., 75 mi. E.N.E. of Ryazan. Population 12,979. It has flax spinning, linen and ropeworks, a bucket factory and tanneries. Its post-horse bells were famous. Founded in 1152, it was formerly known as Meshcherski Gorodets. In the 15th century it became the capital of a Tatar khanate, subject to Moscow, and remained such until 1667. The town possesses a cathedral, and a mosque supposed to have been built by Kasim, founder of the Tatar principality. Near the mosque stands a mausoleum built by Shah-Ali in 1555.

Lying on the direct road from Astrakhan to Moscow and Gorky, Kasimov is a place of some trade and has a large annual fair in July, but it is hampered by lack of railway facilities.

See Veliaminov-Zernov, *The Kasimov Tsars* (St. Petersburg, 1863–1866).

KASR AL KEBIR (Alcogarquivir), a town of Spanish Morocco on the river Lekkus, 80 mi. N.W. of Fez. Pop. (1940) 33,196. Its mud and pantile dwellings are here and there relieved by an occasional mosque tower, but the aspect of the town is far from inviting. Al Kasr al Kebir was built, according to Leo Africanus, by Yakub el Mansur (1184–1199). Near the town, by the banks of the river Makhazan, is the site of the battle fought in 1578 between Dom Sebastian, king of Portugal, and the Moors under Abd el Malek, in which the Moors were victorious, though both kings perished as well as the deposed Mohammed XI, who had called in the Portuguese to his aid.

KASSA: *see* KOŠICE.

KASSALA, a province headquarter town of the Anglo-Egyptian Sudan, is a military station lying on the Gash in 15° 28′ N., 36° 24′ E., 260 mi. E.S.E. of Khartoum. Pop. (1941) 30,026. It is built on a plain 1,735 ft. above sea level, at the foot of the Abyssinian highlands 15 mi. west of the frontier of Eritrea. Jebel Mokram (3,172 ft.) and the domeshaped Jebel Kassala (4,415 ft.) rise abruptly from the plain some 3 mi. to the east and southeast; under the latter lies Khatmia the local centre of the Mirghania family which, being reputedly of descent from the prophet Mohammed's family, exercises considerable religious influence in the eastern Sudan. Kassala was founded by the Egyptians in 1840 to control newly conquered territory near the Abyssinian frontier. In 1885 it fell to the dervishes but was recovered by the Italian Colonel Baratieri on July 17, 1894 and handed over to Egypt on Dec. 25, 1897. On July 4, 1940 Italian forces from Eritrea overran the town only to be ejected by empire troops Jan. 19, 1941 as a preliminary to the successful campaign, which broke fascism in East Africa. The Kassala town council received a warrant from the governor-general in 1944.

Kassala province (pop. [1941] 421,978) stretching from Gallabat to Egypt includes the old Red sea province and the modern Port Sudan and is inhabited mainly by the Hadendoa, Bisharin, Shukria and Beni Amer camel-owning tribes. Although the rains are light, excellent cotton and grain are grown on land flooded by the Gash and also by the Baraka at Tokar, while Gedaref produces rich crops of grain and sesame. (A. C. BN.)

KASSASSIN, a village of lower Egypt 22 mi. by rail W. of Ismailia on the Suez canal. At this place, on Aug. 28, and again on Sept. 9, 1882, the British force operating against Arabi Pasha was attacked by the Egyptians, both attacks being repulsed.

KASSEL: *see* CASSEL.

KASSENA, a patrilineal, animistic people related to the Nuruma, living in the upper Volta southeast of Leo, and in the northern territories, Gold Coast (Navoro district), whose language is akin to Nuruma. They live in scattered groups, each consisting of several households. There are no characteristic marriage customs. The Kassena are cultivators and possess but few cattle.

See Tauxier, *Le Noir du Soudan* (1912).

KASSERINE, a railway station of western Tunisia, 20 mi. S.W. of Sbeitla (Supefula) on the line from Sousse to Metlaoui. It is 2 mi. from the site of the ancient Roman Cilium. The town was captured by the axis, Feb. 17, 1943, and retaken ten days later by the Allies after heavy fighting in the Kasserine pass region.

KASSITES, an Elamite tribe who played a considerable part in the history of Babylonia. They inhabited the northwestern mountains of Elam when Sennacherib attacked them in 702 B.C. They are the Cossaeans of Ptolemy, who divides Susiana between them and the Elymaeans; according to Strabo (xi, 13, 3, 6) they were the neighbours of the Medes. They are the Cissians of the older Greek authors who are identified with the Susians by Aeschylus (*Pers.* 17, 120) and Herodotus (v, 49, 52). About 1780 B.C. they overran Babylonia and founded a dynasty there which lasted for 576 years. In the course of centuries they were absorbed into the Babylonian population; the kings adopted Semitic names and married into the royal family of Assyria. Like the other languages of the non-Semitic tribes of Elam, that of the Kassites was agglutinative; a vocabulary of it has been handed down in a cuneiform tablet, as well as a list of Kassite names with their Semitic equivalents. It has no connection with Indo-European.

See Fr. Delitzoch, *Die Sprache der Kossäer* (1884).

KASTAMUNI or KASTAMONI. (1) A vilayet of Turkey, rich in mineral wealth, with many mineral springs and extensive forests, the timber being used for charcoal and building and the bark for tanning. The products are chiefly cereals, fruits, opium, cotton, tobacco, wool, ordinary goat hair and mohair, in which there is a large trade. Its population (1940) was 369,847. (2) The capital of the vilayet, the ancient *Castamon,* altitude 2,500 ft., situated in the narrow valley of the Geuk Irmak (*Amnias*) and connected by a carriage road, 54 mi., with its port Ineboli on the Black sea. The town is noted for its copper utensils, but the famous copper mines about 36 mi. N., worked from ancient times to the 19th century, are now abandoned. The climate is continental, with extremes of heat and cold; in winter the roads are often closed by snow. Pop. (1940) 13,667. Castamon became an important city in later Byzantine times. It lay on the northern trunk-road to the Euphrates and was built round a strong fortress whose ruins crown the rocky hill west of the town. It was taken by the Danishmand Amirs of Sivas early in the 12th century and passed to the Turks in 1393.

KASTORIA, a city of Greek Macedonia, in the province of Florina, 45 mi. S. by W. of Monastir. Pop. 12,110. In 1941, after the axis conquest of Greece, the town was occupied by Italians.

Kastoria occupies part of a peninsula on the western shore of Lake Kastoria, which here receives from the north its affluent the Zhelova. The lake is formed in a deep hollow surrounded by limestone mountains and is drained on the south by the Vistritza. The lake has an area of 20 sq.mi., and is 2,850 ft. above sea level.

Kastoria is the seat of an Orthodox archbishop. It is usually identified with the ancient *Celetrum,* captured by the Romans under Sulpicius, during the first Macedonian campaign, 200 B.C., and better known for the defense maintained by Bryennius against Alexis I in 1084. A Byzantine wall with round towers runs across the peninsula.

KASUR, a town of British India, in the Lahore district of the Punjab, situated on the north bank of the old bed of the river

Beas, 34 mi. S.E. of Lahore. Pop. (1941) 53,101. Kasur does not appear in history until late in the Mussulman period, when it was settled by a Pathan colony from beyond the Indus. It has an export trade in grain and cotton, and manufactures of cotton and leather goods.

KATAGUM, formerly a sub-province of the province of Kano, Northern Nigeria, after 1926 divided between Kano and Bauchi provinces. It occupies a north central position between Kano and Bornu. In this region are several small but ancient Mohammedan emirates—Katagum, Misau, Jamaari (these three are now in Bauchi province), Gumel, Hadeija, Kazaure and Daura (in Kano province), with a fringe of Bedde pagans on its eastern frontier toward Bornu, and other pagans on the south toward Bauchi.

In ancient times this region formed the debatable country between Bornu and the Hausa states. Though Mohammedan it resisted the Fula invasion. Its northern emirates were for a long time subject to Bornu, and its customs are nearly assimilated to those of Bornu. Katagum and the other emirates were taken under administrative control by the British in Oct. 1903.

Hadeija, a commercial centre of note, was an old Habe town and its name, an evident corruption of Khadija, the name of the celebrated wife and first convert of Mohammed, is a strong presumption of the incorrectness of the Fula claim to have introduced Islam to its inhabitants. The ruling dynasty of Hadeija was, however, overthrown by Fula usurpation toward the end of the 18th century, and the Fula ruler received a flag and a blessing from Dan Fodio at the beginning of his sacred war in the opening years of the 19th century. Nevertheless the habit of independence being strong in the town of Hadeija the little emirate held its own against Sokoto, Bornu and all comers, its boast being that it had never been conquered. It had made nominal submission to the British in 1903, but the emir's attitude became, in the spring of 1906, openly antagonistic to the British and a military expedition was sent against him. The emir with his disaffected chiefs made a plucky stand but after five hours' street fighting the town was reduced. The emir and three of his sons were killed, and a new emir, the rightful heir to the throne, was appointed. The offices of the war chiefs in Hadeija were abolished and 150 yards of the town wall were broken down. For some years a military force was stationed in the town, but its retention was found unnecessary. In 1929 Hadeija was placed in railway communication with Kano and the ports of Nigeria. (*See* NIGERIA.)

KATANGA (HAUT-KATANGA), the southernmost district of the Elizabethville province of Belgian Congo. It is bounded by North Rhodesia on the south and southwest, by the Tanganyika district of the Elizabethville province on the northwest and by Lualaba district of the same province on the east. Its area is 46,458 sq.mi. Pop. (1941), 172,173 natives, 5,078 Europeans, including 3,707 Belgians, 674 Italians, 189 Greeks and 157 British subjects.

The Katanga plateau, from which the district derives its name, is hilly and diversified in character. In it rise the main head streams of the Congo. Within it also, at Bukama, the Lualaba or Upper Congo becomes navigable. The climate resembles that of South Africa. Much of the plateau which is a continuation of the high veld of Rhodesia, is suitable for cattle growing and for agriculture. It is for its mineral wealth, however, that Katanga is best known. Its immense copper deposits, estimated at 115,000,000 or more tons, lie in the hills separating the district from northern Rhodesia. Kambove is one of the world's most productive mines. Production greatly increased after the area was linked by railway to Lobito and to Beira. Production which was 122,600 tons in 1939 rose to an estimated 170,000 tons in 1944. The entire production is controlled by the Union Minière du Haut-Katanga, which holds the concession until 1990. Other important minerals of the area are tin, near Lake Moero (8,000 tons of smelted tin, 1940); cobalt, of which Katanga is the world's principal supplier (4,350 lb., 1942); zinc (44,000 tons, 1943); uranium, from which radium is extracted; and coal, at Leuna, south of Bukama. Iron, gold, platinum and diamonds are also found.

The expedition of 1891–92, led by W. G. Stairs, secured Katanga for the then Congo free state, thereby forestalling the plans of Cecil Rhodes to add the area to British territories. Development of the district was dependent on the building of the railway. Elizabethville (named after the queen of the Belgians), founded in 1910 is the capital. In its fine buildings and amenities it resembles the towns of South Africa. Its white population (1941) was about 3,000. Much of the capital in Katanga is British.

See A. de Bauw, *La Katanga* (1920); *Annales du Service des Mines,* Committee Special du Katanga (vol. I–VII, 1930–35. For the Stairs expedition, J. A. Molony, *With Captain Stairs to Katanga* (1893). (P. W. I.)

KATA THERMOMETER. In considering measurement of ventilation we must bear in mind that the ordinary thermometer merely gives the average temperature of its surroundings. While the human body produces heat, and all day long is keeping itself at body temperature, the thermometer does not produce heat, but just registers the effect of the surrounding atmosphere upon itself. An instrument is needed, therefore, to indicate the cooling and evaporating power of the air.

The Kata thermometer is such and is far more indicative of human feeling than the ordinary thermometer. It records not only the effect of the temperature of the surrounding air on the cooling of its surface when at body temperature, but of the wind and any movement of the air, and also how quickly cooling takes place when its surface is wet, as the skin is when perspiration is going on. The Kata thermometer is a large-bulbed alcohol thermometer of standard size with stem graduated from 100° to 95° Fahrenheit. It is warmed up in hot water till the meniscus rises above 100° F., the bulb is then dried, and the rate of cooling of the meniscus from 100° to 95° F. taken with a stop watch. From a factor number determined for each instrument, the cooling power is deduced in millicalories ($\frac{1}{1,000}$ gram calorie) per sq.cm. of the surface of the bulb at body temperature per second. In still air the dry Kata thermometer has a cooling power of about 10 at 0° C., and about 5 at 20° C.; with a wind of 9 mi. per hour it has a cooling power of about 40 at 0° C., and 20 at about 15° or 16° C., and so on with different rates of wind. Wind is far more important than temperature to the cooling of the body; thus the still air is easily borne. In the case of the wet Kata thermometer a wet muslin glove covers the bulb. In factories, schools, etc., the reading of the cooling power of the dry Kata thermometer should not be less than 5–6 with a temperature of about 60° F., 7 at 70 and 8 at 80°, otherwise the efficiency of the worker and pupil will tend to go down. Observations made by the Industrial Fatigue board in pottery, boot and shoe, cotton and printing works, showed that a great number of readings were below 6. The general mortality is greater in the trades with the lower readings. Great improvements could yet be made in this respect. *See* Medical Research Council, *Special Report, No. 73* (1923). (L. E. H.)

KATER, HENRY (1777–1835), English physicist of German descent, was born at Bristol on April 16, 1777. He entered the army in 1794, retired on half pay in 1814, and devoted the remainder of his life to scientific research. He died in London on April 26, 1835. His most valuable work was the determination of the length of the second's pendulum, first at London and subsequently at various stations throughout the country (*Phil. Trans.,* 1818–19).

As the inventor of the floating collimator, Kater rendered a great service to practical astronomy (*Phil. Trans.,* 1825–28).

KATHA, a district in the Sagaing division of Burma, with an area of 7,593 sq.mi., more than 3,000 of which consists of the former separate State of Wuntho. Katha now includes the former separate district of the Ruby mines. The district stretches from the main divide between the Irrawaddy and Chindwin valleys on the west to the border of the Shan States on the east. Three ranges of hills run through the district, known as the Minwun, Gangaw and Mangin ranges. They separate the three main rivers—the Irrawaddy, the Mèza and the Mu. The Minwun range runs from north to south, and forms for a considerable part of its length the dividing line between the Katha district proper and what formerly was the

Wuntho State. Its average altitude is between 1,500 and 2,000 feet. The Gangaw range runs from the north of the district for a considerable portion of its length close to and down the right bank of the Irrawaddy as far as Tigyaing, where the Myatheindan pagoda gives its name to the last point. Its highest point is 4,400 ft., but the average is between 1,500 and 2,000 feet. The Katha branch of the railway crosses it at Petsut, a village 12 m. W. of Katha town. The Mangin range runs through Wuntho (highest peak, Maingthôn, 5,450 feet).

Gold, copper, iron and lead occur in the district, but are not now worked. Jade and soapstone also exist, and salt is produced from brine wells. There are important forest reserves in Katha.

Population (1941) 290,990. Burmese comprise nearly half the population, Shans (mostly in Wuntho and the hills east of the Irrawaddy) about a third, while nearly all the Sak (Lui) of Burma are in this district.

Rice is the chief crop in the plains, tea, cotton, sesamum and hill rice in the hills. The district was first occupied by British troops in 1886, but it was not finally quieted till 1890, when the Wuntho Sawbwa (chief) was deposed and his state incorporated in Katha district. Wuntho and other parts of the district have evil reputations for fever.

The portion of Katha lying east of the Irrawaddy forms geographically a portion of the Shan plateau. Here, in the centre of a valley, 4,000 ft. above sea-level, and 61 m. by motor road from the river port of Thabeitkyin lies Mogôk, the centre of the famous Ruby mines. Synthetic rubies ruined the market for real stones, and after many vicissitudes the Burma Ruby Mines company finally ceased operations in 1927. The system adopted was to excavate large open pits, from which the ruby bearing earth was removed and washed by machinery. The rubies occur *in situ* near the junction of gneissose and calcareous rocks, and some attempt was made at mining the solid rock, but the stones proved inferior to those naturally weathered out. The industry is still carried on by native workers and in addition to rubies, sapphires, spinels and other coloured stones are obtained. Mogôk is also used to a small extent as a hill station.

KATHIAWAR, a peninsula of India, within the Gujarat division of Bombay, giving its name to a political agency. The peninsula is bounded north by the Ran of Cutch, east by Ahmedabad district and the Gulf of Cambay, and south and west by the Arabian sea. Excepting the Tangha and Mandav hills, in the west of Jhalawar, and some unimportant hills in Hallar, the northern portion of the country is flat; but in the south, from near Gogo, the Gir range runs nearly parallel with the coast, and at a distance of about 20 m. from it, along the north of Babriawar and Sorath, to the neighbourhood of Girnar. Opposite this last mountain is the solitary Osam hill, and then still farther west the Barada group, between Hallar and Barada, runs about 20 m. north and south from Gumli to Ranawao. The Girnar group is a granitic mass, rising to 3,500 feet. The principal river is the Bhadar, which rises in the Mandav hills, and flowing south-west falls into the sea at Navi-Bandar; highly cultivated lands adjoin its course of about 115 m. Four of the old races, the Jaitwas, Churasamus, Solunkis and Walas, still exist as proprietors of the soil who exercised sovereignty in the country prior to the immigration of the Jhalas, Jadejas, Purmars, Kathis, Gohels, Jats, Mohammedans and Mahrattas, between whom the country is now chiefly portioned out. Kathiawar has many notable antiquities, comprising a rock inscription of Asoka, Buddhist caves, and fine Jain temples on the sacred hill of Girnar and at Palitana.

The political agency of Kathiawar has an area of 20,911 square miles and a population of 2,538,497. There are altogether 188 states of varying size and importance. Fourteen independent states, previously in the Kathiawar agency, were formed into the Western India States agency in 1924, and brought into direct relations with the British Government. There are two political agents, one with headquarters at Rajkot, in the centre of the peninsula, and the other at Wadhwan. An excellent system of metre-gauge railways has been provided at the cost of the leading states. Maritime trade is also active, the chief ports being Porbandar, Mangrol and Veraval. Tribute of £31,129 is paid to the British Government.

KATHMANDU, the capital of the state of Nepal, bordering on India, situated on the bank of the Bishanmati river at its confluence with the Baghmati, in 27° 36′ N., 85° 24′ E. The town, which is said to have been founded about 723, contains a population estimated at 108,805, occupying 5,000 houses made of brick, and usually from two to four stories high. Many of the houses have large projecting wooden windows or balconies, which are often elaborately carved and give an attractiveness to the place. The town contains numerous temples. One of these, which is a wooden building, gives to the town its name (*kath*, wood). The British envoy resides approximately one mile to the north of the town.

KATKOV, MICHAEL NIKIFOROVICH (1818–1887), Russian journalist, born in Moscow, sympathized with the Liberal reaction and strong reform movement which characterized the earlier years of Alexander II.'s reign (1855–1881), and for some time he advocated the introduction of liberal institutions but when the agitation assumed a Socialistic and Nihilist tinge, and indulgence was shown to Polish national aspirations, he changed his attitude. From 1863 to 1887 he controlled the *Moscow Gazette*. During these twenty-four years he voiced the conservative spirit of Moscow in opposition to the liberal and cosmopolitan spirit of St. Petersburg.

KATO, TAKA-AKIRA (1859–1926), Japanese statesman, was born at Nagoya, and commenced life as an employee in the great firm of Mitsu Bishi. In 1887 he became private secretary to Marquis Okuma, minister of state for foreign affairs. Subsequently he served as director of a bureau in the finance department, and from 1894 to 1899 he represented his country at the court of St. James. He received the portfolio of foreign affairs in the fourth Ito Cabinet (1900–1901), which remained in office only a few months. Appointed again to the same position in the Saionji cabinet (1906), he resigned after a brief interval, being opposed to the nationalization of the private railways, which measure the Cabinet approved. He then remained without office until 1908, when he again accepted the post of ambassador in London. He was decorated with the grand cross of St. Michael and St. George, and earned the reputation of being one of the strongest men among the junior statesmen. He was Japanese minister in London from 1894 to 1899, and ambassador from 1908 to 1913. Returning to Japan, he joined Prince Katsura's third Cabinet as foreign minister for the third time but resigned soon after. He then reorganized the Doshikai, created by Katsura, and renamed it the Kenseikai or Constitutionalist party, of which he became president in 1913 (*see* JAPAN).

In April 1914 he joined the Okuma Cabinet as foreign minister, resigning in 1915. It was during his incumbency that Japan sent the so-called 21 demands to China. In Aug. 1915 he was elected a crown member of the house of peers and in the following year was created a viscount. The following decade proved a quiet period for Kato, but in June 1924 he became premier of the Coalition Cabinet of the Kenseikai, the Seiyukai and the Kakushin Club. His administration was made historic by the passage of the universal manhood suffrage law. Owing to dissensions among members of the Cabinet, Kato reorganized his Ministry on Aug. 1, 1925, forming it exclusively with members of the Kenseikai party. On Jan. 28, 1926, he died in Tokyo while in office.

KATOWICE (KATTOWITZ), a town of Poland, on the Rawa, 5 mi. S.E. from Beuthen by rail. Pop. (1875) 11,352, (1931) 127,044, (est. 1939) 134,000. There are large ironworks, foundries and machine shops in the town, and near it zinc and anthracite mines. The growth of Katowice was very rapid, owing to the development of the mineral resources of the neighbourhood. In 1815 it was a mere village, and became a town in 1867. As a result of the partition of Upper Silesia between Germany and Poland in 1921 (*see* SILESIA) it was transferred to Poland. German troops took Katowice Sept. 5, 1939.

KATRINE, LOCH, a freshwater lake, Scotland, lying almost entirely in Perthshire. The boundary between the counties of Perth and Stirling runs from Glengyle, at the head of the lake,

down the centre to a point opposite Stronachlachar from which it strikes to the south-western shore towards Loch Arklet. The loch, which has a south-easterly trend, is about 8 m. long, and its greatest breadth is 1 mile. It lies 364 ft. above the sea-level, and the greatest depth is 495 ft. The scenery has been immortalized in Sir Walter Scott's *Lady of the Lake*. The surrounding hills culminate in Ben Venue (2,393 ft.).

The lake is fed by the Gyle and numerous burns, and drained by the Achray to Loch Achray and thence by the Black Avon to Loch Vennacher. Since 1859 it has formed the chief source of the water-supply of Glasgow, the aqueduct leaving the lake about 1½ m. S.E. of Stronachlachar. The level of the lake has been increased by 12 ft., and was designed to be raised a further 5 ft. in 1927. As a result the Silver Strand has been submerged, and Ellen's Isle reduced in size. The principal points on the shores are Glengyle, formerly a fastness of the Macgregors, the Trossachs, the Goblins' Cave on Ben Venue, and Stronachlachar (Gaelic, "the mason's nose"), from which there is a ferry to Coilachra on the opposite side. During summer steamers ply between the Trossachs and Stronachlachar.

KATSINA (or KATSENA), an ancient state of the western Sudan, now included in the Zaria province of the British protectorate of Northern Nigeria. Katsina was amongst the oldest of the Hausa states. There exist manuscripts which carry back its history for about 1,000 years and tradition ascribes the origin of the Hausa population, which is known also by the name of Habe or Habeche, to the union of Bajibda of Baghdad with a prehistoric queen of Daura. More trustworthy records show that it was a well organized state in the 14th century. The conquest of the Habe of Katsina by the Fula about the beginning of the 19th century made little difference to the country. The more cultivated Habe were already Mohammedan and the new rulers adopted the existing customs and system of government. These were in many respects highly developed and included elaborate systems of taxation and justice.

The town of Katsina is situated in 13° N., 7° 41′ E., being 84 m. N.W. of Kano. The walls of Katsina have a circuit of between 13 and 14 miles, but only part of the enclosed space is inhabited. In the 17th and 18th centuries it appears to have been the largest town in the Hausa countries, and its inhabitants at that time numbered some 100,000. The present town must be comparatively modern, for at the time of Leo Africanus (*c.* 1513) there was no place of any considerable size in the province of Katsina. The ancient town, probably on another site, was known as the chief seat of learning throughout the Hausa states and this reputation was maintained by the new town. In the beginning of the 19th century the town fell into the hands of the Fula, but only after a protracted and heroic defence. In March 1903 Sir F. Lugard visited Katsina on his way from Sokoto and the emir and chiefs accepted British suzerainty without fighting. The emir was unfaithful to his oath of allegiance to the British crown, and was deposed in 1904. His successor worked cordially with the British authorities, and the native administration reached a considerable degree of efficiency. A training college for Mohammedan teachers was established as well as a well-equipped native hospital. A number of Europeans, traders and others, have settled in Katsina, which is a cotton-growing and cattle raising region.

See the *Travels* of Heinrich Barth (new ed., London, 1890, chs. xxiii. and xxiv.). Consult also the *Annual Report* on Northern Nigeria (Colonial Office, London) for 1902 and other years, and *Nigeria, Annual Report, Northern Provinces* (Kaduna, 1928).

KATSURA, TARO, PRINCE (1847–1913), Japanese soldier and statesman, was born in 1847 in Choshu. He fought under the Imperial banner in the civil war of the Restoration, and he displayed such talent that he was twice sent at public expense to Germany (in 1870 and 1884) to study strategy and tactics. In 1886 he was appointed vice-minister of war, and in 1891 the command of division devolved on him. He led the left wing of the Japanese army in the campaign of 1894–95 against China, and made a memorable march in the depth of winter from the north-east shore of the Yellow sea to Haicheng, finally occupying Niuchwang, and effecting a junction with the second army corps which moved up the Liaotung peninsula. For these services he received the title of viscount. He held the portfolio of war from 1898 to 1901, when he became premier and retained office for four and a half years, a record in Japan.

In 1902 his cabinet concluded the first *entente* with England, which event procured for Katsura the rank of count. He also directed state affairs throughout the war with Russia, and concluded the offensive and defensive treaty of 1905 with Great Britain, receiving from King Edward the grand cross of the order of St. Michael and St. George, and being raised by the mikado to the rank of marquess. He resigned the premiership in 1905 to Marquess Saionji, but was again invited to form a cabinet in 1908. Marquess Katsura might be considered the chief exponent of conservative views in Japan. Adhering to the doctrine that ministries were responsible to the emperor alone and not at all to the diet, he stood aloof from political parties, only his remarkable gift of tact and conciliation enabling him to govern on such principles. In Aug. 1911 he resigned the premiership in favour of Marquess Saionji, after completing the work of financial reform and treaty revision which he had undertaken, and received the rank of prince. On Dec. 20, 1912, he again accepted office as premier. In Feb. 1913, however, a vote of censure on the premier was moved in the diet for the alleged misuse of imperial rescripts, and on Feb. 10 the prince resigned office. He died in Tokyo, Oct. 10, 1913.

KATSURA TREE: *see* CERCIDIPHYLLUM.

KATTOWITZ: *see* KATOWICE.

KATYDID, a name given to large North American insects (*Pterophyllinae*) of the orthopterous family Tettigoniidae. Their loud syllabic stridulation, suggesting the words "Katy did," is produced by friction of a file on the underside of the left forewing over a ridge on the upperside of the right. By extension the name is used in America for all tettigoniids (*see* ORTHOPTERA).

(T. H. HL.)

KAUB, a town of Germany, in the Prussian province of Hesse-Nassau, on the right bank of the Rhine, north-west of Bingen. Pop. (1933) 2,581. Kaub, first mentioned in the year 983, originally belonged to the lords of Falkenstein, passed in 1277 to the Rhenish Palatinate, and attained civic rights in 1324. On a rock in the middle of the Rhine is the small castle of Pfalz, or Pfalzgrafenstein, which served as a toll-gate on the Rhine.

KAUFBEUREN, a town in the *Land* of Bavaria, Germany, on the Wertach, 55 mi. S.W. of Munich. Pop. (1933) 9,564. It is said to have been founded in 842, and is first mentioned in chronicles of 1126. It appears to have been a free imperial city from about 1288 until 1803, when it passed to Bavaria. It was formerly a resort of pilgrims, and Roman coins have been found in the vicinity. It is surrounded by mediaeval walls. It has a town hall with fine paintings, and an old tower. The chief industries are cotton spinning, weaving, bleaching, dyeing, printing and machine building, and there is trade in wine, beer and cheese.

See F. Stieve, *Die Reichsstadt Kaufbeuren und die bayrische Restaurationspolitik* (Munich, 1870); and Schröder, *Geschichte der Stadt und katholischen Pfarrei Kaufbeuren* (Augsburg, 1903).

KAUFFER, EDWARD McKNIGHT (1890–), American artist and designer, was born at Great Falls, Montana, and led an eventful life in the States before starting on his career as an artist. After working for a time at the Art Institute, Chicago, he went abroad, visiting Munich and Paris and eventually settling in London. There the art of the poster was the art of the moment, and before long McKnight Kauffer was recognized as its most brilliant exponent. His boldness in design, combined with economy of means and a keen sense of colour values, gives to his posters a personal stamp that is unmistakable. Some of the most successful are executed in black on grey, or black and white on grey, as in the "Rocket," one of the long series designed for London's underground railways. A complete contrast to this is "London History at the London Museum" (1922) with the flames of the Great Fire for its subject. His woodcut "Flight," a geometrical design of birds flying, is very remarkable. McKnight Kauffer's style has strongly influenced the poster artists of the day. Examples of his purely illustrative work may be found in his drawings for Burton's *Anatomy of Melancholy* (1925). He edited *The Art of the Poster* (1924).

KAUFFMANN (MARIA ANNA) ANGELICA (1741–1807), the once popular artist and Royal Academician, was born at Coire in the Grisons, on Oct. 30, 1741. Her father, John Josef Kauffmann, was a painter. She was a very gifted child and showed marked talents as a musician and painter at an early age; and in her 12th year she had become a notability, with bishops and nobles for her sitters. In 1754 her father took her to Milan. Later visits to Italy of long duration have succeeded this excursion; in 1763 she visited Rome. From Rome she passed to Bologna and Venice, being everywhere fêted, as much for her talents as for her personal charms. She was induced by Lady Wentworth, the wife of the English ambassador to accompany her to London, where she appeared in 1766. One of her first works was a portrait of Garrick, exhibited in the year of her arrival at "Mr. Moreing's great room in Maiden Lane." She was everywhere well received, the royal family especially showing her great favour.

Her firmest friend was Sir Joshua Reynolds. In his pocket-book her name as "Miss Angelica" or "Miss Angel" appears frequently, and in 1766 he painted her, a compliment which she returned by her "Portrait of Sir Joshua Reynolds," aetat. 46. About Nov. 1767, she was entrapped into a clandestine marriage with an adventurer who passed for a Swedish count (the Count de Horn), from whom she was then separated. Her name is found among the signatories to the famous petition to the king for the establishment of the Royal Academy. In its first catalogue of 1769 she appears with "R.A." after her name (an honour which she shared with another lady and compatriot, Mary Moser); and she contributed the "Interview of Hector and Andromache," and three other classical compositions. From this time until 1782 she was an annual exhibitor. One of the most notable of her performances was the "Leonardo expiring in the Arms of Francis the First," which belongs to the year 1778. In 1773 she was appointed by the Academy with others to decorate St. Paul's, and it was she who, with Biagio Rebecca, painted the Academy's old lecture room at Somerset House.

In 1781, after her first husband's death, she married Antonio Zucchi (1728–1795), a Venetian artist then resident in England. Shortly afterwards she retired to Rome. She continued to contribute to the Academy, her last exhibit being in 1797. She died in Nov. 1807, being honoured by a splendid funeral under the direction of Canova. The entire Academy of St. Luke, with numerous ecclesiastics and virtuosi, followed her to her tomb in S. Andrea delle Fratte, and, as at the burial of Raphael, two of her best pictures were carried in procession.

At Hampton Court is a portrait of the duchess of Brunswick; in the National Portrait Gallery a portrait of herself. There are pictures by her also at Paris, at Dresden, in the Hermitage at St. Petersburg (Leningrad) and in the Alte Pinakothek at Munich. The Munich example is a portrait of herself; and there is a third in the Uffizi at Florence. A few of her works are in private collections. The museum of Schwarzenberg in the Tyrol, where she often stayed, has several of her works. Her life has been used as the basis of a romance by Léon de Wailly, 1838; and it prompted the charming novel contributed by Mrs. Richmond Ritchie to the *Cornhill Magazine* in 1875 under the title of "Miss Angel." (A. Do.)

See Giovanni de Rossi, *Angelica Kauffmann* (1810); F. A. Gerard, *A. Kauffmann* (1893).

KAUFFMANN, CONSTANTINE PETROVICH (1818–1882), Russian general, was born at Maidani on March 3, 1818. He entered the engineering branch (1838), served in the campaigns in the Caucasus, rose to be colonel, and commanded the sappers and miners at the siege of Kars in 1855. After the peace he held important war office appointments. In 1867 he became governor of Turkestan. He captured Samarkand in 1868, and gradually subjugated the whole of the khanate of Bukhara. In 1873 he took Khiva, and forced the khan to become a vassal of Russia. In 1875 Khokand north of the Syrdaria was annexed to Russia, and the independence of the rest of the country became merely nominal. This rapid absorption of the khanates brought Russia into close proximity to Afghanistan, and the reception of Kaufmann's emissaries by the Amir was a main cause of the British war with Afghanistan in 1878. Although Kaufmann failed to find support for his ambitious schemes of further conquest, he sent Skobeleff in 1880 and 1881 against the Akhal Tekkés, and was arranging to add Merv to the Russian empire, when he died suddenly at Tashkend on May 15, 1882.

KAUKAUNA, a city of Outagamie county, Wisconsin, U.S.A., on the Fox river, 100 mi. N. by W. of Milwaukee. It is served by the Chicago and North Western railway. The population was 6,581 in 1930 and was 7,382 in 1940 by the federal census. It is the market town for a farming and dairying region and has machine shops and paper mills. Traders with the Indians made a small settlement there as early as 1820, and in 1830 a Presbyterian mission was established. The city was chartered in 1885.

KAULBACH, WILHELM VON (1805–1874), German painter, was born in Arolsen on Oct. 15, 1805. As a youth of seventeen, he entered the art academy of Düsseldorf, then under the directorship of Peter von Cornelius. The ambitious work by which Louis I. sought to transform Munich into a German Athens afforded the young painter an appropriate sphere. Cornelius had been commissioned to execute the enormous frescoes in the Glyptothek, and his custom was in the winters, to complete the cartoons at Düsseldorf, and in the summers, accompanied by his best scholars, to carry out the designs in colour on the museum walls in Munich. When Cornelius became director of the Bavarian academy in 1824, Kaulbach settled in Munich, and in 1849, when Cornelius left for Berlin, succeeded to the directorship of the academy, an office which he held till his death on April 7, 1874.

Early in the series of his multitudinous works came the famous "Narrenhaus," the appalling memories of a certain madhouse near Düsseldorf; the composition shows points of contact with Hogarth. Somewhat to the same category belong the illustrations to *Reineke Fuchs*. These show how dominant and irrepressible were the artist's sense of satire. Occasionally the grotesque degenerates into the vulgar, the grand into the ridiculous, as in the satire on "the Pigtail Age" in a frescoe outside the New Pinakothek. Kaulbach contracted a fatal facility in covering wall and canvas by the acre. He painted in the Hofgarten, the Odeon, the Palace and on the external walls of the New Pinakothek. His perspicuous and showy manner also gained him abundant occupation as a book illustrator; he was glad to take inspiration from Wieland, Goethe, even Klopstock; among his engraved designs are the Shakespeare gallery, the Goethe gallery and a folio edition of the Gospels. With regard to these examples of "the Munich school," it was asserted that Kaulbach had been unfortunate alike in having found Cornelius for a master and King Louis for a patron, that he attempted "subjects far beyond him, believing that his admiration for them was the same as inspiration"; and supplied the lack of real imagination by "a compound of intellect and fancy."

Nevertheless in such compositions as the "Destruction of Jerusalem" and the "Battle of the Huns" Kaulbach shows creative imagination. As a dramatic poet he tells the story, depicts character, seizes on action and situation. The manner may be occasionally noisy and ranting, but the effect after its kind is tremendous. The cartoon, which, as usual in modern German art, is superior to the ultimate picture, was executed in the artist's prime at the age of thirty. Ten or more years were devoted to the decoration of the grand staircase of the Berlin museum with a series of pictures depicting the Tower of Babel, the Age of Homer, the Destruction of Jerusalem, the Battle of the Huns, the Crusades and the Reformation. These tableaux, severally 30 ft. long, and each comprising over one hundred figures above life-size, are surrounded by minor compositions making more than 20 in all. The idea was to congregate around the world's historic dramas the prime agents of civilization; thus here are assembled allegoric figures of Architecture and other arts, of Science and other kingdoms of knowledge, together with lawgivers from the time of Moses. To the painter's last period belongs the series of melodramatic designs illustrative of Goethe. The canvas, more than 30 ft. long, the Sea Fight at Salamis, painted for the Maxi-

milianeum, Munich, evinces wonted imagination and facility in composition.

See F. von Ostini, *Wilhelm von Kaubach* (Bielefeld and Leipzig, 1906).

KAULBARS, ALEXANDER VASSILIEVICH, BARON, Russian general and traveller, born at St. Petersburg (Leningrad), travelled in central Asia between 1869 and 1873. He explored the Tian-Shan mountains, and was a member of Goluchowski's expedition in the Amur-Daria region. His important contributions to the knowledge of these regions were published in the *Proceedings* of the Russian Geographical society between 1874 and 1888. In 1882–83 Kaulbars was war minister in Bulgaria under Alexander I. He then served in China and at Odessa, and held an army command in the Russo-Japanese War, after which he returned to the Odessa command, retiring in 1909.

KAULBARS, NIKOLAI VASSILIEVICH (1842–1905), Russian general, elder brother of A. V. Kaulbars, born on June 3, 1842, at St. Petersburg (Leningrad), entered the Russian army. During the Russo-Turkish War of 1887–88 he served on a divisional staff, and was afterwards member of the Montenegrin boundary commission. In 1886 he was sent to Bulgaria to consolidate Russian interests there after the fall of Alexander, nominally to assist the Bulgarians. He tried to postpone the elections to the Sobranji, but by his tactless behaviour merely succeeded in alienating the Bulgarians. In 1889 he held command in Warsaw, and in 1891 in Finland. In 1899 he joined the intelligence department of the general staff. He died at St. Petersburg on Dec. 3, 1905.

KAUNAS, a town of Lithuania, situated in the hollow formed at the confluence of the Nemunas and Viliya (Neris) in 54° 54′ N., 23° 54′ E. After the Polish occupation of Vilnius, Kaunas was the provisional Lithuanian capital. Pop. (est. 1941) 120,000. In spite of Russian fortifications, the town fell easily to the Germans in 1918, when factories and churches were razed. Again in 1941 the German armies marched into the town following Russian occupation in 1940. Lying on the high road to the east and at a vital navigation point, Kaunas has many times been attacked since its foundation in the 11th century, reportedly being reduced to ashes on 13 occasions. Napoleon, while passing through Kaunas on his way to Moscow, is said to have used the red brick Lithuanian-Gothic church of Vytautas (15th century) as a stable. After Lithuania gained its independence in 1918, much money was spent to improve the town; a municipal electric plant, a national war museum and other buildings were constructed. Kaunas is the Lithuanian educational centre with the University of Vytautas the Great (3,041 students in 1940), an Academy of Agriculture and Conservatory of Music. Industrial products include metal goods and bone meal. Important as an entrepôt for river trade with East Prussia, trade was increased when Memel was united with Lithuania in 1923. It was formerly called Kovno.

KAUNITZ-RIETBURG, WENZEL ANTON, PRINCE VON (1711–94), Austrian chancellor and diplomatist, was born at Vienna Feb. 2, 1711, son of Max Ulrich, third count of Kaunitz, and Maria Ernestine Franziska von Rietburg. Wenzel Anton, being a second son, was designed for the church, but on the death of his elder brother was trained for the law and for diplomacy, at Vienna, Leipzig and Leiden, and by travel. His family's influence soon obtained him employment, and by 1735 he was a *Reichshofrath.*

When the Emperor Charles VI. died in 1740, he is said to have hesitated before deciding to support Maria Theresa. If so, his hesitation did not last long, and left no trace on his loyalty. From 1742 to 1744 he was minister at Turin, and in the latter year was sent as minister with the Archduke Charles of Lorraine, the governor of Belgium. In 1748 Maria Theresa sent him as representative of Austria to the peace congress of Aix-la-Chapelle. His tenacity and dexterity established his reputation as a diplomatist. He confirmed his hold on the regard and confidence of the empress by insisting in 1749, contrary to the views of most of her advisers, that Austria's true enemy was Prussia, and the traditional policy of alliance with the maritime powers must be exchanged for alliance with France and Russia, directed exclusively against Prussia. The empress eagerly accepted views which were already her own, and entrusted the adviser with the execution of his own plans, clearly recognizing that his ideas and principles were in harmony with her own.

From 1750 till his retirement in 1792 Kaunitz was the leading figure in the politics of eastern and central Europe. His governing principle was to forward the interests of "the august house of Austria," a phrase sometimes repeated at every few lines of his despatches. In internal affairs he helped to promote simplification of the Austrian administration. But his main concern was always with diplomacy and foreign policy. Here he strove with untiring energy, and some success, to extend the Austrian dominions. After the Seven Years' War he endeavoured to avoid great risks, and sought to secure his ends by alliances, exchanges and claims professing to have a legal basis, and justified at enormous length by arguments both pedantic and hypocritical. Of the French Revolution he never understood the full meaning. Yet his despatch of July 17, 1794, contains the first outlines of Metternich's policy of "legitimacy," and the first proposal for the combined action of the powers, based on the full recognition of one another's rights, to defend themselves against subversive principles. Kaunitz died at his house, the Garten Palast, near Vienna, on June 27, 1794. He married on May 6, 1736, Maria Ernestine von Starhemberg, who died Sept. 6, 1754. Four sons were born of the marriage, which was a happy one.

See Hormayr, *Oesterreichischer Plutarch* (Vienna, 1823), for a biographical sketch based on personal knowledge. Also *see* Brunner, *Joseph II.: Correspondance avec Cobenzl et Kaunitz* (Mayence, 1871); A. Beer, *Joseph II., Leopold II. und Kaunitz* (Vienna, 1873).

KAURI PINE, *Agathis australis* (Coniferae), a native tree of New Zealand, where it is abundant in forests in the North Island between the North Cape and 38° south latitude. The forests are rapidly disappearing owing to use as timber and to destruction by fires. It is a tall resiniferous tree, usually ranging from 80 to 100 ft. in height, with a trunk 4 to 10 ft. in diameter, but reaching 150 ft., with a diameter of 15 to 22 ft.; it has a straight columnar trunk and a rounded bushy head. The thick resiniferous bark falls off in large flat flakes. The leaves, which persist for several years, are very thick and leathery; on young trees they are lance-shaped 2 to 4 in. long and $\frac{1}{4}$ to $\frac{1}{2}$ in. broad, becoming on mature trees linear-oblong or obovate-oblong and $\frac{3}{4}$ to $1\frac{1}{2}$ in. long. The ripe cones are almost spherical, erect and 2 to 3 in. in diameter; the broad, flat, rather thin cone-scales fall from the axis when ripe. Each scale bears a single compressed seed with a membranous wing. The timber is remarkable for its strength, durability and the ease with which it is worked. The resin, kauri-gum, is an amber-like deposit dug in large quantities from the sites of previous forests, in lumps generally varying in size from that of a hen's egg to that of a man's head. The colour is of a rich brown or amber yellow, or it may be almost colourless and translucent. Because of its peculiar qualities, Kauri gum is of value for varnish-making.

KAUTSKY, KARL (1854–1938), German Marxist and historian of Socialism, was born on Oct. 16, 1854, at Prague. In 1883 he founded the socialist paper *Die Neue Zeit,* issued at first (1885–88) from London and later (1890–1917) from Stuttgart. He was a friend and disciple of Marx, and after the death of Engels universally regarded as the most important interpreter of Marx's philosophy. Kautsky, who was one of the creators of the Erfurt programme of 1891, took the lead in the resistance to the modification of Marxian doctrine by Eduard Bernstein, under the title of "revisionism." Bernstein, arguing from the increase of small fortunes (due largely to the increase of shareholding in joint-stock companies), deduced that the concentration of capital and the intensification of class conflict were not proceeding as Marx had predicted, and in consequence he advocated a reformist policy. Kautsky dissented from his interpretation of the figures and defended the thesis of the necessity of revolution. At the outbreak of war in 1914 Kautsky took up a pacifist attitude and in 1917 joined with Hugo Haase in organizing the Independent Social Democratic Party. But he was strongly opposed to the Russian Revolution, and declined to follow the majority of his

party into the ranks of the United German Communist Party (V.K.P.D.). He eventually, with others, rejoined the Social Democratic Party. Kautsky, who had settled in Vienna, was still regarded as the most distinguished theorist of the party. Of his considerable controversial literature against Lenin, Trotsky and others, the most important is his *Dictatorship of the Proletariat* (1918, Eng. trans. 1920), in which he attacks the Leninist doctrine and the application of the dictatorship of the proletariat and claims that the Russian Revolution is only a "bourgeois" revolution whose chief achievement is the importance of the transfer of land to the peasants. He agreed that the new Russian organization of industry may pave the way for Socialism.

Kautsky was joint editor of official documents in 1919 that tried to show the war guilt of the kaiser and exonerate the new Government from charges of continuing the pre-war policy. (*See The Guilt of William Hohenzollern*, 1920.)

In 1934 Kautsky became a citizen of Czechoslovakia, but he continued to live in Vienna and direct activities of the Austrian Socialist Party. He barely escaped to Czechoslovakia when the German Army entered Austria in March 1938. The Nazis, however, imprisoned his two sons. Six months later, when Germany was about to absorb the Sudetenland, he was obliged to flee once more, this time to Amsterdam, where he died in poverty Oct. 17, 1938.

His other works include *Der Einfluss der Volksvermehrung auf den Fortschritt der Gesellschaft* (1880); *Thomas More und seine Utopie* (1887, 6th ed. 1926); *Karl Marx, Ökonomische Lehren gemeinverständlich dargestellt* (1887); *Das Erfurter Programm in seinem grundsätzlichen Teil erläutert* (1892, 17th ed. 1922); *Bernstein und das sozialdemokratische Programm* (1899); *Der Ursprung des Christentums* (1908, 13th ed. 1923); *Der Weg zur Macht* (1909); *Vorläufer des Sozialismus* (4 vols. 1909–21); popular edition of *Das Kapital* (1913); *Der politische Massenstreik* (1914). (FR. BR.)

KAVA (CAVA or AVA).—An intoxicating, but non-alcoholic beverage, produced principally in the islands of the south Pacific, from the roots or leaves of a variety of the pepper plant (*Piper latifolium* or *P. methysticum*). The preparation is peculiar. The roots or leaves are first chewed by young girls or boys, care being taken that only those possessing sound teeth and excellent general health shall take part in this operation. The chewed material is then placed in a bowl, and water or coco-nut milk is poured over it, the whole is well stirred, and subsequently the woody matter is removed by an ingenious but simple mechanical manipulation. The resulting liquid, which has a muddy or *café-au-lait* appearance or is of a greenish hue if made from leaves, is now ready for consumption. The taste of the liquid is at first sweet, and then pungent and acrid. The usual dose corresponds to about two mouthfuls of the root. Intoxication (but this apparently only applies to those not inured to the use of the liquor) follows in about 20 minutes. The drunkenness produced by kava is of a melancholy, silent and drowsy character. Excessive drinking is said to lead to skin and other diseases, but *per contra* many medicinal virtues are ascribed to the preparation. There appears to be little doubt that the active principle in this beverage is a poison of an alkaloidal nature. It seems likely that this substance is not present as such (*i.e.*, as a free alkaloid) in the plant, but that it exists in the form of a glucoside, and that by the process of chewing, this glucoside is split up by one of the ferments in the saliva into the free alkaloid and sugar.

KAVADH, a Persian name which occurs first in the mythical history of the old Iranian kingdom as Kai Kobadh (Kaikobad). Other forms of Kavadh are Kabades and Kanades. It was borne by two kings of the Sassanid dynasty.

(1) KAVADH I., son of Pērōz, crowned by the nobles in 488 in place of his uncle Balash, who was deposed and blinded. At this time the empire was utterly disorganized by the invasion of the Ephthalites or White Huns from the east. After one of their victories against Pērōz, Kavadh had been a hostage among them during two years, pending the payment of a heavy ransom. In 484 Pērōz had been defeated and slain with his whole army. Balash was not able to restore the royal authority. The hopes of the magnates and high priests that Kavadh would suit their purpose were soon disappointed. Kavadh gave his support to the communistic sect founded by Mazdak, son of Bamdad, who demanded that the rich should divide their wives and their wealth with the poor. His intention evidently was, by adopting the doctrine of the Mazdakites, to break the influence of the magnates. But in 496 he was deposed and incarcerated in the "Castle of Oblivion (Lethe)" in Susiana, and his brother Jamasp (Zamaspes) was raised to the throne.

Kavadh took refuge with the Ephthalites, whose king gave him his daughter in marriage and aided him to return to Persia. In 499 he became king again and punished his opponents. He had to pay a tribute to the Ephthalites and applied for subsidies to Rome, which had before supported the Persians. But now the emperor Anastasius refused subsidies, expecting that the two rival powers of the East would exhaust one another in war. At the same time he intervened in the affairs of the Persian part of Armenia. So Kavadh joined the Ephthalites and began war against the Romans. In 502 he took Theodosiopolis in Armenia, in 503 Amida (Diarbekr) on the Tigris. In 505 an invasion of Armenia by the western Huns from the Caucasus led to an armistice, during which the Romans paid subsidies to the Persians for the maintenance of the fortifications on the Caucasus. When Justin I. (518–527) came to the throne the conflict began anew. The Persian vassal, Mondhir of Hira, laid waste Mesopotamia and slaughtered the monks and nuns. In 531 Belisarius was beaten at Callinicum. Shortly afterwards Kavadh died, at the age of eighty-two, in September 531.

During his last years Kavadh's favourite son Chosroes had had great influence over him and had been proclaimed successor. He also induced Kavadh to break with the Mazdakites, whose doctrine had caused great social confusion throughout Persia. In 529 they were refuted in a theological discussion held before the throne of the king by the orthodox Magians, and were slaughtered and persecuted everywhere; Mazdak himself was hanged. Kavadh evidently was, as Procopius (*Pers.* i. 6) calls him, an unusually clear-sighted and energetic ruler. Although he could not free himself from the yoke of the Ephthalites, he succeeded in restoring order in the interior and fought with success against the Romans. He built some towns which were named after him, and began to regulate the taxation.

(2) KAVADH II. SHEROE (Siroes), son of Chosroes II., was raised to the throne in opposition to his father in February 628, after the great victories of the emperor Heraclius. He put his father and eighteen brothers to death, began negotiations with Heraclius, but died after a reign of a few months. (ED. M.)

KAVALLA or **CAVALLA,** a walled town and seaport on the Bay of Kavalla, the capital of the Drama province of Greek Macedonia. Kavalla is built on a promontory stretching south into the bay, and opposite the island of Thasos. There is a harbour on each side of the promontory. The immediate hinterland is a rich tobacco-growing country. Kavalla is connected by a branch line to the railway from Salonika to Dédéagatch at Drama, 22 mi. inland from the coast. Kavalla passed to Greece after the Balkan War of 1912–13. It was coveted by Bulgaria as a maritime outlet, and during the negotiations over the peace treaty of Neuilly (*q.v.*) with Bulgaria, M. Venizelos offered to connect Kavalla with the already existing narrow-gauge railway in the Struma valley, which runs from the Bulgarian side of the frontier to Sofia. This would have contributed to the fulfilment of Article 48 of the treaty, in which the principal Allies assured to Bulgaria an economic access to the Aegean sea; but no action was taken upon the offer of M. Venizelos. In 1941 Kavalla was occupied by Bulgaria after the axis invasion of the Balkans.

Mehemet Ali was born at Kavalla in 1769, and founded a Turkish school which still exists. His birthplace can be distinguished by the tablet which the municipal authorities have affixed to its front wall. Numerous Roman remains have been found in the neighbourhood, of which the chief is the large aqueduct on two tiers of arches which still serves to supply the town and dilapidated citadel with water from Mt. Pangeus.

Kavalla has been identified with Neapolis, at which St. Paul landed on his way from Samothrace to Philippi (Acts xvi. 11).

KAVANAGH, ARTHUR MACMORROUGH (1831–1889), Irish politician, son of Thomas Kavanagh, M.P., who

traced his descent to the ancient kings of Leinster, was born in Co. Carlow, Ireland, on March 25, 1831. He had only the rudiments of arms and legs, but in spite of these physical defects had a remarkable career. He learnt to ride in the most fearless way, strapped to a special saddle, and also fished, shot, drew and wrote. He travelled extensively in Egypt, Asia Minor, Persia and India between 1846 and 1853, and after succeeding to the family estates in 1853 he married in 1855 his cousin, Frances Mary Leathley. He was a philanthropic landlord, and an active county magistrate and chairman of the board of guardians. A Conservative and a Protestant, he sat in Parliament for Co. Wexford from 1866 to 1868, and for Co. Carlow from 1868 to 1880. He was opposed to the disestablishment of the Irish Church, but supported the Land Act of 1870, and sat on the Bessborough Commission. In 1886 he was made a member of the Privy Council in Ireland. He died of pneumonia on Dec. 25, 1889, in London.

See S. L. Steele, *Arthur MacMorrough Kavanagh* (1891).

KAVASS, a Turkish name for an armed police-officer; also for a courier such as it is usual to engage when travelling in Turkey. (Adapted from the Turkish *qawwas,* a bow-maker; Arabic *qaws,* a bow).

KAVIRONDO, the general name of two distinct groups of tribes, one Bantu and the other Nilotic, who dwell in the valley of the Nzoia River, on the western slopes of Mount Elgon, and along the north-east coast of Victoria Nyanza. Both groups are immigrants, the Bantu from the south, the Nilotic from the north, the Bantu the first comers. The Nilotic tribes appear to have crossed the lake to reach their present home, the country around Kavirondo Gulf. The Bantu "are practically the most northerly representatives of that race" (Hobley). Their further progress north was stopped by the southward movement of the Nilotic tribes, who in turn were checked by Elgumi people from the east, themselves probably of Nilotic origin. Both groups of Kavirondo are physically fine, the Nilotic stock appearing more virile than the Bantu. The Bantu Kavirondo are divided into three main groups —the Awa-Rimi, the Awa-Ware and the Awa-Kisii. By the Nilotic Kavirondo their Bantu neighbours are known as Ja-Mwa. The generic name for the Nilotic tribes is Ja-Luo. The Bantu Kavirondo call them Awa-Nyoro. The two groups have many characteristics in common. A characteristic feature of the people is their nakedness. Among the Nilotic Kavirondo married men who are fathers wear a small piece of goat-skin, even when European clothing is worn. Among the Bantu Kavirondo married women wear a short fringe of black string in front and a tassel of banana fibre suspended from a girdle behind, this tassel having at a distance the appearance of a tail. Hence the report of early travellers as to a tailed race in Africa. The Nilotic Kavirondo women wear the tail, but dispense with the fringe in front. Some of the Bantu tribes practise circumcision, the Nilotic tribes do not. Patterns are tattooed on chest and stomach for ornament. Men, even husbands, are forbidden to touch the women's tails, which must be worn even should any other clothing be wrapped round the body. The Kavirondo are independent and honest. They practice polygamy. Among the Bantu tribes a man has the refusal of all the younger sisters of his wife as they attain puberty. The Nilotic Kavirondo practise exogamy. Girls are betrothed at six or seven, and the husband-elect continually makes small presents to his father-in-law-elect till the bride reaches womanhood. Premarital intercourse is permitted. Among the Bantus if the girl be not found a virgin on her wedding day, she is sent back to her parents, who have to return the marriage price, and pay a fine. The wife's adultery was formerly punished with death, and the capital penalty was also inflicted on young men and girls guilty of unchastity. Among the Bantu Kavirondo the usual minimum price for a wife is forty hoes, twenty goats and one cow, paid in instalments. The Nilotic Kavirondo pay twenty sheep and two to six cows. If a woman dies without bearing children, the amount of her purchase is returnable by her father, unless the widower consents to replace her by another sister. The women are prolific and the birth of twins, a lucky event, is celebrated by feasting and dances. Among the Bantu Kavirondo the mother of twins must remain in her hut for seven days. Among the Nilotic Kavirondo the parents and the infants must stay in the hut for ten days. If a Bantu mother has lost two children in succession the next child born is taken out at dawn and placed on the road, where it is left till a neighbour, usually a woman friend who has gone that way on purpose, picks it up. She takes it to its mother who gives a goat in return. A similar custom prevails among the Nilotic tribes. Names are not male and female, and a daughter often bears her father's name.

The Kavirondo bury their dead. Among one of the Bantu tribes, the Awa-Kisesa, a chief is buried in the floor of his own hut in a sitting position, but at such a depth that the head protrudes. Over the head an earthenware pot is placed, and his principal wives have to remain in the hut till the flesh is eaten by ants or decomposes, when the skull is removed and buried close to the hut. Later the skeleton is unearthed, and reburied with much ceremony in the sacred burial place of the tribe. Married women of the Bantu tribes are buried in their hut lying on their right side with legs doubled up, the hut being then deserted. Men of the Bantu tribes are buried in an open space in the midst of their huts; in the Nilotic tribes, a man may not be buried in the same house as his wife if she has pre-deceased him. A child is buried near the door of its mother's hut. A "mourning," a cord of banana fibre, is worn round the neck and waist. The chief chooses, sometimes years before his death, one of his sons to succeed him, often giving a brass bracelet as insignia. A man's property is divided equally among his children.

The Kavirondo are an agricultural people: both men and women work in the fields with large iron hoes. In addition to sorghum, *Eleusine* and maize, tobacco and hemp are both cultivated and smoked. Both sexes smoke, but the use of hemp is restricted to men and unmarried women, as it is thought to injure child-bearing women. The Kavirondo cultivate sesamum and make an oil from its seeds which they burn in little clay lamps. These lamps are of the ancient saucer type, probably introduced into the country by the coast people. Some tribes live in isolated huts, others in the north have strongly walled villages. The walls are of mud and formerly, among the Nilotic tribes, occasionally of stone. Their huts are circular with conical thatched roof, and fairly broad verandah all round. A portion of the hut is partitioned off as a sleeping-place for goats, and the fowls sleep indoors in a large basket. Skins form the only bedsteads. In each hut are two fireplaces, about which a rigid etiquette prevails. Strangers or distant relatives are not allowed to pass beyond the first, which is near the door, and is used for cooking. At the second, which is nearly in the middle of the hut, sit the hut owner, his wives, children, brothers and sisters. Around this fireplace the family sleep. Cooking pots, water pots and earthenware grain jars are the only other furniture. The food is served in small baskets. Every full grown man has a hut to himself, and one for each wife. The huts of the Masaba Kavirondo of west Elgon have the apex of the roof surmounted by a carved pole obviously a Phallus. Among the Bantu Kavirondo a father does not eat with his sons, nor do brothers eat together. Among the Nilotic tribes father and sons eat together, usually in a separate hut with open sides. Women eat apart and only after the men have finished. The Kavirondo keep cattle, sheep, goats, fowls and a few dogs. Women do not eat sheep, fowls or eggs, and are not allowed to drink milk except when mixed with other things. The flesh of the wild cat and leopard is esteemed by most of the tribes. From *Eleusine* a beer is made. The Kavirondo are plucky hunters, capturing the hippopotamus with ropes and traps, and attacking with spears the largest elephants. Fish, of which they are very fond, are caught by line and rod or in traps. Bee-keeping is common, and where trees are scarce the hives are placed on the roof of the hut. Among the Bantu Kavirondo goats and sheep are suffocated, the snout being held until the animal dies. The Kavirondo fight well. Their weapons are spears with rather long flat blades and broad-bladed swords. Some use slings, and most carry shields. Bows and arrows are also used; firearms are however displacing other weapons. Kavirondo warfare was mainly defensive and intertribal. When a man had killed his enemy in battle special rites were necessary to defend him from

the spirit of the dead man. Kavirondo industries are salt-making, effected by burning reeds and water-plants and passing water through the ashes; the smelting of iron ore (confined to the Bantu tribes); pottery and basket-work.

The Bantu Kavirondo have many exogamous totemic divisions. Their religion appears to be a vague ancestor-worship, but the northern tribes have two gods, Awafwa and Ishishemi, the spirits of good and evil. To the former cattle and goats are sacrificed. They believe in witchcraft and practise trial by ordeal. They dress wounds with butter and leaves, and for inflammation of the lungs or pleurisy pierce a hole in the chest. There are no medicine-men—the women are the doctors. Certain of the incisor teeth are pulled out. If a man retains these he will, it is thought, be killed in warfare.

Among certain tribes the women also have incisor teeth extracted, otherwise misfortune would befall their husbands. For the same reason the wife scars the skin of her forehead or stomach. A Kavirondo husband, before starting on a perilous journey, cuts scars on his wife's body to ensure him good luck. The Kavirondo have four dances—the birth dance, the death dance, that at initiation and one performed in seasons of drought. They use a large lyre-shaped instrument and various drums.

The Nilotes call their supreme being Nyasi who is to be found in large trees. Sickness is attributed to magic or ghostly visitation.

The Ja-Luo women use as ear ornaments small beads which are ancient, being generally blue, occasionally yellow or green. The beads are picked up in certain districts after heavy rain, and are supposed to come down with the rain. They are identical in shape and colour with ancient Egyptian beads.

See C. W. Hobley, *Eastern Uganda, an Ethnological Survey* (Anthrop. Inst., *Occasional Papers*, No. 1, London, 1902); Sir H. H. Johnston, *Uganda Protectorate* (1902); J. F. Cunningham, *Uganda and its Peoples* (1905); Paul Kollmann, *The Victoria Nyanza* (1899); Rev. J. Roscoe, Northern Bantu (1915).

KAW (*Akha*), a tribe living in Kengtung and the hills east of the Mekong on the Burma-Siam frontier, probably allied to the Lolos, etc. (*See* LOLO.) They have at least seven tribal divisions; practise a form of ancestor-worship; fortify their villages; bury their dead in coffins, placing no mark over the grave; eat dogs; play the gourd mouth-organ, and are believed to have migrated from Yunnan. They are reported to be stolid, timid and unresourceful in character.

See Scott and Hardiman, *Gazetteer of Upper Burma* (1900).

KAWACHI, one of the five home provinces or *Go-kinai* of Japan, lying near Kyōto. (*See* JAPAN.)

KAWAHLA: *see* ARABS.

KAWARDHA, a feudatory state of the Chhattisgarh agency of India within the Central Provinces, to the west of the Bilaspur district. Area 794 sq.mi.; pop. (1941) 77,284, showing a rise in the decade from 72,820. Half the state consists of hill and forest, but the open area is fertile and produces besides millets, wheat, cotton and rice. The state has suffered greatly from bad crops in the past and has never fully recovered from the effects of the great famines at the end of the 19th century. There was very considerable temporary migration on account of scarcity at the time the 1931 census was taken.

The residence of the chief, who is a Raj Gond, is at Kawardha (pop., 1941, 6,210), which is also the headquarters of the Kabir-panthi sect.

KAY, JOHN (1742–1826), Scottish caricaturist, was born near Dalkeith. He went to Edinburgh, painting miniatures and publishing at short intervals his sketches and caricatures of local celebrities and oddities, who abounded at that period in Edinburgh society.

John Kay died on Feb. 21, 1826.

Kay's portraits were collected by Hugh Paton and published under the title *A series of original portraits and caricature etchings by the late John Kay, with biographical sketches and illustrative anecdotes* (Edin., 2 vols. 4to, 1838; 8vo ed., 4 vols., 1842; new 4to ed., with additional plates, 2 vols., 1877).

KAY, JOSEPH (1821–1878), English economist, was born at Salford, Lancashire, on Feb. 27, 1821. Educated at Trinity college, Cambridge, he was called to the bar in 1848, and in 1869 became queen's counsel. He is best known for his works on the social conditions of the poor in various European countries. He died at Dorking, Surrey, on Oct. 9, 1878. His works include: *The Education of the Poor in England and Europe* (1846); *The Social Condition of the People in England and Europe* (2 vols., 1850); *The Condition and Education of Poor Children in English and German Towns* (1853); and *The Law Relating to Land* (1879).

KAYAK or **CAYAK,** an Eskimo word for a fishing boat, in common use from Greenland to Alaska. It has been erroneously derived from the Arabic *caique,* supposed to have been applied to the native boats by early explorers. The boat is made by covering a light wooden framework with sealskin. A hole is pierced in the centre of the top of the boat, and the *kayaker* (also dressed in sealskin) laces himself up securely when seated to prevent the entrance of water. The kayak is propelled like a canoe by a double-bladed paddle. The name *kayak* is properly only applied to the boat used by an Eskimo man—that used by a woman is called an *umiak.*

KAYANS. The Kayans are a cultured people who, from the Northern Central region, where the district Apo Kayan preserves their history, have gradually made their way to the coast of Borneo in search of better lands, and are commonly found about the middle reaches of the great rivers. In appearance they have a Mongol rather than a Caucasian cast of face, with a broad nose and reddish skin, and are heavily built, with stout joints and a general anatomical crudeness. In Borneo they have been a conquering people among tribes of a lower culture, taking their characteristic habits with them, but neither imposing their way of life upon other tribes nor mixing very freely with them. Their particular activities are the building of long houses and boats, the cultivation of rice (doubtless brought with them on their first appearance in Borneo) and working in iron, in which their skill is surpassed only by the best Kenyah work.

Though a warlike and conquering people, Kayans are neither aggressive nor truculent; their qualities are rather slowness and certainty, than enterprise or enthusiasm. (*See* BORNEO.)

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KAYASTH, the "writer"-caste of Bengal. They claim to be Kshatriyas who took to clerical work. They secured many offices under Mohammedan, and occupy more under British rule. (*See* CASTE, INDIAN.)

KAYSER, HEINRICH GUSTAV JOHANNES (1853–), German physicist, was born at Bingen on the Rhine on March 16, 1853. He was educated at Strasbourg and Berlin, and has held the following posts: assistant in the Physical institute, Berlin (1878–85), professor in the Technische Hochschule, Hanover (1885–94), and professor of physics at Bonn (1894–1920). His early research work was on sound, and he published papers on the determination of the ratio of the specific beats of air by measuring the velocity of sound in air, effect of intensity on the velocity of a sound wave, the velocity of sound in wood and other similar subjects. His name, however, is associated with his later work on spectroscopy; a good deal of this work was done in conjunction with Runge. They carefully mapped a large number of spectra of the elements, using a Rowland grating, and discovered the existence of a series in the spectra of the elements. They developed a formula connecting the wave-length of the lines with constants depending on the element. About the same time Rydberg used the data of other workers and developed a similar formula. Kayser wrote *Lehrbuch der Spectralanalyse* (1883); *Lehrbuch der Physik für Studierende* (1890), and *Handbuch der Spectroskopie* (eight volumes, 1902–1934); *Tabelle der Schwingungszahlen* (1925); *Tabelle der Hauptlinien der Linienspektra aller Elemente nach Wellenlänge geordnet* (1926).

KAY-SHUTTLEWORTH, SIR JAMES PHILLIPS, 1st BART., cr. 1849 (1804–1877), English politician and educationalist, was born at Rochdale, Lancashire, on July 20, 1804, the son of Robert Kay. He qualified in medicine at Edinburgh university, and practised in a poor district of Manchester. In 1839 he was appointed first secretary of the committee formed by

the privy council to administer the Government grant for the public education in Great Britain. He founded at Battersea, London, with E. Carleton Tufnell, the first training college for school teachers (1839–40). He died in London on May 26, 1877.

KAZAKSTAN, formerly an autonomous republic of the R.S.F.S.R., but since Dec. 5, 1936, a state member of the U.S.S.R., lying between 40° 15′ N. and 55° 30′ N., and 46° 30′ E. and 87° E. Its area, 2,714,500 sq.km., is second in the U.S.S.R. only to Yakutsk (*q.v.*). Its boundaries are Bashkiria, the Ural Mountains, and the Siberian area on the north; the Oirat autonomous area, and Chinese Turkistan on the east; the Kirghiz S.S.R., Uzbekistan and Turkmenistan on the south; the Caspian sea, and the provinces of Astrakhan, Stalingrad and Samara on the west. It is essentially a steppe area in a region of increasing desiccation, and much of it is characterised by salt lakes, some temporary and rapidly drying, and by rivers which once reached the sea by linking with larger streams, but now lose themselves in the desert sands. In the west the low Mugojar hills, *c.* 1,000 ft., are really a plateau-like extension of the Urals. They are built up of Permian and Cretaceous deposits and deeply entrenched by rivers. To the west of them lies the Kazak province of Uralsk, a region of steppe and desert inclining imperceptibly to the Caspian, much of it lying below sea-level. It is drained by the Ural or Yaik river, many of whose former tributaries, both on the left and right bank, now lose themselves in the desert. The Emba river, flowing from the Mugojar hills, reaches the Caspian by a series of rapidly drying shallow lagoons which even as late as the 18th century were navigable. The winter climate of Uralsk (av. Jan. temp. 3° F) is colder than that of Finland (average July temperature 73° F). It is under the regime of the Asiatic winds, and is a drought area, with sandstorms in summer and snowstorms and biting winds in winter. The Ural river is frozen from November to mid-March at Guryev and farther north until mid-April, and is sufficiently full to flood its banks in spring, but is otherwise so shallow that it is not navigable. Pallas found 19 branches of the delta in 1769, but in 1821 only 9 remained and of these only three now remain, except in spring. To the north the Mugojar hills join the undulating plateau, built up of sandstones and marls, which separates the tributaries of the Tobol and the Ural and falls by steep crags, a former coast line, to the Turgai steppe. Remains of aquatic plants, and shells of Mytilus and Cardium, both still found in the sea of Aral, show that during the glacial period the Aral-Caspian sea covered the Turgai steppe, which is now about 300 ft. above sea-level. It is dotted with lakes, of which Chalkar-Teniz, into which the Turgai river and its tributary, the Irgiz, drain, is the largest. At a recent epoch the Turgai river received tributaries now lost in the sands and was of sufficient volume to reach the Sea of Aral. The climate of the Turgai steppe is extreme, average January temperature −4° F, average July temperature 73° F in N.W., and 7° F and 77° F in the south. The west winds are parched before they reach the area, and the north-east winds in summer bring sandstorms and in winter dry, cold, stinging snow. Precipitation varies from 10 to 12 in., about 3 in. falling in summer.

Shrubs such as the wild cherry (*Cerasus chamaecerasus*) and dwarf almond (*Amygdalus nana*) grow on the hilly slopes, while the rich black earth of the northern steppe is clothed with feather grass (*Stipa pennata*). In spring the grass vegetation is abundant, and geese and cranes are attracted in vast numbers from the heart of the steppe by the fields of the Kirghiz. The jerboa (*Dipus jaculus*) and the marmot (*Spermophilus rufescens*), another species of marmot (*Arctomys bobac*) and the steppe fox (*Canis corsac*) are characteristic. The Central Asian saiga antelope is occasionally met. Farther south the black earth is replaced by chestnut brown and alkaline soils and the *Stipa pennata* gives place to *S. capillata.* River willows and pseudo-acacia or Siberian pea-tree (*Caragana microphyla*) grow near the streams. The clayey soil of the centre is covered with wormwood (*Artemisia fragrans and A. monogyna*), with a few grassy plants near the rivers and lakes. Large areas consist of shifting sands and saline clays clothed with *Salsolaceae,* and the desiccated beds of old lakes. Thickets haunted by wild boars surround many lakes.

THE AGRICULTURAL SETTLEMENTS

East of the Turgai lies Akmolinsk, low and dotted with salt lakes on the north, but rising to an undulating plateau in the centre, the dying down of the Tarbagatai and Chinghiz-tau ranges. It is deeply cut by the northward flowing Ishim, and this northern region is fertile and dotted with agricultural settlements. Akmolinsk town has an average Jan. temperature of 1·5° F, July 70° F, rainfall 9 in. South of the plateau, however, lies the desert region of the lesser Moyun-kum and the Bak-pak-dala or Famine Steppe, a plateau lying between the Sary-su and the Chu rivers. The surface of this arid region is a friable sand, resting on chalk or chalky marl. Along the course of the Chu are Palaeozoic formations of the Devonian period, and limestone rocks containing fossils. Vegetation and water are entirely absent in the Famine steppe, which presents great difficulties to the nomad herdsmen and to the caravan traders, and has thus earned its name. The most easterly province is Semipalatinsk, on the fringes of the Tian Shan mountain system. The snow-clad ranges of the Altai and Narym enter it on the south-east, stretching southwards to Lake Zaisan. The Kalbin (5–6,000 ft.) range continues from them westwards, and between the Kalbin and Narym is a broad valley through which the Irtish flows north-east from Lake Zaisan, and then turns north-west, cutting its way through the Altai, by a wild gorge with dangerous rapids, down which boats are daringly floated. Lake Zaisan, 80 m. long and 10–20 m. wide, is navigable for steamers, which may also pass down the Black Irtish to Kulja in Chinese Turkistan. Many extensions of the Kalbin-Narym complex stretch northwards. South of Lake Zaisan, the Tarbagatai (Marmots') Range 9–10,000 ft., extends westward, and the lower, but wild Chinghiz-tau, sends spurs into the steppe. The Kizil-rai, further west, rises to 4,821 ft. Many varieties of crystalline rocks, granites, syenites, diorites, porphyries and slates are found in the mountain region, and there are gold-bearing sands, silver, lead, graphite, coal and precious stones. The boulders on the mountains indicate a former much wider extension of glaciation. There are forests in the mountain region and on the Irtish plain, with Siberian flora in the north and Central Asiatic in the south. Wide steppes fill the space between the mountains; the Zaisan steppe between the Altai and Tarbagatai is 1,200–1,500 ft. above sea-level. In accord with its more continental situation the climate of Semipalatinsk is extreme. Frosts of −44° F are not uncommon in winter and summer may reach 122° F in the shade. Precipitation is slight, and rain falls in sudden heavy storms that may render the ground impassable for camels and cause disaster to the caravans. It is calculated that quite as many deaths in the steppe-desert fringe are due to starvation through these storms obliterating tracks and making it impossible for camels to move, as to thirst.

The two great lakes in Kazakstan are Balkhash or Denghiz and the Aral Sea. East of Balkhash lies Lake Ala-kul, which in post-Pliocene times was linked with it. Sassik-kul, to the north-west, and Ala-kul, are connected by a chain of smaller lakes. To the south and east of Lake Balkhash lie the sandy deserts of the Sary-Ishik-Otrau and the Tau-kum, through which the Ili discharges by a delta into Lake Balkhash. From these the land rises in the south to the Kunghei Ala-tau, north of Lake Issyk-kul, which dies out in the lower north-western spur, the Chan-tau. In the valleys and mountains, the climate is modified, and Alma-Ata, altitude 2,405 ft., has an average January temperature 17° F, July 74° F, rainfall 21 in. per annum. Eastwards and southwards from the Sea of Aral stretch the sandy deserts of Kara-Kum and Kizil-Kum (*q.v.*), and to the north of the Syr-Darya, south of the Akmolinsk district, lies the great Moyun-Kum stretch of sandy desert. West of the Aral Sea, between it and the Caspian, lies the barren Ust-Urt plateau, consisting mainly of alkaline and gypsiferous desert, with patches of dry sandy desert.

CONDITIONS OF THE PEOPLE

The geographic conditions favoured cattle breeding of a nomadic type from earliest times, and the isolation and vast extent of the difficult steppe-desert have preserved this primitive nomadic life of herdsmen up to present times, though in diminishing num-

bers. After the Russian conquest, up to the latter half of the 19th century, the occupation of the region was purely strategic, but then agricultural settlement began in the northern black earth region and in the southeast, where irrigation could be practised, and even in these vast territories the pressure of settled cultivation on nomad herding begins to be felt severely and the region is in a transition state to agriculture wherever possible, with consequent limitation of movements of herds and need for replacing extensive by intensive breeding, with supplementary foods to pasture. Already a few winter camping grounds with provision of artificial foods have been arranged. Of the population of Kazakstan (1939) 6,145,937 (rural 4,439,787, urban 1,706,150), 62% were Kazaks, 19.7% Russians, 13.2% Ukrainians, 3.3% Uzbeks, and 1.8% Kara Kalpaks. Thus 32.9% of the population were Russian colonists, and it is estimated that of the total area under cultivation, at least 20% is in the hands of Kazaks who have taken to a settled life.

The Kazaks are a branch of the Kirghiz, a name applied to them by the Russians, their own name for themselves being Kazaks, said to mean "riders." The name was borrowed by the Russians and the term *Cossack* applied to Russian soldiery must be distinguished from that of the Kirghiz-Kazak. They are of Turkish origin, allied in physique to the Mongolians, and in language to the Tatars. They are of medium stature, square built, with black hair, small, black, oblique eyes, broad flat nose, high cheekbones, small hands and feet. They are brachycephalic and have a brown or swarthy complexion. The Kazaks of the steppe region, however, have intermarried with Finns in the north, and light eyes and complexion occur among them. They ride on horseback from earliest infancy and keep flocks of sheep, goats and camels, both horses and camels being small, sturdy, and very shaggy. Though nominally Mohammedans of the Sunnite sect since the 16th century, their type of life prevents the observance of strict rules; their women go unveiled; ablutions in the great scarcity of water are impossible; the fasts imposed by nature take the place of religious fasts, and mosques and mullahs are absent. Their herds supply them with food and clothing, but in summer butter, sour cheese and "kumiss" or fermented mare's milk are the staple food; meat must then be eaten sparingly in order to preserve the flocks, depleted by wolves, storms, and exchange for necessities. An example of the severity of the storms is that of 1827, recorded by Helmersen, when a blizzard swept over the region between the Volga and the Urals and in two days the Kirghiz of the Inner Horde lost 280,000 horses, 30,480 oxen and 1,012,000 sheep, in addition to camels. The recurrent droughts and famines of the cultivated areas have their repercussions on the steppe, when supplementary barley for the horses and flour for the "balamyk," flour fried in dripping and diluted in water, are unobtainable, and the increased aridity cuts off water supplies in wells and streams. The 1921 famine, following on the requisition of horses and sheep for military needs, diminished the flocks so severely that the number in 1923 was only about 30% of that in 1916. In 1923 the numbers began to increase and in 1926–27, the total number was about 30,000,000, more than half being sheep, draught cattle coming next, then horses, goats, camels and pigs. The amount of recovery still needed is indicated by the fact that before World War I draught cattle alone numbered 35,000,000. The increase in the number of horses, here as everywhere in Russia, lags behind that of sheep, cattle and pigs.

The women are occupied in spinning and weaving wool and in making felt, often of gay colours, and rugs of every shade and pattern. Clothing is of sheepskin and felt, supplemented by cotton head-dresses for the women. Milk, cheese and butter are kept in partially dressed sheepskins, and a certain amount of leather dressing is carried on. Their round tents are made of a folding willow-lattice frame, covered with felt, and rugs, wooden bowls and sheepskin bags are their main furniture. For fuel they rely mainly on the *saksaul scrub,* and on dried dung. The Kirghiz flocks are an important source of raw wool and leather to the factories of industrial Russia and 2,443,000 dekatons of wool were supplied in 1926–27 and about 6,000,000 hides. Horses are in great demand by the Red army cavalry. In 1937 livestock amounted to 11,000,000 head. A difficult problem is the recurrence of cattle murrain in districts where veterinary centres are few and restrictions on cattle movement impossible. Dysentery, smallpox, typhus, Siberian plague and malaria often work havoc among the nomads, for whom no medical aid is available; in illness they rely on Shamanistic practices. Their healthy out-of-door life is balanced against the great hardships of their extreme climate, their monotonous and often insufficient diet and their lack of sanitary practices. Thus they succumb easily to disease in spite of their robust appearance. About 95% of them are illiterate and this adds to the difficulty of inculcating hygiene for themselves and their flocks.

Efforts to cope with illiteracy and to increase the possibility of education have been very successful. In 1943 there were 8,000 schools in the Kazak republic, 97 technical schools and 16 universities with total enrolment of about 1,000,000 students. The University of Alma Ata was created in 1929.

The first authentic reference to the Kazaks is that of the Persian, Firdousi (1020). S. Herbertstein (1486–1566) refers to them as *Tatars.* They came under the sway of Jenghiz Khan, and afterwards were allotted to the Golden Horde. Fragments of the Golden Horde, *e.g.*, Kipchaks, Naimans, Konrats, Jalairs, Kankali are still to be traced in the names of tribal Kazak divisions. The Kirghiz-Kazaks have long been grouped into three large "hordes," the great, the little and the middle, said to be due to their division by a Khan among his three sons. The great horde chiefly occupies the east from Semipalatinsk, to the Ala-tau; the middle horde occupies the watershed between the Aral-Caspian and the Ob river, being most numerous in the Semipalatinsk and Akmolinsk districts, while the little horde is mainly found in the Chkalov (formerly Orenburg), Uralsk, Turgai and Astrakhan regions. The two latter accepted Russian rule in 1730 and the former in 1798–1819. Since 1801, a fourth horde, the inner or Bukeyevskaya, has been settled in the Chkalov steppe. These hordes are subdivided into races, and again into tribes, and the tribes into sections, branches and "auls," or communities of 5 to 15 tents or "kibitkas." Through all their troubled history they have retained these divisions.

Cultivation in the Kazak S.S.R. is densest along the northern valley of the Ural river, especially from Uralsk to Ilek, along the Tobol river in the Kustanai district, along the right bank of the Ishim, in the Kokchetav-Atbazar-Akmolinsk district, and in a little patch near the town of Semipalatinsk. Less dense patches of cultivation fringe the eastern and southern mountains along the loess terraces and extend along the Syr-Darya as far as Kyzil-Orda. Of the crops, wheat 63%, is the main, millet, oats, rye, sunflower seed, flax, hemp and cotton are also grown. Rice is increasing in quantity. Much of the grain is exported to Central Asia. Tobacco and the opium poppy are cultivated, and near Lake Balkhash the *kendyr* plant, whose fibres are valuable, grows wild.

Fishing and hunting form a supplementary source of income, the latter in the mountain region. The republic is rich in mineral wealth, as yet little exploited. The copper mines were restarted in 1925. The mines working are Spasski, Atlas, Riddersk and Atbazar. Lead and zinc are also worked at the latter, and the lead mines of Ekibastus give gold as a by-product. Gold is also obtained from the Turgai steppe, and gold, lead and zinc occur in the Altai. The extensive Karagandinsk coal beds near Spasski, are comparatively little worked. Naphtha is increasingly worked on the Emba river. Silver is mined in a primitive way. The coal, naphtha, ozokerite and bitumen of the Mangishlak peninsula are as yet extracted only in limited quantities. Salt is obtained from the Iletsk rock salt beds, and from the lakes of the Pavlodar district and Glauber's salt from Kara Bugaz gulf; salt fish is exported from the Caspian and Aral regions. The industries of the republic include leather, flour, food-stuffs and printing. There is a large cloth factory in Alma-Ata and a chemical works and santonin factory in Chimkent. *Kustar* (home) industries include the making of woollen goods, felt, carpets, sheepskin garments and leather goods. The timber area of the foothills and mountains on the east and south is great and with better transport could

be made available for areas where irrigation is necessary and wood needed. It could also supplement the deficient fuel supply.

A sign of the transition taking place in the steppe district is the rapid growth of towns, and the contrast between their electricity, radio and railway stations, and cinemas, and the primitive huts of the nomad herders is sharp. Alma Ata, the administrative centre and the largest town, had a population in 1939 of 230,528; other towns with 1939 populations were Semipalatinsk (109,779), Petropavlovsk (91,678), Chimkent (74,185), Uralsk (66,201), and Aktyubinsk, Kustanai, Kyzil-Orda and Turkistan, between 20,000 and 35,000.

Four major railways link Kazakstan with the outer world. The oldest, Chkalov-Tashkent, runs near the city of Aktyubinsk toward Tashkent in Central Asia. The second, completed in 1930, is the Turkestan-Siberia railroad, called Turksib. It links Novosibirsk to Alma Ata. The third runs from Petropavlovsk to Lake Balkhash. The fourth connects Magnitogorsk in the Urals with Akhmolinsk and Karaganda.

Guryev, at the mouth of the Ural and Fort Alexandrovsk on Mangishlak peninsula are small ports on the Caspian. Considering that the republic covers an area as large as Germany, France, Spain and Italy combined, the inadequacy of railway communication is evident.

Much trade is still done by camel caravan across the desert and steppe. Bazaars and fairs are numerous. Serious efforts are being made to cope with illiteracy and to increase the possibilities of education for the Kirghiz-Kazak children, always a difficult problem in a nomad district with poor communications. The difficulty here is complicated by the lack of Kirghiz-Kazak teachers, and short courses to enable teachers to reach literacy standard have been arranged.

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KAZALA or KAZALINSK, a town in the Syr Darya province of the Kazakstan S.S.R., at the point where the Kazala river falls into the Syr Darya about 50 mi. from its mouth in the Aral sea in 45° 45′ N. and 62° 7′ E. Pop. (1935) 11,511. The floods in the river make it an island in spring; in summer it is parched by the sun and hot winds, and hardly a tree can be made to grow. The streets are wide, but the houses, as well as the fairly strong fort, are built of mud bricks. It is a station on the Chkalov-Tashkent railway and a centre for the wool trade with the Kirghiz; it has a wool cleaning factory and an electric plant.

KAZAN (called by the Cheremisses Ozon), the chief town of the Tatar Autonomous Soviet Socialist Republic, situated on the Kazanka river, in 55° 50′ N., 49° 10′ E., 3 mi. from the Volga, which reaches the town in the spring floods only. Pop. (1939) 401,665, mainly Russian, though the Tatar element is rapidly increasing. It is a flourishing river port and has railway communication westward and eastward. The ancient leather industry, dating back to the Bolgar empire on the Volga, is still important and there are 18 leather factories in the town, a good number making morocco leather goods. It is famous for its soap, glycerine and toilet article factory, the largest in Russia up to 1914. It closed during the World War I and famine period, but later operated at full strength. There are also copper-smelting, machinery, tallow, tobacco, felt boot, textile and brewing industries. The Kazan fair was formerly a great centre for trade between western Russia and Persia and Turkestan, and was held on an island in the Volga opposite to the town.

Kazan was a centre of Mohammedan culture in pre-1914 times, and had an important printing press. This press now issues Tatar magazines, newspapers, school text-books, and a bulletin of research into Tatar culture. Among the educational institutions are the Communist Tatar university, an Oriental Pedagogical institute, a department of agriculture and a clinical observatory. The House of Tatar Culture was opened in 1926. Kazan is of peculiar interest as a place where waves of Slav influence from the west have alternated with Mongol influences from the east, the latter being predominant culturally today, while the former still has the political supremacy. The 13 mosques of the Islamic faith, where, though the Revolution has had some effect, the muezzin still calls the faithful to prayer five times a day, stand side by side with the numerous churches of the Slav Greek Orthodox faith. The ancient Kremlin or citadel, founded in 1437, within which were many beautiful churches and monasteries, and the red brick Suyumbeka tower (246 ft.) the reputed burial place of a Tatar saint, also contained an arsenal.

During the civil war following the 1917 revolution, Kazan, as a military centre, became the headquarters of the bolshevist command in the district, after the fall of Simbirsk (Ulianovsk). The Czech army captured it in Aug. 1918, but it was recaptured by Trotsky in September, and was attacked by Kolchak's army in 1919. Much of the town was damaged or destroyed during this period, the Kremlin, as an arsenal, suffering specially. The 1921 famine was particularly severe in the Tatar republic and the town still feels the effect of these disasters. One of the first activities since its revival was an effort to restore as far as possible, the damaged Kremlin buildings. The treasures of the cathedral of the Annunciation (1562) have been removed to museums, but the cathedral itself still stands. The famous miracle working image of the Black Virgin of Kazan used to be housed in the Bogoroditski convent, built for its reception in 1579, but was removed to Moscow in 1612 and St. Petersburg (Leningrad) in 1710. The city of Kazan originally stood 30 mi. N.E. of its present position, where traces of it can still be seen and 60 mi. S. of Kazan are the ruins of Bolgary (*see* TATAR REPUBLIC). Kazan was the capital of the kingdom founded by Ulugh Mohammed (Ulu Makhmet), khan of the Golden Horde, in 1438, but was captured by Ivan the Terrible of Russia in 1552, thus opening the Volga to Russian trade and settlement. Pugachev laid the city waste in 1774 and it was afterwards frequently destroyed by fire.

See Pineghin's *Kazañ Old and New* (in Russian); Velyaminov-Zernov's *Kasimov Tsars* (3 vols., St. Petersburg, 1863–66); Zarinsky's *Sketches of Old Kazañ* (Kazañ, 1877); Trofimov's *Siege of Kazañ in 1552* (Kazañ, 1890); Firsov's books on the history of the native population (Kazañ, 1864 and 1869); and Shpilevski, on the antiquities of the town and Government, in *Izvestia i Zapiski* of the Kazañ university (1877). A bibliography of the oriental books published in the city is printed in *Bulletins* of the St. Petersburg Academy (1867). *Cf.* also L. Léger's "Kazañ et les tartares," in *Bibl. Univ. de Genève* (1874). *See* also the bulletins now issued regularly by the press of the Tatar A.S.S.R.

KAZBEK (Georgian, *Mkin-vari;* Ossetian, *Urs-khokh*), one of the chief summits of the Caucasus, situated in lat. 42° 48′ N., long. 44° 29′ E., altitude 16,545 ft. It rises on the range which runs north of the main water parting and which is pierced by the gorges of the Ardon and the Terek. It represents an extinct volcano, built up of trachyte and sheathed with lava, and has the shape of a double cone, whose base lies at an altitude of 5,800 ft. Owing to the steepness of its slopes, its eight glaciers cover an aggregate surface of not more than 8 sq.mi., though one of them, Maliev, is 36 mi. long. The heights of the lower terminations of these glaciers vary from 7,532 ft. for Devdorak, the best known of them, to 9,793 ft. for the Shau glacier. The Ardon and Terek rivers are glacial in origin. At the eastern foot runs the Georgian military road through the pass of Darial (7,805 ft.). The summit was first climbed in 1868 by D. W. Freshfield, A. W. Moore and C. Tucker, with a Swiss guide. Several successful ascents have been made since, the most valuable in scientific results being that of Pastukhov (1889) and that of G. Merzbacher and L. Purtscheller in 1890. Many primitive legends gathered round its naked, austere sides, with the vast snowy dome above them, and in monastic times its treasures were reputed to include the tent of Abraham and the cradle of Christ. It has a great literature and has left a deep mark in Russian poetry. At its foot lies the village and posting station of Kazbek, so named by the Russians after a native chief, Kazibeg. This name was printed in atlases and so has superseded the more poetic native names, "Christ's Moun-

tain," "White Mountain," "Ice Mountain," etc. Antiquities dating from the iron age have been found at the village, and at a site 2,000 ft. above it.

KAZERUN, a town of Iran, in the province of Fars, situated in the midst of a plain, among lofty limestone ridges, 29° 37′ N., 51° 43′ E., at an elevation of 2,800 ft., on the main road between Bushire (96 mi.) and Shiraz (70 mi.), now passable for light motor cars. The town is unwalled and has a population of 20,000 (est.); the water supply is from wells and pipes, as there is no river. Adjoining the town on the west is the famous Nazar garden with fine avenues of orange trees, first planted by a former governor in 1767. In the vicinity lies the Daryacheh Famur, a very salt lake teeming with fish. The town is surrounded by tobacco fields. Other products of the district are rice of excellent quality, cotton and opium. Wild almond trees are very numerous and the produce is largely exported. In former times a special kind of cotton stuff called *shatawi* was made at Kazerun. Twenty miles to the south, are the ruins of Shapur (Sabur) where are Sassanian bas-reliefs and, in a cave, a statue of that monarch. A couple of miles north of the town are the imposing ruins of a marble building said to stand over the grave of a Shaikh Amin ed Din Muhammad (d. A.D. 1339) and southeast on a high mound are the ruins of buildings with underground chambers known as Qala i Gabr, or the castle of the fireworshippers, and there is the famous Sassanian rock carving showing the defeated Roman emperor Valerian kneeling before Shapur I.

KAZINCZY, FERENCZ (1759–1831), Hungarian author, was born on Oct. 27, 1759, at Ér-Semlyén, in the county of Bihar, Hungary. He studied at Kassa, Eperies and Pest. In 1784 Kazinczy became subnotary for the county of Abaúj and in 1786 was nominated inspector of schools at Kassa. There he worked for the restoration of the Magyar language and literature by translations from classical foreign works, and by the augmentation of the native vocabulary from ancient Magyar sources. In 1788, with Baróti Szabó and John Bacsányi, he started at Kassa the first Magyar literary magazine, *Magyar Muzeum;* the *Orpheus,* which succeeded it in 1790, was his own creation. As a non-Catholic Kazinczy was obliged to resign his post at Kassa on the accession of Leopold II. He assisted Gideon Ráday in the establishment and direction of the first Magyar dramatic society and enriched the repertoire with translations from foreign authors. Implicated in the democratic conspiracy of the abbot Martinovics, Kazinczy was arrested on Dec. 14, 1794, and condemned to death; but the sentence was commuted to imprisonment. Kazinczy was released in 1801 and retired to his estate at Szephalom, where he died on Aug. 22, 1831. Kazinczy was one of the founders of the Hungarian Academy.

A collective edition of his works (*Szép Literatura*) was published at Pest, 1814–16. His original productions (*Eredeti Mukái*) were edited by Joseph Bajza and Francis Toldy at Pest, 1836–45. Editions of his poems appeared in 1858 and in 1863.

KAZVIN (Qazvin), a province and town of Iran. The province is bounded on the N. by Gilan and Mazanderan, on the W. by Khamseh, on the E. by Tehran and on the S. by Hamadan and is pre-eminently a grain and fruit producing district, great quantities of the latter being dried and exported.

Kazvin, the chief town, 36° 15′ N. and 50° E., is 93 mi. from Tehran, at the foot of the southern slope of the Elburz range at an altitude of 4,165 ft. The pop. (1940 estimate) was 65,000. It is an important road centre connected with Tehran, Pahlavi, Tabriz and Hamadan—and it carries on a thriving transit trade. It is especially a market for the raw silk, rice and fish of Gilan, and has recently essayed carpet weaving. The city, founded by Shapur II, was a strong place in early Persian times and flourished under the Moslems. Harun al-Rashid built a mosque there, of which traces remain, and showed the town distinguished marks of favour. Though ruined later by the Mongol invasion at the beginning of the 13th century, it revived again under the Safavis. Tahmasp I (1524–76) made it his capital, and Abbas I adorned it with several buildings but transferred the seat of government to Isfahan. In 1723 its inhabitants drove back the Afghans. The town was several times damaged by earthquakes.

KEA, a parrot allied to the nestor (*q.v.*) and, like it, confined to New Zealand. Originally feeding on carrion, grubs, fruits and seeds, the kea (*Nestor notabilis*) came to rely more and more upon the offal of slaughterhouses on the sheep runs. This taste for flesh has led it to acquire the habit of attacking living sheep occasionally when pressed by hunger. It is particularly fond of the fat about the kidneys, which it obtains by pecking its way through the flesh of the back. It is large, chiefly dull green, with orange-red rump and under-wing. In summer it inhabits rocky summits of snow-capped mountains on South Island to 6,000 ft. above the forests and lower levels in winter seeking food. Its four or five white eggs are placed in a crevice among the rocks.

(G. F. Ss.)

KEAN, CHARLES JOHN (1811–1868), son of Edmund Kean, was born at Waterford, Ireland, on Jan. 18, 1811. After three years at Eton, he was offered, in 1827, a cadetship in the East India company's service, which he was prepared to accept if his father would settle an income of £400 on his mother. The elder Kean refused to do this, and his son determined to become an actor. He made his first appearance at Drury Lane on Oct. 1, 1827, as Norval in Home's *Douglas.* At Glasgow, on Oct. 1, in the following year, father and son acted together in Arnold Payne's *Brutus,* the elder Kean in the title part and his son as Titus. After a visit to America in 1830, he appeared in 1833 at Covent Garden as Sir Edmund Mortimer in Colman's *The Iron Chest.* He then returned to the provinces, but in Jan. 1838, he returned to Drury Lane, where he played Hamlet with great success. He married the actress Ellen Tree (*q.v.*) (1805–1880) Jan. 29, 1842, and paid a second visit to America with her from 1845 to 1847. Returning to England, he entered on a successful engagement at the Haymarket, and in 1850, with Robert Keeley, became lessee of the Princess theatre. The most noteworthy feature of his management was a series of gorgeous Shakespearian revivals. Charles Kean was not a great tragic actor, but in melodramatic parts such as the king in Boucicault's adaptation of Casimir Delavigne's *Louis XI,* and Louis and Fabian dei Franchi in Boucicault's adaptation of Dumas's *The Corsican Brothers,* his success was complete. Kean returned in 1866 from an extended tour abroad in broken health and died in London on Jan. 22, 1868.

KEAN, EDMUND (1787–1833), was born in London on March 17, 1787. His father was probably Edmund Kean, an architect's clerk, and his mother was an actress, Ann Carey, grand-daughter of Henry Carey. In his fourth year Kean made his first appearance on the stage as Cupid in Noverre's ballet of *Cymon.* At the age of seven he was sent to school, but ran away to sea as cabin boy. Finding the restraint on board ship even worse than that of the school, he counterfeited both deafness and lameness with a histrionic mastery which deceived even the physicians at Madeira. On his return to England he sought out his uncle, Moses Kean, mimic, ventriloquist and general entertainer, who introduced him to the study of Shakespeare, while Miss Tidswell, an actress who had been kind to him from infancy, taught him to act. On the death of his uncle Miss Tidswell took charge of him, and under her direction he began the systematic study of the principal Shakespearian characters. His talents induced a Mrs. Clarke to adopt him, but the slight of a visitor wounded his pride, and he went back to his old surroundings. In his 14th year he obtained an engagement to play leading characters for 20 nights in York theatre, appearing as Hamlet, Hastings and Cato. Shortly afterwards, while he was in the strolling troupe belonging to Richardson's show, the rumour of his abilities reached George III, who commanded him to recite at Windsor. He subsequently joined Saunders's circus, where in the performance of an equestrian feat he fell and broke his legs. About this time he picked up music from Charles Incledon, dancing from D'Egville, and fencing from Angelo. In 1807 he played leading parts in the Belfast theatre with Mrs. Siddons, who began by calling him "a horrid little man" and on further experience of his ability said that he "played very, very well," but that "there was too little of him to make a great actor." An engagement in 1808 to play leading characters in Beverley's provincial troupe ended in his marriage (July 17) with Mary

Chambers of Waterford, the leading actress. For several years his prospects were very gloomy, but in 1814 the committee of Drury Lane theatre resolved to give him a chance among the "experiments" they were making to retrieve the fortunes of the house. His opening at Drury Lane on Jan. 26, 1814, as Shylock roused the audience to almost uncontrollable enthusiasm. Successive appearances in Richard III., Hamlet, Othello, Macbeth and Lear served to demonstrate his complete mastery of the whole range of tragic emotion. He himself said on one occasion, "I could not feel the stage under me." On Nov. 29, 1820, Kean appeared for the first time in New York as Richard III.; the American visit, which lasted until the next summer, was a great success.

After his return to England Kean fell into a series of difficulties. His wife left him after his appearance as co-respondent in the case of *Cox* v. *Kean,* and he was violently attacked when he appeared on the stage both in England and in America, where he spent the year 1825–26. His last performance in New York was on Dec. 5, 1826, and after his return to England the public hostility had vanished. But his great powers were failing, and the process was hastened by his irregular habits. His last appearance on the stage was at Covent Garden, on March 25, 1833, when he played Othello to the Iago of his son Charles. At the words "Villain, be sure," in scene 3 of act iii., he suddenly broke down, and crying in a faltering voice "O God, I am dying. Speak to them, Charles," fell insensible into his son's arms. He died at Richmond on May 15, 1833.

It was in the impersonation of the great Shakespearian characters that the varied beauty and grandeur of the acting of Kean were displayed in their highest form, although probably his most powerful performance was in the part of Sir Giles Overreach in Massinger's *A New Way to Pay Old Debts,* the effect of his first impersonation of which was such that the pit rose *en masse,* and even the actors and actresses themselves were overcome by the terrific dramatic illusion. His only personal disadvantage as an actor was his small stature. His countenance was unusually mobile; he had a matchless command of facial expression; his fine eyes scintillated with the slightest shades of emotion and thought; his voice, though weak and harsh in the upper register, possessed in its lower range musical tones of penetrating and resistless power. Kean specially excelled as the exponent of passion. In Othello, Iago, Shylock and Richard III., characters utterly different from each other, but in which the predominant element is some form of passion, his identification with the personality, as he had conceived it, was as nearly as possible perfect, and each isolated phase and aspect of the plot was elaborated with the minutest attention to detail, and yet with an absolute subordination of these to the distinct individuality he was endeavouring to portray. Coleridge said, "Seeing him act was like reading Shakespeare by flashes of lightning." If the range of character in which Kean attained supreme excellence was narrow, but no one except Garrick has been so successful in so many great impersonations.

Kean's eccentricities at the height of his fame were numerous. Sometimes he would ride recklessly on his horse Shylock throughout the night. He was presented with a tame lion with which he might be found playing in his drawing-room. The prizefighters Mendoza and Richmond the Black were among his visitors. Grattan was his devoted friend. In his earlier days Talma said of him, "He is a magnificent uncut gem; polish and round him off and he will be a perfect tragedian." The life of Edmund Kean formed the subject for a play by the elder Dumas, entitled *Kean, ou désordre et génie,* in which Frederick-Lemaître achieved one of his greatest triumphs.

See Francis Phippen, *Authentic Memoirs of Edmund Kean* (1814); B. W. Procter (Barry Cornwall), *The Life of Edmund Kean* (1835); F. W. Hawkins, *The Life of Edmund Kean* (1869); J. Fitzgerald Molloy, *The Life and Adventures of Edmund Kean* (1888); Edward Stirling, *Old Drury Lane* (1887), also G. C. D. Odell, *Shakespeare from Bellerton to Irving* (vol. ii., 1926).

KEANE, AUGUSTUS HENRY (1833–1912), Irish anthropologist, was born at Cork on June 1, 1833. He was educated at Dublin and in Rome for the Roman Catholic priesthood; but he declined to enter the Church, and devoted himself to geographical and ethnological research. He registered and classified almost every known language, and from these data worked out a system of ethnology. He was professor of Hindustani at University College, London, until 1885. He died on Feb. 3, 1912.

He published *Man, Past and Present* (1899); *Ethnology* (1896 and later editions); *The Gold of Ophir* (1901); etc.

KEANE, JOHN JOSEPH (1839–1918), American Roman Catholic archbishop and educator, was born in Ballyshannon, Co. Donegal, Ireland, on Sept. 12, 1839. When he was seven years old his family settled in the United States. He was educated at St. Charles' college, Ellicott City, Md., and at St. Mary's seminary, Baltimore. In 1866 he was ordained a priest and made a curate of St. Patrick's, Washington, D.C.; in 1878 he was bishop of Richmond. During service at Washington and Richmond he founded churches and schools for negroes and established the Confraternity of the Holy Ghost. From 1886 to 1897 he was rector of the Catholic University of America, Washington, which he did much to upbuild. He was then called to Rome and raised to archiepiscopal rank with the title of archbishop of Damascus, serving in 1897–1900 as canon of St. John Lateran, assistant bishop at the pontifical throne, and counsellor of the Propaganda. Returning to America in 1900, he was consecrated archbishop of Dubuque (Iowa). He resigned this see in 1911 and was appointed titular archbishop of Ciana. A selection of his writings, largely on educational subjects, edited by M. F. Egan, was published under the title *Onward and Upward,* in 1902. He died in Dubuque, Ia., on June 22, 1918.

KEARNEY, a city of Nebraska, U.S.A., 135 mi. west of Lincoln and just north of the Platte river, at an altitude of 2,146 ft.; the county seat of Buffalo county. It is on the Lincoln highway; is served by the Burlington and the Union Pacific railways; and has an aviation field. The population was 7,702 in 1920 (92% native white), and was 9,643 by the federal census of 1940. It is the seat of the State industrial school for boys, the State tuberculosis hospital, a State teachers' college and the "1733 Amusement Park" (including a tourist camp) so called because it is 1,733m. from both Boston and San Francisco by highway. The city has a substantial wholesale trade, ships great quantities of wheat and other grain and has sundry manufacturing industries. Kearney takes its name from old Ft. Kearney (established 1848), which stood across the river, 6m. south-east of the present city, at the junction of the old trails from Kansas City and from Omaha. Here in 1861 the post office of Kearney City was established. Around the fort grew up in the '50s a settlement called Dobey Town (from *adobe*), which was one of the most important towns west of the Missouri in the days of the freighting caravans across the prairies. It was the scene of desperate fighting and hair-raising adventures with the Indians, especially during the construction of the Union Pacific railroad, of which every mile through this territory was surveyed and built under military protection. After the railroad was built, north of the river, Dobey Town dwindled, and in 1871 both the town-site and the fort were abandoned. The site of the present city was settled about 1872, and the city was incorporated and made the county seat in 1874. Fort and city were named after Gen. Stephen W. Kearny and the name was spelled correctly at first, without the second "e."

KEARNY, PHILIP (1815–1862), American soldier, was born in New York on June 2, 1815. He graduated from Columbia university (1835), and in 1837 obtained a commission in the cavalry. In 1839 he was sent to France to study cavalry training and before his return in 1840 he had served, on leave, in Algeria. He inherited a large fortune, but remained in the service in the headquarters staff of the army. After six more years' service he left the army, but almost immediately rejoined with a company of cavalry he had raised and equipped, chiefly at his own expense, for the Mexican War. In Dec. 1846 he was promoted captain. In leading a brilliant charge at Churubusco he lost his left arm, but remained at the front, and won the brevet of major. In 1851 he again resigned in order to travel. He saw further active service with the French cavalry in the Italian War of 1859, and received the cross of the Legion of Honour for his conduct at Solferino. Up

to the outbreak of the American Civil War he lived in Paris, but early in 1861 he hastened home to join the Federal army. As a brigade commander and as a divisional commander of infantry in the Army of the Potomac, he infused into his men his own spirit of dash and bravery. At Chantilly (Sept. 1, 1862), after repulsing an attack of the enemy, he rode out in the dark too far to the front, and mistaking the Confederates for his own men was shot dead. His body was sent to the Federal lines with a message from Gen. Lee, and was buried in Trinity churchyard, New York. His commission as major-general of volunteers was dated July 4, 1862, but he never received it.

See J. W. de Peyster, *Personal and Military History of Philip Kearny* (1869).

KEARNY, town, Hudson county, New Jersey, U.S.A., between the Passaic and the Hackensack rivers, opposite Newark and adjoining Harrison. It is served by the Central of New Jersey and the Erie railways. The former Manhattan Transfer of the Hudson tubes was within its limits. The population was 26,724 in 1920 (29.6% foreign-born white) and was 40,716 in 1930 and 39,467 in 1940 by federal census. It has a large Scottish population. Kearny covers 8.9 sq.mi., including a large tract of marshland, part of which has been reclaimed for factories and other industrial establishments. The section known as Arlington, in the northwest part of the town, is one of the best residence districts. The town is a residential suburb, and also has important manufacturing industries, with a nation-wide market. The aggregate factory output in 1937 was valued at $114,720,115.

The pioneer settler in this region was William Sandford, who came from Barbados in 1668 and bought the neck of land from the mouth of the rivers 7 mi. to the north, and called it New Barbados.

He paid the proprietors of East Jersey £20 sterling, and for the Indian rights he gave 170 fathoms of black wampum, 200 of white, 19 black coats, 10 pairs of breeches, 16 guns, 60 double hands of powder, 60 knives, 67 bars of lead, 30 axes, 20 hoes, 11 blankets, one anker of brandy, and 3½ vats of beer. In 1719 Arent Schuyler bought a plantation covering the present site of Arlington, and a little later one of his slaves turned up an unusual stone which proved to be copper ore 85% fine. From this mine 1,368 tons of ore were sent to the foundry at Bristol (England). From New Barbados the town of Lodi was formed in 1825 and the town of Harrison in 1840; and in 1867 a part of Harrison was made a separate township and named after Gen. Phil Kearny, a former resident. The town of Kearny was incorporated in 1895.

KEATE, JOHN (1773–1852), English schoolmaster, was born at Wells, Somersetshire, in 1773, the son of Prebendary William Keate. He was educated at Eton and King's college, Cambridge, and was headmaster of Eton from 1809 to 1834. His partiality for the birch became a by-word, but beneath an outwardly rough manner the little man concealed a really kind heart, and when he retired the boys presented him with a handsome testimonial. A couple of years before he had publicly flogged eighty boys on one day. Keate died on March 5, 1852, at Hartley Westpall, Hampshire, of which parish he had been rector since 1824.

See Maxwell Lyte, *History of Eton College* (3rd ed., 1899); Collins, *Etoniana;* Harwood, *Alumni Etonienses; Annual Register* (1852); *Gentleman's Magazine* (1852).

KEATS, JOHN (1795–1821), English poet, was born in London on Oct. 29 or 31, 1795. His father, Thomas Keats, had come to London from the West Country, and was at this time managing a livery stable, having married the daughter of the proprietor, Frances Jennings. John Keats was their eldest son, and was born prematurely. He was sent to a school kept by the Rev. John Clarke at Enfield, and soon after lost his father, who was killed by a fall from his horse on April 16, 1804. His mother married again within the year, but was soon separated from her new husband, and went to live with her mother, Mrs. Jennings, at Edmonton; this was Keats' home for the next few years. At school, Keats was not remarkable for anything very much except an intense pugnacity, vented frequently even on his brother George, then and afterwards one of the closest of his friends. Tom, the youngest brother, was already delicate, and had to be looked after by the other two; the family sentiment between them was always strong, and only his brothers were allowed to see the strain of melancholy that lay beneath his surface high spirits. With the school as a whole he was very popular. Towards the end of his time, in his fourteenth and fifteenth years, he suddenly turned to study, and read widely in addition to his school work, particularly in mythology. He also started a translation of the *Aeneid* into English prose. In February his mother, to whom he was passionately attached, died of consumption. His grandmother put the boys under the care of two guardians, Rowland Sandell and Richard Abbey. At the end of 1810 Mr. Abbey had Keats apprenticed to Hammond, a surgeon of Edmonton. About this time he finished his translation of the *Aeneid.* He used often to walk over to the school at Enfield to see Cowden Clarke, the son of the headmaster, and one of the books Clarke lent him was the *Faerie Queene.* This inspired him to his first efforts at poetry, though it was not till two years later, in 1815, that he showed any of his work to Clarke.

In the summer or autumn of 1814 he quarrelled with Hammond, and went to live in London, studying at St. Thomas's and Guy's Hospitals. He lodged, first in the Borough by himself, then in St. Thomas street with fellow-students; in the summer of 1816 he joined his brothers in the Poultry, and in spring 1817 they moved to Cheapside. He worked steadily at first, and passed his examination as licentiate in July 1816. But his real inclinations were beginning to appear, and it seems to have been at some time in the winter 1816–1817 that he decided to devote himself entirely to poetry. In literature his passion, then as always, was for the Elizabethan age, but his early verses written at this time, such as *On Death* (1814), *To Hope* and *To Apollo* (Feb. 1815), are in a typically 18th century style, full of personified abstractions of the Passions and the like. Early in 1815 Clarke came to live in London, and it was after a night spent in the study of Chapman that Keats sent him the famous sonnet *On First Looking into Chapman's Homer,* the first poem in which he unmistakably finds his voice.

Soon after this Clarke introduced him to Leigh Hunt, who had a profound influence on him, as he had on other men far greater than himself. Hunt's critical aim was the sound and valuable one of overthrowing the "classical" school and inaugurating a return to the natural freedom of the great age of English poetry; this cause prevailed, however much or little Hunt may have had to do with it, as everybody knows, and the Return to Nature, or the Romantic Revival, won the day. At the same time Hunt tried to put his own specific ideas of verse construction, the central point of which was the freer form of the heroic couplet, into practice in *Rimini,* and whatever his critical gifts Hunt was no poet. Keats adopted the same method, and while the free form of the heroic couplet was fertile of good results in his hands, he also seems to have been infected with Hunt's worst fault, the tendency to lapse into a casual pertness of diction that at times gives some colour to the gibes of *Blackwood* about the "Cockney school." This tendency is occasionally noticeable in Keats' earlier work, but is far more disastrous when it intrudes, as it does once or twice, into the splendour of his maturity; it is such lines as

> "Good-bye, I'll soon be back"; "Good-bye," said she,

in *Isabella,* and

> That Lycius could not love in half a fright

in *Lamia,* for which we have a serious grudge against Hunt. In addition to his influence on Keats' style, Hunt had a considerable effect on his fortunes; it was Keats' friendship with Hunt that was his real crime in the eyes of the Reviews.

Hunt's house was the centre of a circle of men of literary tastes, and here Keats met J. H. Reynolds and James Rice, who both became friends of his; Shelley, to whom Keats did not take as kindly as Shelley did to him; and Haydon, with whom he at once became intimate. Hunt had already (May 16 and Dec. 1, 1816) printed verse of Keats' in the *Examiner,* and the circle decided that a volume must be published. The Olliers firm undertook its production, and it came out in March 1817 as *Poems,* by

John Keats. It is a collection of youthful work, full of promise but not of much else, though in *Sleep and Poetry* there is an interesting passage that expresses the aspirations of the new school of poetry. The substance of the book is six poems in heroic couplets, three of them poetic epistles. They are more interesting for their style than for their matter, and show various methods of varying the monotony of the measure, such as frequent use of overflow, dissyllabic rhymes, the shortening of the second line, and so on.

In April 1817 Keats went away by himself to the Isle of Wight, urged especially by Haydon to solitude and concentration. He took rooms at Carisbrooke, and began to work at *Endymion.* In May he moved to Margate, where he received an advance payment on the poem from Taylor and Hessey. After a stay in Canterbury with Tom, the two brothers came to Hampstead early in the summer, where they settled down. Hunt lived near, and Keats made two new friends near by, Charles Wentworth Dilke and Charles Brown. By the late summer, when he went to stay in Oxford, he had reached the third book of *Endymion.* He returned to Hampstead in the autumn, to find that the attack in *Blackwood* on the "Cockney school" had just begun; there were also dissensions between Reynolds and Haydon, and Haydon and Hunt, which distressed him. At Christmas he took Reynolds's place as dramatic critic on the *Champion* for a while, and on Dec. 28 he was at Haydon's famous dinner party, with Wordsworth, Lamb and Monkhouse. In the first two months of this year he had a burst of poetic activity, and at one time wrote a new poem nearly every day. This period includes *Hence Burgundy Claret and Port, When I have fears that I may cease to be,* and the sonnet on the Nile. At this time also he and Reynolds had the idea of publishing a book of tales from Boccaccio, which was the origin of *Isabella.* In March he went to Teignmouth to look after Tom, George having decided to marry and go abroad, and there *Isabella* was written. He and Tom came back to Hampstead in May, and about this time *Endymion* was published (1818). Of this poem all that need be said in criticism has been said by Keats himself in the preface. The basis of it is the story of Endymion and the moon-goddess, but it has been allegorised and mixed with other myths, and incidents of his own invention, till it becomes something entirely new. The metre is again the heroic couplet, treated with the same freedom as before, and relieved with incidental lyrics. The strength and weakness of the poem lie in the same feature, his intense and luxuriant imagination, that is ever bursting with new beauties, but, being more or less undisciplined, has the poet at its mercy, and leads to a certain dissipation of interest and lack of cohesion in the poem as a whole.

In the summer of this year Keats went with Brown on a walking tour in the north. George Keats and his wife were starting for America, and the two friends went with them to Liverpool, and thence to Lancaster, where the tour started. They walked through the Lake district to Carlisle, took a coach to Dumfries, and wandered about the coast for some time, finally crossing to Ireland for a day or two. Then they went on up the coast to Ayr, and so by Glasgow and Inverary to Oban. Exertion and exposure were already affecting Keats's throat, and when, after climbing Ben Nevis, they reached Inverness, a doctor advised him to go home, and he sailed from Cromarty for London. This throat trouble brought on by the hardships of the tour was the first sign of the consumption that killed him. Simultaneously with his return the attacks in the Reviews developed in earnest; the August number of *Blackwood's* contained No. IV. of the "Cockney school" articles, devoted entirely to Keats this time, probably by Wilson or Lockhart; in September followed the review of *Endymion* in the Quarterly, in the same strain. Perhaps it should be added that there is no foundation for the belief that Keats' death was hastened by the treatment he received in the Reviews. He took it quite calmly, and at this time was quite preoccupied with a more personal trouble. He returned to find his brother Tom much worse, and the rest of the year was devoted to nursing him. He died in the first week in December. After Tom's death Keats went to live with Brown at Wentworth Place, Hampstead, and was soon settled to work on *Hyperion.*

And now a new distraction was to come into his life, and never to leave it. Fanny Brawne was the eldest daughter of a lady who had taken Brown's house while they were away in the north, and was now living close by. Keats met her at the Dilkes', and was soon completely enslaved. She was an attractive girl, and constant to Keats through the troubles that were to follow; his friends thought that she was no fit mate for him, but what woman would have been? The effect of this passion, to which Keats gave himself up with all the violence of an extraordinarily ardent nature, seems in the end to have been further to strain a constitution already giving way under incipient consumption, but at the moment it only stimulated his poetic energies. During a visit to Sussex with Dilke in January he finished *The Eve of St. Agnes,* and began the unfinished *Eve of St. Mark;* he came back to Hampstead in February, and that spring saw another burst of activity. Between now and June all but one of the great *Odes* were written; *On Indolence* can be dated from his correspondence to about March 19, *On a Grecian Urn* was sent to his brother on April 15, and *To a Nightingale* a week or two later. Yet just at this time his prospects, darkened by his reception by the Reviews, seemed so bad that he was thinking of giving up poetry altogether; Brown dissuaded him, and lent him enough to live on through the summer. In July he went to stay with Rice in Shanklin, and later Brown came and Rice left. He and Brown now collaborated in *Otho the Great,* Brown outlining the scenes and Keats working them out, until they came to the fourth act, when Keats took entire command. At the same time he was writing *Lamia.* From August to September they stayed at Winchester, where, in the last good days of his life, he finished *Lamia,* added to and abandoned the *Eve of St. Mark* and *Hyperion,* and wrote the *Ode to Autumn.* He also started *King Stephen,* which he left unfinished.

Early in October he returned to London, determined to take lodgings by himself and look for work on the Press; a single visit to the Brawnes broke down his resolution, and he was soon back at the Browns' house again, unable to think of anything else. Though his disease was still undisclosed, his genius was now declining under the double strain, as the rest of his work shows. Kean accepted *Otho,* but his manager proposed too long a delay to suit Keats and Brown, and the plan dropped. Keats now started the *Cap and Bells,* but the plan of the work was never congenial to him; he was not designed for a satirist. Later he attempted to recast *Hyperion* in the form of a vision. The new version is not on the level of the old, but throws interesting light on the state of his thoughts at the time, and his conception of the function of poetry:

> Only the dreamer venoms all his days
> Bearing more woe than all his sins deserve.

On February 3, 1820, he had the first attack of consumption; Brown has left an account of how he realised from the first moment that it was his death-warrant. From then on the disease ran the usual course of rally and relapse until the end. In April he was better, and in May he moved to Kentish Town, near Leigh Hunt. In July the last great volume came out, *Lamia, Isabella, The Eve of St. Agnes and other Poems,* which contains all his work of major importance, except *On Indolence, The Eve of St. Mark,* and *La Belle Dame sans Merci,* which first appeared in the *Indicator,* May 20. He was nursed through the summer, first by the Hunts and then by the Brawnes, and his doctor said he must go south for the winter. Shelley wrote asking him to Pisa, but eventually Severn, who was going to Rome, offered to take him. They sailed on Sept. 18, and on the way down Channel they landed for a while near Lulworth, where he wrote his last poem, *Bright Star, would I were stedfast as thou art.* From Naples they went to Rome, where on Dec. 10 he had a final relapse; he was carefully tended by Severn to the last, and died on Feb. 23, 1821.

With the contents of the 1820 volume everyone is familiar; here we have the true measure of his powers, and though some faults remain, the early weakness is quite left behind. In *Isabella,* a story taken from Boccaccio, but, needless to say, given a wholly personal romantic colouring, there are still occasional slipshod

phrases, and the old tendency to follow idly the chance suggestion of a rhyme, but with all his old colour and music there is a new depth of passion and tragedy. The metre is the octave stanza, recently popularised by Byron. In *Hyperion,* a fragment of a blank verse epic, the influence of Milton is clear, and in the end he found the Miltonic note too unnatural to sustain. The theme is Greek, though the treatment is Gothic; it tells of the supplanting of the old deities by the Olympians. *St. Agnes' Eve* is romantic narrative at its height; its enchanted atmosphere and blaze of colour are such that one never pauses to ask whether the characters are anything more than a formal foreground to the setting. Of *Lamia* much the same can be said; the story of the serpent-lady, dissolved before her lover's eyes by the "sophist's eye, keen, cruel, perceant, stinging," comes through Burton from Philostratus. The metre is rhymed heroics, but more in Dryden's manner than *Endymion,* with less use of the overflow. The great *Odes* stand alone in literature, new in form and spirit, and owing nothing to any predecessor. They are too well known for description and too perfect for criticism. As a dramatist Keats is hard to judge; he died too young to accomplish anything great in that sphere; *Otho* is not a success. *Stephen,* so far as it goes, has far more promise, being full of stir and action.

The first life of Keats was R. M. Milnes' (Lord Houghton) *Life, Letters and Literary Remains of John Keats* (2 vols., 1848). The standard life is *Keats* by S. Colvin, in the *English Men of Letters* series (1887). The standard edition of the poems is by H. B. Forman; *Poetical works and other Writings* (4 vols., 1883); *Poetical Works* (1884); there have been several subsequent editions of this, the 1915 edition containing the new sonnets first printed in *The Times,* May 18, 1914, and discussed in the *Literary Supplement,* May 21. Both this edition and Colvin's *Keats* contain a full bibliography.

KEBLE, JOHN (1792–1866), English poet and divine, the author of the *Christian Year,* was born on April 25, 1792, at Fairford, Gloucestershire, the second child of the Rev. John Keble. He became a scholar of Corpus Christi college, Oxford, in 1807, and in 1810 obtained double first class honours, a distinction which had been obtained only once before, by Sir Robert Peel. After his election to an Oriel fellowship in 1811 Keble gained the University prizes, both for the English essay and also for the Latin essay. Oriel College was, at that time, the centre of all the finest ability in Oxford. Copleston, Davison, Whately, were among the fellows who elected Keble; Arnold, Pusey, Newman, were soon after added to the society. In 1815 Keble was ordained deacon, and priest in 1816. His real bent and choice were towards a pastoral cure in a country parish; but he remained till 1823 in Oxford, acting first as a public examiner in the schools, then as a tutor, when he returned to Fairford to assist his father, and with his brother to serve one or two small and poorly endowed curacies in the neighbourhood of Coln.

In 1827 he published anonymously the *Christian Year* (2 vols., Oxford). The poems which make up that book had been the silent gathering of years. There is one for each Sunday and for each Saint's day and festival observed by the Church of England. Keble had purposed to keep them beside him, correcting and improving them, as long as he lived, and to leave them to be published only "when he was fairly out of the way." This resolution was at length overcome by the importunities of his friends, and by the desire of his father to see his son's poems in print before he died. Between 1827 and 1872 one hundred and fifty-eight editions appeared, and it has been largely reprinted since.

In 1831 Keble succeeded Milman as professor of poetry at Oxford. He delivered a series of lectures, printed as *Praelectiones academicae,* clothed in excellent idiomatic Latin (as was the rule), in which he expounded a theory of poetry which was original and suggestive. He distinguished between what he called primary and secondary poets—the first employing poetry to relieve their own hearts; the second, poetic artists, composing poetry from some other and less impulsive motive. Of the former kind were Homer, Lucretius, Burns, Scott; of the latter were Euripides, Dryden, Milton. His regular visits to Oxford kept him in intercourse with his old friends at Oriel. Catholic emancipation and the Reform Bill had deeply stirred, not only the political spirit at Oxford, but also the church feeling which had long been stagnant. Newman wrote, "On Sunday July 14, 1833, Mr. Keble preached the assize sermon in the University pulpit. It was published under the title of *National Apostasy.* I have ever considered and kept the day as the start of the religious movement of 1833." The occasion of this sermon was the suppression, by Earl Grey's Reform ministry, of ten Irish bishoprics. Against Erastianism Keble had long chafed inwardly, and he now asserted the claim of the church to a heavenly origin and a divine prerogative. About the same time, and partly stimulated by Keble's sermon, leading spirits in Oxford began a systematic course of action to revive High Church principles and patristic theology. Thus arose the Tractarian movement, a name it received from the famous *Tracts for the Times.* If Keble is to be reckoned, as Newman would have it, as the primary author of the movement, it was from Pusey that it received one of its best known names, and in Newman that it soon found its genuine leader. To the tracts Keble made only four contributions: —No. 4, containing an argument, in the manner of Bishop Butler, to show that adherence to apostolical succession is the safest course; No. 13, which explains the principle on which the Sunday lessons in the church service are selected; No. 40, on marriage with one who is unbaptized; No. 89, on the mysticism attributed to the early fathers.

In 1835 Keble married Miss Clarke, and became vicar of Hursley, Hampshire, a living to which he had been presented by his attached pupil, Sir William Heathcote, and which continued to be Keble's cure for the remainder of his life. In 1841 the tracts were brought to an abrupt termination by the publication of Newman's tract No. 90 (*see* NEWMAN, JOHN HENRY). The same year in which the ecclesiastical storm burst Keble's tenure of the professorship of poetry closed, and thenceforward he was seen but rarely in Oxford. No other public event ever affected Keble so deeply as the secession of Newman to the Church of Rome in 1845. It was to him both a public and a private sorrow, which nothing could repair. In all the ecclesiastical contests of the twenty years which followed 1845, Keble resolutely maintained those High Anglican principles with which his life had been identified. These absorbing duties, added to his parochial work, left little time for literature. But in 1846 he published the *Lyra Innocentium;* and in 1863 he completed a life of Bishop Wilson. He died at Bournemouth on March 29, 1866, and was buried at Hursley.

See J. T. Coleridge, *Memoir of John Keble* (1869). The following is a list of his writings:—*Christian Year* (1827); *Psalter* (1839); *Praelectiones Academicae* (1844); *Lyra Innocentium* (1846); *Sermons Academical* (1848); *Argument against Repeal of Marriage Law,* and *Sequel* (1857); *Eucharistical Adoration* (1857); *Life of Bishop Wilson* (1863); *Sermons Occasional and Parochial* (1867). Posthumous publications: *Village Sermons on the Baptismal Service* (1868); *Miscellaneous Poems* (1869); *Letters of Spiritual Counsel* (1870); *Sermons for the Christmas Year, etc.* (11 vols., 1875–80); *Occasional Papers and Reviews* (1877); *Studia Sacra* (1877); *Outlines of Instruction or Meditation* (1880).

KECSKEMET, a town in Hungary, 65 m. S.S.E. of Budapest by rail. Situated on an extensive drift-sand plain, it is the market centre of a thriving agricultural region devoted to the growth mainly of fruit and vine, with cattle-rearing and rye cultivation as subsidiary activities. In addition the town has industrial interests, *e.g.,* milling, fruit and vegetable preserving and the preparation of leather. It covers a large area, but it is poorly built and surrounded by growing *tanya* settlements. Pop. (1939) 83,837.

KEDDAH (from Hindu, *Khedna,* to chase), the term used in India for the enclosure constructed to entrap elephants. In Ceylon the word employed in the same meaning is *corral.*

KEDGE, a small anchor, also called a kedge anchor, used for kedging; *i.e.,* hauling the stern of a ship from one part of a harbour or waterway to another.

KEDGEREE, an Indian dish, composed of boiled rice and various highly flavoured ingredients (Hindustani, *khichri*). Kedgeree is of two kinds, white and yellow. The white is made with grain, onions, ghee (clarified butter), cloves, pepper and salt. Yellow kedgeree includes eggs, and is coloured by turmeric. Kedgeree is a favourite and universal dish in India; among the poorer classes it is frequently made of rice and pulse only, or rice and beans. In European cookery kedgeree is a similar dish

usually made with fish.

KEDIRI, a residency in the province of East Java, Netherlands Indies, bounded E. by Malang, W. by Madiun, N. by Surabaya and Bodjonegara, and S. by the Indian ocean. The middle parts are hilly, with high mountains, Mt. Willis, 7,481 ft., and Mt. Kelut, 5,625 ft., also the extreme south, and limestone hills of low formation shut off practically all the coast from the interior, which consists of fertile plains bordering the river Brantas, which flows from the eastern border in a westerly direction and then turns north-eastwards and continues to the northern border. Area 2,555 sq.mi.; pop. 2,411,209 ([1930] 5,948 Europeans and Eurasians, 25,811 foreign Asiatics, including Chinese). The natives are almost entirely Javanese. Rice, sugar-cane, cotton, coffee, cocoa, coca, cassava, maize, ground-nuts and coco-nuts are grown; the principal crops are those of cassava and sugar-cane, and there are tapioca and sugar factories; teak is obtained from the forests. Kediri (pop. 48,567), is the capital. It is on the banks of the Brantas, and is one of the centres of the sugar industry; there are remains of Hindu temples in the neighbourhood (*see* JAVA). Other towns are Blitar (pop. 27,846), with the ruins of Panataram temple (Hindu) near by, Tulung Agung (pop. 31,767), Kertosono and Papar. All these towns are on the railway which branches off from the main line to Surabaya at Kertosono and runs southwest to Tulung Agung, and thence eastwards to Blitar, and on into Pasuruan. Steam tramways connect with Wates, Para and Kepung, other small towns. The Brantas is navigable. There are no harbours on the coast. Kediri was made into a residency in 1830, just after the war in Central Java. The residency was occupied by Japan in March 1940.

KEDU (Dutch, Kedoe), a residency in Middle Java, Netherlands Indies, bounded east by Surakarta and Jokjakarta, north by Semarang, west by Banjumas, and south by the Indian ocean. Area 2,104 sq.mi.; pop. (1930) 2,536,932 (6,980 Europeans and Eurasians). Kedu is one of the most densely inhabited regions in the world, more than 1,200 per sq.mi. in 1930. The natives are almost wholly Javanese. There are high mountains all along the eastern border, in the centre, Mt. Sumbing (10,955 ft.), and north of Sumbing, where lie Mt. Sendoro (10,318 ft.) and the Dieng plateau (6,500 ft.). The population is chiefly in the fertile valley of the river Praga (there are three small rivers in the south), which runs southwards to the sea between the mountain ranges. The coast is a difficult one, with high sand ridges, and it has no harbours. Principal crops are rice, sugar-cane, tobacco and coconuts; maize, rubber and ground-nuts are grown, and timber woods are extracted from the forests. Magelang, pop. 52,944 (4,169 Europeans and Eurasians), is the capital. Its altitude (1,250 ft.), gives it a comparatively cool climate, and it is an important military station. It is on the steam tramway which traverses Kedu from south to north, running from the main railway line at Jokjakarta northwards to Parakan, and is a convenient starting-place for Boro Budur and Mendut (*see* JAVA), which lie a few miles to the south. Another important town is Wonosobo (pop. 10,701), altitude 3,400 ft. It is connected by steam tramway with the main railway line at Purwakerto, in Banjumas, and is the *rendezvous* of travellers wishing to explore the highly interesting Hindu ruins of the Dieng plateau (*see* JAVA). Other towns are Muntilan, with a large Chinese colony, Purworejo (pop. 24,645), Krakal (thermal springs), Kebumen (pop. 14,102), Kutuarjo and Setjang, junction for a steam tramway connecting with Semarang. The main railway line from Batavia to Surabaya traverses the southern part of Kedu. The rivers are not navigable. Kedu was made into a residency in the time of Raffles; it was occupied by Japan in March 1942.

KEELER, JAMES EDWARD (1857–1899), American astronomer, was born in Lasalle, Ill., Sept. 10, 1857, and removed with his family to Florida when he was quite young. In 1877 he made an important meridian instrument from a marine spyglass. He graduated from Johns Hopkins in 1881, and had two years of study at the universities of Heidelberg and of Berlin where he made an investigation of the absorption by carbon monoxide of radiant heat with the use of Langley's newly invented bolometer. He then became an assistant to Langley in his research on the infra-red portion of the spectrum and radiation of the moon. He was for four or five years at Mt. Hamilton as astronomer of the Lick Observatory. In 1891 he was made director of the Allegheny Observatory, and in 1898 director of Lick Observatory. His greatest work was in spectroscopy, especially his observations on the nebular spectrum. He also demonstrated the truth of Maxwell's theory regarding the meteoric constitution of the rings of Saturn. He died on Aug. 12, 1899.

For a complete bibliography see *Nat. Acad. of Science, Biog. Memoirs,* v. 5, p. 233.

KEELEY, MARY ANNE (1806?–1899), English actress, was born at Ipswich on Nov. 22, 1805 or 1806. Her maiden name was Goward, her father being a brazier and tinman. After some experience in the provinces, she first appeared on the stage in London on July 2, 1825, in the opera *Rosina.* It was not long before she gave up "singing parts" in favour of the drama proper, where her powers of character-acting could have scope. In June 1829 she married Robert Keeley (1793–1869), an admirable comedian, with whom she had often appeared. In 1838 she made a great success as Nydia, the blind girl, in a dramatized version of Bulwer Lytton's *The Last Days of Pompeii,* and followed this with a striking impersonation of Smike in *Nicholas Nickleby.* In 1839 she achieved a triumph as the hero of a play founded upon Harrison Ainsworth's *Jack Sheppard.* As Jack Sheppard Mrs. Keeley lived in the memory of playgoers, despite her many later successes in other parts. She managed the Lyceum (1844–47) with her husband; acted with Webster and Kean at the Haymarket; returned for five years to the Adelphi; and made her last regular public appearance at the Lyceum in 1859. She died on March 12, 1899.

See Walter Goodman, *The Keeleys on the stage and off* (1895).

KEELING ISLANDS (often called Cocos and Cocos-KEELING ISLANDS), a group of coral islands in the Indian ocean, between 12° 4′ and 12° 13′ S., and 96° 49′–57′ E., but including a smaller island in 11° 50′ N. and 96° 50′ E. They lie 700 mi. W. of Batavia. Only Home and Direction islands are regularly inhabited, the former housing the labour force for working in the large coconut plantations on the islands, and the latter containing the important cable station. There are altogether 27 small islands, 9½ mi. being the greatest width of the whole atoll. The lagoon is very shallow and an opening on the north side of the reef permits the entrance of vessels. The flora is scanty in species. One of the commonest living creatures is a monstrous crab which lives on the coconuts; and in some places also there are great colonies of the pomegranate crab. From time to time the group has been visited by scientists for the purpose of studying the fauna and flora and, more especially, the formation of the coral reefs. Of particular interest is North Keeling island, 1 mi. long and with a shallow enclosed lagoon with an opening on its east side. A dense vegetation of ironwood (*Cordia*) and other trees and shrubs, together with a forest of coconut palms, covers its surface. It is tenanted by myriads of seafowl, frigate birds, boobies, and terns (*Gygis candida*), which find here an excellent nesting-place, and in consequence the island contains valuable calcium phosphate deposits. The lagoon is slowly filling up and becoming cultivable land, but the rate of recovery from the sea was specially marked after the eruption of Krakatoa, the pumice from which was washed on to it in enormous quantity, so that the lagoon advanced its shores from 20 to 30 yards.

The atoll has an exceedingly healthful climate, the temperature never reaching extremes, its range being from 89° F. to 70°, and the rainfall rarely exceeds 40 inches. The southeast trade blows almost ceaselessly for ten months of the year. Terrific storms sometimes break over the island; and it has been more than once visited by earthquakes. A profitable trade is done in coconuts, but there are few other exports. The imports are almost entirely foodstuffs and other necessaries for the inhabitants.

The islands were discovered in 1609 by Captain William Keeling. A temporary settlement was made on the southernmost island in 1823 by Alexander Hare, an English adventurer, and in 1827 Capt. John Clunies Ross, a Scot, established permanent residence on Direction island. The group was taken under British protec-

tion in 1856; in 1878 it was attached to the colony of Ceylon; and in 1882 it was placed under the governor of the Straits Settlements. Great Britain made a perpetual grant of the lands in the islands to George Clunies Ross and his descendants in 1886, and the Ross family continues to work the plantations. In 1903 the group was annexed to the Straits Settlements and incorporated with the Settlement of Singapore. Pop. (1941) 1,142.

See F. W. Jones, *Coral and Atolls* (1910); H. M. Stationery Office, *Malpelo, Cocos and Easter Islands* (1920).

KEEL-MOULDING, in architecture, a round convex moulding, along one side of which there is attached a small, projecting fillet or flat member, so called from a resemblance to the keel of a ship. It was common throughout the Gothic period, especially as an arch moulding.

KEEN, WILLIAM WILLIAMS (1837–1932), American surgeon, was born at Philadelphia (Pa.), Jan. 19, 1837. He graduated at Brown university (1859), and Jefferson medical college (1862); was made assistant surgeon of the 5th Massachusetts Regiment in 1861 and was acting assistant surgeon U.S. Army (1862–64). After two years' study abroad, he started practice in Philadelphia and conducted the Philadelphia School of Anatomy (1866–75). He was a lecturer on pathological anatomy at Jefferson medical college (1866–75), professor of surgery at Woman's medical college (1884–89), professor of surgery at Jefferson medical college (1889–1907) and professor emeritus (1907). In 1909 he was made 1st lieutenant of the Medical Reserve Corps, U.S. Army, and major in 1917. A specialist in the surgery of the brain and the nervous system, he was a pioneer in performing successfully new and difficult operations in this field. He wrote several surgical and other works, and was editor of many well-known works including Gray's *Anatomy* and Keen's *Surgery.*

He wrote *Reflex Paralysis* and *Gunshot Wounds and Other Injuries of Nerves* (with Weir Mitchell and Morehouse) (1864); *Keen's Clinical Charts* (1870); *History of the Philadelphia School of Anatomy* (1874); *Early History of Practical Anatomy* (1870); *Surgical Operations of President Cleveland* (1893); *Bicentenary History of the First Baptist Church of Philadelphia* (1898); *Surgical Complications and Sequels of Typhoid Fever* (1898); *Addresses and Other Papers* (1905); *Animal Experimentation and Medical Progress* (1914); *The Early Years of Brown University, 1764–1770* (1914); *Ether Day Address* (1916); *Treatment of War Wounds* (1917); *Colver Lectures at Brown University on Medical Research and Human Welfare* (1917); *Selected Papers and Addresses* (1922).

KEENE, CHARLES SAMUEL (1823–1891), English black-and-white artist, the son of Samuel Browne Keene, a solicitor, was born at Hornsey on Aug. 10. His earliest known design is the frontispiece, signed "Chas. Keene," to *The Adventures of Dick Boldhero,* etc. In Dec. 1851 he made his first appearance in *Punch* and, after nine years of steady work, was called to a seat at the famous table. It was during this period of probation that he first gave evidence of those transcendent qualities which make his work at once the joy and despair of his brother craftsmen. On the starting of *Once a Week,* in 1859, Keene's services were requisitioned, his most notable series in this periodical being the illustrations to Charles Reade's *A Good Fight* (afterwards rechristened *The Cloister and the Hearth*) and to George Meredith's *Evan Harrington.* There is a quality of conventionality in the earlier of these which later disappears. In 1864 John Leech died, and Keene's work in *Punch* thenceforward found wider opportunities. In 1872 Keene made the acquaintance of Joseph Crawhall, who had been in the habit for many years of jotting down any humourous incidents he might hear of or observe, illustrating them at leisure for his own amusement. These were placed unreservedly at Keene's disposal, and to their inspiration we owe at least 250 of his most successful drawings in the last 20 years of his connection with *Punch.* A list of more than 200 of these subjects is given at the end of *The Life and Letters of Charles Keene of "Punch."* In 1881 a volume of his *Punch* drawings was published by Bradbury and Agnew, with the title *Our People.* He died on Jan. 4, 1891.

See G. S. Layard, *Life and Letters of Charles Keene of "Punch"; The Work of Charles Keene,* with an introduction and notes by Joseph Pennell, and a bibliography by W. H. Chesson. (G. S. L.; X.)

KEENE, LAURA (*c.* 1820–1873), Anglo-American actress and manager, whose real name was Mary Moss, was born in England. In 1851, in London, she was playing Pauline in *The Lady of Lyons.* She made her first appearance in New York Sept. 20, 1852, on her way to Australia. She returned in 1855, and till 1863 managed Laura Keene's theatre, in which was produced, in 1858, *Our American Cousin.* It was her company that was playing at Ford's theatre, Washington, on the night of Lincoln's assassination. Miss Keene was a successful melodramatic actress, and an admirable manager. She died at Montclair (N.J.) Nov. 4, 1873.

See John Creahan, *Life of Laura Keene* (1891).

KEENE, city of southern New Hampshire, U.S.A., on the Ashuelot river; county seat of Cheshire county. It is served by the Boston and Maine railroad. The population was 11,210 in 1920 (87% native white) and was 13,832 by the federal census of 1940. The land area of the city is 36.6 sq.mi., and its beautiful main street is 220 ft. wide from curb to curb. In every direction are hills 800 to 1,500 ft. high, and Mt. Monadnock (3,166 ft.) is 15 mi. S.E. Keene is the seat of a teachers' college (established 1908); the trading centre for the county; and a summer and winter resort. There is an annual summer theatre and an annual carnival of winter sports.

The city has many and varied factories, with an output in 1937 valued at $6,887,340. Among the leading products are chairs, shoes, wooden heels, manicure implements, silver polish, mechanical toys, machinery, woollens, marking machines, feldspar products and loose-leaf ledgers. The site of Keene was one of the Massachusetts grants of 1733, but it was abandoned from 1746 until 1750 because of forays by the Canadian Indians. In 1753 the town was incorporated, and was named after Sir Benjamin Keene (1697–1757), an English diplomatist in high repute at the time. It was chartered as a city in 1874. Keene has a beautiful church, but it is today too much shut in by stores.

KEENE'S CEMENT: *see* CEMENT: *Calcium Sulphate Cements.*

KEEP, an English term corresponding to the French donjon (*q.v.*) for the strongest portion of the fortification of a castle (*q.v.*), the place of last resort in case of siege or attack. It was either a single tower or a larger fortified enclosure, sometimes approximately round, and then known as a shell keep, as in Berkeley castle, or Windsor. The most famous of the Norman keeps of England is the White Tower of London of the 11th century, supposedly designed by Gundulf, Bishop of Rochester. Other famous examples are those at Rochester, Arundel and Newcastle.

KEEWATIN, the name now given to the most easterly district of the three divisions of the Northwest Territories of Canada. It is bounded on the east by Hudson bay and Foxe channel, on the west by 102° W. long. and on the south by Lat. 60° N. Pop. (1941) 1,737.

The district, as at present defined, is wholly within the Laurentian Shield physiographic division, and only the extreme southwest of it is forested, and that sparsely. The remainder is a tundra area, with frequent rock outcrops and many lakes and marshes. It lies well to the north of any present area of development.

Before the present boundaries of the three prairie provinces were established the name was applied to a more extensive region.

KEF, more correctly El-Kef (the Rock), a town of Tunisia, 125 m. by rail south–south-west of the capital, and 75 m. south-east of Bona in Algeria. It occupies the site of the Roman colony of Sicca Veneria, and is built on the steep slope of a rock in a mountainous region through which flows the Mellegue, an affluent of the Mejerda. Situated at the intersection of main routes from the west and south, Kef occupies a position of strategic importance. The town with its half-dozen mosques and tortuous, dirty streets, is still partly walled. The *kasbah,* or citadel, occupies a rocky eminence on the west side of the town. It was built, or rebuilt, by the Turks, from Roman ruins. It has been restored by the French, who maintain a garrison here. Pop. (1936) 8,855 including 1,357 Europeans.

The Roman remains include fragments of a large temple and of the baths. The ancient cisterns remain, but are empty, being used as part of the barracks. The town is, however, supplied by water from the same spring which filled the cisterns. The Christian cemetery is on the site of a basilica. There are ruins of another Christian basilica, excavated by the French, the apse being intact and the narthex serving as a church. Many stones with Roman inscriptions are built into the walls of Arab houses. The modern town is much smaller than the Roman colony. Kef in ancient times bore the name of Sicca Veneria, derived from a famous temple dedicated to an oriental goddess whom the Romans identified with Venus. Augustus made of it a colony in the first centuries of our era.

KEHL, a town in the *Land* of Baden, Germany, on the right bank of the Rhine, opposite Strassburg. Pop. (1939) 12,138. After 1697 the town belonged to Baden but was, at various times, occupied by the French. It has river trade in timber, cattle and coal, which has been developed by the formation of a harbour. It manufactures sugar, soap, chemicals, and hats.

KEIGHLEY (Kēth'lĭ or Kē'lĭ), municipal borough in the Keighley parliamentary division of the West Riding of Yorkshire, England, 17 mi. W.N.W. of Leeds on the L.M.S. ry. Pop. (est. 1938) 51,476. Area, 41.6 sq.mi. It is in a deep valley near the confluence of the Worth and the Aire. It is served by the Leeds and Liverpool canal which affords water communication with both Liverpool and Hull. The parish church of St. Andrew, dating from the time of Henry II, was much modernized in 1710, rebuilt with the exception of the tower, in 1805, and again rebuilt in 1878. The grammar school was founded in 1713, and from it were established in 1871 a trade school for boys and a grammar school for girls. The technical school was founded in 1870. The principal manufactures are woollen goods, spinning, sewing and washing machines and tools. The town was incorporated in 1882. It was considerably extended in 1938 and became one of the largest non-county boroughs.

KEI ISLANDS (Kai or Ewaf), a group of islands of the Moluccas, Netherlands Indies, on a ridge which extends southeastwards from Ceram to Timor Laut. They are in the residency of the Moluccas, and are separated by deep water from the Banda Isles to the west and the Aru group to the east and are between 5° and 6° 5′ S., and 131° 50′ and 133° 15′ E. Japanese troops occupied the group in Aug. 1942. They consist of Great Kei (Nuhu Yut), Little Kei (Nuhu Roa and Kei Dula), the Kur group, and the Tayando group. The principal island is Great Kei, which is long (64 mi.) and narrow, of Tertiary formation, and very mountainous, with heights rising to nearly 3,000 ft. The mountains run down the centre of the island, whilst the coast is high, with steep cliffs. Kei Dula has low hills in the south and north-west, but the other islands are, comparatively, without high ground; most of them are encircled by shoals, and all are covered with dense forest, from which excellent timber is obtained. Excepting Great Kei, they are of Post-Tertiary formation, coralline limestone. The area of the whole group is 572 sq.mi., and the population 50,648 (70 Europeans and 281 Chinese). The natives are described by Wallace as typical black Papuans, but since his visit to Kei there has been a pronounced admixture of Malay blood. Originally pagans, the people to-day are largely Christian, the result of work by the Mission of the Sacred Heart, which has its headquarters for Kei, Timor Laut, and New Guinea here. There are, however, many Mohammedans, the result of Malay and Arab influence, which endeavours to spread Mohammedanism. Under the new *régime* old customs are tending to disappear, but where Christianity and Islam have not displaced them the division of *pata-lima* and *pata-siwa* exists; as well as three classes of society, *melmel,* an upper class, which appears to have come to Kei from the west, *rinrin,* made subject by the *melmel,* and *iri,* the descendants of slaves brought over from New Guinea. The old form of marriage is endogamic, and society is democratic in organization, untilled land being owned by the community, and cultivated ground by the individual. The right to the land is never alienated, so that a stranger cannot own it unless he marries into the community. Houses are built very simply, of bamboo and *atap,* sometimes on piles; and where the people are pagan there is a holy stone in the midst of a number of houses, also stone and wooden images, the "protectors" of the village: the cromlech is known in Kei. The Christian and Mohammedan people wear *baju,* or *kabayah* and *sarong:* the loin cloth is still used amongst the pagans. Amongst interesting pagan customs, now dying out rapidly, are those of maintaining quietude amongst near female relatives of sailors on a voyage, to ensure a calm passage; the exorcism of evil spirits by tempting them to another spot, with sacks of rice; the preservation of an infant's soul which is "deposited" in a coco-nut shell, the latter being hung up beside the image of a worthy ancestor; and the preservation of the navel-string of an infant, which is regarded as its brother or sister, and set in some spot where it may bring its "brother" or "sister" good fortune. At Banda Elat on the eastern side of Great Kei, midway along the coast, and also at Banda Eli in the north, there is a community of the original inhabitants of the Banda islands, who were expelled thence by the Dutch in the time of Jan Pieterszoon Coen, and who have retained the Bandanese language, now unknown in Banda, and the Bandanese customs. They are Mohammedans, and clever smiths and potters; racially they appear to be Malay-Papuan, but it is unlikely that they have kept purity of blood. The Kei islanders have a quarrelsome nature, they are not given to cleanliness, and are not good agriculturists. They are, however, good at wood-carving and basket-work, and they are first-class boat builders.

The flora of the Kei islands includes the fig and the ironwood tree, various palms (sago, areng, coco-nut, the latter thriving on quite high ground, over 1,000 ft., as well as at sea level), mangrove, and in the forests orchids and arboreal Liliaceae and Pandanaceae abound. Plantain, yams, maize, rice to a small extent, and tobacco are cultivated. Fishing and hunting add largely to the native dietary, which consists mainly of sago. The fauna comprises a wild pig and a cuscus, a small green lizard, a rare species of pigeon, *Carpophaga concinna,* and red lories, a number of rare species of butterfly, including the black *Papilio euchenor,* a blue and black beetle, *Eupholus,* a fine green floral beetle, *Lomaptera papua, Therates labia,* and *Tricondyla aptera,* a wingless beetle shaped like a very large ant. There are many kinds of fish, in large quantities, and trepang and tortoise are found in great numbers on the reefs. Practically the only trade is in copra, timber, trepang and tortoise-shell. Roads are confined to the immediate vicinity of Langgur and the ports Tual (where the Gezaghebber, or resident magistrate, resides) and Elat, all of which are visited regularly by Dutch steamships. Wallace says Kei has no affinity with the Malay languages.

See A. R. Wallace, *The Malay Archipelago* (1890). (E. E. L.)

KEISER, REINHOLD (1673–1739), German composer, was born at Teuchern near Weissenfels, Leipzig, in 1673 (baptized Jan. 12, 1674). He received his early musical training from his father, a composer of church music, and afterwards went to the Thomasschule in Leipzig. In 1694 he settled in Hamburg and became the most famous composer of German opera of his day. He wrote a hundred and sixteen pieces for the Hamburg theatre, ran a successful series of "winter concerts" (which were a combination of concert and banquet), married the daughter of a Hamburg patrician, and in 1728 became cantor and canon of Hamburg cathedral. In between he held court appointments at Stuttgart and Copenhagen but Hamburg remained his home and he died there on Sept. 13, 1739. Keiser's facility in writing and gift for melody must have been extraordinary. His operas contained on an average forty airs and for forty years he remained a favourite with the public. Those were critical days for German opera, which was then in its infancy with Hamburg for its cradle, and it was Keiser, with his colleagues Mattheson and Telemann, who in the beginning enabled it to hold its own against the French and Italian schools. Unfortunately Keiser's early promise was never fulfilled. His work not only became trivial but was often—as in the opera *Störtebecker und Gödje Michael*—of unparalleled coarseness, and the attempt to establish German opera ended in failure. In his later years he turned to church music, which he seems to have approached with due seriousness. His oratorios were dramatic, as was natural, but had earnestness and

dignity. He also wrote motets, cantatas and psalms.

For the full catalogue of his works see *Vierteljahrsschrift*, vol. vi., pp. 196–203. Examples from his operas are included in "The Age of Bach and Handel" (*Oxford History of Music*, vol. iv.). *Octavia* was reprinted as a supplement to the Händelgesellschaft edit., 1902, and *Krösus* and *Inganns fidele* are in the *Denkmäler deutscher Tonkunst*, xxxvii., xxxviii. *See* also Chrysander, *Geschichte d. Hamburger Oper*, Allgemeine Musikztg. (1878–79); Kljefeld, *Das Oper*, Internat. Musikgesellsch. (Leipzig).

KEITH, the name of an old Scottish family which derived its name from the barony of Keith in East Lothian, said to have been granted by Malcolm II., king of Scotland, to a member of the house for services against the Danes. The office of great marishal of Scotland, afterwards hereditary in the Keith family, was confirmed, together with possession of the lands of Keith, to Sir Robert Keith by a charter of King Robert Bruce. Keith commanded the Scottish horse at Bannockburn, and was killed at the battle of Neville's Cross in 1346. At the close of the 14th century Sir William Keith, by exchange of lands with Lord Lindsay, obtained the crag of Dunnottar in Kincardineshire, where he built the castle of Dunnottar, which became the stronghold of his descendants. He died about 1407. In 1430 a later Sir William Keith was created Lord Keith, and a few years afterwards earl marishal, and these titles remained in the family till 1716. William, fourth earl marishal (d. 1581), was one of the guardians of Mary queen of Scots during her minority, and a member of her privy council on her return to Scotland. While refraining from extreme partisanship, he was an adherent of the Reformation; he retired into private life at Dunnottar Castle about 1567, thereby gaining the sobriquet "William of the Tower." He was reputed to be the wealthiest man in Scotland. His eldest daughter Anne married the regent Murray. His grandson George, 5th earl marishal (*c.* 1553–1623), was one of the most cultured men of his time. He was educated at King's College, Aberdeen, where he became a proficient classical scholar, afterwards studying divinity under Theodore Beza at Geneva. He was a firm Protestant, and took an active part in the affairs of the kirk. He acted as special ambassador to Denmark to arrange the marriage of James VI. with the Princess Anne. He was subsequently employed on a number of commissions. He founded and endowed in 1593 the Marischal College in the university of Aberdeen. From an uncle he inherited the title of Lord Altrie about 1590.

WILLIAM, 7th earl marishal (*c.* 1617–1661), was a leader of the covenanting party in north-east Scotland, and the most powerful opponent of the marquess of Huntly. He co-operated with Montrose in Aberdeenshire and neighbouring counties against the Gordons. With Montrose he signed the Bond of Cumbernauld in August 1640, but took no active steps against the popular party till 1648, when he joined the duke of Hamilton in his invasion of England, escaping from the rout at Preston. In 1650 Charles II. was entertained by the marishal at Dunnottar; and in 1651 the Scottish regalia were left for safe keeping in his castle. Taken prisoner in the same year, he was committed to the Tower and was excluded from Cromwell's Act of Grace. He was made a privy councillor at the Restoration and died in 1661. Sir John Keith (d. 1714), brother of the 7th earl marishal, was, at the Restoration, given the hereditary office of knight marishal of Scotland, and in 1677 was created earl of Kintore, and Lord Keith of Inverurie and Keith-Hall, a reward for his share in preserving the regalia of Scotland, which were secretly conveyed from Dunnottar to another hiding-place, when the castle was besieged by Cromwell's troops. From him are descended the earls of Kintore.

GEORGE, 10th earl marishal (*c.* 1693–1778), served under Marlborough, and like his brother Francis, Marshal Keith (*q.v.*), was a zealous Jacobite, taking part in the rising of 1715, after which he escaped to the continent. In the following year he was attainted, his estates and titles being forfeited to the Crown. He lived at first in Spain, and, after 1745, in Prussia, where he became, like his brother, intimate with Frederick the Great. Frederick employed him in diplomacy, and he is said to have conveyed information to Chatham, for which he received a pardon from George II., and returned to Scotland in 1759.

From the Keith family through the female line was descended George Keith Elphinstone, Baron of Stonehaven, Marishal and afterwards Viscount Keith (*q.v.*), whose titles became extinct at the death of his daughter Margaret, Baroness Keith, in 1867.

See *Calendar of Documents relating to Scotland*, edited by J. Bain (4 vols., Edinburgh, 1881–88); Peter Buchan, *An Account of the Ancient and Noble Family of Keith* (Edinburgh, 1828); *Memoirs and Correspondence of Sir Robert Murray Keith*, edited by Mrs. Gillespie Smyth (London, 1849); J. Spalding, *Memorialls of the Troubles in Scotland, 1624–1645* (2 vols., Aberdeen, 1850–51); E. E. Cuthell, *The Scottish Friend of Frederick the Great* (1915). See *Dictionary of National Biography* (ed. L. Stephen and S. Lee, 1908, etc.).

KEITH, SIR ARTHUR (1866–), British anthropologist, was born at Old Machar, Aberdeen, on Feb. 5, 1866. He studied medicine at Aberdeen, London and Leipzig. He became a leading authority on anthropology, and an expert on the reconstruction of prehistoric man from fragments or fossil remains. He was Fullerian professor of comparative anatomy at the Royal Institution (1917–23), became conservator of the Museum and Hunterian professor at the Royal college of surgeons in 1908 and acted as honorary secretary of the Royal Institution (1922–26). He was secretary and later president of the Anatomical Society of Great Britain, president of the Royal Anthropological Institute (1913–7), and in 1913 was elected F.R.S. and *membre de la Société d'anthropologie de Paris*. He was knighted in 1921, and was designated president of the British Association in 1927. (*See* MAN, EVOLUTION OF.)

His published works include *Introduction to the Study of Anthropoid Apes* (1897); *Human Embryology and Morphology*, 4th ed. (1921); *Ancient Types of Man* (1911); *The Human Body* (1912); *Antiquity of Man* (1915, 2nd ed. 1925); *Menders of the Maimed* (1919); *Engines of the Human Body* (1919, 2nd ed. 1925); *Nationality and Race* (1919); and *Religion of a Darwinist* (1925).

KEITH, FRANCIS EDWARD JAMES (1696–1758), Scottish soldier and Prussian field marshal, was the second son of William, 9th earl marishal of Scotland, and was born on June 11, 1696 at the castle of Inverugie near Peterhead. His share in the rising of 1715 drove him from Scotland. After two years in Paris, chiefly spent in study, he took part in 1719 in the ill-starred expedition of the Pretender to the Highlands of Scotland. He then served the Spanish and the Russian armies. He had the reputation of being one of the ablest officers in the Russian service as well as a capable and liberal civil administrator. In 1747 he offered his services to Frederick II. of Prussia, who at once gave him the rank of field marshal, in 1749 made him governor of Berlin, and evinced towards him, as towards his brother, the 10th earl marishal, a strong personal regard. Keith was employed in high command during the Seven Years' War. In 1756 he commanded the troops covering the investment of Pirna, and distinguished himself at Lobositz. In 1757 he commanded at the siege of Prague; later in this same campaign he defended Leipzig against a greatly superior force, was present at Rossbach, and, while the king was fighting the campaign of Leuthen, conducted a foray into Bohemia. In 1758 he took a prominent part in the unsuccessful Moravian campaign, and the autumn campaign in the Lausitz. He was killed on Oct. 14, 1758 at the battle of Hochkirch. Keith had several children by his mistress, Eva Mertens, a Swedish prisoner captured by him in the war of 1741–43. In 1889 the 1st Silesian infantry regiment No. 22 of the German army received his name.

See K. A. Varnhagen von Ense, *Biographische Denkmale*, part 7 (1844); *Fragment of a Memoir of Field-Marshal James Keith, written by himself* (1714–34; edited by Thomas Constable for the Spalding Club, 1843); T. Carlyle, *Frederick the Great, passim;* V. Paczynaski-Tenczyn, *Leben des G. F. M. Jakob Keith* (Berlin, 1889); Peter Buchan, *Account of the Family of Keith* (Edinburgh, 1878); Anon., *Memoir of Marshal Keith* (Peterhead, 1869); Pauli, *Leben grosser Helden*, part iv.

KEITH, GEORGE (1639?–1716), British divine, was born at Aberdeen and was educated for the Presbyterian ministry at Marischal College in his native city. In 1662 he became a Quaker and worked with Robert Barclay (*q.v.*). After being imprisoned for preaching in 1676 he went to Holland and Germany on an evangelistic tour with George Fox and William Penn. Two further

terms of imprisonment in England induced him (1684) to emigrate to America, where he was surveyor-general in East New Jersey and then a schoolmaster at Philadelphia. He travelled in New England, defending Quakerism against the attacks of Increase and Cotton Mather, but after a time fell out with his own folk on the subject of the atonement, accused them of deistic views, and started a community of his own called "Christian Quakers" or "Keithians." He then came to London to defend his views, but the Yearly Meeting of 1694 disowned him, and he established a society of Turner's Hall in Philpot Lane, where he departed from Quaker usage, and administered the two sacraments. In 1700 he conformed to the Church of England, and from 1702 to 1704 was an agent of the Society for the Propagation of the Gospel in America. He died on March 27, 1716, at Edburton in Sussex, of which parish he was rector. Among his writings were *The Deism of William Penn and his Brethren* (1699); *The Standard of the Quakers Examined; or, an Answer to the Apology of Robert Barclay* (1702); *A Journal of Travels* (1706).

KEITH, GEORGE KEITH ELPHINSTONE, VISCOUNT (1746–1823), British admiral, fifth son of the 10th Lord Elphinstone, was born in Elphinstone Tower, near Stirling, on Jan. 7, 1746. He entered the navy in 1761, in the "Gosport," then commanded by Captain Jervis, afterwards Earl St. Vincent. In 1767 he made a voyage to the East Indies in the Company's service, and made a fortune in trading. He was engaged afloat throughout the American War. At the outbreak of the War of the French Revolution in 1793 he was appointed to the "Robust" (74), in which he took part in the occupation of Toulon by Hood. He distinguished himself by beating a body of the French ashore at the head of a naval brigade of English and Spaniards. In 1794 he was promoted rear-admiral, and in 1795 he was sent to occupy the Dutch colonies at the Cape of Good Hope and in India, and in August 1796 captured a whole Dutch squadron in Saldanha Bay. When the mutiny at the Nore broke out in 1797 he was appointed to the command, and restored order there and at Plymouth. At the close of 1798 he was sent as second in command to St. Vincent. St. Vincent was at once half incapacitated by ill-health and very arbitrary, while Nelson, who considered that Keith's appointment was a personal slight to himself, was insubordinate. The escape of a French squadron which entered the Mediterranean from Brest in May 1799 was mainly due to jarrings among the British naval commanders. Keith followed the enemy to Brest on their retreat, but failed to bring them to action. He returned to the Mediterranean in November as commander-in-chief, and was in charge of the operations at Genoa (1800). The close of 1801 and the beginning of the following year were spent in transporting the army sent to Egypt. He was made a baron of the United Kingdom—an Irish barony having been conferred on him in 1797. In 1803–07 he was commander-in-chief in the North Sea. In February 1812 he was appointed commander-in-chief in the Channel, and in 1814 he was raised to a viscounty. He was at Plymouth when Napoleon surrendered and was brought to England in the "Bellerophon" by Captain Maitland (1777–1839). The decisions of the British government were expressed through him to the fallen Emperor. Keith died on March 10, 1823 at Tullyallan, and was buried in the parish church.

There is a panegyrical *Life of Lord Keith* by Alex. Allardyce (Edinburgh, 1882); and biographical notices will be found in John Marshall, *Royal Naval Biography*, i. 43 (1823–35). See *The Keith Papers* (ed. W. G. Perrin, pub. Navy Records Society, 1927, etc.).

KEITH, a small burgh, Banffshire, Scotland, on the Isla, 53¼ mi. N.W. of Aberdeen by the L.M.S. railway. Pop. (1938) 4,440. A branch of the L.N.E. railway also gives access to Elgin, and there is a line to Buckie and Portessie on the Moray Firth. The burgh includes Old Keith and New Keith on the east bank of the Isla, and Fife-Keith on the west bank. Old Keith, which has a charter dating from William the Lion, fell into gradual decay; New Keith was founded about 1750 by the fifth earl of Findlater, and Fife-Keith has grown up since 1816. In the Roman Catholic church there is a painting of the "Incredulity of St. Thomas," presented by Charles X of France. The industries include manufactures of manure, meal, tweeds, blankets and agricultural implements; there are also distilleries and breweries. Keith is also important as the centre of the agricultural trade of the shire, and for its September horse fair, one of the largest in the north of Scotland.

KEJ or KECH, the chief place in a district of the province of Makran in Baluchistan, which has given its name to Kej-Makran, as distinguished from Iranian Makran. There is no town, but a number of small villages dominated by a fort built upon a rock, on the eastern bank of the Kej river. This fort, like many others similarly placed throughout the country, is supposed to be impregnable, but is of no strength except against the matchlocks of the surrounding tribes. Kej (or Kiz) was an important trade centre in the days of Arab supremacy in Sind, and the rulers of Kalat at various times marched armies into the province with a view to maintaining their authority. At the beginning of the 19th century it had the reputation of a commercial centre, trading through Panjgur with Kandahar, with Karachi via Bela, and with Muscat and the Persian gulf by the seaport of Gwadar, distant about 80 m. The present Khan of Kalat exercises but a feeble sway over this portion of his dominion, although he appoints a governor to the province. The principal tribe residing around Kej is that of the Gichki, who claim to be of Rajput origin, and to have settled in Makran during the 17th century, having been driven out of Rajputana. The climate during summer is too hot for Europeans. During winter, however, it is temperate. The principal exports consist of dates, which are considered of the finest quality. A local revolt against Kalat rendered an expedition against Kej necessary in 1898, when the fort was captured.

KEKCHI, a group of Maya Indians, speaking a distinctive dialect, who occupy the department of Alta Verapaz in Guatemala. They number about 80,000. According to tradition they and the Poconchi, who were once part of the same people, lived long ago in the Mexican State of Chiapas and north-eastern Guatemala. Kekchi to-day is spoken between the Rio Chixoy and Lake Isabal, chiefly in the towns of Cobán, San Juan Chamelco, San Pedro, Carchá, Zamac, Lanquin, Cahabón and Senahú. At the time of the Spanish conquest, three incursions were repulsed by the Kekchi, whose territory was called the "Land of War." Las Casas, the celebrated missionary and historian, then intervened, and offered to secure the Indians to the Crown by peaceful penetration. This he did, and the king in recognition changed the name of the region to "True Peace" (Verapaz). To-day the Kekchi are devoted to agriculture, many of them working on coffee estates. They retain many features of aboriginal life, and still wear the brilliant costumes characteristic of the Guatemalan highlands.

BIBLIOGRAPHY.—Bartolomé Las Casas, *Historia de las Indias* (Madrid, 1875–76); Robert Burkitt, "Guatemalan Myths" (The *Museum Journal*, vol. vi., No. 3) (Philadelphia, 1915); Karl Sapper, *Mittelamerikanische Reisen und Studien* (Braunschweig, 1902).

KEKULÉ, FRIEDRICH AUGUST (1829–1896), German chemist, was born at Darmstadt on Sept. 7, 1829. He studied architecture at Giessen and, coming under the influence of Justus von Liebig, he took up chemistry. The doctorate was obtained in 1852. From Giessen he went to Paris for further study. He spent a year in England, as assistant to John Stenhause and he enjoyed personal intercourse with the leading chemists. On his return to Germany he started a small chemical laboratory at Heidelberg, where, with a very slender equipment, he carried out several important researches. In 1856 he became Privatdozent of chemistry at Heidelberg, and in 1858 professor at Ghent. In 1867 he was called to Bonn to fill the professorship that had been vacated by August Wilhelm Hofmann (*q.v.*). The latter once declared "I would trade all my discoveries for one idea of Kekulé's (*viz:* the benzene theory). He held this post till his death on July 13, 1896. He was given a title of nobility and took the name Kekulé von Stradonitz.

Kekulé's main importance lies in the far-reaching contributions which he made to chemical theory, especially in regard to the constitution of the carbon compounds (*see* CHEMISTRY: *Organic*). The doctrine of atomic saturation capacity (valency) had already been enunciated by Sir Edward Frankland (*q.v.*), when in 1858

Kekulé published a paper in which, after giving reasons for regarding carbon as a tetravalent element, he set forth the essential features of his famous doctrine of the linking of atoms. The quadrivalency of carbon was assumed independently by A. S. Cooper (1831–1892), a Scotch chemist. His theory of molecular construction was essentially the same as Kekulé's, but expressed with greater precision. (The failure of Wurtz to present it promptly to the French Academy of Sciences gave Kekulé a priority of one month.)

Kekulé explained that in substances containing several carbon atoms it must be assumed that some of the affinities of each carbon atom are bound by the affinities of the atoms of other elements contained in the substance, and some by an equal number of the affinities of the other carbon atoms. This conception led Kekulé in 1865 to formulate his "closed-chain" or "ring" theory of the constitution of benzene (*q.v.*), which has been called the "most brilliant piece of prediction to be found in the whole range of organic chemistry." This in turn led to the elucidation of the constitution of the "aromatic compounds." These contributions to the theory of chemical structure are so important that Kekulé's other valuable work on fulminate of mercury, and on unsaturated and thio-acids, etc., appears insignificant in comparison. Professor F. R. Japp, in the Kekulé memorial lecture (*Journ. Chem. Soc.*, 1898), declared that three-fourths of modern organic chemistry is directly or indirectly the product of Kekulé's benzene theory. A great celebration was held in Berlin on May 11, 1890 to honour the 25th anniversary of the benzene theory. An imposing monument was erected at Bonn in 1903. A rich collection of personal items is contained in the Kekulé room at the Polytechnik in Darmstadt. (*See* Berl and Oesper, *Journal of Chemical Education*, 1929).

Many of Kekulé's papers appeared in the *Annalen der Chemie*, of which he was editor. He also published an important work, *Lehrbuch der organischen Chemie*, of which the first three volumes are dated 1861, 1866 and 1882, while of the fourth only one small section was issued in 1887. Complete biographical details are given in the 2-volume work by R. Anschütz, *August Kekulé* (1929). The second volume contains all of his publications, except the *Lehrbuch*. *See* also R. Winderlich's essay in Bugge's *Das Buch der grossen Chemiker* (1930); L. Darmstaedter and R. Oesper, *Journal of Chemical Education* (1927).

KELANTAN: *see* MALAY STATES.

KELLER, ALBERT VON (1844–1920), German painter, was born at Gais, in Switzerland on April 27, 1844; he studied at the Munich academy under Lenbach and Ramberg, and must be counted among the leading colourists of the modern German school. Travels in Italy, France, England and Holland, and a prolonged sojourn in Paris, helped to develop his elegant and refined style. In his portraits and the scenes from fashionable life, such as the famous "Dinner" (1890), he displays great sensibility to colour and a subtle skill in the treatment of satin and lustrous materials. There are good examples of his work at Munich, Königsberg and elsewhere. He died on July 14, 1920, at Zürich.

See F. V. Ostini: "Albert von Keller" in Velhagen und Klasings *Monatsheft* (xvi 2, 1902).

KELLER, GOTTFRIED (1819–1890), German-Swiss poet and novelist, was born at Zürich on July 19, 1819. He was apprenticed (1835) to a landscape painter, and spent two years (1840–42) in Munich in the study of art. Poverty drove him home again; he then wrote a small volume of *Gedichte* (1846), which proved his real talent. The cantonal government gave him a small pension which enabled him to study philosophy at Heidelberg. From 1850 to 1855 he lived in Berlin, where he wrote the novel, *Der grüne Heinrich* (1851–53; revised ed. 1879–80), remarkable for its delicate autobiographic portraiture and the beautiful episodes interwoven with the action. This was followed by *Die Leute von Seldwyla* (1856), studies of Swiss provincial life, including *Romeo und Julia auf dem Dorfe*, one of the most powerful short stories in the German language, and *Die drei gerechten Kammacher*, almost as great a masterpiece of humorous writing. From 1861 to 1867 he was first secretary to the canton. For a time his creative faculty seemed paralysed by his public duties, but in 1872 appeared *Sieben Legenden*, and in 1874 a second admirable series of *Die Leute von Seldwyla*. In his later years appeared *Züricher Novellen* (1878), *Das Sinngedicht*, a collection of short stories (1881), *Gesammelte Gedichte* (1883) and a novel, *Martin Salander* (1886). He died on July 15, 1890, at Hottingen. Keller's place among German novelists is very high. Few have united such fancy and imagination to such uncompromising realism, or such tragic earnestness to such abounding humour. As a lyric poet, his genius is no less original; he takes rank with the greatest German poets in the second half of the 19th century.

Keller's *Gesammelte Werke* were published in 10 vols. (1889–90), to which was added another volume, *Nachgelassene Schriften und Dichtungen*, containing the fragment of a tragedy (1893). In English appeared, *G. Keller: A Selection of his Tales translated with a Memoir by Kate Freiligrath-Kroeker* (1891). *See* also F. Baldensperger, *G. Keller; sa vie et ses oeuvres* (1893); A. Frey, *Erinnerungen an Gottfried Keller* (1893); J. Baechtold, *Kellers Leben. Seine Briefe und Tagebücher* (3 vols., 1894–97 revised ed. by Ermatinger, 1915); A. Köster, *G. Keller* (1900; 2nd ed., 1907); Ricarda Huch, *Gottfried Keller* (1904); Mayne, *Gottfried Keller* (1923); and for his work as a painter, H. E. von Berlepsch, *Gottfried Keller als Maler* (1895). A new edition of *Der grüne Heinrich* in its original form, before Keller changed its tragic ending, was published by Ermatinger in 1913.

KELLER, HELEN ADAMS (1880–), U.S. blind deaf-mute, was born at Tuscumbia, Ala., on June 27, 1880. By severe illness, at the age of 19 months, she was deprived of sight and hearing and soon became dumb. When she was about six years old her parents appealed to Dr. Alexander Graham Bell (*q.v.*) for counsel regarding her education. As a result Miss Anne Mansfield Sullivan (later Mrs. John Macy) came on March 2, 1887 to instruct the child. Miss Sullivan, then 20 years old, formerly blind but partially cured of blindness, was a graduate of the Perkins Institution for the Blind at Boston, Massachusetts. Within a month she had imparted the gift of language to her pupil. Under Miss Sullivan's constant teaching and with instruction at the Horace Mann School for the Deaf, Boston, and the Wright-Humason Oral School, New York, Miss Keller not only learned to read, write and talk, but became exceptionally proficient in the ordinary educational curriculum. In 1900 she entered Radcliffe college, and graduated *cum laude* in 1904.

Miss Sullivan, whose ability as a teacher was almost as marvellous as the talent of her pupil, was a devoted companion until her death in 1936. The case of Helen Keller is the most extraordinary ever known in the education of blind deaf-mutes, her acquirements including several languages and her general culture being exceptionally wide. She wrote *The Story of My Life* (1902), *Optimism* (1903), *The World I Live In* (1910), *My Religion* (1927), *Midstream* (1929), and *Helen Keller's Journal* (1938), which are striking revelations of the results of modern methods of educating defective persons.

KELLERMANN, BERNHARD (1879–), German novelist, was born at Fürth on March 4, 1879. His early novels, *Yester und Li* (1904), *Ingeborg* (1906), *Der Tor* (1909; English trans. *The Fool*, 1925), were subjective and emotional. *Das Meer* (1910; English trans. *The Sea*, 1925), and *Sassa Yo Sassa* (1912), a novel of Japan, were the fruit of travels. Kellermann had now acquired an excellent technique and descriptive power, and his further novels, which were very popular, dealt with social problems in a sensational fashion. These include *Der Tunnel* (1913), *Der 9. November* (1920; English trans. *The 9th November*, 1925), *Die Heiligen* (1922), *Schwedenklees Erlebnis* (1923), *Die Brüder Schellenberg* (1925). Kellermann also wrote a drama and two books of war journalism, *Der Krieg im Westen* (1915) and *Der Krieg im Argonnerwald* (1916).

KELLERMANN, FRANÇOIS CHRISTOPHE DE (1735–1820), duke of Valmy and marshal of France, was born in Strasbourg of a Saxon family on May 28, 1735. He entered the French army and served in the Seven Years' War and in Louis XV's Polish expedition of 1771, after which he was made a lieutenant-colonel. He became brigadier (1784), *maréchal-de-camp* (1785), and in 1791 general of the Revolutionary army in Alsace. In April 1792 he was made a lieutenant-general, and in August his victory of Valmy (*see* FRENCH REVOLUTIONARY WARS) over the Prussians, in Goethe's words, "opened a new era in the history of the world."

Transferred to the army on the Moselle, Kellermann was accused of neglecting to support Custine's operations on the Rhine, but was acquitted and placed at the head of the army of the Alps and of Italy. Shortly afterward he received instructions to reduce Lyons, then in revolt against the Convention, but after the surrender he was imprisoned in Paris for 13 months. He was acquitted and reinstated in his command, maintaining the south-eastern border against the Austrians until his army was merged into that of General Bonaparte in Italy. His active career then came to an end, but the hero of Valmy was never forgotten. When Napoleon came to power Kellermann was named successively senator (1800), honorary marshal of France (1803), and duke of Valmy (1808). His experience in army administration made him one of Napoleon's most valuable assistants. In 1814 he voted for the deposition of the emperor and became a peer under the royal government. After the "Hundred Days" he sat in the Chamber of Peers and voted with the Liberals. He died at Paris on Sept. 23, 1820.

His son, FRANÇOIS ÉTIENNE DE KELLERMANN, duke of Valmy (1770–1835), French cavalry general, was born at Metz and served in his father's regiment of Hussars before entering the diplomatic service in 1791. In 1793 he again joined the army and rose in 1796 to the rank of *chef de brigade*. During the Italian campaign (1796–97), he attracted Bonaparte's notice by his brilliant conduct at the forcing of the Tagliamento. He was made general of a brigade, and employed successively in the armies of Rome and Naples under Macdonald and Championnet. In the campaign of 1800 he commanded a cavalry brigade, and at Marengo (*q.v.*) he carried out one of the most famous cavalry charges of history, which, with Desaix's infantry attack, regained the lost battle and decided the issue of the war. He was promoted general of a division immediately. He was perhaps the ablest of all Napoleon's cavalry leaders, and distinguished himself at Austerlitz (*q.v.*) in Portugal, at Tormes (Nov. 28, 1809), and on many other occasions in the Peninsular War and in the campaigns of 1813–14. He retained his rank under the first Restoration, but joined Napoleon during the Hundred Days, and fought in the Waterloo campaign, where he was again wounded. He was disgraced at the second Restoration, and maintained till the fall of Charles X in 1830 an attitude of determined opposition to the Bourbons. He succeeded his father and died June 2, 1835.

His son FRANÇOIS CHRISTOPHE EDMOND DE KELLERMANN, duke of Valmy (1802–1868), was a distinguished statesman, political historian, and diplomatist under the July Monarchy.

KELLGREN, JOHAN HENRIK (1751–1795), Swedish poet and critic, was born at Floby, West Gothland, on Dec. 1, 1751. He studied at Åbo, where he began to lecture (1774) on aesthetics. With Carl Lenngren he founded (1778) the journal *Stockholmsposten*, of which he was sole editor from 1788 onward. Kellgren was librarian to Gustavus III from 1780, and from 1785 his private secretary. He was an original member of the Swedish academy. He died at Stockholm on April 20, 1795. His poetical works are partly lyrical, partly dramatic; of the plays the versification belongs to him, the plots being due to Gustavus III. The songs interspersed in the four operas which they produced in common, viz., *Gustaf Vasa, Gustaf Adolf och Ebba Brahe, Aeneas i Kartago,* and *Drottning Kristina,* are wholly the work of Kellgren. His lyrics are among the best of the Gustavian age.

His *Samlade skrifter* (3 vols., 1796; a later edition, 1884–85) were revised by himself. His correspondence with Rosenstein and with Clewberg was edited by H. Schück (1886–87 and 1894). *See* Wieselgren, *Sveriges sköna litteratur* (1833–49); Atterbom, *Svenska siare och skalder* (1841–55); C. W. Böttiger in *Transactions of the Swedish Academy,* xlv 107 *seq.* (1870); and Gustaf Ljunggren's *Kellgren, Leopold, och Thorild,* and his *Svenska vitterhetens häfder* (1873–77).

KELLOGG, CLARA LOUISE (1842–1916), U.S. singer, was born at Sumterville, S.C., on July 12, 1842, and was educated in New York for the musical profession, singing first in opera there in 1861. Her fine soprano voice and artistic gifts soon made her famous. She appeared as prima donna in Italian opera in London, and at concerts, in 1867 and 1868; and from that time till 1887 was one of the leading public singers. She appeared at intervals in London, but was principally engaged in the United States. In 1874 she organized an opera company which became widely known in the United States. In 1887 she married Carl Strakosch, and retired from the profession. In 1913 she published *Memoirs of an American Prima Donna.* She died at Hartford, Conn., on May 13, 1916.

KELLOGG, FRANK BILLINGS (1856–1937), U.S. diplomat and lawyer, was born at Potsdam, N.Y., on Dec. 22, 1856. In 1865 he went with his parents to Minnesota, where he studied law and was admitted to the bar in 1877. He practised in Rochester, Minn., for ten years, removing in 1887 to St. Paul. He was retained as special counsel for the United States in the actions against the Paper Trust and in the Standard Oil case. He also appeared as special counsel for the Interstate Commerce commission in the investigation of the Harriman railways, and for the United States in the action to dissolve the Union Pacific and Southern Pacific railway merger. He was a delegate to the Republican national conventions of 1904, 1908 and 1912, and was elected U.S. senator from Minnesota for the term 1917–23. He was also U.S. delegate to the fifth International Conference of American States at Santiago, Chile, 1923. In 1924 he was appointed ambassador to Great Britain, succeeding G. B. M. Harvey. He resigned in Feb. 1925, to accept an appointment in the cabinet of President Coolidge as secretary of state, which office he held until April 1929.

In this capacity he protested firmly against the threatened forfeiture of U.S. rights in lands in Mexico under new laws of retroactive effect. He advocated intervention in Nicaragua to suppress a rebellion and pacify the country until a fair election could be held. He secured a treaty with Panama for co-operation in protection of the Panama canal in case of war. He made a firm stand in China for the protection of American lives and property. He received much criticism from the liberal press for many of these acts on the ground that they were too aggressive, also for his decisions as to the exclusion of certain foreigners under the undesirable alien exclusion acts. He aided the treasury department in negotiating debt-funding agreements with European countries. He aided in bringing about a conference with Great Britain and Japan on limitation of naval armaments, (Geneva, 1927), and in the discussion of the Tacna-Arica dispute between Chili, Peru and Bolivia. In 1928, he attended the Sixth Pan American conference at Havana, Cuba. His most important achievement, doubtless, was bringing about the signing of a multilateral treaty for the renunciation of war, known as the "Pact of Paris" (*see* OUTLAWRY OF WAR) by 15 principal nations at Paris Aug. 27, 1928. The contracting parties, in the language of the treaty, "condemn recourse to war for the solution of international controveries and renounce it as an instrument of national policy in their relations with one another."

KELLS, a market town of Co. Meath, Eire, on the Blackwater, $9\frac{3}{4}$ mi. N.W. of Navan by rail. Pop. of urban district (1936) 2,304. St. Columbkille's house, originally an oratory, was converted into a church, the chancel of which existed in 1752. The present church is modern, with the exception of the bell-tower, rebuilt in 1578. Near the church is a round tower, 99 ft. in height; and there are several ancient crosses, the finest being that now erected in the market-place. Kells was originally a royal residence, whence its ancient name *Ceanannus,* meaning the *dun* or circular northern fort, in which the king resided, and the name *Kenlis,* meaning head fort. Here Conn of the Hundred Fights resided in the 2nd century; and here was a palace of Dermot, king of Ireland, in 544–565. The other places in Ireland named Kells are probably derived from *Cealla,* signifying church. In the 6th century Kells was granted to St. Columbkille. The town owes its chief ecclesiastical importance to the bishopric founded about 807, and united to Meath in the 13th century.

The *Book of Kells,* an illuminated copy of the Gospels in Latin, contains also local records, dating from the 8th century, and is preserved in the library of Trinity college, Dublin. It is asserted to be the finest extant example of early Christian art of its kind. Neighbouring antiquities are the church of Dulane, with a fine doorway, and the *dun* or fortification of Dimor, the principal erec-

tion of a series of defences on the hills about 6 m. W. of Kells.

KELLY, EDWARD (1854–1880), Australian bushranger, was born at Wallan Wallan, Victoria. His father was a transported Belfast convict, and as boys he and his brothers were constantly in trouble for horse-stealing; "Ned" served three years' imprisonment for this offence. In April 1878, an attempt was made to arrest his brother Daniel on a similar charge. The whole Kelly family resisted this and Ned wounded one of the constables. Mrs. Kelly and some of the others were captured, but Ned and Daniel escaped to the hills, where they were joined by two other desperadoes, Byrne and Hart. For two years, despite a reward of £8,000 offered jointly by the governments of Victoria and New South Wales for their arrest, the gang under the leadership of Kelly terrorized the country on the borderland of Victoria and New South Wales, "holding up" towns and plundering banks. In June 1880, however, they were at last tracked to a wooden shanty at Glenrowan, near Benalla, which the police surrounded, riddled with bullets, and finally set on fire. Kelly was severely wounded, captured and taken to Beechworth, where he was tried, convicted and hanged in October 1880. The total cost of the capture of the Kelly gang was reckoned at £115,000.

See F. A. Hare, *The Last of the Bushrangers* (London, 1892).

KELLY, HOWARD ATWOOD (1858–1943), American gynaecologist, was born at Camden, N.J., on Feb. 20, 1858. He graduated in medicine from the University of Pennsylvania in 1882 and following an interneship at the Episcopal hospital he founded the Kensington hospital for women, Philadelphia. In 1888 he devised the open cystoscope by which a light is introduced into the interior of the body to aid in diagnosis and operations. He was associate professor of obstetrics, University of Pennsylvania (1888–89), and professor of gynaecology and obstetrics, Johns Hopkins university (1889–1919), after which he was made professor emeritus, and consultant of Johns Hopkins hospital. In 1892, he founded the Howard A. Kelly hospital, of which he was surgeon and radiologist. His attainments in the field of gynaecology, and his pioneer research in the use of radium for cancer, brought him many honours.

Besides contributing some 500 valuable articles to medical journals, he wrote *Operative Gynecology,* 2 vol. (1898, 1906); *The Vermiform Appendix and Its Diseases* (with Elizabeth Hurdon, 1905); *Walter Reed and Yellow Fever* (1906, '07, '23); *Medical Gynecology* (1908, 1912); *Appendicitis and Other Diseases of the Vermiform Appendix* (1909); *Myomata of the Uterus* (with T. S. Cullen, 1909); *Diseases of the Kidneys, Ureters, and Bladder,* 2 vol. (with C. F. Burnam, 1914, 1922); *Gynecology* (1928); *Dictionary of American Medical Biography* (with W. L Burrage, 1928). He died Jan. 12, 1943.

KELLY, HUGH (1739–1777), Irish dramatist and poet, son of a Dublin publican, was born in 1739 at Killarney. He was apprenticed to a staymaker, and in 1760 went to London. Here he worked at his trade for some time, and then became an attorney's clerk. He contributed to various newspapers, wrote pamphlets for the booksellers, and a novel, once famous, *Memoirs of a Magdalen, or the History of Louisa Mildmay* (2 vols., 1767). In 1766 he published an anonymous poem, *Thespis; or, A Critical Examination into the Merits of All the Principal Performers belonging to Drury Lane Theatre.* Kelly's first comedy, *False Delicacy,* written in prose, was produced by Garrick at Drury Lane on Jan. 23, 1768. The piece had a great vogue in London, and in French and Portuguese versions it drew crowded houses in Paris and Lisbon.

Kelly was a journalist in the pay of Lord North, and therefore hated by the party of John Wilkes, especially as being the editor of the *Public Ledger.* His *Thespis* had also made him many enemies; and Mrs. Clive refused to act in his pieces. The production of his second comedy, *A Word to the Wise* (Drury Lane, 3rd of March 1770), occasioned a riot in the theatre, repeated at the second performance, and the piece had to be abandoned.

His other plays are: *Clementina* (Covent Garden, Feb. 23, 1771), a blank verse tragedy, given out to be the work of a "young American Clergyman" in order to escape the opposition of the Wilkites; *The School for Wives* (Drury Lane, Dec. 11, 1773), a prose comedy given out as the work of Major (afterwards Sir William) Addington; a two-act piece, *The Romance of an Hour* (Covent Garden, Dec. 2, 1774), borrowed from Marmontel's tale *L'Amitié à l'épreuve;* and an unsuccessful comedy, *The Man of Reason* (Covent Garden, Feb. 9, 1776). Kelly gave up literature for law in 1774. He died in poverty on Feb. 3, 1777.

See *The Works of Hugh Kelly, to which is prefixed the Life of the Author* (1778); Genest, *History of the Stage* (v. 163, 263–269, 308, 399, 457, 517). Pamphlets in reply to *Thespis* are: "Anti-Thespis . . ." (1767): "The Kellyad . . ." (1767), by Louis Stamma; and "The Rescue or Thespian Scourge . . ." (1767), by John Brown-Smith.

KELLY, MICHAEL (1762–1826), British actor, singer and composer, was the son of a Dublin wine-merchant and dancing-master. He studied in Italy, and for four years from 1783 was engaged to sing at the Court Theatre at Vienna, where he became a friend of Mozart. In 1786 he sang in the first performance of the *Nozze di Figaro.* Appearing in London, at Drury Lane in 1787, he had a great success, and thenceforth was the principal English tenor at that theatre. In 1793 he became acting-manager of the King's Theatre. He wrote a number of songs (including "The Woodpecker"), and the music for many dramatic pieces. In 1826 he published his entertaining *Reminiscences,* in writing which he was helped by Theodore Hook.

He combined his professional work with conducting a music-shop and a wine-shop, but with disastrous financial results. He died at Margate on Oct. 9, 1826.

KELP (a term of unknown derivation) is the ash produced by incineration of various kinds of coarse seaweeds (*Algae*). Until early in the 19th century the ash obtained from algae was an important source of potassium and iodine; afterward, except during World War I, recovery of these elements from seaweeds was unprofitable. The chief algae burned for their ash were brown algae belonging to the genera *Laminaria* and *Fucus.* The kelp industry centred on the coast of Brittany and on the west coasts of Ireland and Scotland.

Seaweeds burned for kelp included both those cast ashore in windrows after storms and those cut from rocks at low tide. The algae were first dried in the sun and then placed in shallow pits and burned until they formed a fused mass, which, while still hot, was sprinkled with water to break it into convenient pieces. From 20 to 22 tons of wet seaweed yield a ton of kelp in which 10 to 12% is potassium sulphate and 1 to 6% is iodine (*see* IODINE).

Kelp is also a popular name for any of the algae belonging to the order Laminariales of the brown algae (Phaeophyta). These are the largest of all algae and certain of those in the Pacific ocean, the "giant kelps," are more than 100 ft. in length.

(G. M. S.)

KELSO, small burgh and market town, Roxburghshire, Scotland, on the left bank of the Tweed, 52 mi. (43 mi. by road) S.E. of Edinburgh and 10¼ mi. N.E. of Jedburgh by the L.N.E. railway. Pop. (est. 1938) 3,864. The name has been derived from the old Welsh *calch,* or Anglo-Saxon *cealc,* "chalk," and the Scots *how,* "hollow," a derivation more evident in the earlier forms Calkon and Calchon, and illustrated in Chalkheugh, the name of a locality in the town. The ruined abbey was founded in 1128 by David I. for monks from Tiron in Picardy, whom he transferred hither from Selkirk, where they had been installed fifteen years before. The abbey, completed towards the middle of the 13th century, became one of the most powerful in Scotland, claiming precedence over the other monasteries and disputing the supremacy with St. Andrews. It suffered damage in numerous English forays, was pillaged by the 4th earl of Shrewsbury in 1522, and was reduced to ruins in 1545 by the earl of Hertford (afterwards the Protector Somerset). In 1602 the abbey lands passed into the hands of Sir Robert Ker of Cessford, 1st earl of Roxburghe. The ruins were disfigured by an attempt to render part of them available for public worship, and one vault was long utilized as the town gaol, but they were cleared at the beginning of the 19th century and presented to the nation by the duke of Roxburghe in 1919. The late Norman and Early Pointed cruciform church has an unusual ground-plan, the west end of the

cross forming the nave and being shorter than the chancel. The nave and transepts extend only 23 ft. from the central tower. The remains include most of the tower, nearly the whole of the walls of the south transept, less than half of the west front, the north and west sides of the north transept, and a remnant of the chancel. The predominant feature is the great central tower, which, as seen from a distance, suggests the keep of a Norman castle.

The Tweed is crossed at Kelso by a bridge of five arches constructed in 1803 by John Rennie. It is said to have been his test for Waterloo bridge in London. The grammar school occupies the site of the school which Sir Walter Scott attended in 1783. The public park lies in the east of the town, and the racecourse to the north of it. The leading industries are the making of fishing tackle, agricultural implements and chemical manures, besides coachbuilding, cabinetmaking and upholstery, corn and saw mills, iron founding, etc. James and John Ballantyne, friends of Scott, set up a press about the end of the 18th century, from which there issued, in 1802, the first two volumes of the *Minstrelsy of the Scottish Border*. The *Kelso Mail*, founded by James Ballantyne in 1797, is now the oldest of the Border newspapers. The town is an important agricultural centre.

Kelso became a burgh of barony in 1634. On Oct. 24, 1715 the Old Pretender was proclaimed James VIII. in the market square, but in 1745 Prince Charles Edward found no active adherents in the town.

About 1 m. W. of Kelso is Floors or Fleurs Castle, the principal seat of the duke of Roxburghe. The mansion as originally designed by Sir John Vanbrugh in 1718 was severely plain, but in 1849 William Henry Playfair converted it into a magnificent structure in Tudor style.

On the peninsula formed by the junction of the Teviot and the Tweed stood the formidable castle and flourishing town of Roxburgh from which the shire took its name. No trace exists of the town, and of the castle all that is left are a few ruins shaded by ancient ash trees. Built by the Northumbrians, after the consolidation of the kingdom of Scotland it became a favoured royal residence; the town beneath its protection reached its palmiest days under David I., and formed a member of the Court of Four Burghs with Edinburgh, Stirling and Berwick. It possessed a church, court of justice, mint, mills, and, what was remarkable for the 12th century, grammar school. Alexander II. was married and Alexander III. was born in the castle. During the long period of Border warfare, the town was repeatedly burned and the castle captured. The castle was finally razed to the ground in 1460. It was at the siege that the king, James II., was killed by the explosion of a huge gun called "the Lion." On the fall of the castle the town was abandoned in favour of the rising burgh of Kelso. The town, whose patron-saint was St. James, is still commemorated by St. James's Fair, held on the 5th of every August on the vacant site, and the most popular of Border festivals.

Sandyknowe or Smailholm Tower, 6 m. W. of Kelso, dating from the 15th century, is a fine example of a Border Peel. Two m. N. by E. of Kelso is the pretty village of Ednam (Edenham, "The Village on the Eden"), the birthplace of the poet James Thomson, to whose memory an obelisk, 52 ft. high, was erected on Ferney Hill in 1820.

KELTIE, SIR JOHN SCOTT (1840–1927), British geographer, was born at Dundee on March 29, 1840. In 1880 he was appointed editor of the *Statesman's Year Book*. He became in 1884 inspector of geographical education in connection with the Royal Geographical society, and was librarian of the society in 1885 and secretary in 1892. In 1915 he was appointed joint-editor of the *Geographical Journal*. In 1917 he retired and in 1918 was knighted. He acted during the winter of 1918–19 as geographical adviser to the historical section of the Foreign Office. He died on Jan. 10, 1927.

His book *The Partition of Africa* (1894) is a standard work. He has also published *A History of the Scottish Highlands and Clans* (1874); *Report on Geographical Education* (1886); *Applied Geography* (1890; new ed. 1908); *The History of Geography* (with O. J. R. Howarth, 1914), and many articles in scientific and geographical journals.

KELVIN, WILLIAM THOMSON, BARON (1824–1907), British physicist, the second son of James Thomson, LL.D., professor of mathematics in the University of Glasgow, was born at Belfast, Ireland, on June 26, 1824, his father being then teacher of mathematics in the Royal Academical Institution. In 1832 James Thomson accepted the chair of mathematics at Glasgow. In 1841 William Thomson entered Peterhouse, Cambridge, and in 1845 took his degree as second wrangler and won the first Smith's Prize. At that time there were few facilities for the study of experimental science in Great Britain. Thomson therefore had recourse to Paris, and for a year worked in the laboratory of Regnault, who was then engaged in his classical researches on the thermal properties of steam. In 1846, he accepted the chair of natural philosophy in the University of Glasgow, which he filled for 53 years, attaining universal recognition as one of the greatest physicists of his time. The Glasgow chair was a source of inspiration to scientific men for more than half a century, and many of the most advanced researches of other physicists grew out of the numerous suggestions made by Thomson. One of his earliest papers dealt with the age of the earth. Thomson's calculations on the conduction of heat showed that at some time between 20 millions and 400 millions, probably about 100 millions, of years ago, the physical conditions of the earth must have been entirely different from those which now obtain. This led to a long controversy with geologists in which the physical principles held their ground.

In 1847 Thomson first met James Prescott Joule at the Oxford meeting of the British Association. Joule's views of the nature of heat strongly influenced Thomson's mind, with the result that in 1848 Thomson proposed his absolute scale of temperature, which is independent of the properties of any particular thermometric substance, and in 1851 he presented to the Royal Society of Edinburgh a paper on the dynamical theory of heat, which reconciled the work of N. L. Sadi Carnot with the conclusions of Count Rumford, Sir H. Davy, J. R. Mayer and Joule, and placed the dynamical theory of heat and the fundamental principle of the conservation of energy in a position to command universal acceptance. It was in this paper that the principle of the dissipation of energy, briefly summarized in the second law of thermodynamics, was first stated.

Although his contributions to thermodynamics may properly be regarded as his most important scientific work, it is in the field of electricity, especially in its application to submarine telegraphy, that Lord Kelvin is best known to the world at large. From 1854 he is most prominent among telegraphists. The stranded form of conductor was due to his suggestion; but it was in the letters which he addressed in that year to Sir G. G. Stokes, and which were published in the *Proceedings of the Royal Society* (1855), that he discussed the mathematical theory of signalling through submarine cables, and enunciated the conclusion that in long cables the retardation due to capacity must render the speed of signalling inversely proportional to the square of the cable's length. Thomson set to work to overcome the difficulty by improvement in the manufacture of cables, by the production of copper of high conductivity and the construction of apparatus which would readily respond to the slightest variation of the current in the cable. The mirror galvanometer and the siphon recorder, which was patented in 1867, were the outcome of these researches. Thomson's work in connection with telegraphy led to the production in rapid succession of instruments adapted to the requirements of the time for the measurement of every electrical quantity, and when electric lighting came to the front a new set of instruments was produced to meet the needs of the electrical engineer.

When W. Weber in 1851 proposed the extension of C. F. Gauss's system of absolute units to electromagnetism, Thomson took up the question, and, applying the principles of energy, calculated the absolute electromotive force of a Daniell cell, and determined the absolute measure of the resistance of a wire from the heat produced in it by a known current. In 1861 Thomson induced the British Association to appoint its first famous committee for the determination of electrical standards.

The oscillatory character of the discharge of the Leyden jar, the foundation of the work of H. R. Hertz and of wireless telegraphy, were investigated by him in 1853.

It was in 1873 that he undertook to write a series of articles for *Good Words* on the mariner's compass. He wrote the first, but so many questions arose in his mind that it was five years before the second appeared. In the meanwhile the compass went through a process of complete reconstruction in his hands, a process which enabled both the permanent and the temporary magnetism of the ship to be readily compensated, while the weight of the 10-in. card was reduced to one-seventeenth of that of the standard card previously in use, although the time of swing was increased. Thomson also invented his sounding apparatus, whereby soundings can be taken in shallows and in deep-water. Thomson's tide gauge, tidal harmonic analyser and tide predicter are famous, and among his work in the interest of navigation must be mentioned his tables for the simplification of Sumner's method for determining the position of a ship at sea. Thomson published more than 300 original papers bearing upon nearly every branch of physical science. It is only by reference to his published papers that any approximate conception can be formed of his life's work; but the student who had read all these knew comparatively little of Lord Kelvin if he had not talked with him face to face. Extreme modesty, almost amounting to diffidence, was combined with the utmost kindliness in Lord Kelvin's bearing to the most elementary student, and nothing seemed to give him so much pleasure as an opportunity to acknowledge the efforts of the humblest scientific worker. The progress of physical discovery during the last half of the 19th century was perhaps as much due to the kindly encouragement which he gave to his students and to others who came in contact with him as to his own researches and inventions; and it would be difficult to speak of his influence as a teacher in stronger terms than this.

In 1866, perhaps chiefly in acknowledgment of his services to trans-Atlantic telegraphy, Thomson received the honour of knighthood, and in 1892 he was raised to the peerage with the title of Baron Kelvin of Largs. The Grand Cross of the Royal Victorian Order was conferred on him in 1896, the year of the jubilee of his professoriate. In 1890 he became president of the Royal Society, and he received the Order of Merit on its institution in 1902. In 1896, on the occasion of the jubilee of his professorship, the city authorities joined with the university in honouring their most distinguished citizen. Three years after this celebration Lord Kelvin resigned his chair at Glasgow, though by formally matriculating as a student he maintained his connection with the university, of which in 1904 he was elected chancellor. Much of his time after his retirement was given to writing and revising the lectures on the wave theory of light which he had delivered at Johns Hopkins university, Baltimore, in 1884 (published 1904). At the Leicester meeting of the British Association in 1884 he delivered a long and searching address on the electronic theory of matter. He died on Dec. 17, 1907, at his residence, Netherhall, near Largs, Scotland; there was no heir to his title, which became extinct. A statue was erected to him at Glasgow in 1913.

In addition to the Baltimore lectures, he published with Professor P. G. Tait a standard but unfinished *Treatise on Natural Philosophy* (1867). A number of his scientific papers were collected in his *Reprint of Papers on Electricity and Magnetism* (1872), and in his *Mathematical and Physical Papers* (1882, 1883 and 1890), and three volumes of his *Popular Lectures and Addresses* appeared in 1889–94.

See Andrew Gray, *Lord Kelvin* (1908); S. P. Thompson, *Life of Lord Kelvin* (1910), which contains a full bibliography of his writings.

KEMBLE, the name of a family of English actors, of whom the most famous were Mrs. Siddons (*q.v.*) and her brother John Philip Kemble, the eldest of the 12 children of ROGER KEMBLE (1721–1802), a strolling player and manager, who in 1753 married an actress, Sarah Wood.

JOHN PHILIP KEMBLE (1757–1823), the second child, was born at Prescot, Lancashire, on Feb. 1, 1757. He was educated for the Roman Catholic priesthood at Sedgeley Park Catholic seminary, near Wolverhampton, and the English college at Douai, France. But he had no vocation, and on his return to England he joined the theatrical company of Crump and Chamberlain, his first appearance being as Theodosius in Lee's tragedy at Wolverhampton on Jan. 8, 1776. In 1778 he joined the York company of Tate Wilkinson, appearing at Wakefield as Captain Plume in Farquhar's *The Recruiting Officer;* in Hull for the first time as Macbeth on Oct. 30, and in York as Orestes in Ambrose Philips's *Distressed Mother.*

He appeared as Hamlet in Dublin on Nov. 2, 1781, and was engaged at Drury Lane in 1783, where he made his début on Sept. 30, 1783, in the same part. The Drury Lane public were moderately enthusiastic, but his performance with his sister, Mrs. Siddons, in *Macbeth* (March 31, 1785) established him as a popular favourite. Brother and sister had first appeared together at Drury Lane on Nov. 22, 1783, as Beverley and Mrs. Beverley in Moore's *The Gamester,* and as King John and Constance in Shakespeare's tragedy. In the following year they played Montgomerie and Matilda in Cumberland's *The Carmelite,* and in 1785 Adorni and Camiola in Kemble's adaptation of Massinger's *A Maid of Honour,* and Othello and Desdemona. Between 1785 and 1787 Kemble appeared in a variety of rôles, his Mentevole in Jephson's *Julia* producing an overwhelming impression. He married (Dec. 8, 1787) Priscilla Hopkins Brereton (1756–1845), the widow of an actor and herself an actress.

Kemble's appointment as manager of Drury Lane in 1788 gave him full opportunity to dress the characters less according to tradition than in harmony with his own conception of what was suitable. In his own version of *Coriolanus,* which was revived during his first season, the character of the "noble Roman" exactly suited his powers; it is even said that he allowed its influence to colour his private manner and modes of speech. His tall and imposing person, noble countenance, and solemn and grave demeanour were uniquely adapted for the Roman characters in Shakespeare's plays; and when he had to depict the gradual growth and development of one absorbing passion, his representation gathered a momentum and majestic force that were irresistible. His defect was in flexibility, variety, rapidity; the characteristic of his style was method, regularity, precision, elaboration even of the minutest details, founded on a thorough psychological study of the special personality he had to represent. Kemble excelled in declamation, but physically he was incapable of giving expression to impetuous vehemence and searching pathos.

On account of the eccentricities of Sheridan, the proprietor of Drury Lane, Kemble withdrew from the management, and, although he resumed his duties at the beginning of the season 1800–01, he at the close of 1802 finally resigned connection with it. In 1803 he became manager of Covent Garden, in which he had acquired a sixth share for £23,000. The theatre was burned down on Sept. 20, 1808, and the raising of the prices after the opening of the new theatre, in 1809, led to riots, which practically suspended the performances for three months. Kemble was only saved from ruin by a loan, afterwards converted into a gift, of £10,000 from the duke of Northumberland. Kemble's last performance was as Coriolanus on June 23, 1817. His retirement was probably hastened by the rising popularity of Edmund Kean. He died at Lausanne on Feb. 26, 1823.

See Boaden, *Life of John Philip Kemble* (1825); Fitzgerald, *The Kembles* (1871).

STEPHEN KEMBLE (1758–1822), the second son of Roger, was rather an indifferent actor, ever eclipsed by his wife and fellow player, Elizabeth Satchell Kemble (*c.* 1763–1841), and a man of such portly proportions that he played Falstaff without padding. He managed several other theatres situated in Edinburgh and elsewhere.

CHARLES KEMBLE (1775–1854), a younger brother of John Philip and Stephen, was born at Brecon, South Wales, on Nov. 25, 1775. He, too, was educated at Douai. He made his first recorded appearance at Sheffield as Orlando in *As You Like It* in 1792. His first London appearance was on April 21, 1794, as Malcolm to his brother's Macbeth. Ultimately he won independent fame, especially in such characters as Archer in George

Farquhar's *Beaux' Stratagem,* Dorincourt in Mrs. Cowley's *Belle's Stratagem,* Charles Surface and Ranger in Dr. Benjamin Hoadley's *Suspicious Husband.* His Laertes and Macduff were hardly less interesting than his brother's Hamlet and Macbeth. In comedy he was ably supported by his wife, Marie Therèse De Camp (1774–1838), whom he married on July 2, 1806. His visit, with his daughter Fanny, to America during 1832 and 1834, aroused much enthusiasm. The later period of his career was clouded by money embarrassments in connection with his joint proprietorship in Covent Garden theatre. He formally retired from the stage in Dec. 1836, but his final appearance was on April 10, 1840. For some time he held the office of examiner of plays. In 1844–45 he gave readings from Shakespeare at Willis's Rooms. He died on Nov. 12, 1854.

See *Gentleman's Magazine,* Jan. 1855; *Records of a Girlhood,* by Frances Anne Kemble.

ELIZABETH WHITLOCK (1761–1836), who was a daughter of Roger Kemble, made her first appearance on the stage in 1783 at Drury Lane as Portia. In 1785 she married Charles E. Whitlock, went with him to America and played with much success there. She had the honour of appearing before President Washington. She seems to have retired about 1807, and she died on Feb. 27, 1836.

FRANCES ANNE KEMBLE (Fanny Kemble) (1809–1893), the actress and author, was Charles Kemble's elder daughter; she was born in London on Nov. 27, 1809, and educated chiefly in France. She first appeared on the stage on Oct. 25, 1829 as Juliet at Covent Garden. Her attractive personality at once made her a great favourite, her popularity enabling her father to recoup his losses as a manager. She played all the principal women's parts, notably Portia, Beatrice and Lady Teazle; Julia in Sheridan Knowles's *The Hunchback,* especially written for her, was perhaps her greatest success. In 1832 she went with her father to America, and in 1834 she married there a Southern planter, Pierce Butler. They were divorced in 1849. In 1847 she returned to the stage, and later, following her father's example, appeared with much success as a Shakespearian reader. In 1877 she returned to England, where she lived till her death in London on Jan. 15, 1893. Fanny Kemble was a popular figure in London society. Besides her plays, *Francis the First,* unsuccessfully produced in 1832, *The Star of Seville* (1837), a volume of *Poems* (1844), and a book of Italian travel, *A Year of Consolation* (1847), she published a volume of her *Journal* in 1835, and in 1863 another (dealing with life on the Georgia plantation), and also a volume of *Plays* (1863), including translations from Dumas and Schiller. These were followed by *Records of a Girlhood* (1878), *Records of Later Life* (1882), *Notes on some of Shakespeare's Plays* (1882), *Far Away and Long Ago* (1889), and *Further Records* (1891). Her various volumes of reminiscences contain much valuable material for the social and dramatic history of the period.

ADELAIDE KEMBLE (1814–1879), Charles Kemble's second daughter, was an opera singer of great promise, whose first London appearance was made in *Norma* on Nov. 2, 1841. In 1843 she married Edward John Sartoris, a rich Italian, and retired after a brief but brilliant career. She wrote *A Week in a French Country House* (1867), a bright and humorous story, and of a literary quality not shared by other tales that followed.

Among more recent members of the Kemble family, mention may also be made of Charles Kemble's grandson, HENRY KEMBLE (1848–1907), a popular London actor.

KEMBLE, JOHN MITCHELL (1807–1857), English scholar and historian, eldest son of Charles Kemble the actor, was educated at Bury St. Edmunds, at Trinity college, Cambridge, and under the brothers Grimm at Göttingen (1831). His early works were: *Beowulf* (1833–37), *Über die Stammtafel der Westsachsen* (1836), *Codex Diplomaticus Aevi Saxonici* (1839–48). His *History of the Saxons in England* (1849; new ed. 1876) attempted an examination of the original sources of the early period of English history. He was editor of the *British and Foreign Review* from 1835 to 1844; and from 1840 to his death was examiner of plays. He died at Dublin on March 26, 1857. Other works of his are *State Papers . . . from the Revolution to the Home of Hanover* (1857); and *Horae Ferales,* completed by R. G. Latham (1864).

KEMÉNY, ZSIGMOND, BARON (1816–1875), Hungarian author, was on the staff of the *Pesti Hirlap,* when he brought out his first great novel, *Pál Gyulay* (1846). He was a member of the revolutionary diet of 1848, and spent a short time in exile. In his two pamphlets, *Forradalom után* (After the Revolution) and *Még egysz ó a forradalom után* (One word more after the Revolution), he defended the point of view which was realized by Deák in 1867. He subsequently edited the *Pesti Napló,* which became virtually Deák's political organ. Kemény also published several political essays (e.g., *The Two Wesselényis,* and *Stephen Szechenyi*), and some excellent novels: *Férj és nö* (Husband and Wife), *Szivörvényei* (The Heart's Secrets), etc. During the 'sixties Kemény actively assisted Deák; he popularized the Composition of 1867 which he had done so much to bring about. He was elected to the diet of 1867 for one of the divisions of Pest, but took no part in the debates. The last years of his life were passed in complete seclusion in Transylvania. To the works of Kemény already mentioned should be added the fine historical novel *Rajongok* (The Fanatics) (Pest, 1858–1859), and *Collected Speeches* (Hung.) (Pest, 1889).

See L. Nogrady, *Baron Sigismund Kemény's Life and Writings* (Hung.) (Budapest, 1902); G. Beksics, *Sigismund Kemény, the Revolution and the Composition* (Hung.) (Budapest, 1888).

KEMMERER, EDWIN WALTER (1875–1945), U.S. economist, was born at Scranton, Pa., on June 29, 1875, and educated at Wesleyan (A.B., 1899) and Cornell (Ph.D., 1903). He was instructor in economics at Purdue university, 1901–03; assistant professor of political economy, 1906–09, professor of economics and finance, 1909–12, at Cornell, and professor of economics and finance at Princeton, 1912–43. He served as financial adviser to the U.S. Philippine commission in 1903 and was chief of the division of currency, Philippine Islands, 1904–06. He was financial adviser to the governments of Mexico, 1917, and Guatemala, 1919; U.S. trade commissioner in South America, 1922; chairman of the Commission of American Financial Advisers in Colombia, 1923; Chile, 1925; Poland, 1926; Ecuador, 1926–27; Bolivia, 1927; China, 1929. He served on the Gold Standard Inquiry committee for the Union of South Africa, 1924–25, and as expert on currency and banking to the Dawes committee, 1925. He died at Princeton, N.J., on Dec. 16, 1945.

Besides various articles and reports he was the author of *Money and Credit Instruments in their Relation to General Prices* (1907); *Seasonal Variations in the Relative Demand for Money and Capital* (1910); *Modern Currency Reforms* (1916); *The U.S. Postal Savings System* (1917); *The ABC of the Federal Reserve System* (1918); *High Prices and Deflation* (1920); *The ABC of Inflation* (1942).

KEMP, JAMES FURMAN (1859–1926), American geologist, was born in New York city on Aug. 14, 1859. He graduated from Adelphi academy, Brooklyn (1876), and later studied in Amherst and at Columbia university. After studying at Leipzig and Munich, he returned to America to become a member of the teaching staff at Cornell university (1886–91). In 1891 he was called to Columbia as adjunct professor, and the following year became professor of geology and head of the department, remaining in this position until his death, except during the years 1914–18.

While at Cornell he was one of a group of 13 who organized the Geological Society of America, and was president in 1921. He was considered a leading authority on ore deposits, and was the author of text-books and many scientific papers. Among these were: *Ore Deposits of the United States and Canada* (1903) and *Handbook of Rocks* (1896), *The Trap Dikes of the Lake Champlain Region* (1893), *Geology of the Lake Placid Region* (Albany, 1898), *The Titaniferous Iron Ores of the Adirondacks* (1899), *The Geological Relations and Distribution of Platinum and Associated Metals* (1902), *The Economic Geology of the non-metallic Minerals based on American Examples* (1903), *Geology of the Mount Marcy Quadrangle, Essex County, New York* (Albany, 1921) and many others.

He died at Great Neck, L.I., on Nov. 17, 1926.

KEMPE, JOHN (*c.* 1380–1454), English cardinal, archbishop of Canterbury, and chancellor, son of Thomas Kempe of Ollantigh, near Ashford, Kent, was born about 1380 and educated at Merton college, Oxford. He practised as an ecclesiastical lawyer, was an assessor at the trial of Oldcastle, and in 1415 was made dean of the Court of Arches. He passed into the royal service and after being entrusted with several diplomatic missions was eventually made chancellor of the duchy of Normandy. He was consecrated bishop of Rochester at Rouen on Dec. 3, 1419. In Feb. 1421 he was translated to Chichester, and in November following to London. During the minority of Henry VI. Kempe had a prominent position in the English council as a supporter of Henry Beaufort. In 1426 he became archbishop of York. Succeeding Henry Beaufort, in 1426, Kempe held office as chancellor for six years; his main task was to keep Humphrey of Gloucester in check. His resignation on Feb. 28, 1432, was a concession to Gloucester. He still enjoyed Beaufort's favour and was sent to the congress of Arras in 1435 and the conference at Calais in 1438. In Dec. 1439 he was created cardinal. He supported Suffolk over the king's marriage with Margaret of Anjou; but later there arose some difference between them arising from the nomination of the cardinal's nephew, Thomas Kempe, to the bishopric of London. In Jan. 1450 Kempe once more became chancellor and pronounced the final sentence on Suffolk in March. In spite of his age he dealt vigorously with Cade's rebellion, and by his official experience and skill did what he could for four years to sustain the king's authority. He was rewarded by his translation to Canterbury in July 1452, when Pope Nicholas added as a special honour the title of cardinal-bishop of Santa Rufina. As Richard of York gained influence, Kempe became unpopular and his fall seemed imminent when he died suddenly on March 22, 1454. He was buried at Canterbury, in the choir. Kempe was a politician first, and he was accused with some justice of neglecting his dioceses. He founded a college at Wye, which was suppressed at the Reformation.

BIBLIOGRAPHY.—For contemporary authorities *see* under HENRY VI. *See* also W. Dugdale, *Monasticon,* iii. 254, vi., 1430–1432 (1655); W. F. Hook, *Lives of the Archbishops of Canterbury,* v. 188–267 (1860–76); J. Raine, *Historians of the Church of York,* vol. ii. (1879–94).

KEMPE, WILLIAM (*fl.* 1600), English actor and dancer. He probably began his career as a member of the earl of Leicester's company, but his name first appears after the death of Leicester in a list of players authorized by an order of the privy council in 1593 to play 7 m. out of London. In 1594–95 he was one of the Lord Chamberlain's men, but he probably left the company in 1599, as he ceases to appear on the actor-list, and is known to have sold out his share in the Globe theatre. He was the successor, both in parts and reputation, of Richard Tarlton. But it was as a dancer of jigs that he won his greatest popularity, and in Feb.–March 1600, for a wager, he danced his morris dance from London to Norwich. Examples of the music may be seen in the ms. collection of John Dowland now in the Cambridge university library. At the same time Kempe was given parts like Dogberry, and Peter in *Romeo and Juliet;* indeed his name appears by accident in place of those of the characters in early copies. Kempe seems to have exhibited his dancing on the Continent, but in 1602 he was a member of the earl of Worcester's players. He is mentioned as dead in Heywood's *Apology* (*c.* 1608).

KEMPEN, town in Prussian Rhine Province, Germany, 40 mi. N.W. of Cologne by the railway to Zevenaar. Pop. (1933) 8,445. It belonged in the middle ages to the archbishopric of Cologne and received civic rights in 1294. It has a monument to Thomas à Kempis, who was born there. The industries include silk-weaving, glass-making and the manufacture of electric plant.

KEMPENER, PETER DE (1505–1580), Flemish painter, active chiefly at Seville, where he was known as Pedro Campaña. He was born at Brussels, and was the most distinguished member of a family of painters and tapestry weavers. He went to Italy in 1529. When in Bologna he painted a triumphal arch for festivities connected with the coronation of Charles V., and he also painted that emperor in his coronation robes for Cardinal Marin-Grimani. He is said to have studied the works of Michelangelo and Raphael, but little is known of him at this period. He then went to Spain, and settled at Seville from about 1537–62. Here he became one of the leading representatives of the Seville school of painting. Fr. Pacheco says of him that besides being a painter he was an architect, a sculptor, a mathematician, an astronomer, and well versed in perspective. His masterpiece is the "Deposition from the Cross," painted in 1548 for the church of Santa Cruz and now in the sacristy of the cathedral. In the cathedral is also the large altarpiece of Mariscal representing "The Presentation of Christ" on the central panel, with portrait of donors on the two wings. An earlier version of the "Deposition from the Cross," painted in 1547, is now in the museum of Montpellier. Kempener's pictures were deeply felt and appealed to the emotions. They were greatly admired by Murillo. His portraiture was vivid and noble in conception. A number of pictures attributed to this artist are in Seville, Corboda, Carmona, Eciga and Rota in Spain. The Berlin museum contains a small "Adoration of the Magi," signed by the artist, very fine in colour. Kempener returned to Brussels in 1563 and was made director of the tapestry works and chief engineer under the duke of Alva. He died in Brussels in 1580. His portrait appears in Fr. Pacheco's *Libro de Descripción de verdadores retratos* (Seville, 1876).

KEMPENFELT, RICHARD (1718–1782), British rear-admiral, son of Magnus Kempenfelt, a Swede said to have been in the British army, was born at Westminster in 1718. He went into the navy and saw his first service in the West Indies, taking part in the capture of Portobello. In 1746 he returned to England, and from that date to 1780, when he was made rear-admiral, saw active service in the East Indies with Sir George Pocock and in various quarters of the world. In 1781 he gained, with a vastly inferior force, a brilliant victory over the French fleet under De Guichen, fifty leagues south-west of Ushant. In 1782 he hoisted his flag on the "Royal George," which formed part of the fleet under Lord Howe. In August this fleet was ordered to refit at top speed at Portsmouth and proceed to the relief of Gibraltar. The shifting of weights on the "Royal George" to facilitate the repairs of a leak, caused a large piece of her bottom to fall out and she sank with 800 persons on board. Kempenfelt perished with the rest. Cowper's poem, the "Loss of the Royal George," commemorates this disaster. A painting of the loss of the "Royal George" is in the Royal United Service Institution, London. Kempenfelt effected radical alterations and improvements in the signalling system then existing in the British navy.

See Charnock's *Biog. Nav.,* vi. 246, and Ralfe's *Naval Biographies,* i. 215.

KEMPT, SIR JAMES (1764–1854), British soldier, son of Gavin Kempt, was born at Southampton. He joined the army, saw service in India, and accompanied Sir Ralph Abercromby to Holland (1799), and to Egypt as aide-de-camp (1801). In 1803 he went with the 81st Foot to the Mediterranean, under Craig, and at Maida the light brigade led by him bore the heaviest share of the battle. He was employed as brevet-colonel in North America from 1807 until he joined Wellington's army (1811) in Spain, where he was wounded at Badajoz. On rejoining the army he led a brigade of the Light Division at Vera, the Nivelle, Bayonne, Orthez and Toulouse, and was made G.C.B. for his services at Waterloo. From 1828 to 1830 he was governor-general of Canada, and afterwards master-general of the ordnance. At the time of his death in 1854 he had been for some years a full general.

KEMPTEN, a town in the *Land* of Bavaria, Germany, on the Iller, 81 mi. S.W. of Munich. Pop. (1939) 30,245. Kempten, identified with the Roman Cambodunum, consisted in early times of two towns, the old and the new, whose rivalry was intensified by the welcome given by the old town, a free imperial city since 1289, to the Reformed doctrines, the new town keeping to the older faith. The Benedictine abbey of Kempten, said to have been founded in 773 by Hildegarde, the wife of Charlemagne, was an important house and in 1360 its abbot was promoted to the dignity of a prince of the Empire. The town and abbey passed to Bavaria in 1803. The town contains a castle, the old palace of the abbots

of Kempten, dating from the end of the 17th century, now partly used as barracks, and the abbey church. The industries include cotton-spinning and weaving and the manufacture of paper, beer, machines, cement and soap. As the commercial centre of the Algäu, Kempten carries on trade in timber and dairy produce.

KEMP-WELCH, LUCY ELIZABETH (1869–), R.I. 1917, English animal painter, was born at Bournemouth in 1869. She studied under Herkomer at Bushey, and, after the success of her first Academy picture in 1894, exhibited regularly every year. Her bold treatment of animals, in particular of horses, has given her an international reputation. In 1905 she became head of the Art School at Bushey. She was made president of the newly-formed Society of Animal Painters in 1914; a member of the Pastel Society in 1917; of the Royal Cambrian Academy in 1919, and was awarded the bronze medal at the Paris Salon of 1921 and the silver medal in 1922. Among her best known paintings are: "Colt Hunting in the New Forest" (1897), bought by the Chantry Bequest; "Horses Bathing in the Sea" (1900), now in the National Gallery of Victoria; "Timber Hauling" (1914) at Bristol; "The Riders" (1911); "Forward, the Guns" (1917); "The Straw Ride" (1920), presented to the Imperial War Museum, London; and the large wall panel, commemorating women's work in the World War, at the Royal Exchange, London.

KEN, THOMAS (1637–1711), English divine, the most eminent of the English non-juring bishops, and one of the fathers of modern English hymnology, was born at Little Berkhampstead, Herts. He was the son of Thomas Ken of Furnival's Inn; his mother was a daughter of the now forgotten poet, John Chalkhill. Ken's step-sister, Anne, married Izaak Walton in 1646. Ken was educated at Winchester College, and Hart Hall, Oxford, and became fellow (1657) and subsequently tutor of New College. He was ordained in 1662, and after holding several preferments returned in 1672 to Winchester, as a prebendary of the cathedral, chaplain to the bishop, and a fellow of Winchester College. He remained there for several years, preparing his *Manual of Prayers for the use of the Scholars of Winchester College* (1674), and composing hymns. At this time he wrote, primarily for the scholars, his morning, evening and midnight hymns, the first two of which, "Awake, my soul, and with the sun," and "Glory to Thee, my God, this night," are household words in the English-speaking countries. In 1674 Ken visited Rome with young Izaak Walton. In 1679 he was appointed by Charles II. chaplain to the Princess Mary, wife of William of Orange. But he incurred the displeasure of William, and gladly returned to England in 1680, when he was immediately appointed one of the king's chaplains. He was once more residing at Winchester in 1683 when Charles came to the city, and Ken's residence was chosen as the home of Nell Gwyn. Ken stoutly, and successfully, objected. In August of this same year he accompanied Lord Dartmouth to Tangier as chaplain to the fleet, and in 1684, was appointed bishop of Bath and Wells. It is said that, upon the occurrence of the vacancy, Charles, mindful of the spirit he had shown at Winchester, exclaimed, "Where is the good little man that refused his lodging to poor Nell?" and determined that no other should be bishop.

In 1685 he published *Exposition on the Church Catechism*, perhaps better known by its sub-title, *The Practice of Divine Love*. In 1688, when James reissued his "Declaration of Indulgence," Ken was one of the "seven bishops" who refused to publish it. They were committed to the Tower on June 8, 1688, on a charge of high misdemeanour. With the revolution which speedily followed their acquittal, new troubles encountered Ken; for, having sworn allegiance to James, he thought himself thereby precluded from taking the oath to William of Orange. He stood firm to his refusal and was, in August 1691, superseded in his bishopric by Dr. Kidder, dean of Peterborough. From this time he lived mostly with Lord Weymouth, his friend from college days, at Longleat, Wilts; and though pressed to resume his diocese in 1703, upon the death of Bishop Kidder, he declined. He died at Longleat on March 19, 1711. Ken lives in history, apart from his three hymns, mainly as a man of unstained purity and invincible fidelity to conscience, weak only in a certain narrowness of view which is a frequent attribute of the intense character which he possessed. The closing verse of his morning and evening hymns, beginning "Praise God from whom all blessings flow," is one of the most familiar stanzas in the English language, being widely sung as a doxology.

See the edition of his *Poetical Works* (4 vols., 1721) ed. W. Hawkins; and of his *Prose Works* (1838), ed. J. T. Round.

See also J. Lavicount Anderdon (*The Life of Thomas Ken, Bishop of Bath and Wells, by a Layman*, 1851; 2nd ed., 1854); and Dean Plumptre, *Life of Thomas Ken* (2 vols., 1888; revised, 1890); F. G. Gilman, *The Evolution of the English Hymn* (1927).

KEN, a river of northern India, tributary to the Jumna on its right bank, flowing through Bundelkhand. An irrigation system, including a weir 60 m. S. of Banda and a main canal 37 m. long, irrigates 89,000 acres in a normal year. A dam at Gangae to increase the supply of water was finished in 1917.

KENA: *see* QENA.

KENDAL, DUKEDOM OF. The English title of duke of Kendal was first bestowed in May 1667 upon Charles (d. 1667), the infant son of the duke of York, afterwards James II. Several persons have been created earl of Kendal, among them being John, duke of Bedford, son of Henry IV.; John Beaufort, duke of Somerset (d. 1444); and Queen Anne's husband, George, prince of Denmark.

In 1719 Ehrengarde Melusina (1667–1743), mistress of the English king George I., was created duchess of Kendal. This lady was the daughter of Gustavus Adolphus, count of Schulenburg (d. 1691), and was born at Emden on Dec. 25, 1667. Her father held important positions under the elector of Brandenburg; her brother Matthias John (1661–1747) won great fame as a soldier in Germany and was afterwards commander-in-chief of the army of the republic of Venice. Melusina was attached to the household of the Electress Sophia, and became George's mistress about 1690. She followed him to England in 1714, and ousted her principal rival, Charlotte Sophia, Baroness von Kilmannsegge (*c.* 1673–1725), afterwards countess of Darlington, as his first favourite. In 1716 she was created duchess of Munster; then duchess of Kendal; and in 1723 the emperor Charles VI. made her a princess of the Empire. The duchess was avaricious and obtained large sums of money by selling public offices and titles; she also sold patent rights, one of these being the privilege of supplying Ireland with a new copper coinage. This she sold to a Wolverhampton iron merchant named William Wood (1671–1730), who flooded the country with the coins known as "Wood's halfpence," which occasioned Swift's *Drapier's Letters*. After George's death she lived at Kendal House, Isleworth, Middlesex, until her death on May 10, 1743. The duchess was by no means a beautiful woman, and her thin figure caused the populace to refer to her as the "maypole." By the king she had two daughters: Petronilla Melusina (*c.* 1693–1778), who was created countess of Walsingham in 1722, and who married the great earl of Chesterfield; and Margaret Gertrude, countess of Lippe (1703–1773).

KENDAL, WILLIAM HUNTER (1843–1917), English actor, whose family name was Grimston, was born in London on Dec. 16, 1843, the son of a painter. He made his first stage appearance at Glasgow in 1862 as Louis XIV., in *A Life's Revenge*. He joined the Haymarket company in London in 1866, acting everything from burlesque to Romeo. In 1869 he married Margaret (Madge) Shafto Robertson (1849–1935), sister of the dramatist, T. W. Robertson. As "Mr. and Mrs. Kendal" their professional careers then became inseparable. Mrs. Kendal's first stage appearance was as Marie, "a child," in *The Orphan of the Frozen Sea* in 1854 in London. By 1865 she was playing Ophelia and Desdemona. She was Mary Meredith in *Our American Cousin* with Sothern, and Pauline to his Claud Melnotte. But her real triumphs were at the Haymarket in Shakespearian revivals and the old English comedies. While Kendal played Orlando, Charles Surface, Jack Absolute and Young Marlowe, his wife made the combination perfect with her Rosalind, Lady Teazle, Lydia Languish and Kate Hardcastle; and she created Galatea in Gilbert's *Pygmalion and Galatea* (1871). Short seasons followed at the Court theatre and at the Prince of Wales's, at the latter of which they joined the

Bancrofts in *Diplomacy* and other plays. Then in 1879 began a long association with Sir John Hare as joint-managers of the St. James's theatre, some of their notable successes being in *The Squire, Impulse, The Ironmaster* and *A Scrap of Paper.* In 1888, however, the Hare and Kendal régime came to an end. From that time Mr. and Mrs. Kendal chiefly toured in the provinces and in America, with an occasional season at rare intervals in London. William Kendal died on Nov. 7, 1917, in London.

See T. E. Pemberton, *The Kendals* (1900).

KENDAL, market town, municipal borough, Westmorland parliamentary division, England, 251 mi. north-west of London on the L.M.S. railway. Pop. (est. 1938) 17,470. Area 5.8 sq.mi. The town, the full name of which is Kirkby-Kendal or Kirkby-in-Kendal, is the largest in the county. It is on the river Kent, and is irregularly built. The white-walled houses with their blue-slated roofs, and the numerous trees, give it an attractive appearance. The church of the Holy Trinity, the oldest part dating from 1200, is Gothic, with five aisles and a square tower. Among the public buildings are the town hall, classic in style; the market house, and literary and scientific institution, with a museum. Educational establishments include a free grammar school, in modern buildings, founded in 1525 and well endowed; a blue-coat school, science and art school, and "Green Coat" Sunday school (1801). East of the town are the ruins of Kendal castle, attributed to the first barons of Kendal. It was the birthplace of Catherine Parr, Henry VIII's last queen. On the Castlebrow hill, an artificial mound probably of pre-Norman origin, an obelisk was raised in 1788 in memory of the revolution of 1688. The woollen manufactures of Kendal have been noted since 1331, and, although the coarse cloth known to Shakespeare as "Kendal green" is no longer made, tweeds, railway rugs, horse clothing, hand-knit hosiery, carpets and girths and similar goods are manufactured. Other manufactures are machine-made boots and shoes, cards for wool and cotton, agricultural and other machinery, paper, and, in the neighbourhood, gunpowder. There has been a tobacco trade since the 16th century. There is a large weekly market for grain, and annual horse and cattle fairs. The borough was extended in 1934.

The outline of a Roman fort is traceable at Watercrook. The barony and castle of Kendal, held by Turold, were granted by William I to Ivo de Taillebois, but the barony was divided into three parts in the reign of Richard II, one part with the castle passing to Sir William Parr, knight, ancestor of Catherine Parr. After the death of her brother William Parr, his share of the barony reverted to Queen Elizabeth. The castle was in ruins in 1586. In 1745 the Pretender was proclaimed king here. Burgesses in Kendal are mentioned in 1345, and charters were granted in 1472, 1484 and the town was incorporated in 1576. A weekly market on Saturday granted by Richard I to Roger Fitz Reinfred was purchased by the corporation from the earl of Lonsdale and Captain Bagot, lords of the manor, in 1885 and 1886. Of the five fairs which are now held three are ancient, that now held on April 29 being granted to Marmaduke de Tweng and William de Ros in 1307, and those on Nov. 8 and 9 to Christiana, widow of Ingelram de Gynes, in 1333.

KENDALL, HENRY CLARENCE (1841–1882), Australian poet, son of a missionary, was born in New South Wales on April 18, 1841. He was a clerk in the Lands Department at Sydney, being afterwards transferred to the colonial secretary's office. Later on he became an inspector of forests. His principal volumes of verse were *Leaves from an Australian Forest* (1869) and *Songs from the Mountains* (1880), his feeling for nature, as embodied in Australian landscape and bush-life, being very true and full of charm. He died on Aug. 1, 1882. In 1886 a memorial edition of his poems was published at Melbourne.

KENDALLVILLE, a city of northeastern Indiana, U.S.A., served by the New York Central and the Pennsylvania railways and by electric interurban lines. The population was 5,439 in 1930 and 5,431 in 1940. It is in a fine farming region, and has a large trade in grain and onions. The principal manufactures are refrigerators, windmills, pumps and ladies' garments. The assessed valuation of property is about $7,500,000. The city was founded about 1833 and was incorporated in 1863.

KENEALY, EDWARD VAUGHAN HYDE (1819–1880), Irish barrister and author, born at Cork on July 2, 1819, was educated at Trinity college, Dublin; was called to the Irish bar in 1840 and to the English bar in 1847; and became a Q.C. and a bencher of Gray's Inn (1868). In 1873 he was leading counsel for the Tichborne claimant. After the verdict against his client he started a paper to plead his cause and to attack the judges. In 1874 he was disbenched and disbarred by his Inn. In 1875 he was elected to parliament for Stoke; but no member would introduce him when he took his seat. Kenealy died on April 16, 1880, in London.

KENG TUNG (now TUNG KENG): *see* SHAN STATES.

KENILWORTH, town and urban district, Warwickshire, England, on a tributary of the Avon; 99 mi. N.W. from London by the L.M.S.R. Pop. (1938 est.) 8,750. The town is only of importance for the ruins of its old castle. The walls originally enclosed an area of seven acres. The gatehouse is now used as a dwelling-house; Caesar's tower, the only portion built by Geoffrey de Clinton now extant, has massive walls 16 ft. thick; Merwyn's tower of Scott's *Kenilworth,* the great hall built by John of Gaunt and the Leicester buildings also survive. Near the castle are remains of an Augustinian monastery founded in 1122 and afterward made an abbey. The Norman doorway of St. Nicholas church is supposed to have been the entrance of the former abbey church.

Kenilworth (Chinewrde, Kenillewurda, Kinelingworthe, Kenilord, Killingworth) is said to have been a member of Stoneleigh before the Norman Conquest and a possession of the Saxon kings. The town was granted by Henry I to Geoffrey de Clinton, a Norman who built the castle. Geoffrey's grandson released his right to King John, and the castle remained with the crown until Henry III granted it to Simon de Montfort, earl of Leicester. The "Dictum de Kenilworth" was proclaimed here in 1266.

After the battle of Evesham the rebel forces rallied at the castle, which after a siege of six months was surrendered by Henry de Hastings, the governor. The king then granted it to his son Edmund. Through John of Gaunt it came to Henry IV and was granted by Elizabeth in 1562 to Robert Dudley, afterward earl of Leicester, but on his death in 1588 again merged in the possessions of the crown. It was later held by the Careys and the Hydes. Dudley spent large sums on restoring the castle and grounds, and here in July 1575 he entertained Queen Elizabeth. During the civil wars the castle was dismantled by the soldiers of Cromwell and from that time abandoned. It was given to the nation by Lord Kenilworth in 1937. The only mention of Kenilworth as a borough occurs in a charter of Henry I to Geoffrey de Clinton and in the charters of Henry I and Henry II to the church of St. Mary of Kenilworth confirming the grant of lands made by Geoffrey to this church and mentioning that he kept land for making his borough, park and fishpond. The town possesses large tanneries.

KENITES, in the Bible, a clan of the south of Palestine, closely associated with the Amalekites, whose hostility towards Israel, however, it did not share. Saul spared them when bidden by Yahweh to destroy Amalek; and David appears to have been on friendly terms with them (1 Sam. xv. 6; xxx. 29). Moses married into a Kenite family (Judges 1: 16) and it would seem that the Kenites were only a branch of the Midianites (*see* JETHRO, MIDIAN). Jael, the slayer of Sisera (*see* DEBORAH), was the wife of Heber the Kenite, who lived near Kadesh in Naphtali. There is an obscure allusion to the destruction of the Kenites in an appendage to the oracles of Balaam (Num. xxiv. 21 *seq.*), and with this, the only unfavourable reference to them, may perhaps be associated the curse of Cain (Kayin). In view of the part played by the Kenite (or Midianite) father-in-law of Moses, as related in Exod. xviii., and of the Kenite origin of the Rechabites (*q.v.*), this obscure tribe was evidently an important factor in the history of the religion of Israel. (*See* CALEB, GENESIS, JERAHMEEL, JUDAH.)

KENMORE, village and civil parish, Perthshire, Scotland, 6 mi. W. of Aberfeldy. Pop. (1931), 962. It is at the foot of Loch

Tay, near the point where the river Tay leaves the lake. Taymouth castle (1801), the former seat of the marquess of Breadalbane, standing near the base of Drummond hill in a park through which flows the Tay, is now a hotel. It is a stately four-storied building with corner towers and a central pavilion. Two miles S.W. of Kenmore are the falls of the Acharn, 80 ft. high. At Fortingall at the mouth of Glen Lyon (30 mi. long) and on the north side of Loch Tay are the remains of a Roman camp, also a yew claimed to be the oldest tree in Europe. Glenlyon house was the home of Campbell of Glenlyon, chief agent in the massacre of Glencoe. At Garth, 2½ mi. N.E., are the ruins of a castle, said to have been a stronghold of Alexander Stewart, the Wolf of Badenoch (1343–1405).

KENMORE, a former village of Summit county, Ohio, U.S.A., on the Tuscarawas river, 8 mi. S.W. of Akron. Kenmore lost its identity under process of annexation, no longer existing apart from Akron.

It was a rapidly growing suburb of Akron, with rubber and match factories, salt works and packing plants. It was annexed to Akron Jan. 1, 1020.

KENMURE, WILLIAM GORDON, 6th viscount (d. 1716), Jacobite leader, son of Alexander, 5th viscount (d. 1698), was descended from the same family as Sir John Gordon of Lochinvar (d. 1604), whose grandson, Sir John Gordon (d. 1634), was created Viscount Kenmure in 1633. The family had generally adhered to the Presbyterian cause, but Robert, the 4th viscount, had been excepted from the amnesty granted to the Scottish royalists in 1654, and the 5th viscount, who succeeded his kinsman Robert in 1663, after some vacillation, joined the court of the exiled Stuarts. The 6th viscount's adherence to the Pretender in 1715 is said to have been due to his wife Mary Dalzell (d. 1776), sister of Robert, 6th earl of Carnwath.

The sixth earl raised the royal standard of Scotland at Lochmaben on Oct. 12, 1715, and was joined by about two hundred gentlemen. This small force received some additions before Kenmure reached Hawick, where he learnt the news of the English rising. He effected a junction with Thomas Forster and James Radclyffe, 3rd earl of Derwentwater, at Rothbury. Their united forces of some fourteen hundred men were reinforced at Kelso by a brigade under William Mackintosh. Threatened by an English army under General George Carpenter, they eventually crossed the English border to join the Lancashire Jacobites, and the command was taken over by Forster. Kenmure was taken prisoner at Preston on Nov. 14. In January 1716 he was tried with other Jacobites before the House of Lords, when he pleaded guilty and appealed to the king's mercy. At his execution on Tower Hill on Feb. 24, he reiterated his belief in the claims of the Pretender. His estates and titles were forfeited, but in 1824 an act of parliament repealed the forfeiture and his descendant, John Gordon (1750–1840), became Viscount Kenmure. On the death of the succeeding peer, Adam, 8th viscount, without issue in 1847, the title became dormant.

KENNEDY, the name of a famous and powerful Scottish family long settled in Ayrshire, derived probably from the name Kenneth. John Kennedy of Dunure obtained Cassillis and other lands in Ayrshire about 1350. John's descendant, Sir James Kennedy, married Mary, a daughter of King Robert III. and their son, Sir Gilbert Kennedy, was created Lord Kennedy before 1458. Another son was James Kennedy (*c.* 1406–1465), bishop of St. Andrews, who founded and endowed St. Salvator's college at St. Andrews and built a large and famous ship called the "St. Salvator."

One of Gilbert Kennedy's sons was the poet, Walter Kennedy (*q.v.*), and his grandson David, third Lord Kennedy (killed at Flodden, 1513), was created earl of Cassillis before 1510; David's sister Janet Kennedy was one of the mistresses of James IV. The earl was succeeded by his son Gilbert, who was killed at Prestwick (Dec. 22, 1527). His son Gilbert, the 3rd earl (*c.* 1517–1558), was educated by George Buchanan, and was a prisoner in England after the rout of Solway Moss in 1542. He was lord high treasurer of Scotland from 1554 to 1558, although he had been intriguing with the English and had offered to kill Cardinal Beaton in the interests of Henry VIII. He died at Dieppe late in 1558 when returning from Paris, where he had attended the marriage of Mary Queen of Scots, and the dauphin of France. He was the father of the "king of Carrick" and the brother of Quintin Kennedy (1520–1564), abbot of Crossraguel. The abbot wrote several works defending the doctrines of the Roman Catholic Church, and in 1562 had a public discussion with John Knox at Maypole. He died on Aug. 22, 1564.

Gilbert Kennedy, 4th earl of Cassillis (*c.* 1541–1576), called the "king of Carrick," became a protestant, but fought for Queen Mary at Langside in 1568. He tortured Allan Stewart, the commendator abbot of Crossraguel in 1570 in order to compel him to renounce his title to the abbey lands which had been seized by Cassillis. John, 6th earl (*c.* 1595–1668), was one of the leaders of the Scots in their resistance to Charles I. In 1643 he went to the Westminster Assembly of Divines and several times he was sent on missions to Charles I. and to Charles II.; for a time he was lord justice general and he was a member of Cromwell's House of Lords. His granddaughter Margaret, married Gilbert Burnet, afterwards bishop of Salisbury. The direct line failed with the death of John, the 8th earl, in August 1759.

The titles and estates of the Kennedys were now claimed by William Douglas, afterwards duke of Queensberry, a great-grandson in the female line of the 7th earl and also by Sir Thomas Kennedy, Bart., of Culzean, a descendant of the 3rd earl, *i.e.*, by the heir general and the heir male. In January 1762 the House of Lords decided in favour of the heir male. The 10th earl died unmarried, and the earldom then passed to a branch of the family settled in America. Archibald, the 12th earl, was created marquess of Ailsa in 1831.

See R. Pitcairn, *Historical and genealogical account of the principal families of the name of Kennedy* (1830).

KENNEDY, SIR ALEXANDER BLACKIE WILLIAM (1847–1928), British engineer, was born at Stepney on March 17, 1847, and educated at the City of London School, and the School of Mines. About 1863 he became a pupil at Dugeon's, Millwall, marine engineers, who were constructing the earliest twin-screw engines. Kennedy took a large part in designing the first compound marine engines built on the Tyne, but by the time he went to Palmer's engine works at Jarrow-on-Tyne as a draughtsman (1868), the types were already beginning to be standardized. After a few years at Leith, Edinburgh and Glasgow, he was appointed, in 1874, professor of engineering at University college, London. His leading methods, founded on Reuleaux's kinematic analysis, have had a wide influence in England and America. He translated Reuleaux's *Kinematics* (1876), and *The Mechanics of Machinery* (1886). In 1887 he was elected F.R.S. In 1889 he set up in practice as an electrical engineer, supervising the construction of power stations in London, Edinburgh, Glasgow and elsewhere. He applied the underground conduit system to part of the London County Council tramway service, and he acted as electric adviser to many companies. Kennedy was knighted in 1905. In 1913 he was a member of Lord Parker's committee on wireless telegraphy. During the World War he presided over the committee on gun-sights and range-finders, and took active part on other similar bodies. He published in 1921 a book, illustrated by his own photographs, entitled *Ypres to Verdun.* In 1920 he was chairman of the electric railways committee set up by the Ministry of Transport.

At the age of 75, in 1922, he set out to explore Petra, publishing the results of his work in an admirable monograph, *Petra: Its History and Monuments* (1925). His book was also illustrated by his excellent photographs. He died on Nov. 1, 1928.

KENNEDY, BENJAMIN HALL (1804–1889), English scholar, was born at Summer Hill, near Birmingham, Nov. 6, 1804. He was elected fellow and classical lecturer of St. John's college, Cambridge, in 1828. From 1836–66 he was headmaster of Shrewsbury. In 1867 he was elected regius professor of Greek at Cambridge and canon of Ely. From 1870–80 he was a member of the committee for the revision of the New Testament. He died near Torquay April 6, 1889. A Latin professorship at Cambridge was founded in memory of him.

His chief works, besides his *Latin Primer* and *Public School Latin Grammar,* are: Sophocles, *Oedipus Tyrannus* (1885), Aristophanes, *Birds* (1874); Aeschylus, *Agamemnon* (1882), with introduction, metrical translation and notes; a commentary on Virgil (1881); and a translation of Plato, *Theaetetus* (1881). He contributed largely to the collection known as *Sabrinae Corolla,* and published a collection of verse in Greek, Latin and English under the title *Between Whiles* (1882).

His brother, CHARLES RANN KENNEDY (1808–1867) became a barrister. From 1849–56 he was professor of law at Queen's college, Birmingham. In the celebrated will case Swinfen *v.* Swinfen (1856) he brought an action for remuneration for professional services, but the verdict given in his favour was set aside by the court of Common Pleas. He died in Birmingham Dec. 17, 1867.

His works include a translation of the orations of Demosthenes (1852–63, in Bohn's *Classical Library*), and a blank verse translation of Virgil (1861), besides *New Rules for Pleading* (1841) and *A Treatise on Annuities* (1846).

Another brother, REV. WILLIAM JAMES KENNEDY (1814–91), was a prominent educationalist, and the father of Lord Justice Sir William Rann Kennedy (1846–1915), himself a distinguished Cambridge scholar.

KENNEDY, WALTER (*c.* 1460–*c.* 1508), Scottish poet, was the third son of Gilbert, 1st Lord Kennedy. He matriculated at Glasgow university in 1475 and took his M.A. degree in 1478. In 1481 he was one of four examiners in his university, and in 1492 he acted as depute for his nephew, the hereditary bailie of Carrick. He is best known for his share in the *Flyting* with Dunbar (*q.v.*). In this combat of wits Dunbar taunts his rival with his Highland speech (the poem is an expression of Gaelic and "Inglis," *i.e.,* English, antagonism); and implies that he had been involved in treason, and had disguised himself as a beggar in Galloway. Kennedy's poems, chiefly religious in character, are printed in the rare supplement to David Laing's edition of *William Dunbar* (1834); they have been re-edited by Dr. J. Schipper in the proceedings of the Kais. Akad. der Wissenschaften (Vienna, 1902).

See the prolegomena to *The Poems of William Dunbar* (ed. J. Small, The Scottish Text Society, 3 vols., 1884–93); J. Schipper, *Poems of Walter Kennedy* (with introduction, life and bibliography, in English, Leipzig and Vienna, 1902); F. Holthauser, *Kennedy-Studien* (vol. cx.; in new series, x., 1903; vol. cxii., in new series, xii., 1904, in *Archiv für das Studium der neueren Sprachen und Litteraturen,* Braunschweig, 1874, etc.); and for Kennedy's life, *Historie of the Kennedies* (ed. R. Pitcairn, 1830).

KENNEL, a small hut for a dog, also a group of buildings for a pack of hounds (*see* DOG) (*cf.* French *chenil,* from popular Latin *canile,* place for a dog, *canis*). The word "kennel," a gutter in a street, is a corruption of the M.E. *canel, cannel,* in modern English "channel."

KENNETH, the name of two kings of the Scots.

KENNETH I., MacAlpin (d. *c.* 860), often described as the first king of Scotland (kingdom of Scone), was the son of Alpin, called king of the Scots, a descendant of Conall Gabhrain of the old Dabriadic Scottish kingdom. His father was slain in 832 or 834, whilst endeavouring to assert his claim to the Pictish throne and Kenneth is said to have succeeded him in the kingdom of the Scots. The region of his rule is a matter of conjecture, though Galloway seems the most probable suggestion, in which case he probably led a piratic host against the Picts. Their chief support seems to have been found in Fife. In 841 he took advantage of a Danish invasion of the Pictish kingdom to attack the remaining Picts, whom he finally subdued in 846. He is said also to have carried out six invasions of Northumbria, in the course of which he burnt Dunbar and took Melrose. According to the *Scalacronica* of Sir Thomas Gray he drove the Angles and Britons over the Tweed, reduced the land as far as that river, and first called his kingdom Scotland. He died in 860 at Forteviot.

KENNETH II. (d. 995), son of Malcolm I., king of Alban, succeeded Cuilean, son of Indulph, who was slain by the Britons of Strathclyde in 971 in Lothian. Kenneth began his reign by ravaging the British kingdom. Soon afterwards he attacked Eadulf, earl of the northern half of Northumbria, and ravaged the whole of his territory. He fortified the fords of the Forth and again invaded Northumbria, carrying off the earl's son. About this time he gave the city of Brechin to the church. In 977 he is said to have slain Amlaiph or Olaf, son of Indulph, king of Alban, perhaps a rival claimant to the throne. According to the English chroniclers, Kenneth paid homage to King Edgar for the cession of Lothian, but these statements are probably due to the controversy as to the position of Scotland. Kenneth's chiefs were continually engaged in a contest with Sigurd the Norwegian, earl of Orkney, for the possession of Caithness and the district of Scotland north of the Spey, but the Scots attained no permanent success. The central districts of Scotland were, however, consolidated during his reign. In 995 Kenneth was slain treacherously by his own subjects, according to the later chroniclers at Fettercairn in the Mearns through an intrigue of Fenella, daughter of Cunchar, a mormaor of the earl of Angus. He was buried at Iona.

See *Chronicles of the Picts and Scots,* ed. W. F. Skene (Edinburgh, 1867), and W. F. Skene, *Celtic Scotland* (Edinburgh, 1876).

KENNETT, WHITE (1660–1728), English bishop and antiquary, was born at Dover and was educated at Westminster school and at St. Edmund's Hall, Oxford, where as tutor and vice-principal he gave considerable impetus to the study of antiquities. He became rector of St. Botolph's, Aldgate, London (1700), archdeacon of Huntingdon (1701), dean of Peterborough (1707) and bishop of Peterborough (1718). He joined the Low Church party, opposed the Sacheverell movement, and in the Bangorian controversy supported with zeal and considerable bitterness the side of Bishop Hoadly. He died at Westminster in Dec. 1728.

Kennett wrote the third volume (Charles I.–Anne) of the composite *Compleat History of England* (1706), and a more detailed and valuable *Register and Chronicle* of the Restoration. He was one of the founders of the S.P.G.

See W. Newton, *Life of Bishop White Kennett* (1730), J. Nichols's *Literary Anecdotes of the Eighteenth Century* (9 vol., 1812–15) and I. Disraeli's *Calamities of Authors* (2 vols., 1812; new ed. by the Earl of Beaconsfield, 1881).

KENNEY, JAMES (1780–1849), English dramatist, was the son of James Kenney, one of the founders of Boodles' club in London. His first play, a farce called *Raising the Wind* (1803), was a success owing to the popularity of the character of "Jeremy Diddler." Kenney produced more than 40 dramas and operas between 1803 and 1845, the most famous of which was *Sweethearts and Wives,* produced at the Haymarket theatre in 1823. Kenney, who numbered Charles Lamb and Samuel Rogers among his friends, died in London on July 25, 1849. He married the widow of the dramatist Thomas Holcroft, by whom he had two sons and two daughters. He also wrote: *False Alarms* (1807), a comic opera with music by Braham; *Love, Law and Physic* (1812); *Spring and Autumn* (1827); *The Illustrious Stranger, or Married and Buried* (1827); *Masaniello* (1829) and *The Sicilian Vespers* (1840), a tragedy.

See J. Genest, *Some Account of the English Stage, 1660–1830,* vols. vii. and viii. (10 vols., 1832); P. W. Clayden, *Rogers and his Contemporaries* (2 vols., 1889); *Dict. Nat. Biography.*

KENNICOTT, BENJAMIN (1718–1783), English divine and Hebrew scholar, was born at Totnes, Devonshire, on April 4, 1718. He studied at Wadham college, Oxford, where he distinguished himself in Hebrew and divinity. In 1747 he was elected fellow of Exeter college, and in 1767 keeper of the Radcliffe Library. He was also canon of Christ Church (1770) and rector of Culham (1753), Oxfordshire. He died at Oxford on Sept. 18, 1783.

His chief work is the *Vetus Testamentum hebraicum cum variis lectionibus* (2 vols. fol., Oxford, 1776–80), for which 615 Hebrew mss. and 52 printed edd. were collated, together with 16 mss. of the Samaritan Pentateuch. Before this he had published *The State of the Printed Hebrew Text of the Old Testament considered* (1753–59), which were designed to combat the then current ideas as to the "absolute integrity" of the received Hebrew text.

Kennicott's work was perpetuated by his widow, who founded two university scholarships at Oxford for the study of Hebrew. The fund yields an income of £200 per annum.

KENNINGTON, a district in the south of London, England, within the borough of Lambeth. There was a royal palace here until the reign of Henry VII. Kennington Common, now repre-

sented by Kennington park, was the site of a gallows until the end of the 18th century, and was the meeting-place appointed for the great Chartist demonstration of April 10, 1848. Kennington Oval is the ground of the Surrey County Cricket club. The Hobbs memorial gate dates from 1933. (*See* LAMBETH.)

KENORA, a town and port in Ontario, Canada, and chief town of Kenora district, situated at an altitude of 1,087 ft. Pop. (1941) 7,745. It is 125 mi. east of Winnipeg, on the main line of the Canadian Pacific railway, and at the outlet of the Lake of the Woods. It is connected by motor highway with Minnesota and by the C.P.R. air lines with the northern gold fields. The Winnipeg river has at this point a fall of 16 ft., which, with the lake as a reservoir, furnishes abundant water power. The industrial establishments comprise reduction works, sawmills and flourmills, one of the latter being the largest in Canada. It is the distributing point for the gold mines of the district, and during the summer months steamboat communication is maintained on the lake. There is important sturgeon fishing.

KENOSHA, a city of Wisconsin, U.S.A., on Lake Michigan, 35 mi. S. of Milwaukee; a port of entry and the county seat of Kenosha county. It is served by the Chicago and North Western railway and interurban electric lines, and by lake steamers. The population was 40,472 in 1920 (31% foreign-born white); 50,262 in 1930 and 48,765 in 1940 by the federal census.

The city has a fine situation above the lake, and its excellent harbour is open throughout the year. A beautiful civic centre is one feature of the city plan. Kenosha is an important manufacturing centre, and the factories of the county had an output in 1937 valued at $63,246,680.

Among the products which have a country-wide market are motor cars, hosiery, underwear and brass and wire rope. The assessed valuation of real property in 1940 was $63,001,340, of which 91% represented realty and 9% personal property. Retail trade transactions amount to $23,000,000 annually. Kenosha was settled about 1832 and was called Southport until (in 1850) it was chartered as a city. The city of Kenosha operates under a city-manager form of government.

KENSETT, JOHN FREDERICK (1818–1872), American artist, was born in Cheshire (Conn.), March 22, 1818. After studying engraving he went abroad, took up painting and exhibited at the Royal Academy, London, in 1845. In 1849 he was elected to the National Academy of Design, New York, and in 1859 he was appointed a member of the committee to superintend the decoration of the United States capitol at Washington, D.C. After his death the contents of his studio realized at public auction over $150,000. He painted landscapes more or less in the manner of the Hudson River school.

KENSINGTON, a western metropolitan borough of London, England, bounded northeast by Paddington and the city of Westminster, southeast by Chelsea, southwest by Fulham, northwest by Hammersmith, and extending north to the boundary of the county of London. Pop. (1938) 174,100. Area, 3.6 sq.mi. It includes the districts of Kensal Green (partly) in the north, Notting Hill in the north-central portion, Earl's Court in the southwest, and Brompton in the southeast. A considerable area adjoining Brompton is called South Kensington; but the area known as West Kensington is within the borough of Fulham.

The name appears early as *Chenesitun* and *Kenesitune,* and has been connected with a Saxon royal residence (King's town), a family of the name of Chenesi, and the word *caen,* meaning wood, from the forest which originally covered the district and was still traceable in Tudor times. The most probable derivation, however, finds in the name a connection with the Saxon tribe or family of Kensings. The history of the manor is traceable from the time of Edward the Confessor, and after the Conquest it was held of the bishop of Coutances by Aubrey de Vere. Soon after it became the absolute property of the de Veres, subsequently earls of Oxford. The memory of the manorial courts is preserved in the name Earl's Court. There were also three submanors, one given by the first Aubrey de Vere early in the 12th century to the abbot of Abingdon; whence the present parish church is called St. Mary Abbots; while in another, Knotting Barnes, the origin of the name Notting Hill is found.

The period of history for which Kensington is famous may be dated from the settlement of the court here by William III. A mansion on the west flank of the present Kensington Gardens had been the seat of Heneage Finch, lord chancellor and afterwards earl of Nottingham. It was known as Nottingham house, but when bought from the second earl by William, to avoid residing in London as he suffered from asthma, it became known as Kensington palace. The additions and alterations made by Wren resulted in a severely plain edifice of brick; the orangery, added in Queen Anne's time, is by the same architect. Caroline, the wife of George II, formed the lake called the Serpentine (1733). The palace became open to the public by order of Queen Victoria. It was damaged, but not seriously, in World War II.

Kensington square, south of High street in the vicinity of St. Mary Abbots church, still preserves some picturesque houses. Holland house was built by Sir Walter Cope, lord of the manor, in 1607, and obtained its present name on coming into the possession of Henry Rich, earl of Holland, through his marriage with Cope's daughter. General Fairfax and General Lambert are mentioned as occupants after his death, and later the property was let, William Penn of Pennsylvania being among those who leased it. Addison, marrying the widow of the 6th earl, lived there until his death in 1719. During the tenancy of Henry Fox, third Lord Holland (1773–1840), the house gained a European reputation as a meeting-place of statesmen and men of letters. Unfortunately this fine Jacobean mansion was very badly damaged in World War II. The library was completely wrecked and other rooms were burned out.

The parish church of St. Mary Abbots, High street (an ancient site) was built from the designs of Sir Gilbert Scott in 1869. The oratory of S. Philip Neri is a well-known Roman Catholic church in Brompton road. South Kensington has become a great centre of museums and institutions of learning, with the British Museum of Natural History, the Victoria and Albert, also called the South Kensington, Museum of the Arts and Crafts, the Science museum, and library, the Imperial institute with its museum galleries (within the bounds of Westminster), the Imperial College of Science, the Royal College of Art, the house of the Royal Geographical society, the Albert Hall, etc. Kensington Gardens, laid out in the time of Queen Anne, were the site of the "Great Exhibition" of 1851. In Holland Park road is the house of Lord Leighton (d. 1896), given to the nation, and open, with its art collection, to the public. Kensington is a bishopric suffragan in the diocese of London. The parliamentary borough of Kensington has north and south divisions, each returning one member.

KENT, EARLS AND DUKES OF. The first holder of the English earldom of Kent was probably Odo, bishop of Bayeux, and the second a certain William de Ypres (d. 1162), both of whom were deprived of the dignity. The regent Hubert de Burgh obtained this honour in 1227, and in 1321 it was granted to Edmund Plantagenet, the youngest brother of Edward II. Edmund (1301–1330), who was born at Woodstock on Aug. 5, 1301, steadily supported his brother until the last act in Edward's life opened in 1326. He fought in Scotland and then in France, and was a member of the council when Edward III became king in 1327. Soon at variance with Queen Isabella and her lover, Roger Mortimer, Edmund was involved in a conspiracy to restore Edward II, who he was led to believe was still alive; he was arrested, and beheaded on March 19, 1330. Although he had been condemned as a traitor his elder son Edmund (*c.* 1327–1333) was recognized as earl of Kent, the title passing on his death to his brother John (*c.* 1330–1352).

The Holand Earls.—After John's childless death the earldom appears to have been held by his sister Joan, "the fair maid of Kent," and in 1360 Joan's husband, Sir Thomas de Holand, or Holland, was summoned to parliament as earl of Kent. Holand, who was a soldier of some repute, died in Normandy on Dec. 28, 1360, and his widow married Edward the Black Prince, by whom she was the mother of Richard II. The next earl was Holand's eldest son Thomas (1350–1397), who was marshal of England from 1380 to 1385, and was in high favour with his half-brother,

Richard II. The 3rd earl of Kent of the Holand family was his son Thomas (1374–1400). In September 1397, a few months after becoming earl of Kent, Thomas was made duke of Surrey as a reward for assisting Richard II. against the lords appellant; but he was degraded from his dukedom in 1399, and was beheaded in January of the following year for conspiring against Henry IV. However, his brother Edmund (1384–1408) was allowed to succeed to the earldom, which became extinct on his death in Brittany in September 1408.

The Nevilles.—In the same century the title was revived in favour of William, a younger son of Ralph Neville, 1st earl of Westmorland, and through his mother Joan Beaufort a grandson of John of Gaunt, duke of Lancaster. William (*c.* 1405–1463), who held the barony of Fauconberg in right of his wife, Joan, fought for the Yorkists during the Wars of the Roses, and was chiefly responsible for the victory of Edward IV. at Towton (1461); soon after this event he was created earl of Kent and admiral of England. At his death the title became extinct. Neville's natural son Thomas, "the bastard of Fauconberg" (d. 1471), was a follower of Warwick, the "Kingmaker."

The Greys.—The long connection of the family of Grey with this title began in 1465, when Edmund, Lord Grey of Ruthin, was created earl of Kent. Edmund (*c.* 1420–1489) was the eldest son of Sir John Grey, while his mother, Constance, was a daughter of John Holand, duke of Exeter. During the earlier part of the Wars of the Roses Grey fought for Henry VI.; but by deserting the Lancastrians during the battle of Northampton in 1460 he gave the victory to the Yorkists. He was treasurer of England and held other high offices under Edward IV. and Richard III. His son and successor, George, 2nd earl of Kent (*c.* 1455–1503), also a soldier, married Anne Woodville, a sister of Edward IV.'s queen, Elizabeth, and was succeeded by his son Richard (1481–1524). Henry, the 12th earl, was created in 1706 earl of Harold and marquess of Kent, becoming duke of Kent four years later. His titles became extinct at his death in 1740.

Royal Dukes.—In 1799 Edward Augustus (1767–1820), fourth son of George III, was created duke of Kent and Strathearn by his father. He served in the British army in North America and elsewhere, a field marshal in 1805. In 1818 he married Victoria Mary Louisa (1786–1861), widow of Emich Charles, prince of Leiningen (d. 1814), and sister of Leopold I, king of the Belgians; and his only child was Queen Victoria (*q.v.*).

On Oct. 9, 1934, George Edward Alexander Edmund (1902–1942), fourth son of George V, was created duke of Kent. In 1934 he married Marina (1906–), youngest daughter of Prince Nicolas of Greece. He was killed Aug. 25, 1942, on military duty, when an R.A.F. bomber crashed in Scotland.

KENT, JAMES (1763–1847), American jurist, was born at Philippi, N.Y., July 31, 1763. He graduated at Yale college in 1781, and in 1785 began to practise law at Poughkeepsie. From 1791 to 1793 Kent was a representative of Dutchess county in the State Assembly. In 1793 he removed to New York city, where Governor Jay appointed him a master in chancery. He was professor of law in Columbia college in 1793–98, and again served in the assembly in 1796–97. In 1797 he became recorder of New York, in 1798 judge of the supreme court of the State, in 1804 chief justice, and in 1814 chancellor of New York. In 1822 he was a member of the convention to revise the State Constitution. Next year, Chancellor Kent resigned his office and was re-elected to his former chair. Out of the lectures he now delivered grew the *Commentaries on American Law* (4 vols., 1826–30), which won for him a high and permanent place among English and American jurists. His judgments as chancellor (*see* Johnson's *Chancery Reports,* 7 vols., 1816–24) cover a wide range of topics, and are so thoroughly considered and developed as unquestionably to form the basis of American equity jurisprudence. He died in New York Dec. 12, 1847.

Kent wrote several other works (including a *Commentary on International Law*) of less importance than the *Commentaries. See* J. Duer's *Discourse on the Life, Character and Public Services of James Kent* (1848); *The National Portrait Gallery of Distinguished Americans,* vol. ii. (1852); W. Kent, *Memoirs and Letters of Chancellor Kent* (1898).

KENT, ROCKWELL (1882–), American painter, was born at Tarrytown Heights, N.Y., on June 21, 1882. He studied and practised architecture but turned to painting, and was a pupil of William M. Chase, Robert Henri, Hayes Miller and Abbott Thayer. Of a roving disposition, he worked as a lobsterman and carpenter on the coast of Maine, lived in Newfoundland and Alaska, and explored the waters about Tierra del Fuego in a small boat, went to sea as ship's carpenter, painting what he saw in his travels and writing his impressions. His work was individual in character and attracted great attention by its dramatic realism. He also produced some book illustrations. He is represented in the principal museums of the United States:—"Deer Season," in the Chicago Art Institute; "Annie McGinley," Carnegie Institute, Pittsburgh; "Marine," in the Metropolitan Museum, New York; "Mother and Child" and "Lone Woman," in the Brooklyn Museum, etc. He wrote *Wilderness* (1920), *Voyaging* (1924), *N. by E.* (1930), *Rockwellkentiana* (1933), *Sàlamina* (1935) and *This is My Own* (1940). In 1927 he assumed the editorship of a new magazine, *Creative Art.*

See F. Newlin Price, "Rockwell Kent, Voyager," *International Studio,* vol. lxxix., p. 272–276 (1924).

KENT, WILLIAM (1685–1748), English "painter, architect, and the father of modern gardening," as Horace Walpole in his *Anecdotes of Painting* describes him, was born in Yorkshire in 1685. He found patrons, who sent him in 1710 to study painting in Italy; and at Rome he made other friends, among them Lord Burlington, with whom he returned to England in 1719. Under that nobleman's roof Kent chiefly resided till his death on April 12, 1748—obtaining abundant commissions in all departments of his art, as well as various court appointments. Walpole says that Kent was below mediocrity in painting. He had some little taste and skill in architecture, of which Holkham palace is perhaps the most favourable example. The mediocre statue of Shakespeare in Westminster abbey sufficiently stamps his powers as a sculptor. His merit in landscape gardening is greater. He was the first in English gardening to vindicate the natural against the artificial. Banishing the topiary art in yew, box or holly, releasing the streams from the conventional canal and marble basin, and rejecting the mathematical symmetry of ground plan then in vogue for gardens, Kent endeavoured to imitate the variety of nature, with due regard to the principles of light and shade and the rules of perspective.

KENT, one of the kingdoms of Anglo-Saxon Britain, the dimensions of which seem to have corresponded with those of the present county (*see* p. 328). According to tradition it was the first part of the country occupied by the invaders, its founders, Hengest and Horsa, having been employed by the British king Vortigern against the Picts and Scots. Their landing, according to English tradition, took place between 450–455, though in the Welsh accounts the Saxons are said to have arrived in 428 (cf. *Hist. Britt.* 66). According to *The Anglo-Saxon Chronicle,* which probably used some lost list of Kentish kings, Hengest reigned 455–488, and was succeeded by his son Aesc (Oisc), who reigned till 512; but little value can be attached to these dates. Continuous history begins with Aethelbert, the great-grandson of Aesc, who reigned probably 560–616. He is famous as the author of a code of laws which is the oldest document of its kind written in any Germanic language. He married Berta, daughter of the Frankish king Haribert, or Charibert, an event which no doubt was partly responsible for the success of the mission of Augustine, who landed in 597. Aethelbert was at this time supreme over all the English kings south of the Humber. On his death in 616 he was succeeded by his son Eadbald, who renounced Christianity and married his stepmother, but was shortly afterwards converted by Laurentius, the successor of Augustine. Eadbald was succeeded in 640 by his son Erconbert, who enforced the acceptance of Christianity throughout his kingdom, and was succeeded in 664 by his son Egbert, the latter again by his brother Hlothhere in 673. The early part of Hlothhere's reign was disturbed by an invasion of Aethelred of Mercia. He issued a code of laws, which is still extant, together with his nephew Eadric, the son of Egbert, but in 685 they quarrelled and Eadric called in the South Saxons.

Hlothhere died of his wounds, and was succeeded by Eadric, who reigned under two years.

The death of Eadric was followed by a disturbed period, in which Kent was under kings whom Bede calls *"dubii vel externi."* An unsuccessful attempt at conquest seems to have been made by the West Saxons, but there is some evidence for a successful invasion by the East Saxon king Sigehere in 687. A king named Oswine, who apparently belonged to the native dynasty, seems to have obtained part of the kingdom in 688. The other part came in 689 into the hands of Swefheard, probably a son of the East Saxon king Sebbe. Wihtred, a son of Egbert, succeeded Oswine about 690, and obtained possession of the whole kingdom before 694. From him also we have a code of laws. At Wihtred's death in 725 the kingdom was divided between his sons Aethelbert, Eadbert and Alric, the last of whom appears to have died soon afterwards. Aethelbert reigned till 762; Eadbert, according to the *Chronicle,* died in 748, but some doubtful charters speak of him as alive in 761–762. Eadbert was succeeded by his son Eardwulf, and he again by Eanmund, while Aethelbert was succeeded by a king named Sigered. From 764–779 we find a king named Egbert, who in the early part of his reign had a colleague named Heabert. At this period Kentish history is very obscure. Another king named Aethelbert appears in 781, and a king Ealhmund in 784, but there is some reason for suspecting that Offa annexed Kent about this time. On his death (796) Eadbert Praen made himself king, but in 798 he was defeated and captured by Coenwulf of Mercia who made his own brother Cuthred king in his place. On Cuthred's death in 807 Coenwulf seems to have kept Kent in his own possession. His successors Ceolwulf and Beornwulf likewise appear to have held Kent, but in 825 we hear of a king Baldred who was expelled by Egbert king of Wessex. Under the West Saxon dynasty Kent, together with Essex, Sussex and Surrey, was sometimes given as a dependent kingdom to one of the royal family. During Egbert's reign it was entrusted to his son Aethelwulf, on whose accession to the throne of Wessex, in 839, it was given to Aethelstan, probably his son, who lived at least till 851. From 855 to 860 it was governed by Aethelbert son of Aethelwulf. During the last years of Alfred's reign it seems to have been entrusted by him to his son Edward. Throughout the 9th century we hear also of two earls, whose spheres of authority may have corresponded to those of the two kings whom we find in the 8th century. The last earls of whom we have any record were the two brothers Sigehelm and Sigewulf, who fell at the Holm in 905 when the Kentish army was cut off by the Danes, on Edward the Elder's return from his expedition into East Anglia. At a later period Kent appears to have been held, together with Sussex, by a single earl.

The internal organization of the kingdom of Kent seems to have been peculiar. Besides the division into West Kent and East Kent, which probably corresponds to the kingdoms of the 8th century, we find a number of lathes, apparently administrative districts under reeves, attached to royal villages. In East Kent there were four of these, namely, Canterbury, Eastry, Wye and Lymne, which can be traced back to the 9th century or earlier. In the 11th century we hear of two lathes in West Kent, those of Sutton and Aylesford.

The social organization of the Kentish nation was wholly different from that of Mercia and Wessex. Instead of two "noble" classes we find only one, called at first eorlcund, later as in Wessex, gesithcund. Again, below the ordinary freeman we find three varieties of persons called *laetas,* probably freedmen, to whom we have nothing analogous in the other kingdoms. Moreover the wergeld of the ceorl, or ordinary freeman, was two or three times as great as that of the same class in Wessex and Mercia, and the same difference of treatment is found in all the compensations and fines relating to them. It is not unlikely that the peculiarities of Kentish custom observable in later times, especially with reference to the tenure of land, are connected with these characteristics. An explanation is probably to be obtained from a statement of Bede—that the settlers in Kent belonged to a different nationality from those who founded the other kingdoms, namely the Jutes (*q.v.*).

See Bede, *Historia ecclesiastica,* ed. C. Plummer (Oxford, 1896); *Two of the Saxon Chronicles,* ed. J. Earle and C. Plummer (Oxford, 1892–99); W. de G. Birch, *Cartularium Saxonicum* (1885–89); B. Seebohm, *Tribal Custom in Anglo-Saxon Law* (1902); H. M. Chadwick, *Studies on Anglo-Saxon Institutions* (Cambridge, 1905); Liebermann, *Gesetze der Angelsachsen* (Halle 1903–16). (F. G. M. B.)

KENT, a south-eastern county of England, bounded north by the Thames estuary, east and south-east by the English Channel, south-west by Sussex, and west by Surrey. In the north-west the administrative county of London encroaches upon the geographical county of Kent, the area of which is 1,525 sq.mi. The county is divided from west to east by the chalk hills of the North downs, which near Westerham reach a height of over 800 ft. but are lower towards the east. Towards the north the chalk is covered by the Eocene Woolwich beds and London clay, which dip towards the north. At three points the chalk downs have been cut right through by rivers. In the west the Darent, flowing to join the Thames at Dartford, pierces the hills north of Sevenoaks. The Medway, after traversing the Vale of Kent, composed mainly of Weald clay, forces its way through the downs near Maidstone to enter the Thames at Chatham. In the east the Stour cuts its way through the downs between Ashford and Canterbury. The isles of Sheppey and Grain are formed of clay beds and alluvium; the former is divided from the mainland by the Swale (bridged at Queensbridge) and the latter by a branch of the Medway. Along the banks of the Thames the coast is alluvial and generally low and marshy, embankments being in several places necessary to prevent inundation. At a few points, however, as at Gravesend, spurs of the North downs descend directly upon the shore.

In the estuary of the Medway there are a number of low marshy islands, but Sheppey, with its clay beds along the north coast, presents to the sea a range of slight cliffs. The marshes extend along the Swale to Whitstable, whence stretches a low line of clay and sandstone cliffs towards the Isle of Thanet, a chalk outlier, when they become lofty and grand, extending round the Foreland southward to Pegwell bay. The coast from Sheppey round to the South Foreland is skirted by numerous flats and sands, the most extensive of which are the Goodwin sands off Deal. The whole valley of the Stour and the depression from Sarre to Reculver is composed of alluvium, and marks the course of the channel (Wantsum) which used to separate Thanet from the mainland. South of Deal the coast rises again into chalk cliffs, the eastward termination of the North downs. These cliffs continue round the South Foreland to Folkestone, where they fall away, and are succeeded west of Sandgate by a flat, shingly shore. To the south of Hythe this shore borders the wide expanse of Romney marsh, which, immediately west of Hythe, is overlooked by a line of abrupt hills, but for the rest is divided on the north from the drainage system of the Stour only by a slight uplift. Between Folkestone and Hythe, gault and lower greensand emerge from beneath the chalk, and these formations run across the county to Westerham as a band of varying width. To the south of Sevenoaks the lower greensand forms the Ragstone ridge, over 600 ft. high.

Romney marsh, drained by many channels, seldom rises over a dozen feet above sea-level. At its south-eastern extremity, and at the extreme south of the county, is the shingly promontory of Dungeness. Within historic times much of this marsh was covered by the sea, and the valley of the river Rother, which forms part of the boundary of Kent with Sussex, entering the sea at Rye harbour, was represented by a tidal estuary for a considerable distance inland.

The south-west of the county is crossed by a line of hills, the continuation of the Forest ridge of Sussex, which have a height varying from 200 ft. to 500 feet. These hills consist of the Hastings beds, which are the oldest rock formations in the county.

History and Early Settlement.—Ightham was the scene of the work of Benjamin Harrison, who claimed to find implements of pre-Palaeolithic (Eolithic) type in the plateau gravels. It is widely, though not universally agreed, that many of the flints he found are human artefacts of a very rough type, their age is a subject of much discussion. Palaeolithic implements have been

found chiefly in the river gravels. The number of Neolithic artefacts found in the county may be taken to suggest that towards the dawn of the age of metal, Kent already had a considerable population. Beaker pottery is of some importance and the megaliths near the Medway entry may have kinship with those of Holland. The links of the county at that stage were clearly with the continental shores of the North sea. In the later bronze age these were as clearly with Gaul, as they were also in the later centuries of the 1st millennium B.C. and the immigrants kept up contact with the continent. From Caesar we know that they worked some of the Wealden iron mines and corn was widely grown. Kent was the Roman gateway into Britain, and along the coast they developed a number of ports. The focus behind the ports was what has become Canterbury (*q.v.*), and from here Watling street ran in the direction of Rochester and London, while the Pilgrims' Way of the middle ages, along the line of the downs, in all probability had a prehistoric predecessor. The chief ports on and near the straits included Regulbium (Reculver), Rutupiae (Richborough), Dubrae (Dover) and Portus Lemanis (Lympne). (For the history of Kent in Anglo-Saxon times *see* KENT [kingdom] just preceding this article.)

Kent is remarkable as the only English county which comprises two entire bishoprics, Canterbury, the see for East Kent, having been founded in 597, and Rochester, the see for West Kent, in 604. In 1291 the archdeaconries were co-extensive with the diocesan boundaries, but in 1845 the new archdeaconry of Maidstone was formed out of that of Rochester. The shire organization of Kent dates from the time of Aethelstan, the name as well as the boundary being that of the ancient kingdom. The inland boundary has varied with the course of the Rother. In 1888 the county was diminished by the formation of the county of London.

At the time of the Domesday survey Kent comprised 60 hundreds, and there was a further division into six leets, probably representing the shires of the ancient kingdom. The five modern lathes (Aylesford, St. Augustine, Scray, Shepway and Sutton-at-Hone), all existed in the time of Edward I, with the additional lathe of Hedeling, which was absorbed before the next reign in that of St. Augustine. The *Nomina Villarum* of the reign of Edward II mentions 66 of the 73 modern hundreds, more than two-thirds of which were at that date in the hands of the Church.

Sheriffs of Kent are mentioned in the time of Aethelred II, and in Saxon times the shiremoot met three times a year on Penenden heath, near Maidstone. Four of the Cinque Ports, viz., Dover, Hythe, New Romney and Sandwich, belonged to this county. The assizes for the county were held in the reign of Henry III at Canterbury and Rochester, and also at the Lowey of Tonbridge under a mandate from the crown as a distinct liberty; after the Restoration they were held at Maidstone.

Between the Conquest and the 14th century the earldom of Kent was held by Odo, bishop of Bayeux, Hubert de Burgh (sheriff of the county in the reign of Henry III) and Edmund of Woodstock, youngest son of Edward I, who bestowed the title on him. It subsequently passed to the families of Holand and Neville (*see* KENT, EARLS AND DUKES OF). The chief local events under the Norman and Plantagenet kings were the capture of Rochester by William Rufus during the rebellion of Odo of Bayeux; the capture of Dover and Leeds castles by Stephen; the murder of Thomas Becket at Canterbury in 1170; the submission of John to the pope's legate at Dover in 1213 and the capture of Rochester castle by the king in the same year. Rochester castle was, in 1216, captured by the dauphin of France, to whom nearly all Kent submitted, and during the wars of Henry III with his barons was captured by Gilbert de Clare. In the peasants' rising of 1381 the archbishop's palace at Canterbury was plundered. In 1450 Kent took a leading part in Jack Cade's rebellion; and in 1554 the insurrection of Sir Thomas Wyat, who was born at Allington castle, began at Maidstone. Greenwich was the birthplace of three Tudor sovereigns. Sir Philip Sidney was born at Penshurst. Boughton Malherbe was the seat of the Wottons, and Hever castle of the Boleyns. Sir Francis Walsingham was born at Chislehurst, where his family had long flourished. On the outbreak of the Great Rebellion feeling was much divided, but after capturing Dover castle the parliament soon subdued the whole county. In 1648, however, a widespread insurrection was organized on behalf of Charles, and was suppressed by Fairfax. The county was among the first to welcome back Charles II. In 1667 the Dutch fleet under De Ruyter levelled the fort at Sheerness and burned the ships at Chatham.

In 1290 Kent returned two members to parliament for the county, and in 1295 Canterbury, Rochester and Tonbridge were also represented; Tonbridge, however, made no returns after this date. In 1552 Maidstone acquired representation, and in 1572 Queenborough. Under the act of 1832 the county returned four members in two divisions, Chatham was represented by one member and Greenwich by two, while Queenborough lost its member. Under the act of 1868 the county returned six members in three divisions, and Gravesend returned one member. By the act of 1885 the county returned eight members in eight divisions, and the representation of Canterbury, Maidstone and Rochester was reduced to one member each. By the London Government Act of 1892 the borough of Greenwich was taken out of Kent and made one of the 28 metropolitan boroughs of the county of London. By the Representation Act of 1918 the county was divided into 11 divisions.

Architecture.—As was to be expected from its connection with the life of the continent, Kent possessed a larger than average number of monastic foundations. The earliest were the priory of Christ's Church and the abbey of St. Peter and St. Paul, now called St. Augustine's, both at Canterbury, founded by Augustine and the monks who accompanied him to England. Other Saxon foundations were the nunneries at Folkestone (616–640?), Lyminge (633, nunnery and monastery), Reculver (shortly after 669), Minster-in-Thanet (669–690), Minster-in-Sheppey (670) and the priory of St. Martin at Dover (before 640), all belonging to the Benedictine order. Some of these were refounded, and the principal monastic remains now existing are those of the Benedictine priories at Rochester (1089), Folkestone (1095), Dover (1136); the Benedictine nunneries at Malling (shortly before 1099), Minster-in-Sheppey (before 1186), Higham (1148) and Davington (1153); the Cistercian abbey at Boxley (1146); the Cluniac abbey at Faversham (founded by Stephen in 1147) and priory at Monks Horton (time of Stephen); the preceptory of Knights Hospitallers at Swingfield (time of Henry II?); the Premonstratensian abbey of St. Radigund's, near Dover (1192–93); the first house of Dominicans in England at Canterbury (1236–37); the first Carmelite house in England, at Aylesford (1242); and the only house in England of Dominican nuns at Dartford (1356).

Other houses of which there are slight remains are Lesnes abbey, near Erith, and Bilsington priory near Ashford, established in 1178 and 1253 respectively, and both belonging to the Augustinian canons; and the house of Franciscans at Canterbury (1225). But no remains exist of the priories of Augustinian canons at Canterbury (St. Gregory's, 1084), Leeds, near Maidstone (1119), Tonbridge (shortly before 1192), Combwell, near Cranbrook (time of Henry II); the nunnery of St. Sepulchre at Canterbury (about 1100) and West Langdon abbey, near Walmer (1189), the former being Benedictine and the latter Premonstratensian; the Trinitarian priory of Mottenden near Headcorn, the first house of Crutched Friars in England (before 1236), where miracle plays were presented in the church by the friars on Trinity Sunday; the Carmelite priories at Sandwich (1272) and Lossenham, near Tenterden (1242); and the preceptory of Knights of St. John of Jerusalem at West Peckham near Tonbridge (1408?). Apart from the cathedral churches of Canterbury and Rochester, the county possesses a number of churches of the highest interest. In the church of Lyminge, apart from the monastic remains, there may be seen portions of the church founded by Aethelburga, and rebuilt, with considerable use of Roman material, in 965 by St. Dunstan. There is similar early work in the church of Paddlesworth. Among Norman examples is the small but important church at Barfreston. The churches of St. Margaret-at-Cliff, Patrixbourne and Darenth, and the tower of New Romney church are notable. Early English churches are

Hythe church, SS. Mary and Eanswith, Folkestone, Minster-in-Thanet, Chalk, Faversham and Westwell. Stone church, near Dartford, is a late example of this style, transitional to Decorated; and among Decorated buildings we have Chartham church. Perpendicular churches are numerous, and the fine glass of this period in Nettlestead church may be noticed. The church of Cobham contains one of the richest collections of ancient brasses in England. Great houses include Knole, Penshurst place and Leeds castle, while Ightham Mote is a fine example of a moated manor house, whose oldest parts date from about 1340.

Industries.—Among the earliest industries of Kent were the iron mining in the Weald, and the salt industry, which flourished along the coast in the 10th century. The Domesday survey, besides testifying to the agricultural activity of the county, mentions over 100 saltworks and numerous valuable fisheries, vines at Chart Sutton and Leeds and cheese at Milton. The Hundred Rolls of the reign of Edward I frequently refer to wool, and Flemish weavers settled in the Weald in the time of Edward III. Tiles were manufactured at Wye in the 14th century. Valuable timber was afforded by the vast forest of the Weald, but the restrictions imposed on the felling of wood for fuel did serious detriment to the iron-trade, and after the statute of 1558 forbidding the felling of timber for iron smelting within 14 mi. of the coast the industry steadily declined. Cherries are said to have been imported from Flanders and first planted in Kent by Henry VIII, and from this period the culture of fruits (especially apples and cherries) and of hops spread rapidly over the county. Thread-making at Maidstone and silk-weaving at Canterbury existed in the 16th century, and before 1590 one of the first paper mills in England was set up at Dartford. The statute of 1630 forbidding the exportation of wool followed by the plague of 1665, led to a serious trade depression, while the former enactment resulted in the vast smuggling trade.

The total acreage under crops and grass in 1939 was 637,570 ac. and of this 253,915 ac. was arable land. Wheat occupied 35,175 ac. Oats, at 21,884 ac., showed a decline after 1926 of over 15,000 ac. Barley also was considerably lower at 16,184 ac. Potatoes occupied 15,152 ac., being only 4,000 ac. below peas, beans, mangolds and turnips and swedes together. About 14,200 ac. of clover and rotation grasses were kept for hay. The orchards, found chiefly in the valleys of the Darent and Medway, and on the Tertiary soils between Rochester and Canterbury, had an acreage of 70,655 ac., the greatest of any county; small fruit occupied 11,664 ac. and hops 10,460 ac. There was a small but increasing acreage under sugar beets. Market gardening is extensively practised in the districts abutting on London. Much of the Weald, which originally was occupied by a forest, is still densely wooded with oaks and beeches. A large extent of woodland consists of ash and chestnut plantations, maintained for the growth of hop poles. Cattle are grazed in considerable numbers (104,657 in 1939) on the marshlands, and dairy farms are numerous in the neighbourhood of London. For the rearing of sheep (788,477 in 1939) Kent is one of the chief counties in England. A breed peculiar to the district, known as Kents, is grazed on Romney marsh, but Southdowns are the principal breed raised on the uplands. Beekeeping is extensively practised. Among the principal modern industries are papermaking, carried on on the banks of the Darent, Medway, Cray and neighbouring streams; engineering, chemical and other works along the Thames; manufactures of bricks, tiles, pottery and cement, especially on the lower Medway and the Swale. A variety of industries is connected with the government establishments at Chatham and Sheerness. Shipbuilding is prosecuted here, at Gravesend, Dover and other ports. Gunpowder is manufactured near Erith and Faversham.

Deep-sea fishing is largely prosecuted all round the coast. Shrimps, soles and flounders are taken in great numbers along the north coast and off Ramsgate. The principal oyster beds, some of which were known in Roman times, are near Whitstable, Faversham, Milton, Queenborough and Rochester, some being worked by ancient companies or guilds of fishermen. The existence of coal deposits beneath the secondary rocks had been known for a long time, but it was only after World War I that extensive operations were commenced. The area over which coal can be economically worked runs inland from south of Ramsgate to near Canterbury, and thence southward to the coast again east of Folkestone. The area of the field is about 200 sq.mi., of which 50 are under the sea, but in a workable position. It was carefully surveyed and a scheme of regional development prepared. The National Trust owned 495 ac. in Kent in 1942.

Communications.—The county is served by the Southern railway, whose lines radiate from London, one to Tunbridge Wells, another to Maidstone and Folkestone and a network along the north coast to Rochester and on to Canterbury, a junction for Thanet and Dover. All these lines are linked up by other cross county lines. Dover, Folkestone and Queenborough are ports for traffic with the continent. There were 3,740 mi. of roads in 1943, excluding the London-Folkestone-Dover trunk. All around the coast are a number of seaside resorts, and Tunbridge Wells is an inland watering place. The influence of London in converting villages into outer residential suburbs is to be observed at many points, whether seaside, along the Thames or inland. The county is practically without inland water communications, excluding the Thames. The Royal military canal which runs along the inland border of Romney marsh, and connects the Rother with Hythe, was constructed in 1807 as part of a scheme of defense in connection with the martello towers or small forts along the coast.

Administration.—The area of the administrative county is 1,517.6 sq.mi.; pop. (est. 1938) 1,411,550. Being in the track of enemy air raiders in World War II, the county suffered considerably from bombing, and evacuation of civilians caused a decline of 11% in the population between Sept. 1939 and Feb. 1941. The county contains two cities, Canterbury (a county borough) and Rochester, 22 other municipal boroughs, and 15 urban districts. It is in the southeastern circuit and has two courts of quarter sessions. Fifteen boroughs have separate commissions of the peace and 11 have separate courts of quarter sessions. The central criminal court has jurisdiction over certain parishes adjacent to London. All those civil parishes within the county of Kent of which any part is within 12 mi. of, or of which no part is more than 15 mi. from, Charing Cross, are within the metropolitan police district. Kent is mainly in the dioceses of Canterbury and Rochester but has parts in those of Southwark and Chichester. The county (extra-metropolitan) is divided into 11 parliamentary divisions, each returning one member; the parliamentary boroughs of Bromley and Hythe return one member each and Rochester two members.

See W. Lambarde, *Perambulation of Kent* (1576, 1826); R. Kilburne, *Topographie or Survey of the County of Kent* (1659); J. and T. Philipot, *Villare Cantianum* (1659, 1776); J. Harris, *History of Kent* (1719); E. Hasted, *History and Topographical Survey of Kent* (4 vols., Canterbury, 1778–99; 2nd ed., 12 vols., Canterbury, 1797–1801); W. H. Ireland, *History of the County of Kent* (1828–30); C. Sandys, *Consuetudines Kantiae* (1851); A. Hussey, *Notes on the Churches of Kent* (1852); L. B. Larking, *The Domesday Book of Kent* (1869); R. Furley, *History of the Weald of Kent* (Ashford, 1871–74); W. A. Scott Robertson, *Kentish Archaeology* (1876–84); Sir S. R. Glynne, *Notes on Churches of Kent*, edit. W. H. Gladstone (1887); *Victoria County History*, "Kent." *See* also *Archaeologia Cantiana* (trans. of the Kent Archaeological Society, London, from 1858).

KENT, a city of Portage county, Ohio, U.S.A., on the Cuyahoga river, 11 mi. N.E. of Akron. It is served by the Baltimore and Ohio, the Erie and the Wheeling and Lake Erie railways, and motor-coach lines. The population was 7,070 in 1920 (86% native white) and was 8,581 by the federal census of 1940. The city has railroad shops and a number of important manufactures (including keyless locks, cotton fabrics, valves, rivets, bolts, screws, flour and motor coaches) and is the headquarters of the Davey tree experts. On a wooded hillside is the 100 ac. campus of the Kent State university (opened in 1913). Kent was founded about 1807, incorporated as a village in 1867 and chartered as a city in 1920.

KENTIGERN, ST., or MUNGO ("dear friend," a name given to him, according to Jocelyn, by St. Servanus), a Briton of Strathclyde, called by the Goidels *In Glaschu*, "the Grey Hound," is said to have been of royal descent. His mother when with child was thrown down from a hill called Dunpelder (Traprain

Law, Haddingtonshire), but survived the fall and escaped by sea to Culross on the farther side of the Firth of Forth, where Kentigern was born. Kentigern lived for some time at Glasgow, near a cemetery ascribed to St. Ninian, and was eventually made bishop of that region by the king and clergy. Subsequently he was opposed by a pagan king called Morken, whose relatives after his death succeeded in forcing the saint to retire from Strathclyde. He thereupon took refuge with St. David at Menevia (St. David's), and eventually founded a monastery at Llanelwy (St. Asaph's), for which he received grants from Maelgwn, prince of Gwynedd. After the battle of Ardderyd in 573 in which King Rhydderch, leader of the Christian party in Strathclyde, was victorious, Kentigern was recalled. He fixed his see first at Hoddam in Dumfriesshire, but afterwards returned to Glasgow. He is credited with missionary work in Galloway and north of the Firth of Forth. The meeting of Kentigern and Columba probably took place soon after 584, when the latter began to preach in the neighbourhood of the Tay.

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KENTON, a city of Ohio, U.S.A., 60m. N.W. of Columbus, on the Scioto river; the county seat of Hardin county. It is on the Harding highway, has a landing field for aeroplanes, and is served by the Erie, the Big Four and the New York Central railways. The population was 7,690 in 1920 (95% native white) and was 7,593 by the federal census of 1940. Kenton lies on the watershed, at an altitude of 990ft. Large crops, especially onions, are grown roundabout, and the city has important manufacturing industries, including the largest plant in the country making iron toys. Electric cranes, sluice gates, machine tools, candy, metal signs and fertilizers are other products. Kenton was named after Simon Kenton (1755–1836), a famous scout and Indian fighter, who took part in the border warfare, particularly in Kentucky and Ohio, during the Revolution and afterwards. It became the county seat in 1833 and was chartered as a city in 1885.

KENT'S CAVERN, a large limestone cave near Torquay, England, which has yielded some of the earliest evidence of man's co-existence with extinct animals. The Rev. J. McEnery, who investigated the upper deposits (1825–29), was perhaps the first man to proclaim this fact. In 1840 Godwin Austin confirmed McEnery's view; the continuous excavations (1865–80) carried on by Wm. Pengelly on behalf of the British Association completed the proof. The following are the main strata in the cave, in descending order: (1) A superficial deposit of black mould, confined to an area near the main entrances, and containing objects of the Roman, early iron, and bronze ages. Most interesting are sherds of La Tène pottery with incised curvilinear designs in the style of the Glastonbury lake village ware. (2) A floor of granular stalagmite, up to three ft. thick, incorporating remains of the Neolithic period, and also such bones of the extinct cave fauna as lay upon the surface of the more ancient stratum of cave earth. (3) A local deposit of burnt bones, charcoal and ashes (the Black Band), confined to an area adjacent to the northern entrance, and from two to six in. thick. In this prehistoric hearth, and in the cave earth immediately beneath it, three harpoons were found, two of which approximate, in their trapezoidal barbs, to the harpoons found on sites of the Magleinose culture in Northern Europe. Associated with these were flint implements apparently of a very late Aurignacian type. (4) A deposit of unstratified, light-red cave earth, of unknown depth near the entrances, but thinning out towards the interior of the cave. This deposit yielded rich finds of mammoth, rhinoceros, cave bear, and other fauna of the Late Pleistocene period, with hyena and horse predominating, in association with flint implements of the Proto-Solutrian, Aurignacian, and Mousterian periods. (5) A floor of crystalline stalagmite, up to 12ft. thick, resting on (6) a compact breccia composed of bones and occasional pebbles in a matrix of dark red grit derived from the neighbouring hills. The bones were almost only those of the cave bear, associated incongruously with rude flint implements of Chellean type, sometimes lightly rolled, and presumably of earlier date than the bones. The breccia is of unknown thickness near the west end of the cave, but thins out towards the entrances. Remains of at least two additional stalagmite floors at different levels in the cave earth suggest that this latter deposit was laid down during three separate periods of erosion, interrupted by two intervals of calm, the entire process resulting in some confusion of the successive deposits of cave earth. Incorporated in the breccia are blocks of stalagmite indicating the former existence of a more ancient floor, formed upon the surface of a still older deposit. This may still exist somewhere in the cave, rock bottom having been reached over only a small area. To one of these more ancient deposits the remains of the sabre-toothed tiger, discovered in the cave earth, may originally have belonged. The human remains of Palaeolithic date consist of a brachycephalic skull from a fissure near the northern entrance; a portion of an upper jaw, with teeth, from the base of the granular stalagmite; and a fragment of an upper jaw, with three teeth, found ten feet deep in the cave earth. They are all of late Palaeolithic type. Excavations were resumed in 1926 by members of the Torquay Natural History Society, in conjunction with a committee of the British Association. Principal collections are at British Museum, Natural History Museum and Museum of the Natural History Society, Torquay.

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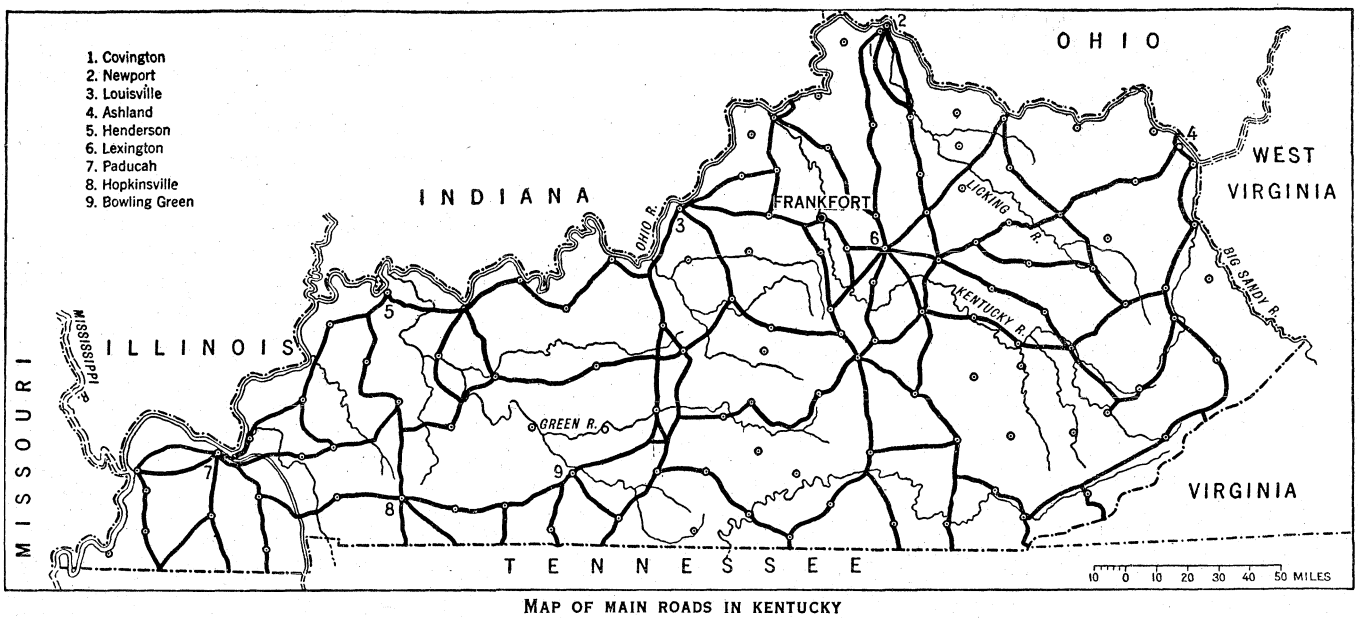
(H. G. D.)

KENTUCKY, popularly known as the "Blue Grass State" because of the abundance of luxuriant blue grass found in the central part, but officially styled the Commonwealth of Kentucky, is a south central State of the United States of America. It is situated immediately west of the Allegheny mountains, between 36° 30′ and 39° 6′ N. and 82° and 89° 38′ W. The State is bounded north-west and north-east by the Ohio river, which separates it from Illinois, Ohio, and not quite entirely from Indiana; east by the Big Sandy river and its east fork, the Tug, which separate Kentucky from West Virginia, and by Virginia; south-east and south by Virginia and Tennessee; and west by the Mississippi river, which separates it from Missouri.

Kentucky has an area of 40,395 sq.mi.; of this, 286 sq.mi. are water surface.

Physical Features.—From mountain heights along its eastern border the surface of Kentucky is principally a much furrowed plain, sloping very gently to the west and declining toward the Ohio river. The whole of the State lies within the Mississippi basin, and within the special division of the Ohio valley. A small area in the south-east lies within the disturbed region of the Alleghenies, in which parallel ridges of folded structure form the Cumberland and the Pine mountains, which have crests from 2,000 to 3,000ft. high. The highest point in the State is Big Black mountain in Harlan county, with an elevation of 4,100 feet. The lowest point is on the Mississippi river in Fulton county, with an elevation of 257 feet. The approximate average elevation for the State is 750 feet. The entire eastern quarter of the State, conterminous with the Eastern Kentucky coal-field, is commonly known as the region of the "mountains," but, with the exception of the narrow area just described, it properly belongs to the Allegheny plateau province. This plateau belt is exceedingly rugged, with sharp ridges alternating with narrow valleys which have steep sides, but are seldom more than 1,500ft. above the sea. The



MAP OF MAIN ROADS IN KENTUCKY

remainder of that part of the State which lies east of the Tennessee river is divided into the Highland Rim plateau and a lowland basin, eroded in the Highland Rim plateau and known as the Blue Grass region; this region is separated from the Highland Rim plateau by a semicircular escarpment extending from Portsmouth, O., at the mouth of the Scioto river, to the mouth of the Salt river below Louisville; it is the southern part of the Cincinnati Arch. The Highland Rim plateau, lying to the south, east and west of the escarpment, embraces fully one-half of the State, slopes from elevations of 1,000 to 1,200ft. or more in the east to about 500ft. in the north-west, and is generally much less rugged than the Allegheny plateau; a peculiar feature of the southern portion of it is the numerous circular depressions, "sink holes," in the surface and the cavernous region beneath. Kentucky is noted for its caves, the best known of which are Mammoth cave and Colossal cavern. The caves are cut in the beds of limestone (lying immediately below the coal-bearing series) by streams that pass beneath the surface in the "sink holes." Down the steep slopes the escarpment of the Highland Rim plateau drops 200ft. or more to the famous Blue Grass region, in which erosion has developed on limestone a gracefully undulating surface. This Blue Grass region is like a beautiful park, without ragged cliffs, precipitous slopes, or flat marshy bottoms, but marked by rounded hills and dales. Especially within a radius of 20m. around Lexington, the country is clothed with an unusually luxuriant vegetation. During spring, autumn and winter in particular, the blue grass (*Poa compressa* and *Poa pratensis*) spreads a mat, green, thick, fine and soft, over much of the country, and it is a good winter pasture; about the middle of June it blooms, and, owing to the hue of its seed vessels, gives the landscape a bluish hue. Another lowland area embraces that small part of the State in the extreme south-west which lies west of the Tennessee river; this belongs to that part of the Coastal Plain region which extends north along the Mississippi river; it has in Kentucky an average elevation of less than 500 feet. Most of the larger rivers of the State have their sources among the mountains or on the Allegheny plateau, and flow more or less circuitously in a general north-western direction into the Ohio. Although deep river channels are common, falls or impassable rapids are rare west of the Allegheny plateau. The Licking, Kentucky, Salt, Green and Tradewater are the chief rivers wholly within the State. The Cumberland, after flowing through the south-east and south-central parts of the State, passes into Tennessee at a point nearly south of Louisville. In the extreme south-west the Cumberland and the Tennessee, with only a short distance between them, cross Kentucky and enter the Ohio river at Smithland and Paducah, respectively. The drainage of the region under which the caverns lie is mostly underground. Some traces of the last glacial period are visible in Boone county.

The soils of Kentucky, except the strips of alluvial land along the banks of the rivers, have been formed from the decay of the underlying rocks. This feature gives the soils a more local character than have those north of the Ohio, where glaciers brought new materials. The best soils are the alluvium in the bottom lands along some of the larger rivers and the soils of the blue or Ordovician limestone found in the Blue Grass region. The soil within a radius of some 20m. around Lexington is especially rich and is not surpassed for endurance. The soil next in fertility, extending over a large area in the central and western part of the State, is the sub-carboniferous limestone, or "cavern limestone," as it is commonly called. The soils of the Highland Rim plateau, as well as of the lowland west of the Tennessee river, vary greatly, but the most common are a clay, containing more or less carbonate of lime, and a sandy loam. On the escarpment around the Blue Grass region the soils are for the most part either cherty or stiff with clay and of inferior quality. On the mountains and on the Allegheny plateau, also, much of the soil is very light and thin.

The climate is somewhat more mild and even than that of the neighbouring States. The mean annual temperature, about 50° on the mountains in the south-east, and 60° west of the Tennessee, is about 55° for the entire State; the thermometer seldom registers as high as 100° or as low as −10°. The mean annual precipitation ranges from about 38in. in the north-east to 50in. in the south, and is about 46in. for the entire State; it is usually distributed evenly throughout the year, and very little is in the form of snow. The prevailing winds blow from the west or south-west, rain-bearing winds blow mostly from the south, and the cold waves come from the north or north-west. In April or May these cold waves often destroy orchard blooms that have started too early, and they have been disastrous to the fruit industry in recent decades.

ADMINISTRATION, ETC.

Government.—Kentucky is governed under its fourth Constitution, adopted in 1891. This document presents few features not common to similar instruments of government of the other States; it should be noticed, however, that an unusually large number of officials are elected and that ineligibility for immediate re-election is the rule. A convention to revise the Constitution or to draft a new one meets on the call of two successive legislatures, ratified by a majority of the popular vote, provided that majority be at least one-fourth of the total number of votes cast at the preceding general election. Ordinary amendments are pro-

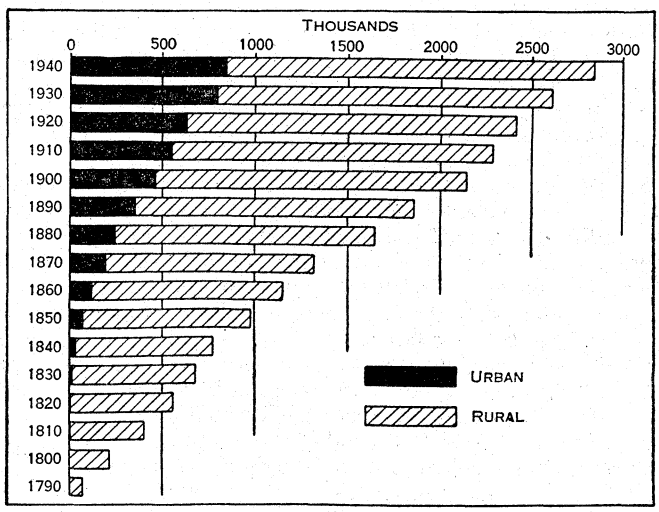
posed by a three-fifths majority in each house, and are also subject to popular approval. The executive is composed of a governor, a lieutenant governor, a treasurer, an auditor of public accounts, a register of the land office, a commissioner of agriculture, labour and statistics, a secretary of state, an attorney-general and a superintendent of public instruction. All are chosen by popular vote for four years and are ineligible for immediate re-election. If a vacancy occurs in the office of governor during the first two years a new election is held; if it occurs during the last two years the lieutenant governor serves out the term. While the governor's control of patronage is not extensive and his veto power weak, he has considerable power in appointing members of important commissions. He may veto any measure, including items in appropriation bills, but the legislature can repass such a measure by a simple majority of the total membership in each house.

Legislative power is vested in a general assembly, which consists of a senate and a house of representatives. Senators are elected for four years, one-half retiring every two years; representatives are elected for two years. There are 38 senators and 100 representatives. The senate sits as a court for the trial of impeachment cases. A majority of either house constitutes a quorum, but ordinary bills, on the third reading, not only must receive a majority of the quorum, but that majority must be at least two-fifths of the total membership of the house. For the enactment of appropriation bills, and bills creating a debt, a majority of the total membership in each house is required. All revenue measures must originate in the house of representatives, but the senate may introduce amendments. There are many detailed restrictions on local and special legislation.

The judiciary consists of a court of appeals, circuit courts, quarterly courts, county courts, justice of the peace courts, police courts and fiscal courts. The court of appeals is composed of seven judges, elected one from each appellate district, for a term of eight years. The senior judge presides as chief justice. The counties are grouped into judicial circuits, those containing a population of more than 150,000 constituting separate districts; each district has a judge and a commonwealth's attorney. The county officials are the judge, clerk, attorney, sheriff, jailer, coroner, surveyor and assessor, each selected for four years.

The municipalities are divided into six classes according to population, a classification which permits much special local legislation in spite of the constitutional inhibition.

Population.—The population of Kentucky in 1790 was 73,677; in 1820 it was 564,317; in 1850, 982,405; in 1880, 1,648,690; in 1910, 2,289,905; and in 1940, 2,845,627. This last figure represents an increase of 8·8% over the population in 1930. The population per square mile was 70·9, as compared with 44·2 for the United States as a whole. Of the 1940 population, 849,327, or 29·8%, lived in urban places; that is, in cities and towns of 2,500 or more. The rural population, occupying the remainder of the state, thus constituted 70·2% of the total. The number of occupied dwelling units returned in the housing census of 1940 was 698,604, which is approximately the same as the number of families. The average population per family (occupied dwelling unit) declined from 4·3 in 1930 to 4·1 in 1940. The white population of Kentucky formed 92·5% of the total in 1940, as compared with 91·4% in 1930, practically all the nonwhite population being Negro. The number of males per 100 females in the entire population of the state was 101·0, though there was an excess of males in the white population alone, the sex ratio being 101·2 for the white and only 98·3 for the nonwhite population. The number of persons 65 years old and over in Kentucky increased from 142,122, or 5·4% of the total population in 1930, to about 189,000, or 6·6% in 1940. The population of the state and of its principal cities is summarized for recent censuses in the following table:



BY COURTESY OF THE U.S. BUREAU OF THE CENSUS

URBAN AND RURAL POPULATION OF KENTUCKY: 1790–1940

Area	Population			Per cent of increase	
	1940	1930	1920	1930–40	1920–30
The State	2,845,627	2,614,589	2,416,630	8·8	8·2
Urban	849,327	799,026	633,543	6·3	26·1
Rural	1,996,300	1,815,563	1,783,087	10·0	1·8
Per cent urban	29·8	30·6	26·2	..	..
Principal cities:					
Louisville	319,077	307,745	234,891	3·7	31·0
Covington	62,018	65,252	57,121	−5·0	14·2
Lexington	49,304	45,736	41,534	7·8	10·1
Paducah	33,765	33,541	24,735	0·7	35·6
Newport	30,631	29,744	29,317	3·0	1·5
Owensboro	30,245	22,765	17,424	32·9	30·7
Ashland	29,537	29,074	14,729	1·6	97·4
Frankfort	11,492	11,626	9,805	−1·2	18·6

Finance.—In 1926 the budget system created in 1918 was repealed and a new system created. Under this system the budget commission consists of the governor, the auditor of public accounts and the state tax commissioners; the budget officer is the state inspector and examiner. The act also provided for a uniform budget system in each county. The revenue of the state is classified under a number of separate funds. The commissioner of revenue reported for the fiscal year ending June 30, 1940, receipts into the various funds amounting to $42,729,446. The most important sources were: alcoholic beverage tax, $6,469,884; excise taxes, $6,496,890; incomes and inheritances, $5,496,000; general property tax, $5,851,706; motor and fuels, $16,895,151; licences and corporations, $1,519,242. From these sums the highway division expended the largest amount. The floating debt, which stood at $42,544,606 in outstanding treasury warrants in 1935, had been reduced to $4,097,000 on Dec. 31, 1940, with prospect of its early payment. Banks chartered by the state are subject to inspection and regulation by the state banking department, which consists of a commissioner, two deputy commissioners and eight examiners.

Education.—Public education in Kentucky is under the general supervision of the state board of education. Until within the present century, public education was supported almost wholly from the state school fund, which was distributed on a per capita basis, and as a result the terms were short and the teachers underpaid. This situation was changed in part by an act of the general assembly in 1908 which provided that each county of the state be a unit for taxation, that the county tax be mandatory and that there be a local sub-district tax. According to the report of the state superintendent of public instruction for the year ending June 30, 1939, the total revenue from all sources accruing to the state school system was $25,108,542. Of this sum $13,643,928 came from county sources, and $11,464,617 came from other sources. The total disbursements were about $24,000,000. This report estimated the population between the ages of five and 17 years, inclusive, in 1939, as 795,374. Of this number 614,036 were enrolled in the public schools. Daily attendance was reported as 494,339. In 1939, 136,037 were in the secondary schools compared with 90,891 in 1934. Consolidation and higher standards of instruction accounted for a decline in the number of public high schools from 759 in 1935 to 708 in 1939; and in private high schools from 89 to 75 in the same period. Some idea of Kentucky's educational progress can be gained from a comparison of

figures for 1920 with those for 1930. In this period, illiteracy decreased from 8·4% to 6·6%; the average days attended per year per pupil enrolled increased from 78·7 in 1920 to 121·4 in 1930; the per capita expenditure, based on total public school enrolment increased from $11.56 in 1920 to $38.98 in 1930. School attendance is compulsory. Separate schools are maintained for whites and Negroes throughout the educational system. A text-book commission, created by an act of the general assembly in 1926, selects and adopts schoolbooks for the entire state and fixes a maximum retail price.

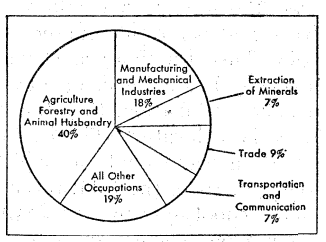
What was formerly the State Agricultural and Mechanical college at Lexington became the State university by legislative enactment (1908) and University of Kentucky (1917); there is no tuition fee except in the college of law. The university has also colleges of liberal arts, education, commerce and a graduate school. The agricultural experiment station and the agricultural extension work are associated with the university. The training of white teachers is provided for in four normal schools and teachers colleges: Eastern Kentucky State Teachers college, at Richmond; Western, at Bowling Green; Murray, at Murray; Morehead, at Morehead. The state provides advanced education for Negroes at the Kentucky State College for Negroes, at Frankfort, and the West Kentucky Vocational Training school, at Paducah. Private and denominational colleges accredited by various agencies are: Asbury college at Wilmore; Berea college, Berea; Centre college, Danville; Georgetown college at Georgetown; Kentucky Wesleyan college at Winchester; Nazareth college, Louisville; Transylvania college, Lexington; Union college at Barbourville; and the University of Louisville, which supervises a municipal college for Negroes, at Louisville.

In addition there are 15 junior colleges, not including the Mayo Vocational school, at Paintsville.

Charities and Prisons.—The benevolent, charitable, corrective and penal institutions of the state are under the supervision of the department of public welfare created in 1936. Institutions under the control of the state board are, Eastern State hospital, at Lexington; Central State hospital, at Lakeland; Western State hospital, at Hopkinsville; Feeble Minded institute, at Frankfort; the state reformatory, at La Grange; the state penitentiary, at Eddyville; and a house of reform, with two departments, one for boys and one for girls, at Greendale. Other state institutions of a charitable nature are, the Kentucky Children's Home society, at Lyndon; Kentucky Home society for Negro children, at Louisville; a school for the deaf, at Danville; and a school for the blind, at Louisville.

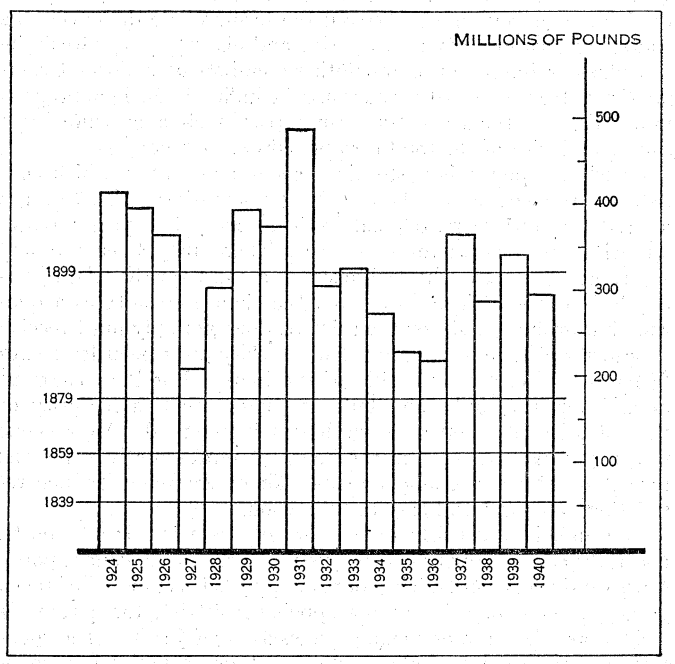
THE INDUSTRIAL SIDE

Industry, Trade and Transportation.—Kentucky is still a rural state, having 70·2% of the population rural in 1940. Agriculture, however, no longer compares favourably with manufactures as a source of wealth. The rural population in 1920, according to the U.S. census bureau, was 1,783,087, and by 1940 it had increased to 1,996,300. The number of farms decreased from 270,626 in 1920 to 246,499 in 1930, but increased to 278,298 in 1935. Improved land has decreased steadily since 1910, despite the efforts of the reclamation service which has expended large sums in the counties bordering on the great rivers and in the western coal area. The number of farm owners decreased from 179,327 in 1920 to 157,403 in 1930, but by 1935 had increased to 174,661. Tenantry shows a corresponding fluctuation, as the number of tenants decreased from 90,330 in 1920 to 88,421 in 1930, but increased to 102,215 in 1935. Field crops in 1930 were valued at $86,700,000; and in 1935 they were estimated to be worth $67,600,000. In 1940 the cash income from crops was about $74,073,000. Indian corn (maize) is the leading agricultural product in acreage, yield and value. In 1940, the 2,816,000 ac. devoted to its culture produced 70,400,000 bushels.



OCCUPATIONS OF THE 907,095 PERSONS (45.3% OF THE TOTAL POPULATION 10 YEARS OF AGE AND OVER) ENGAGED IN GAINFUL OCCUPATIONS IN 1930

The crop second in value is tobacco. Tobacco was introduced into the northern part of the state as early as 1780, and thence it spread to the west. Toward the close of the 19th century it was introduced in the rich blue grass region, where it soon supplanted hemp. The two most important tobacco-growing districts are the Black Patch, in the extreme southwest corner



TOBACCO CROP EACH YEAR 1924–1940, ALSO (HORIZONTAL LINES CROSSING FIGURE) IN 1839, 1859, 1879 AND 1899

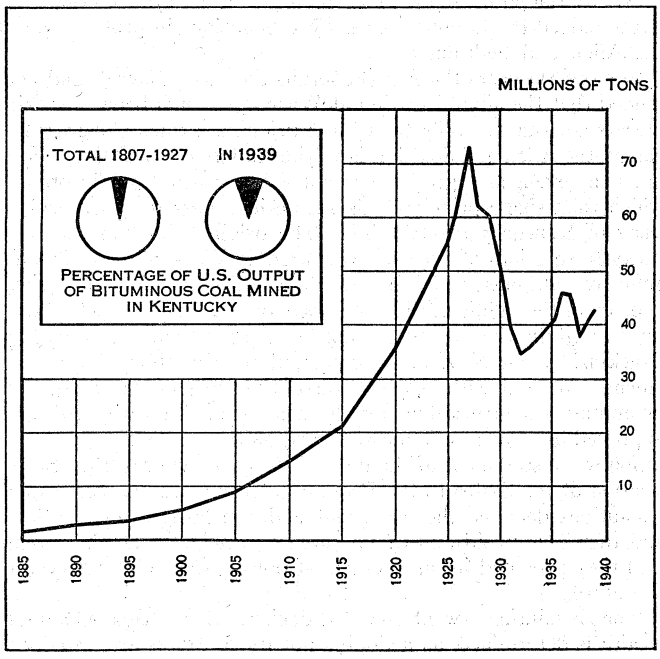
of the state, which, with the adjacent counties in Tennessee, grows a black, heavy leaf, bought extensively by foreign agents, and the blue grass region, as far east as Maysville, and the hill country south and east, whose product, the red and white burley, is a fine-fibred light leaf, peculiarly absorbent of liquorice and other ingredients used in the manufacture of sweet chewing tobacco, and hence is a particularly valuable crop. There were 343,200 ac. devoted to tobacco culture in Kentucky in 1940. The production was 295,890,000 lb., the state's yield being exceeded by North Carolina only. Other important agricultural products, with the 1940 production indicated in parentheses are as follows: corn (70,400,000 bu.), oats (1,400,000 bu.), wheat (5,625,000 bu.), barley (1,825,000 bu.), hay (1,629,000 tons), potatoes (4,140,000 bu.) and sweet potatoes (1,955,000 bu.). Livestock in Kentucky on Jan. 1, 1941 included 1,243,000 cattle; 1,218,000 hogs; 1,165,000 sheep; 239,000 horses; and 228,000 mules. The aggregate value of these five species in Kentucky in 1941 was estimated to be $98,218,000. The thoroughbred Kentucky horse has long had a world-wide reputation for speed, and the blue grass region, especially Fayette, Bourbon and Woodford counties, is probably the finest horse-breeding region in America and has large breeding farms.

Kentucky's oldest industry of importance was the manufacture of distilled liquors, and the business again became one of leading rank after the repeal of the National Prohibition Amendment in 1934. Products of her farms and forests continue to be the chief sources of raw materials for the state's manufactures; the iron and steel works have developed in late years, but industry suffered following the depression of 1930. The total value of manufactured products of the state decreased from $499,747,000 in 1929 to $297,808,000 in 1933, or over 40%. In 1939 the state's 1,640 industrial establishments gave employment to 62,791 wage-earners, and added $187,400,000 to value of products. Measured by the value of the products, the industries ranked as follows in 1939 according to the United States census of manufactures:

petroleum refining, $21,305,000; flour and other grain-mill products, $15,157,000; slaughtering and meat packing, $22,312,000; bread and bakery products, $9,973,239; iron and steel products, $50,158,000; butter, cheese and condensed milk, $11,232,000; men's and boys' clothing, $10,598,000; furniture (household), $10,637,152; lumber and other timber products, $11,145,000; tobacco, chewing and snuff, $9,587,000; liquors and distillery products, $23,432,444. The value of all manufactures in 1939 was $481,029,771.

Louisville was the chief manufacturing centre. Other important industrial centres were Newport, Covington, Paducah and Ashland.

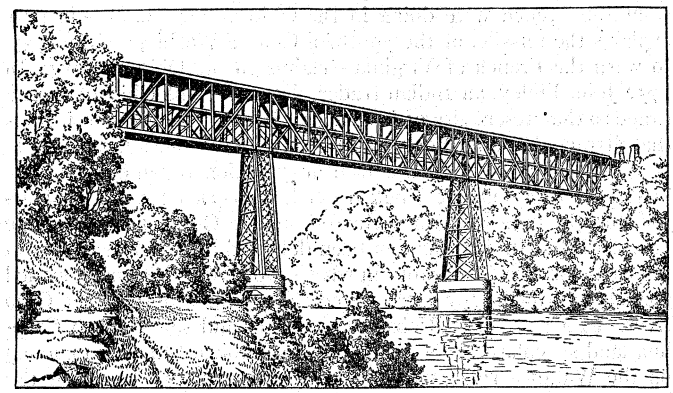
Kentucky ranked ninth among the states of the union in the value of mineral products in 1938, producing 2·5% of the total value for the United States. The state in 1938 ranked second in the production of fluor-spar, first in native asphalt, and fourth in coal. The principal products in the order of their value were coal, natural gas, petroleum, and stone. The total mineral production in 1938 was valued at $106,654,903; in 1929 the value was $132,650,000. Coal mining was the principal industry, giving employment to about 90% of the persons engaged in mineral production. Bituminous coal output in 1939 was 42,310,995 short tons. The coal producing areas include about 8,000 sq.mi. in 22 eastern and southeastern counties, which are part of the Middle Appalachian coalfield, and approximately 5,000 sq.mi. in 10 counties in the western part of the state. Approximately 75% of the production was from the eastern district. The industry second in importance was the production of petroleum and natural gas. The most productive pool, Big Sinking, was opened in Lee county; another field appeared in the southwestern counties, centring about Allen and Warren; and in 1926 still another in Daviess county. In many locations the drillers opened gas wells which have reduced the state's dependence on West Virginia's



COAL MINED 1885–1939 AND (IN INSERT) PERCENTAGE OF TOTAL U.S. OUTPUT OF BITUMINOUS COAL PRODUCED BY KENTUCKY. FIRST 1807–1927, SECOND THE YEAR 1939

supply; and Mt. Sterling, Winchester, Paris, Lexington, Frankfort and Louisville obtained natural gas. The principal oil refinery is at Louisville. From 1909 to 1919 the value of the products of mines, quarries and wells rose from $12,000,000 to $75,000,000 or 625%; by 1937 the value of the products had risen to $127,423,680.

The transportation system of Kentucky may be said to date from the marking of a trail through the Cumberland Gap by Daniel Boone in 1775. This trail, later widened and called the Wilderness road, and the Ohio river served as the chief highways of the early settlers. In the early part of the 19th century, the streams and turnpikes were relied upon, and then came the first railway, begun in 1830 and put in operation in 1835. Up to 1880 the railway mileage had increased to only 1,530, but after this date it increased rapidly. In 1936 there were 3,743m. of steam railway in operation, a slight decrease from the 1920s. The principal lines are the Louisville and Nashville, the Chesapeake and Ohio, the



BRIDGE AT HIGH BRIDGE, KY., THE HIGHEST BRIDGE SPANNING A NAVIGABLE STREAM ON THE AMERICAN CONTINENT

Illinois Central and the Cincinnati Southern. Most of the lines run south or south-west from Cincinnati and Louisville; during the decade 1910–20, however, the Louisville and Nashville railway constructed 332m. of track into the eastern coal region. On Jan. 1, 1935, there were 6,770m. of surfaced highway and 7,538m. of unsurfaced highway in the State. River boats and pipe lines serve as the chief transport for petroleum products. Hydro-electric plants distribute electricity from Dix river and the falls of the Ohio (Louisville).

HISTORY

Early Days.—The history of Kentucky has features not shared with other States west of the Allegheny mountains. To the Indians it was known as the "Dark and Bloody ground" because of the incessant wars between the Iroquois and the Cherokees for its possession. Each of these savage nations laid claim to this famous hunting territory, and each used every known art of savage warfare to make good its claim. So deadly were these struggles that the first explorers spoke of Kentucky as a beautiful country devoid of inhabitants, with the exception of some Shawnees dwelling along the Ohio and a few Chickasaws living along the Mississippi. Kentucky early attracted the attention of both the French and the English; it was the first region settled in the westward movement and the first State west of the Allegheny mountains admitted into the Union. The first white men to sight the territory were in search of a water passage to the western waters, or the Pacific ocean. It was while on such a quest that La Salle (*q.v.*), in 1669, passed down the Ohio until he came to the falls where the city of Louisville now stands. The next white men to come into the region were Thomas Batts with a party in 1671, acting under the authority of the Tory governor of Virginia, Sir William Berkeley. They too were in search of the river that would lead to the Pacific. For more than half a century after these first adventurers, nothing is heard of Kentucky. It is possible, however, that casual French explorers or English settlers carried away by the Indians traversed the region in the meanwhile. It is almost certain that a Frenchman named Longueril discovered Big Bone Lick in 1739. The next evidence of French interest came in 1749, when Céleron de Bienville, with a following of soldiers and Indians, was sent into the Ohio valley to take formal possession of the country; as evidence that he had done this, he buried lead plates. At this time Virginians were showing renewed interest in the country beyond the mountains, and as a result two land companies were organized and bought up vast tracts of western land. Dr. Thomas Walker (1715–94), as an agent and surveyor of the Loyal Land company, passed through the Cumberland gap in March 1750 and followed down the Cumberland river in search of a suitable place for settle-

ment, but he did not get beyond the mountain region. In Oct. 1750 Christopher Gist, on a similar mission for the Ohio company, set out from the banks of the Potomac and followed an Indian trail which led from Wills creek to the Ohio. In the following spring he explored the country westward from the mouth of the Scioto river. This interest in Kentucky land caused Robert Dinwiddie, one of the stockholders of the Ohio company, when made lieutenant-governor of Virginia in 1752, to display a keen interest in what the French were doing in the Ohio valley. It also in part explains the mission of the youthful George Washington, in 1753, to warn the French of Virginia's claims to the Ohio country. In 1752 John Finley, an Indian trader, descended the Ohio river in a canoe to the present site of Louisville. It was Finley's descriptions that attracted Daniel Boone, and soon after Boone's first visit, in 1767, travellers through the Kentucky region became numerous.

The first permanent English settlement was set up at Harrodsburg in 1774 by James Harrod, and in October of the same year the Ohio Indians, having been defeated by Virginia troops in the battle of Point Pleasant (in what is now West Virginia), signed a treaty by which they surrendered their claims south of the Ohio river. In March 1775 Richard Henderson and some North Carolina land speculators met about 1,200 Cherokee Indians in council on the Watauga river and concluded a treaty with them for the purchase of all the territory south of the Ohio river and between the Kentucky and Cumberland rivers. The purchase was named Transylvania. Within less than a month after the treaty was signed, Boone, under the auspices of the land company, founded a settlement at Boonesborough which became the headquarters of the colony. The title was declared void by the Virginia Government in 1778, Henderson and his associates receiving 200,000ac. in compensation, and all sales made to actual settlers were confirmed.

American Revolution.—During the American Revolution the colonists were neglected by Virginia, and had to defend themselves against the Indians, who were often under British leadership. Boonesborough was attacked in April and July 1777 and Aug. 1778. Bryan's Station, near Lexington, was besieged in Aug. 1782 by about 600 Indians under the notorious Simon Girty, who after raising the siege drew the defenders, numbering fewer than 200, into an ambush. In the battle of Blue Licks which ensued, the Kentuckians lost about 60 killed and seven prisoners. Kentucky county, practically conterminous with the present commonwealth of Kentucky, and embracing all the territory claimed by Virginia south of the Ohio river and west of Big Sandy creek and the ridge of the Cumberland mountains, was one of three counties which were formed out of Fincastle county in 1776. Four years later, this in turn was divided into three counties, Jefferson, Lincoln and Fayette, but the name Kentucky was revived in 1783 and was given to the judicial district which was then organized for these three counties. The American Revolution was followed by an extensive emigration from Virginia, Maryland and North Carolina, which made its way either by the Ohio river from Fort Pitt or—the far greater number—by the Cumberland Gap and the "Wilderness Road," as marked by Daniel Boone in 1775. At least 95% of this population, excluding negro slaves, were of pure English, Scotch or Scotch-Irish descent. The manners, customs and institutions of Virginia were transplanted beyond the mountains. There was the same political rivalry between the slave-holding farmers of the Blue Grass region and the "poor whites" of the mountain districts that there was in Virginia between the tidewater planters and the mountaineers. Between these extremes were the small farmers of the "Barrens" or burned-over lands in Kentucky and of the Piedmont region in Virginia. The aristocratic influences in both States have always been on the Southern and Democratic side; but while they were strong enough in Virginia to lead the State into secession, they were unable to do so in Kentucky.

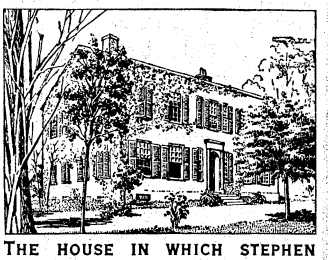
At the close of the American Revolution the Kentuckians complained because the mother State did not protect them against their enemies and did not give them an adequate system of local government. Nine conventions were held at Danville from 1784 to 1790 to demand separation from Virginia. The Virginia authorities expressed a willingness to grant the demand provided Congress would admit the new district into the Union as a State. The delay, together with the proposal of John Jay, the secretary for foreign affairs and commissioner, to negotiate a commercial treaty with the Spanish envoy, to surrender navigation rights on the lower Mississippi for 25 years in order to remove the one obstacle to the negotiations, aroused so much feeling that Gen. James Wilkinson and a few other leaders began to intrigue, not only for a separation from Virginia, but also from the United States, and for the formation of a close alliance with the Spanish at New Orleans. Although most of the settlers were too loyal to be led into such a plot, they generally agreed that it might have a good effect by bringing pressure to bear upon the Federal Government. Congress passed a preliminary act in Feb. 1791, and the State was formally admitted into the Union on June 1, 1792. In the act of 1776 for dividing Fincastle county, Virginia, the ridge of the Cumberland mountains was named as a part of the east boundary of Kentucky; and now that this ridge had become a part of the boundary between the States of Virginia and Kentucky they, in 1799, appointed a joint commission to run the boundary line on this ridge. A dispute with Tennessee over the southern boundary was settled in a similar manner in 1820. The constitution of 1792 provided for full manhood suffrage first in the nation, and for the election of the governor and of senators by an electoral college. Gen. Isaac Shelby was the first governor.

Troubles and Trials.—The people still continued to have troubles with the Indians and with the Spanish at New Orleans. The Federal Government was slow to act, but its action when taken was effective. The power of the Indians was overthrown by Gen. Anthony Wayne's victory in the battle of Fallen Timbers, fought on Aug. 20, 1794, near the rapids of the Maumee river a few miles above the site of Toledo, O., and the Mississippi question was settled temporarily by the treaty of 1795 and permanently by the purchase of Louisiana in 1803. In 1798–99 the legislature passed the famous Kentucky Resolutions in protest against the Alien and Sedition acts.

For several years the Anti-Federalists or Republicans had contended that the administration at Washington had been exercising powers not warranted by the Constitution, and when Congress had passed the Alien and Sedition laws the leaders of that party seized upon the event as a proper occasion for a spirited public protest, which took shape principally in resolutions passed by the legislatures of Kentucky and Virginia. The original draft of the Kentucky Resolutions of 1798 was prepared by Vice-president Thomas Jefferson, although the fact that he was the author of them was kept from the public until he acknowledged it in 1821. They were introduced in the Kentucky house of representatives by John Breckinridge on Nov. 8, were passed by that body with some amendments but with only one dissenting vote on the 10th, were unanimously concurred in by the senate on the 13th, and were approved by Governor James Garrard on the 16th. The first resolution was a statement of the ultra State-rights view of the (State) relation of the States to the Federal Government, and subsequent resolutions declared the Alien and Sedition laws unconstitutional and therefore "void and of no force," principally on the ground that they provided for an exercise of powers that were reserved to the State.

The resolutions went on to declare that "this Commonwealth is determined, as it doubts not its co-States are, tamely to submit to undelegated and therefore unlimited powers in no man or body of men on earth," and that "these and successive acts of the same character, unless arrested on the threshold, may tend to drive these States into revolution and blood." Copies of the resolutions were sent to the governors of the various States, to be laid before the different State legislatures, and replies were received from Connecticut, Delaware, Massachusetts, New Hampshire, New York, Rhode Island, Vermont and Virginia, but all except that from Virginia were unfavourable. Nevertheless the Kentucky legislature on November 22, 1799, re-affirmed in a new resolution the principles it had laid down in the first series, asserting in this new resolution that the State "does now unequivocally declare its attachment to the Union, and to that compact (the

Constitution), agreeably to its obvious and real intention, and will be among the last to seek its dissolution," but that "the principle and construction contended for by sundry of the State legislatures, that the General Government is the exclusive judge of the extent of the powers delegated to it, stop nothing (short) of *despotism*—since the discretion of those who administer the Government, and not the *Constitution,* would be the measure of their powers," "that the several States who formed that instrument, being sovereign and independent, have the unquestionable right to judge of the infraction," and *"that a nullification by those sovereignties of all unauthorized acts done under color of that instrument is the rightful remedy."* These measures show that the State was Democratic-Republican in its politics and pro-French in its sympathies, and that it was inclined to follow the leadership of that State from which most of its people had come.



THE HOUSE IN WHICH STEPHEN FOSTER WROTE "MY OLD KENTUCKY HOME"

The Constitution of 1799 adopted the system of choosing the governor and senators by popular vote and deprived the Supreme Court of its original jurisdiction in land cases. The Burr conspiracy (1804–06) aroused some excitement in the State. Many would have followed Burr in a filibustering attack upon the Spanish in the south-west, but scarcely any would have approved of a separation of Kentucky from the Federal Union. No battles were fought in Kentucky during the war of 1812, but her troops constituted the greater part of the forces under Gen. William Henry Harrison. They took part in the operations at Ft. Wayne, Ft. Meigs, the river Raisin, the Thomas, and the naval battle of Lake Erie.

The Democratic-Republicans controlled the politics of the State without serious opposition until the conflict in 1820–26, arising from the demands for a more adequate system of currency and for other measures to relieve delinquent debtors, divided the State into what were known as the "Relief" and "Anti-Relief" parties. After nearly all the 46 banks chartered by the legislature in 1818 had been wrecked in the financial panic of 1819, the legislature in 1820 passed a series of laws designed for the benefit of the debtor class, among them one making State bank notes a legal tender for all debts. A decision of the Clark county district court declaring this measure unconstitutional was affirmed by the court of appeals. The legislature in 1824 repealed all of the laws creating the existing court of appeals and then established a new one. This precipitated a bitter campaign between the Anti-Relief or "Old Court" party and the "Relief" or "New Court" party, in which the former was successful. The Old Court party followed the lead of Henry Clay and John Quincy Adams in national politics, and became National Republicans and later Whigs. The New Court party followed Andrew Jackson and Martin Van Buren and became Democrats. The electoral vote of the State was cast for Jackson in 1828 and for Clay in 1832. Clay's conservative influence dominated the politics of the State even after his death in 1852. Kentucky voted the Whig ticket in every presidential election from 1832 until the party made its last campaign in 1852. When the Whigs were destroyed by the slavery issue, some of them immediately became Democrats, but the majority became Americans, or Know-Nothings. They elected the governor in 1855 and almost succeeded in carrying the State for their presidential ticket in 1856.

The Slavery Issue.—In 1860 the people were drawn towards the South by their interest in slavery and by their social relations, and towards the North by business ties and by a national sentiment which was fostered by the Clay traditions. They naturally assumed the leadership in the Constitutional Union movement of 1860, casting the vote of the State for Bell and Everett. After the election of President Lincoln they also led in the movement to secure the adoption of the Crittenden Compromise or some other peaceful solution of the difficulties between the North and the South.

A large majority of the State legislature, however, were Democrats, and in his message to this body, in Jan. 1861, Governor Magoffin, also a Democrat, proposed that a convention be called to determine "the future of Federal and inter-State relations of Kentucky"; later, in reply to the President's call for volunteers, he declared, "Kentucky will furnish no troops for the wicked purpose of subduing her sister Southern States." Under these conditions the Unionists asked only for the maintenance of neutrality, and a resolution to this effect was carried by a bare majority—48 to 47. Some of the secessionists took this as a defeat and left the State immediately to join the Confederate ranks. In the next month there was an election of congressmen, and the anti-secession candidates were chosen in nine out of ten districts. An election in August of one-half the State senate and all of the house of representatives resulted in a Unionist majority in the new legislature of 103 to 35, and in September, after Confederate troops had begun to invade the State, Kentucky formally declared its allegiance to the Union. From Sept. 1861 to the fall of Ft. Donelson in Feb. 1862 that part of Kentucky which is south and west of the Green river was occupied by the Confederate army under Gen. A. S. Johnston, and at Russellville in that district a so-called "sovereignty convention" assembled on Nov. 18. This body, composed mostly of Kentucky men who had joined the Confederate army, passed an ordinance of secession, elected State officers, and sent commissioners to the Confederate Congress, which body voted on Dec. 9 to admit Kentucky into the Confederacy. Throughout the war Kentucky was represented in the Confederate Congress—representatives and senators being elected by Confederate soldiers from the State. The officers of this "provisional government," headed by G. W. Johnson, who had been elected "governor," left the State when Gen. A. S. Johnston withdrew; Johnson himself was killed at Shiloh, but an attempt was subsequently made by Gen. Bragg to install this Government at Frankfort. Gen. Felix K. Zollicoffer (1812–62) entered the State through the Cumberland Gap in September, and later with a Confederate force of about 7,000 men attempted the invasion of central Kentucky, but in Oct. 1861 he met a slight repulse, and on Jan. 19, 1862, in an engagement near Mill Springs with troops under Gen. George H. Thomas, he was killed and his command was utterly routed. In 1862 Gen. Braxton Bragg, in command of the Confederates in eastern Tennessee, eluded Gen. Don Carlos Buell and, entering Kentucky in Aug. 1862, proceeded slowly toward Louisville, hoping to win the State to the Confederate cause and gain recruits for Confederacy in the State. His main army was preceded by a division of about 15,000 men under Gen. Edmund Kirby Smith, who on Aug. 30 defeated a Federal force under Gen. William Nelson near Richmond and threatened Cincinnati. Bragg met with little opposition on his march, but Buell reached Louisville first (Sept. 24), turned on Bragg and forced him to withdraw. On Oct. 8, Buell and Bragg fought an engagement at Perryville which, though tactically indecisive, was a strategic victory for Buell; and thereafter Bragg withdrew entirely from the State into Tennessee. This was the last serious attempt on a large scale by the Confederates to win Kentucky; but in Feb. 1863 one of Gen. John H. Morgan's brigades made a raid on Mt. Sterling and captured it; in March Gen. Pegram made a raid into Pulaski county; in March 1864 Gen. N. B. Forrest assaulted Ft. Anderson at Paducah but failed to capture it and in June Gen. Morgan made an unsuccessful attempt to take Lexington.

Although the Union was supported by the majority of the people, so much feeling was aroused by the emancipation of the slaves without compensation even to loyal owners, the arming of negro troops, the arbitrary imprisonment of citizens and the interference of Federal military officials in purely civil affairs, that the State became strongly Democratic and remained so for many years until 1895. The Emancipation Proclamation of 1863 did not free the slaves of Kentucky, as it applied only to such regions as were in rebellion against the Union; however, slavery was doomed. Many of the slaves, with their families, became free by enlisting in the United States army, and the remainder were freed by the adoption of the XIII. Amendment to the Federal Constitution, Dec. 18, 1865. Amendments XIII., XIV. and XV. were all rejected by

Kentucky. Kentucky suffered much of the depression common to the South and West in the period after the Civil War. In 1878 the legislature demanded the repeal of the federal law making "greenbacks" redeemable in specie after Jan. 1, 1879, and called upon congress to make silver the equal of gold in the payment of private and public dues. The continued low price for agricultural products caused many to join the Granger movement and similar agrarian movements of the middle west. The low price paid for tobacco in the early years of the 20th century caused the farmers in the two chief producing areas to organize selling "pools" and, if necessary, to use violence to force all the producers to join. Secret organizations known as "night riders" were formed, and under the cover of darkness these men took terrible vengeance upon persons who had disposed of their products independently. In some instances their ravages were extended to railways that had accepted for transportation tobacco not marketed by a pool. After numerous outrages in the "Dark Tobacco" district and a few in the "Burley" region, Governor Willson called out the armed forces of the state, and by the end of 1908 order was again established. Owing to the panic of 1893, distrust of the free silver movement and the expenditure of large campaign funds, the Republicans were successful in the gubernatorial election of 1895 for the first time in the history of the state. Since that time the two major parties have had about equal success in controlling the governor's office. In 1924, for the first time in her history, Kentucky cast all her electoral votes for the Republican party, and two years later favoured that party's candidate for governor. A drought and violent labour trouble in 1930 and 1931 strengthened the Democrats who elected R. Laffoon governor in 1931 and secured the state's vote for Roosevelt in 1932. In the years 1936 and 1940 the state again went solidly Democratic. Suppression of the coal strike and prosecution of the union leaders on murder charges prompted congress in 1937 to investigate the alleged condition of lawlessness.

The Ohio flood of Jan. 1937 caused much property loss in Frankfort, Louisville and Paducah.

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KENTUCKY COFFEETREE (*Gymnocladus dioicus*), a North American tree of the family Leguminosae, called also Kentucky mahogany and nickertree, found, though nowhere common, in alluvial woods from western New York through Ontario to South Dakota and southward to Tennessee and Oklahoma. It is a handsome forest tree, 75 to 110 ft. high with a trunk diameter of 2 to 3 ft., bearing large, bipinnately compound leaves, 1 to 3 ft. long, composed of numerous ovate leaflets and showy white flowers in terminal clusters, followed by thick, leathery pods (legumes), 6 to 10 in. long. The pods contain large seeds, ¾ in. long, embedded in sweet, reddish pulp, that were formerly used as a substitute for coffee.

KENUZ: *see* BARABRA.

KENYA, a great volcanic mountain in Kenya Colony, just south of the equator in 37° 20′ E. It is one of the highest mountains of Africa, its highest peak reaching an altitude of about 17,040 ft. The central core, which consists of several steep pyramids, is that of a much denuded old volcano. This central core (the highest point) is a nepheline syenite, the sides are of ashes and tuffs and the lavas consist of phonolites, kenytes and olivine basalts. Lavas dip in all directions from the central crystalline core. From the central peaks, ridges radiate outwards, separated by broad valleys, ending upwards in vast cirques. The most important ridges centre in the peak Lenana (16,300 ft.) at the eastern end of the central group, and through it runs the chief water-parting of the mountain, in a north to south direction. Three main valleys, the Hinde, Gorges and Hobley valleys, run down to the east, and four—Mackinder, Hausberg, Teleki and Höhnel—to the west. From the central peaks fifteen glaciers, all lying west of the main divide, descend to the north and south, the two largest being the Lewis and Gregory glaciers, each 1 mi. long, which, with the smaller Kolb glacier, lie immediately west of the main divide. Most of the glaciers terminate at an altitude of 14,800–14,900 ft. Glaciation was formerly more extensive, old moraines being observed down to 12,000 feet.

BY COURTESY OF THE AMERICAN MUSEUM OF NATURAL HISTORY

A MERU-MASAI GIRL ON THE SLOPES OF MT. KENYA

In the upper valleys a number of lakes occur, occupying hollows and rock basins in the agglomerates and ashes, fed by springs, and feeding many of the streams that drain the mountain slopes. The largest of these are Lake Höhnel (14,000 ft.); and Lake Michaelson (12,700 ft.?). At a distance from the central core the radiating ridges become less abrupt and descend with a gentle gradient into the level plateau (7,000 ft.). These outer slopes are clothed with dense forest and jungle, composed chiefly of junipers and *Podocarpus,* and between 8,000 and 9,800 ft. of huge bamboos. The forest zone extends to about 10,500 ft., above which is the steeper alpine zone, in which pasturages alternate with rocks and crags. This extends to a general height of about 15,000 ft., but in damp, sheltered valleys the pasturages extend some distance higher. The only trees or shrubs in this zone are the giant *Senecio* (groundsel) and *Lobelia,* and tree-heaths.

Of the fauna of the lower slopes, tracks of elephant, leopard and buffalo have been seen, between 11,500 and 14,500 ft. That of the alpine zone includes two species of dassy (*Procavia*), a coney (*Hyrax*), and a rat (*Otomys*). The bird fauna is of considerable interest, the finest species of the upper zone being an eagle-owl, met with at 14,000 ft. At 11,000 ft. was found a

brown chat, with a good deal of white in the tail. Kenya was first seen, from a distance, by the missionary Ludwig Krapf in 1849; approached from the west by Joseph Thomson in 1883; partially ascended by Count S. Teleki (1889), J. W. Gregory (1893) and Georg Kolb (1896); and its summit reached by H. J. Mackinder in 1899.

See J. W. Gregory, "Geology of Mt. Kenya," *Quarterly Journ. of Geol. Soc.* (1900); *The Rift-Valleys and Geology of East Africa* (1921); H. J. Mackinder, "Journey to the Summit of Mount Kenya," *Geog. Jnl.*, May 1900.

KENYA COLONY AND PROTECTORATE (formerly known as British East Africa), a country of East Africa bounded on the north by Ethiopia and the Sudan, on the west by Uganda, on the south by Tanganyika Territory and on the east by the Indian ocean and Italian Somaliland. Including parts of the great African lakes, it has an area of about 224,960 sq.mi. (land area, 219,730, water area, 5,230). The greater part of Jubaland, formerly part of the colony, was transferred to Italy in 1925. Included in Kenya are the northeastern shores of Lake Victoria and nearly the whole of Lake Rudolf. Part of the coast lands—from the Tanganyika frontier to Kipini—to a depth of 10 mi. inland, together with Mombasa, Lamu and other small islands, are held on lease from the Sultan of Zanzibar, and form the Kenya Protectorate as distinct from the colony. For nearly all purposes, however, the distinction is one in name only. No accurate census of the native population has ever been taken, but the official estimate of the population in 1937 totalled 3,334,191, comprising the following groups: natives (estimate), 3,253,689; British Indians, 42,368; Goans (Portuguese India), 3,658; Arabs, 13,660; Europeans, 19,211; others, 1,605. The 1940 estimate was 3,534,862.

Topography.—The coast line extends from the mouth of the Umba river in the south to Dick's Head (Ras Kiambone) in the north. It has no deep indentations. From the coast lands the ground rises to a broad zone of high ground which is furrowed by the eastern Rift valley, formed by the subsidence of its floor, and occupied in parts by lakes without outlet. West of the Rift valley the ground sinks to the level of Lake Victoria. In the north a well-defined escarpment marks the frontier with Abyssinia. The Tanganyika and Italian Somaliland frontiers are arbitrary straight lines. The colony takes its name from Mt. Kenya, the second highest mountain in Africa, which dominates the region in which white settlers are most numerous.

The first of the parallel zones—the coast plain or "Temborari"—is generally of insignificant width, varying from 2 to 10 mi., except in the valleys of the main rivers. The shore line is broken by bays and branching creeks, often cutting off islands from the mainland. Such are Mvita or Mombasa in 4° 4′ S., and the larger islands of Lamu, Manda and Patta (the Lamu archipelago), between 2° 20′ and 2° S. Beyond the coast plain the country rises in a generally well defined step or steps to an altitude of some 800 ft., forming the wide level plain called "Nyika" (uplands). It contains large waterless areas, such as the Taru desert in the Mombasa district. The next stage in the ascent is marked by an intermittent line of mountains—gneissose or schistose—running generally north-northwest, sometimes in parallel chains, and thought to represent the primitive axis of the continent. Their height varies from 5,000 to 8,000 feet. Farther inland, grassy uplands extend to the eastern edge of the Rift valley, though varied with cultivated ground and forest, the latter between 0° and 0° 40′ S. The most extensive grassy plains are those of Kapte or Kapote and Athi, between 1° and 2° S. The general altitude of these uplands, the surface of which is largely composed of lava, varies from 5,000 to 8,000 feet. This zone includes the volcanic pile of Kenya (17,007 ft.), Sattima (13,214 ft.) and Nandarua (about 12,900 ft.). The Sattima (Settima) range, or Aberdare mountains, has a general elevation of fully 10,000 feet. To the west the fall to the Rift valley is marked by a line of cliffs, of which the best-defined portions are the Kikuyu escarpment (8,000 ft.), just south of 1° S., and the Laikipia escarpment, on the equator.

One of the main watersheds of East Africa runs close to the eastern wall of the Rift valley, separating the basins of inland drainage from the rivers of the east coast, of which the two largest within the colony are the Sabaki and Tana, both separately noticed. The Guaso Nyiro rises in the hills northwest of Kenya and flows in a northeast direction. After a course of more than 350 mi. the river in about 1° N., 39° 30′ E. enters a marshy expanse known as the Lorian swamp. From the swamp issues an intermittent stream, the Lak Dera, nominally a tributary of the Juba.

The Rift valley, though with a generally level floor, is divided by transverse ridges into a series of basins, each containing a lake without outlet. The southernmost section within the colony is formed by the arid Dogilani plains. At their north end rise the extinct volcanoes of Suswa (7,800 ft.) and Longonot (8,700 ft.), the latter on the ridge dividing off the next basin—that of Lake Naivasha. This is a small fresh-water lake, 6,135 ft. above the sea, measuring about 13 mi. each way. Its basin is closed to the north by the ridge of Mt. Buru, beyond which is the basin of the still smaller lakes Nakuro (5,845 ft.) and Elmenteita (5,860 ft.), followed in turn by that of Lakes Hannington and Baringo (*q.v.*). Beyond Baringo the valley is drained north into Lake Sugota, in 2° N., about 35 mi. long, while north of this lies the much larger Lake Rudolf (*q.v.*), the valley becoming here somewhat less defined.

On the west of the Rift valley the wall of cliffs is best marked between the equator and 1° S., where it is known as the Mau escarpment, and between the equator and 1° N., where the Elgeyo escarpment, finely forested, falls to a longitudinal valley separated from Lake Baringo by the ridge of Kamasia. Opposite Lake Naivasha the Mau escarpment is over 8,000 ft. high. Its crest is covered with dense forest. To the south the woods become more open, and the plateau falls to an open country, drained towards the Dogilani plains. On the west the cultivated districts of Sotik and Lumbwa, broken by wooded heights, fall toward Victoria Nyanza. The Mau plateau reaches a height of 9,000 ft. on the equator, north of which is the somewhat lower Nandi country, well watered and partly forested. In the treeless plateau of Uasin Gishu, west of Elgeyo, the land again rises to a height of over 8,000 ft., and to the west of this is the great mountain mass of Elgon (*q.v.*). East of Lake Rudolf and south of Lake Stefanie is a large waterless steppe, mainly volcanic in character, from which rise mountain ranges. The highest peak is Mt. Kanjora, 6,900 ft. high. South of this arid region, strewn with great lava stones, are the Rendile uplands, affording pasturage for thousands of camels. Running northwest and southeast between Lake Stefanie and the Daua tributary of the Juba, is a mountain range with a steep escarpment towards the south. It is known as the Goro escarpment and at its eastern end it forms the boundary between Kenya and Abyssinia. Southeast of it the country is largely level bush-covered plain, mainly waterless.

Geology.—Four regions with distinct physiographical features are distinguished in the parts of Kenya best known: (1) the coastal belt, (2) the belt of gneiss, from the coast belt to the highlands, (3) the volcanic zone of the highlands and Rift valley, (4) the lake belt. The underlying formation appears everywhere to be archaean gneiss. The coast belt, which geologically includes the actual coast plain, the foot plateau and the Nyika in part extends inland 50 to 60 mi., and consists of sedimentary rocks—raised coral formations, Upper Jurassic shales, and grits and sandstone, with subordinate shales (the Duruma sandstones). Going inland, older and older rocks are found until the gneiss zone is reached. This zone is very extensive; on the line of the Kenya and Uganda railway it extends from 57 mi. to 283 mi. Coarse grained and well foliated, the gneiss is very uniform in structure. It is composed chiefly of quartz, felspar and hornblende; mica is sometimes present. A bright red sandy soil is formed by the disintegration of the gneiss in its eastern border, which is arid and generally level but with characteristic isolated hills. Farther west the desert condition ceases, and black cotton soil is found in places. A series of mountain ridges—the crests of ancient earth folds—5,000 to 7,000 ft. high and 2,000 to 3,000 ft. above the normal level, run in a northwest to southwest direction. In the third or highland zone, the gneiss is covered by a deep cap of lava, which extends over some 50,000 sq.mi. from the southern border north-

east to the Abyssinian frontier. Above this lava bed tower the extinct volcanoes of Kilimanjaro, Kenya, Elgon and the Aberdare mountains, while much of the Northern Frontier province consists of lava ridges separated by stretches of stony desert. This highland region is traversed by the eastern Rift valley.

Volcanic activity preceded and followed the subsidence which caused the Rift valley to be formed. The older activity, starting apparently in the Cretaceous age, began with a series of fissure eruptions along the site of what afterwards became the Rift valley and also on both sides of the "valley." From these fissures issued immense and repeated flows of lava, burying the gneiss to varying depths. These fissure eruptions—the welling up of liquid magma—produced no craters. They formed vast plateau plains, such as the Athi and Kapati plains. In the Eocene age came another series of eruptions producing craters, such as that of Mt. Kenya and the Marwenzi crater of Kilimanjaro, and after the Rift valley had been formed there was a further period of volcanic activity, as witness Longonot, in the Rift valley, and apparently Elgon in its present form. Volcanic activity is not yet at an end, as is evidenced by the many steam-vents and hot-springs in the Rift valley, and the eruption of Teleki's volcano (at the south end of Lake Rudolf) at the close of the 19th century. The breaching of the crater wall of Elgon probably let loose the lava bed which covers the Uasin Gishu plateau. On its sides gneiss and granite are exposed. The surface soil in the highland zone is mainly red clay (in the forested areas) or black-cotton. In the central parts of the Rift valley yellow loam is found. The fourth geological zone, the Lake Victoria belt is in parts covered by lava flows, but the gneiss reappears with granite hills and sedimentary rocks. The Kisii highlands are composed of hard sandstone resembling the Waterberg (Transvaal) series.

Climate.—The equator passes through the centre of Kenya. The greater part of the region north of the equator has a hot, dry climate, and in some districts, as in the Lake Rudolf area, rain does not fall for years at a time. There are few data for this part, except on the coast, where the climate is hot and damp and the rainfall variable, but rarely more than 15 in. a year. In the southern half of Kenya three climatic zones are recognized, the coast, the highlands and the lake region. The coast zone is hot and damp. February, March and April are the hottest months, when the temperature of Mombasa reaches a mean of 82° F.; June and July are the coolest months (76° F. at Mombasa). Owing to the humidity, the range of temperature is normally small, with an annual mean of 15° F., but in the same month (March) at Mombasa extremes of 98° F. and 60° F. have been registered. Rainfall varies; at Mombasa January and February are the driest months, and May is the wettest. The yearly average is about 48 inches. Humidity ranges from 89% in April to 74% in December.

The comparatively temperate climate of the highlands has made part of Kenya fit for occupation by whites. Yet a generation of occupation has proved, malaria has still to be combated. In districts 4,500 ft. above sea level, *e.g.*, Ft. Hall, the mean temperature is about 66° F. (but with days when the thermometer registers over 90° F.); above 5,000 ft. the heat decreases, the mean in the hot months varying, according to altitude, from 62° F. to 69° F., and in the cool months from 55° F. to 63° F. The range of temperature is, however, great, reaching to over 40° F. The minimum temperature rarely falls below 38° F., but has fallen in places, *e.g.*, the Eldoma ravine to 30° F. Rainfall in the highlands is heavy, varying from 40 to 100 or more inches a year. There are two rainy seasons: April–June and Oct.–Dec., the driest months being January and July–September. In general, the atmosphere is bracing, with cool breezes, but thick, wet fogs may be experienced in the dry seasons. At Nairobi the mean maximum temperature is 79° F., the mean minimum 56° F. The rainfall is about 32 in. a year. The highlands intercept the rain, thus accounting for the dryness of the country to the north. In the lake region—that is the country bordering Victoria Nyanza, the climate is typically tropical, and resembles that of Uganda (*q.v.*).

Flora and Fauna.—The characteristic trees of the coast zone are the mangrove (which forms dense forests) and the coconut palm. Patches of forest containing sandalwood, the copal tree and teak also occur along the coast. The lowlands, up to about 3,000 ft., are mostly covered with thorn bush, with dense thickets and forest patches in which are found giant euphorbia, baobab and a flat topped acacia. Rubber vines are found both in the coast and lowland regions. The country from about 3,000 to 9,000 ft. is either grassland or parkland, with acacia forest along the water courses, and papyrus swamps in places. The grassy belt often extends right up to the dense forest, with no transitional phase. The forests, which clothe the mountains between 6,000 and 10,000 ft. are of two kinds: the "rain forest," generally on the eastern and southeastern slopes, and the "dry forest," usually on the western slopes of the mountains. The rain forests contain the great camphor tree, hard wood trees and yellow wood. The highest zone of these wet forests is marked frequently by a growth of giant bamboos. The characteristic tree of the (relatively) dry forest is the African cedar. The moorland or alpine zone covers regions from 11,000 ft. up to 14,500 feet. Tree-heaths, giant senecious and lobelias characterize this zone.

As to fauna, Kenya is noted for its big game, especially its great herds of antelope and zebra, which roam the plains. Forest and bush animals also abound. The mammals include the lion, leopard, cheetah, giraffe, buffalo and rhinoceros; hartebeest, eland, oryx, bongo, roan, greater and lesser kudu, sable and other antelope and gazelle; the bush pig and the hippopotamus. The elephant is reported to be becoming scarce. The baboon, colobus monkey, squirrels and dormice live in the forests. Other animals found are the ant-bear, the white-tailed mongoose, wild dogs, jackals and the spotted hyena. Domestic animals are the horse, cattle, sheep, goats and, in the northern regions, the camel. Crocodiles, some of them 30 ft. long, are common in the larger rivers and in Victoria Nyanza. There are 40 species of snakes, including the deadly mamba, the Uganda tree-cobra, two kinds of "spitting" cobra and the puff-adder. Centipedes and scorpions, as well as mosquitoes and other insects abound in the coast region and lowlands. The tsetse fly is absent from the highlands. In many districts bees are exceedingly numerous. The birds include the ostrich, stork, bustard and secretary-bird, the tawny eagle, five kinds of vultures, the francolin, guinea fowl, various kinds of spur fowl, and the lesser bustard, the wild pigeon, weaver and hornbill. By the banks of lakes and rivers are to be seen thousands of cranes, pelicans and flamingoes as well as herons, the sacred ibis, and the cormorant. More than 60 species of birds that are migrants to England are found in Kenya.

Inhabitants.—The African races include representatives of various stocks, as the country forms a borderland between the Negro and Hamitic peoples, and contains many tribes of doubtful affinities. The three most important tribal groups are the Wakikuyu (Kikuyu), the Masai and the Kavirondo. The Bantu division of the negroes is represented chiefly in the south, the principal tribes being the Wakamba, Wakikuyu and Wanyika. By the eastern shores of Victoria Nyanza dwell the Kavirondo (*q.v.*), a race formerly remarkable for their complete nudity. Nilotic tribes, including the Nandi (*q.v.*), Lumbwa, Suk and Turkana, are found in the northwest. Of Hamitic strain are the Masai (*q.v.*), a race of cattle-rearers speaking a Nilotic language. A branch of the Masai, which has adopted the settled life of agriculturists, is known as the Wakuafi. The Galla section of the Hamites is represented, among others, by Borani living south of the Goro escarpment (though the true Boran countries are Liban and Dirri in Abyssinian territory), while Somali occupy the country between the Tana and Juba rivers. Of the Somali tribes the Herti dwell near the coast and are more or less stationary. Farther inland is the nomadic tribe of Ogaden Somali. The Gurre, another Somali tribe, occupy the country south of the lower Daua. Primitive hunting tribes are the Wandorobo in the central and southern districts, and scattered tribes of small stature, such as the Midgan and Watta, in other regions. These seem to be survivals of aboriginal tribes of a Bushman or pigmy character, and it has been shown that this part of Africa has been the home of man from remotest antiquity. Remains of a very primitive form of *Homo sapiens* have been found, and evidence of the existence *c.* 2000

B.C. of a Stone age people who were probably in contact with the civilization of Egypt or Mesopotamia.

On the coast are to be found the Swahili (*q.v.*), a Bantu people mixed with Arab and other blood (whose language Ki-Swahili is largely understood throughout the country). The Arab inhabitants, practically confined to the coast, are of ancient settlement in East Africa, and many have a marked strain of negro blood. Indians have also been long settled on the coast, but the great increase in their numbers dates from the British occupation. The Europeans, nearly all of British or South African origin, have mostly settled in the country since 1902, in which year the whole white population was about 400 (traders, officials and missionaries).

Towns and Communications.—Nairobi, the capital, and Mombasa, the port, are separately noticed. On the mainland, nearly opposite Mombasa, is the settlement of freed slaves named Freretown, after Sir Bartle Frere. Freretown (called by the natives Kisaoni) is the headquarters in East Africa of the Church Missionary Society. It was the residence of the bishop of the diocese of Mombasa, but the bishop's seat has been moved to Nairobi. Lamu (pop. 6,500), on the island of the same name, 150 mi. N.E. of Mombasa, is an ancient settlement and the headquarters of the coast Arabs. Here are some Persian and Portuguese ruins, and a large Arab city is buried beneath the sands. Other towns on the coast are Malindi (pop. about 3,000), Patta and Kipini. At Malindi, the "Melind" of *Paradise Lost*, is the pillar erected by Vasco da Gama when he visited the port in 1498. The harbour is very shallow. Of towns founded by the white settlers (besides Nairobi), Naivasha, 64 mi. N.N.W. of Nairobi, lies in the Rift valley close to Lake Naivasha, and is 6,230 ft. above the sea. It is the centre of a European agricultural settlement (white pop., 1937, 746). Nakuru (white pop., 1,245; Asiatic, 2,188); 57 mi. by rail N.W. of Naivasha, and finely situated on the shores of a salt lake, is the headquarters of the Kenya Farmers Association. At Eldoret (white pop., 700), on the Uasin Gishu plateau, is a settlement of Dutch-speaking South Africans. Kisumu (white pop., 350; Asiatic 2,500), is a port on Lake Victoria, with railway and steamer services; up to 1928 it was the *entrepôt* for the trade of Uganda. Fifteen miles N. of Nairobi is Kikuyu, a noted missionary station; Limuru (7,340 ft. high), 10 mi. N. of Kikuyu, has a reputation as a health resort. Other towns founded by the white settlers are Gilgal, Kitale, Thika (centre of the coffee plantations) and Nyeri.

With the outside world and for commercial purposes, communications are almost entirely through Mombasa, with its spacious harbour at Kilindini. It can accommodate ships of the largest size, and is served by many steamship lines with direct and regular services to and from Europe, South Africa, India and other countries. Kenya and Uganda form a unit for transport services. State owned, the railway, harbours and allied services have, after 1921, possessed financial autonomy, and after 1926 have been under a high commissioner for transport (consisting of the governors of Kenya and Uganda, acting jointly with the aid of a railway advisory council and harbour advisory board). There is one trunk railway, which, starting from Mombasa, runs northwest through the southern part of Kenya and eastern Uganda to the Nile, near its source. Originally the line went to Kisumu on Lake Victoria, whence a steamer service gave connection with Uganda. This was long known as the Uganda railway, and was begun at a time when it was not suspected that any part of Kenya could become "a white man's country." A preliminary survey was executed in 1892, and work was begun in 1896. The distance by rail from Mombasa to Kisumu is 587 mi. and to Kampala, Uganda, 879 mi. The total length of the line, including all branches, is 1,625 mi. (1939). The line is of metre (3.28 ft.) gauge, the Sudan, and South and Central African lines being of 3 ft. 6 in. gauge. Essentially a mountain line, it has gradients of one in 50 and one in 60. From Mombasa it crosses to the mainland by a bridge half a mile long, and ascends the plateau till it reaches the edge of the Rift valley, 346 mi. from its starting point, at the Kikuyu escarpment, where it is 7,600 ft. above the sea. It then descends across ravines bridged by viaducts to the valley floor, dropping to a level of 6,011 ft., and next ascending the opposite (Mau) escarpment to the summit, 8,321 ft. above sea level. In the remaining 100 mi. to Kisumu the level sinks to 3,738 ft., the altitude of Lake Victoria. The railway was built by the British government at a cost of £5,331,000, or about £9,500 per mile. The first locomotive reached Victoria Nyanza (Lake Victoria) on Dec. 26, 1901; and the permanent way was practically completed by March 1903, when Sir George Whitehouse, the engineer who had been in charge of the construction from the beginning, resigned his post. The railway, by doing away with the carriage of goods by men, gave the final death-blow to the slave trade in that part of East Africa. It put an end to the raids of the Masai which had for long terrorized a wide area. It also facilitated the continued occupation and development of Uganda, which was, previous to its construction, an almost impossible task, owing to the prohibitive cost of the carriage of goods from the coast. Not only were the two avowed objects of the railway—the destruction of the slave trade and the securing of the British position in Uganda—attained; it was found that the line passed through a region which was suitable for colonization by whites. For several years the existing line served all the needs of the settlers. In 1911–12 a branch line (91 mi.) was built to the Magadi soda lake, and a line (32 mi.) was built from Nairobi to the Thika river (toward Mt. Kenya). In 1915–16, for military purposes, a railway—92 mi. long—was built from Voi via Taveta to Kahe in (then) German East Africa. It linked the Uganda railway to the Tanga railway. This Voi-Kahe line was bought by the Uganda railway in 1923 and reconditioned.

White settlement in the Trans-Nzoia and Uasin Gishu districts, and the sudden development of cotton growing in Uganda, led, in 1921, to the adoption of a bold policy of railway development. From Nakuru (452 mi. from Mombasa) a new line was built north to Eldoret on the Uasin Gishu plateau, and thence north and east to the Uganda frontier and on to the Nile at Mbulamuti on the Busoga railway—the distance from Nakuru to the Nile being 350 miles. The line, opened in Jan. 1928, cost about £2,000,000. It at once became the main line; the section Nakuru–Kisumu being henceforth but a branch. Seventy miles from Nakuru, and a little north of the equator, the new main line reaches an altitude of 9,130 ft., believed to be the highest point of any railway in the British empire. The line sinks at Eldoret, 50 mi. farther on, to 7,000 ft., and thence continues to fall to some 3,500 ft. at its terminus. A branch (41 mi.) from the new main line to Kitale serves the Trans-Nzoia district; the Thika river line has been extended to Rongai river, west of Mt. Kenya and 140 mi. from Nairobi (this line climbs 2,000 ft. in 15 mi. by the free use of 3% grades). Other branches have been built, including one in Uganda from Tororo to Soroti (98 mi.) serving a rich cotton district. The whole system is now known as the Kenya and Uganda railways and harbours administration.

Road development was slow and communications over the greater part of the colony—all the northern and eastern districts—are still primitive, but motorable roads run from Nairobi to Mombasa, to Tanganyika Territory and to Uganda and the Sudan. There were in 1937 approximately 10,600 mi. of public roads in Kenya of which 2,830 mi. were classed as principal arterial roads; but only *c.* 816 mi. of these have hard surface. The building of roads and the general use, after World War I, of the motor-car, has done much to end the isolation of the white settlers. Civil aviation has expanded rapidly in recent years. There are customs aerodromes at Kisumu, Nairobi and Mombasa, and 12 aerodromes are available for regular use. The country is served by a twice-weekly air service between Great Britain and South Africa, with stops at Kisumu and Nairobi. Cargo landed and shipped by aircraft at customs aerodromes in 1937 was valued at £897,999. The postal and telegraphic service is well developed, and there is a cable and (after 1928) wireless communication with the outside world.

Government and Revenue.—At the head of the administration is a governor, who is aided by an executive council composed of officials and nominated unofficial members. There is a legislative council, of which the governor is president, consisting of elected, nominated and ex-officio members. The elected members

are in a minority, so that ultimate control is in the hands of the colonial office, London, to which the governor is responsible. The white settlers and the Indians possess adult suffrage; the Arabs (at their own wish) male adult suffrage only. The franchise is communal, whites, Indians and Arabs having separate voting rolls. For whites the country is divided into 11 single member constituencies; for the Indians the colony and protectorate form a single five-membered constituency; for the Arabs the whole country is also one constituency. The Africans have not the franchise, but one member, chosen from the Christian missionaries, is nominated to represent them, and in 1944, for the first time, a native was placed on the legislative council as a nominated, unofficial member. For tribal purposes the chiefs are assisted by local native councils which, under an ordinance of 1924, possess a measure of local self government. There is a chief native commissioner, with a department for native affairs under his control. The other central services include public works, medical, education, lands and agricultural departments. For local government purposes the country is divided into provinces, each with senior, district and resident commissioners. Separate control of the native and settled areas was in force after 1921. For customs purposes Kenya and Uganda, after April 1917, have formed an administrative unit. The judicature is distinct from the executive.

In the early years of the British administration, expenditure necessary for ordinary services and for opening up the country exceeded revenue, and to balance accounts the taxpayers of the United Kingdom furnished between 1896 and 1913 £2,843,000, in addition to heavy capital expenditure on railways and public works. In 1913–14 the country became self supporting. In that year expenditure was £1,115,000 and revenue £1,123,000. In 1900–01, just before the opening of the Uganda railway, revenue had been £64,000 and expenditure £302,000. In 1906–07, when the railway figures were first included, revenue was £461,000 and expenditure £616,000. In 1920–21, the last year in which the railway returns were included in the ordinary budget, revenue was £2,978,000, expenditure £2,976,000. In 1926 the ordinary revenue was £2,627,000 and expenditure £2,414,000, the railway and harbours revenue in the same year was £2,058,000 and expenditure £1,216,000 (not reckoning interest and loan redemption payments —about £400,000). The 1937 budget figures were: Revenue £3,667,393; expenditure £3,565,976. The chief sources of revenue (railways and harbours apart) are customs and taxes, including a poll tax on all adult males of every race (at the age of 18 in the case of whites). A very moderate income tax was introduced in 1937. Kenya and Uganda are a single unit for customs purposes. The customs receipts for Kenya in 1937 were £897,853 (net). The public debt, incurred mostly for transport development, was, in 1937, £17,580,600, of which £4,328,792 was attributable to the colony, and £413,251,888 to the transport administration. With respect to the loan of the colony, interest charges in 1938 were £197,434, and £39,537 were contributed to the sinking fund.

Economic Conditions.—The prosperity of Kenya depends upon agriculture. In the highlands the white settlers cultivate, chiefly, coffee, maize and sisal. Wheat and barley, potatoes and other vegetables, fruits, sugar cane, tobacco, pyrethrum and other crops are also grown. There are very extensive pasture lands, and the colony, in addition to being self-supporting in all animal products, has developed an export trade in dairy products. A meat canning factory at Athi Riner began operations in 1938. All the northern half of the country, though arid, has sufficient vegetation to permit its Somali, Galla and other inhabitants to keep large herds of cattle as well as of camels. Under irrigation much of this northern region would be very fertile. Cotton plantations are successful in the Kavirondo country around Lake Victoria; in the coast lowlands coconut plantations yield copra, and there are also in these coast lands sisal, maize, sugar cane and cotton areas. There are a great variety of minor crops and products, but the principal crops—for the whole colony—in the order named are coffee, sisal, maize, wheat, coconuts and sugar cane. Most of the manual labour is done by Africans, but the white man must be prepared to work himself, and farms of over 500 acres require more than one European to manage. The difficulty of getting sufficient labour for such crops as coffee and sisal, which need many hands, led the governor (Sir Edward Grigg) in 1926 to advocate concentration by the white settlers on work which required fewest hands—stock-raising, dairying, mixed farming, wheat, maize, etc.—advice taken only to a certain extent. Plans for closer settlement and the introduction of men with small capital, or even none, were being put into execution in 1928–29. By 1937, 6,987,498 ac. had been alienated to Europeans, of which (1936) 4,580,029 ac. were occupied by Europeans engaged in agriculture, and 502,497 were under cultivation, apart from areas used for grazing. Small areas, about 34,000 (1930) ac., were being cultivated by Indians in the lowlands.

The native was at first regarded as a negligible economic factor, except as providing manual labour, but under official encouragement and the example of the natives of Uganda and Tanganyika, he became a producer of more than the food crops needed for home consumption. The chief native crops for export are maize, sim-sim, beans, ground-nuts, wattle, and, in Kavirondo, cotton. The dual policy of developing simultaneously native and white areas—as carried out in Nyasaland and Northern Rhodesia, and also in Tanganyika—was definitely adopted by the Kenya Government in 1924. It provoked criticism from a section of the whites, who considered that it conflicted with their interests. Native production increased, though not so rapidly as in the adjacent territories. In 1937, ca. 1,750,000 ac. were under native cultivation. The hides and skins and the ground nuts exported came mainly from the reserves, which cover (1937) 30,830,720 acres. By 1928 the natives produced about 25% of the total exports, while they take a much larger proportion of the imports. The chief imports are cotton piece-goods; food, drink and tobacco (the natives take 80% of the tobacco); pottery and machinery; motor cars and trucks and bicycles; the last largely used by the natives.

The sylvan resources of the country have not been properly developed and there was, at first, unwise alienation of much of the best forest lands. Great quantities of carbonate of soda are taken from the Magadi soda "lake" (the surface is solid and the soda cut away in huge blocks). There are gold deposits in the Kisii district round Lake Victoria, but the mineral resources are little known. Gold is the only mineral exploited in important quantities.

Practically the whole of the import and export trade of Uganda passes through Mombasa, and as there is a customs union with that protectorate the trade figures do not distinguish between Kenya and Uganda imports and exports, though on analysis they can, in the main, be ascertained. Consideration of economic conditions in Kenya must, however, take account of Uganda, and this is true of other East African territories. They are engaged on similar enterprises; Tanganyika territory, for example, is the chief producer of sisal and might become a competitor with Kenya for the carrying of Uganda cotton. Tanganyika, too, has areas like Kenya, suitable for white settlement, and like Uganda has cotton interests. Zanzibar is still to some extent an *entrepôt* for the distribution of goods (though in this respect Kenya has become a competitor), and Nyasaland, if not Northern Rhodesia, is in the East African orbit. All these countries, except Zanzibar, have had, after 1922, the same currency—the British shilling being the standard coin; the change from rupees to sterling in Kenya, Uganda and Tanganyika indicating a new orientation. The shilling is, however, divided into 100 cents. A general East Africa currency board is established in London; and to London all these countries turn when raising loans. Obviously, a common policy would have advantages in respect of transport, tariffs, agricultural and mineral development, and in regard to the fight against the tsetse fly and other tropical pests, also in combating leprosy, sleeping sickness and other diseases. After World War I, when Tanganyika territory (formerly German East Africa) came under British mandate, the desire for economic co-operation became strong and was accompanied by proposals for political union (*see* BRITISH EAST AFRICA). As far as trade and commerce are concerned, organizations representing all the East African territories have been created. A trade commissioner, appointed by the

British government, deals with all the territories under British administration. (Consult the reports issued by the Department of Overseas Trade, London.) As indicating the relative position of the various countries it may be stated that in 1926, out of a total of, in round figures, £31,000,000 as the value of imports to and exports from the British administered East African territories, the share of Kenya and Uganda was £17,000,000 and that of Tanganyika nearly £7,000,000, the remainder being divided between Zanzibar, Nyasaland and Northern Rhodesia.

Up to 1921 an *ad valorem* duty of 10% was imposed in Kenya on almost all imports, with varying duties on certain exports. In 1921–23 a modified protection policy was adopted, with specific duties between 10 and 50% on certain goods, and 10 to 30% *ad valorem* duties on other goods. Export duties were abolished, a uniform tariff was enacted for Kenya and Uganda, which also applied to Tanganyika. Free trade was established in goods, the growth, produce or manufacture of those three countries. There was, however, no uniformity of railway charges, Tanganyika pursuing a somewhat independent policy.

Although a tendency to inflation was noticeable in Kenya after World War I, due in part to the spending of loan money upon expectations of increased purchasing power and there were periods of acute commercial depression (as in 1922–23), trade showed much elasticity. As between Kenya and Uganda, analyses of the trade figures showed that up to 1926 Kenya took the larger proportion of the imports, and Uganda, owing to its cotton crop, supplied the larger part of the exports. Thereafter, the growth of the maize exports from Kenya began to tell, so that with a "slump" in the Uganda cotton crop, Kenya exports in 1927 exceeded those of Uganda. For 1937 the total imports for home consumption (Kenya and Uganda combined) were £10,832,573, the British share being 41%. The exports, 25% of which went to Great Britain, were £11,887,747. (By way of comparison it may be pointed out that in 1896 the Kenya exports were but £73,000 and the imports £176,000.) Imports dropped to £4,898,722 and exports for Kenya alone to £2,246,999 in the depression year of 1933.

HISTORY

Before the partition of Africa between European Powers a great part of the coast of East Africa belonged to the dominions of Zanzibar. That sultanate had close ties with India, and in the last quarter of the 19th century British influence was strong at the court of the seyyids or sultans. Much of the trade of the chief ports, Zanzibar, Mombasa and Bagamayo, was in the hands of British and Indian merchants. In 1877 the then ruler, Sultan Bargash, offered to (Sir) William Mackinnon (1823–93), the chairman of the British India Steam Navigation company, a lease for 70 years of all his mainland territories, including, with certain reservations, rights of sovereignty. This was the year (1877) in which H. M. Stanley completed his journey down the Congo, and by revealing the riches of Central Africa set on foot the movement for the partition of the continent. But at the time the British Foreign Office was not converted, and receiving no support from that quarter Mackinnon declined the offer of Bargash. A few years later, when public interest was aroused, H. H. Johnston obtained concessions from chiefs in the Kilimanjaro region. This was early in 1884; at the end of the same year German agents obtained concessions in the same region. The British government of the day placed no hindrance in the way of German acquisitions, but put forward claims of its own to the hinterland of Mombasa.

Spheres of Interest.—In 1886 a provisional agreement as to spheres of interest was reached between Germany and Great Britain; the agreement of July 1890 defined definitely the boundaries of British and German East Africa respectively. North, the British sphere reached to Abyssinia; on the east it adjoined Italian Somaliland, on which side the river Juba was fixed as the frontier in 1891. Meanwhile the plan of leasing the mainland of Zanzibar had been revived, and in May 1887 Bargash granted to an association formed by Mackinnon a concession for the administration of his mainland territory not included in the German sphere of operations. Subsequently the Benadir ports were leased to Italy, and in the German and Italian spheres the Zanzibar government sold its sovereign rights. The territory acquired by Mackinnon continued to be held on lease.

Formation of Chartered Company.—By international agreement the mainland territories of the sultan had been defined as extending 10 mi. inland from the coast. Mackinnon's association, whose object was to open up the hinterland as well as this 10 mi. strip, became the Imperial British East Africa company, and received a royal charter in Sept. 1888. To this company the sultan made a further concession dated Oct. 1888. On the faith of these concessions and the charter a sum of £240,000 was subscribed, and the company received formal charge of its concessions. The path of the company was speedily beset with difficulties, which in the first instance arose out of the aggressions of the German East African company, which had received the lease of the southern part of the Zanzibar mainland, *i.e.*, the coast of what is now Tanganyika territory. The Germans proved uncomfortable and somewhat unscrupulous neighbours, and claims put forward to certain coast-districts, notably Lamu, included in the British concession, gave much trouble. In conditions of great difficulty the company carried on its work. In 1888 it sent an expedition under F. J. Jackson to the far interior. Jackson reached the Victoria Nyanza, and hearing there that a German party under Karl Peters had run a blockade of the ports and reached Uganda, Jackson also went on to Uganda. Rival treaties were signed; but the Anglo-German agreement of 1890, already mentioned, placed Uganda in the British sphere. The next step taken by the company was to send Capt. F. D. (later Lord) Lugard to Uganda. For events in that country *see* UGANDA. Here it should be noted that the activities of the company in Uganda gravely crippled its resources. To open up its territories the company planned to build a railway from Mombasa to the Victoria Nyanza, an enterprise which Mackinnon rightly held was essential. A preliminary survey was made in 1892. But there was strong opposition in parliament to any aid for railway building from imperial sources, and even to the retention of Uganda, and the company's scheme was wrecked.

Further difficulties now arose which led to the extinction of the company. Its pecuniary interests sustained a severe blow owing to the British government—which had taken Zanzibar under its protection in Nov. 1890—declaring (June 1892) the dominions of the sultan within the conventional Congo basin free trade zone. The result for the company was that dues were swept away without compensation, and the company was left saddled with the payment of the rent, and with the cost, in addition, of administration, the necessary revenue for which had been derived from the dues thus abolished. Moreover, a scheme of taxation which it drew up failed to gain the approval of the foreign office.

In every direction the company's affairs had drifted into an *impasse*. At this crisis Sir William Mackinnon, its guiding spirit, died (June 1893), and after protracted negotiations it was decided that the British government should purchase the property, rights and assets of the company in East Africa for £250,000. Although the company had proved unprofitable for the shareholders (when its accounts were wound up they disclosed a total deficit of £193,000) it had accomplished a great deal of good work. Mackinnon and his colleagues were largely animated by the desire to suppress slavery and to improve the condition of the natives. With this aim they prohibited the drink traffic, started industrial missions, built roads, and administered impartial justice.

Crown Control.—The formal transfer of the country to the British crown took place on July 1, 1895, the foreign office assuming responsibility for its administration. The territory, hitherto known as "Ibea," from the initials of the company, was now called the East Africa protectorate, and the chief local official was styled commissioner. Coincident with the transfer of the administration a dispute as to the succession to a chieftainship in the Mazrui, the most important Arab family on the coast, led to a revolt which lasted ten months and involved much hard fighting. This revolt, or rather its suppression, was of more than passing importance. The defeat of the rebels definitely substituted European for Arab influence. Before the rebellion the coast

was in reality a protected Arab state; after its suppression, though no legal change was made, British influence was paramount. The Arab population, about 10,000, found it hard to cope with the new conditions.

Construction of Railway.—The country was, before long, to develop in an unexpected manner. It came about through the decision of Lord Salisbury, then prime minister, to build the railway projected by Mackinnon from the coast to Victoria Nyanza, and that at the expense of the British taxpayer. The object was twofold, to provide easy access to the headwaters of the Nile and to deal a heavy blow at the slave trade. The building of the railway from Mombasa was begun in 1896, the first locomotive reaching Victoria Nyanza in Dec. 1901, but it was not until March 1903 that the permanent way was practically completed. It cost the exchequer £5,331,000. During the building of the railway the energies of the administration were largely absorbed in that great work, and in establishing effective control over the Masai, Somali, and other tribes. The coast lands apart, the protectorate was regarded as valuable chiefly as being the high road to Uganda. But as the railway reached the high plateaux the discovery was made that there were large areas of land, perhaps as much as 20,000 sq.mi., and very sparsely peopled, where the climate was excellent and where the conditions were favourable to European colonization.

Beginning of White Settlement.—The completion of the railway, by affording transport facilities, made it practicable to open the country to settlers. Hitherto the European population had consisted of officials, a few traders, and missionaries; the labours of the last-named class among the natives having already produced good results. The first application for land was made in April 1902 by the East Africa syndicate—a company in which financiers belonging to the Chartered company of South Africa were interested—which sought a grant of 500 sq.mi.; and this was followed by other applications for considerable areas. The settlers had the unusual advantage of coming to a country already provided—and not at their expense—with railway and port facilities. That there were already some thousands of Indians in the protectorate—the railway had been built by Indian coolies—did not at first cause the whites much perturbation. They, the whites, were carving out virgin estates, and at the outset they got the small amount of native labour they needed. During 1903 there arrived in the country hundreds of prospective settlers, chiefly from South Africa—Dutch and British—but including many from England, men of the upper and middle classes. The first settler was Lord Delamere (the 3rd baron) and he became the recognized leader of the immigrant whites. To meet the requirements of the majority of the settlers the administration decided not to entertain any further applications for large areas of land; moreover, some of the best land was used by the Masai for depasturing their vast herds of cattle. In dealing with the applications for land grants a dispute arose between the commissioner, Sir Charles Eliot, and Lord Lansdowne, the secretary of State for foreign affairs. Eliot, an able man, who had been commissioner since 1900, refused to carry out Lord Lansdowne's decisions as to certain applications for land. He resigned his position, and in a public telegram to the prime minister declared Lord Lansdowne's instructions "unjust and impolitic." This was on June 21, 1904; on the same day Sir Donald W. Stewart was appointed to succeed Eliot. (*See* the parliamentary paper, *Correspondence Relating to the Resignation of Sir C. Eliot, Africa No. 4, 1904.*)

Growth of White Settlement.—This quarrel drew public attention in forcible fashion to East Africa; and it raised the question as to whether the land should fall in large areas into the hands of speculators, or be divided into smaller blocks which the individual settler could develop. The second was the proper course; on this both the foreign secretary and the commissioner were agreed, but Lord Lansdowne considered himself bound by a pledge given to the East Africa syndicate.

Sir Donald Stewart (who died in Oct. 1905) induced the Masai, whose grazing rights were threatened, to remove to another district, and a settlement of the land claims was arranged. An offer to the Zionist association of land for colonization by Jews was declined in Aug. 1905 by that body, after the receipt of a report by a commissioner sent to examine the land (6,000 sq.mi.) offered. Meanwhile, in April 1905, the administration of the protectorate had been transferred from the foreign to the colonial office. By the close of 1905 considerably over a million acres of land had been leased or sold by the protectorate authorities —about half of it for grazing purposes. In 1907, to meet the demands of the increasing number of white inhabitants, who had formed a Colonists' association for the promotion of their interests, a nominated legislative council was established, and on this council representatives of the settlers were given seats. The style of the chief official was also altered, "governor" being substituted for "commissioner." During this period relations with the natives were, on the whole, satisfactory. However, the Nandi, who occupied the southern part of the plateau west of the Mau escarpment, repeatedly raided their less war-like neighbours and committed wholesale thefts from the railway and telegraph lines. In Sept. 1905 an expedition was sent against them which reduced the tribe to submission in the following November, and early in 1906 the Nandi were removed into a reserve.

Complications with Indians and Natives.—By this time the white settlers had begun to experience difficulties with Indians and natives alike. At Nairobi, the new capital in the highlands, Indian traders, small and great, were competing with the Europeans, and elsewhere Indians obtained much of the trade with the natives. The settlers in the highlands engaged in stock-raising and grew coffee, maize, wheat, barley, flax and vegetables. In the lowlands sisal, tobacco and coconut plantations were started. Here, however, the white man was present only as overseer. The settlers were dependent for manual labour on the natives. The bulk of the farm work in the highlands was done by the Kikuyu, a people with a natural aptitude for agriculture. Most of the white farmers treated the native labourer with consideration, and in general, the native, at his unaccustomed work, did good service. Many natives, however, preferred to remain in their reserves, which the Government began to encourage them to develop for their own advantage. Difficulties inevitably arose and were aggravated by the scarcity of labour. The administration, on behalf of the natives, enforced, as early as 1907, regulations which the white settlers regarded as irksome. Hence arose much friction. Meanwhile the Indian problem grew in importance; the census of 1911 showed that there were 11,886 Asiatics in the country as against 3,175 Europeans. Sir Percy Girouard (governor, 1909–12), achieved the somewhat difficult task of working harmoniously with the settlers, whose grievances then were chiefly over the delay in getting land grants, but who were already beginning to claim a share in the government. Sir Percy had also the satisfaction, in 1912, of seeing the country become self-supporting. The next year (1913) was most noticeable for the acute controversy which arose over a missionary conference at Kikuyu, when the bishop of Mombasa (Dr. W. G. Peel) officiated at a communion service in a Presbyterian church at which Anglicans, Presbyterians, Wesleyans and others communicated. Apart from the theological controversy this service aroused, it served to draw attention to the fact that, up to that period, by far the greater part of the work, not only of Christianizing, but of civilizing the natives and giving them industrial as well as literary education, was in the hands of missionaries.

The War Period.—World War I caused a setback in the economic conditions of the country. The majority of the white male settlers went on active service, and agriculture and stock-raising suffered in consequence. Very heavy demands were also made on the natives, who had to supply carriers, transport oxen and meat to the troops. They responded well to these demands and large numbers of natives joined the combatant ranks. After the war a brief period of revival in trade was followed by a longer period of depression. Maj.-gen. Sir Edward Northey, who took over the governorship on Jan. 31, 1919, had to deal with the difficulties created by a period of change and strain. The white settlers were restive, the Indians were demanding political rights, the natives were in great need of careful guidance—so that on the

one hand they should cultivate their reserves and on the other hand supply the labour required for public works and the farms and plantations of Europeans. A currency crisis also arose through the rise in the exchange value of the rupee—the Indian rupee being the legal currency. An ill-advised stabilization of the rupee at 2s., in Feb. 1920, was quickly followed by the introduction of a coinage based on British currency. In May 1921 the shilling (divided into 100 cents) was made the standard coin. Dissatisfaction arose also over the great difficulties encountered in carrying out a scheme launched in 1919 to establish ex-soldiers from Great Britain on the land. By 1924, however, the settlement was, on the whole, a success. Over 700 farms out of 1,000 granted to ex-combatants were being worked.

Change of Status.—During this period of strain the change from a protectorate to a crown colony was effected (July 1920). The new colony was named after Mount Kenya, the most commanding natural feature of the country. The coast lands which formed part of the sultanate of Zanzibar were not annexed but became the Kenya protectorate. In 1919 a change in the constitution had introduced, for Europeans, an elective element in the legislative council, 11 single-member constituencies being created, with adult franchise on a residential qualification. At the same time two members were nominated to represent the Indian community. This discrimination against Indians was deliberate. Sir Edward Northey, the then governor, stated, in July 1919, that "though Indian interests should not be lost sight of, European interests must be paramount." Prolonged agitation followed. The Indians claimed equal rights with Europeans and a common franchise, and they had the strong and unremitting support of the government of India. The white settlers, to whom the development of the country's resources was very largely due, vehemently contested the claims of the Indians, most of whom were clerks, mechanics, shop assistants, small traders and labourers, though they included professional men and merchants of high standing. The whites further alleged that the Indian influence on the natives was bad. At this time (1921) the white settlers numbered about 9,600 and the Indians over 23,000; in 1931, 16,812 and 39,644.

White and Native Interests.—The whole question of policy came under consideration by the British government, whose decision was given in the Kenya White Paper of July 1923. The most significant part of this decision was that:

> The interests of the African natives must be paramount, and that if, and when, those interests, and the interests of the immigrant races (European and Asiatic) should conflict, the former should prevail. As in the Uganda protectorate, so in the Kenya colony, the principle of trusteeship for the natives, no less than in the mandated territory of Tanganyika, is unassailable.

In respect to the franchise the British government decided on a communal system of representation—that is, separate electoral rolls for Europeans, Indians and Arabs. The 11 seats on the legislative council for Europeans were retained; five seats on the council were allotted to the Indians and one seat to the Arab community, all on an elective basis; while one member was nominated specially to represent the natives. By means of other nominated members the government, however, retained control of the council. The franchise apart, the British government decided against the segregation of Indians in townships, but the practice which had been followed of reserving land in the highlands for Europeans was maintained.

The definite enunciation of the principle that native interests were paramount hardly pleased the European community, though they professed that African and European interests did not clash. To what they called "West Africanization" Lord Delamere and other leaders of the whites were hotly opposed. By that term they meant the policy of making the negro an independent producer and equal partner in development. That, they argued, might be the proper course in countries where white settlement was not possible; in Kenya, they claimed, the African would get his best training by working for and in association with the whites. But in spite of some wild talk the Europeans accepted the British government's decision. The Indians continued their agitation—which included a refusal to pay the poll tax and to elect members to the Council. In Dec. 1924, however, more moderate counsels prevailed and it was decided to accept seats on the council. This easing of the situation was largely due to Sir Robert Coryndon, who became governor in Sept. 1922, and, while a firm upholder of native rights, fully recognized the work done by the Europeans and the services rendered by the Indians. Sir Robert died at Nairobi on Feb. 10, 1925, and was succeeded by Sir Edward Grigg.

In respect to the natives, the administration endeavoured to guide them through their own chiefs and tribal organizations and gradually to teach them the art of government. The efforts of the officials, supported by the missionaries and by many of the white settlers, met with a measure of success. In 1922 they were extended to include, in addition to medical, educational and other services, direct encouragement of stock breeding and agriculture in the reserves. In 1924 a further step was taken in the grant to the tribal councils of a considerable measure of local self-government. The development of the reserves would, many settlers feared, decrease the supply of labour for the whites, though figures showed that the natives working on European farms increased from 53,000 in 1919–20 to 87,000 in 1923–24. Compulsory labour for private persons had been definitely prohibited in 1920. The root of the labour difficulty was that the population was insufficient for the intensive cultivation both of the European farms and the native reserves. To help in meeting this difficulty Sir Edward Grigg advised the Europeans to concentrate on crops and occupations —such as cattle-raising—which required least labour.

Plans for Development.—In 1924 a parliamentary commission, of which W. G. A. Ormsby-Gore was chairman, spent two months in Kenya, one of its main objects being to consider plans for the development of East Africa as a whole. It was followed, in Feb. 1926, by a conference at Nairobi of the governors of all the East African territories. (For federation efforts *see* BRITISH EAST AFRICA.) The parliamentary commission wrote in terms of high praise of the European settlers, "pioneers in a hurry," who desired to build in the highlands "a distinctive type of British civilization" while obtaining "a more complete inter-relation and co-operation between the European and the African than exists either in South or West Africa." The hurry of the pioneers was shown at the general election for the legislative council in 1926, when Lord Delamere and others campaigned—in vain —for an elected European majority in the council, that is the handing over of control to the white settlers. But the Imperial government announced (July 1927) that it was desired to associate the white community in its trusteeship and control of native affairs. The vigour of the pioneers was manifest in a large increase of the area under cultivation and the readiness to assume financial burdens for railway and other works—a new stage in transport facilities being reached in 1928, when through railway communication between Mombasa and the Nile in Uganda was opened. In that year, too, another British royal commission, under the chairmanship of Sir E. Hilton Young, visited East Africa. It considered, among other things, the question of native reserves in Kenya. If the dual policy of the simultaneous development of native and white areas was to be successful it was essential that the natives should have not only ample reserves, but security of tenure, and to this end a Native Lands Trust bill was introduced into the Kenya legislature, placing the reserves in trust for the natives in perpetuity. There was, in 1927–28, a revival of agitation by the Indian community arising out of proposals for a permanent European majority on the town councils of Nairobi and Mombasa; the administration showed a conciliatory attitude, the proposal was dropped and a satisfactory arrangement reached. A visit of the prince of Wales to Kenya in 1928 evoked enthusiasm.

The large part of Kenya—more than half the total area—not suitable for white settlement, Tanaland, Jubaland and the Northern province, was little affected by the problems which perplexed the rest of the colony. But these northern and eastern regions, semi-arid, were of much potential value and needed only irrigation. In 1925 (in accordance with a treaty made when Italy entered World War I) the greater part of Jubaland (*q.v.*) was transferred to Italy.

The colony, unprotected by any Monroe Doctrine, is Europe conscious. The military autocracy of Italy which added the Abyssinian to the Somaliland frontier; the activity of Germans in Tanganyika and Germany's demand for colonies were some of the reasons for Kenya's idea (1936) of adopting some form of conscription.

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(F. R. C.; X.)

KENYAHS. The Kenyahs, a Borneo tribe, are quick in thought and action, spendthrifts rather than savers, genial, hospitable, pugnacious without being bloodthirsty. Less reserved than the Kayans, they are adaptable and lively, very loyal, and very ready to follow a leader. Their countenances are open and well-featured, with a very fair yellow skin and wavy hair. Their legs are comparatively short, and their speech is a marked staccato.

The Kenyahs are found generally in the same regions as the Kayans, and have spread over Borneo from the same centre, Apo Kayan. It would almost seem as if they have been morally dominated by the Kayans and had an alliance forced upon them. They follow the Kayans in mode of life and in the arts, and very often improve upon their pattern. As a tribe they are not such great house-builders, iron-workers, or carvers as the Kayans, but the best Kenyah work is both better finished and more durable than the Kayan product. The Kenyah smelts his own steel from iron-ore which, at least until recently, he obtained from river-beds; from this he fashions a sword, knife, or adze, not indeed so artistic or so carefully chased as Kayan work, but of the highest temper. As regards carving, the best Kenyah work is on sword handles made from the antlers of a stag, and is most delicately and beautifully executed.

Above all, the Kenyah is a born boatman. His short legs and long body fit him for the work of paddling or poling, and on his own rivers he is able and willing to go anywhere and do anything. (*See* BORNEO.)

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KENYON, SIR FREDERIC GEORGE (1863–), British scholar, was born in London on Jan. 15, 1863. Educated at Winchester and at New College, Oxford, he became a fellow of Magdalen College, Oxford, in 1888. He was assistant in the British Museum, 1889–98; assistant keeper of MSS., 1898–1909; and director and principal librarian, 1909–30. His honours include the K.C.B. (1912) and G.B.E. (1925).

Among his other published works are three editions of Aristotle's *Constitution of Athens* (1891, 1904, 1920); *Classical Texts from Papyri in the British Museum* (1891); *Catalogue of Greek Papyri in the British Museum* (1893, 1898, 1907); *Our Bible and the Ancient Manuscripts* (1895); *Palaeography of Greek Papyri* (1899); *Handbook to the Textual Criticism of the New Testament* (1901–12). *The Chester Beatty Biblical Papyri* (1933–37); *The Text of the Greek Bible* (1937).

KENYON, LLOYD KENYON, 1ST BARON (1732–1802), lord chief-justice of England, was born at Gredington, Flintshire, on Oct. 5, 1732. Educated at Ruthin grammar school, he was in his 15th year articled to an attorney at Nantwich, Cheshire. In 1750 he entered at Lincoln's Inn, London, and in 1756 was called to the bar. As for several years he was almost unemployed, he utilized his leisure in taking notes of the cases argued in the court of king's bench, which he afterwards published. In 1780 he was made king's counsel. He showed conspicuous ability in the cross-examination of the witnesses at the trial of Lord George Gordon, but his speech was so tactless that the verdict of acquittal was really due to the brilliant effort of Erskine, the junior counsel. This want of tact, indeed, often betrayed Kenyon into striking blunders; as an advocate he was, moreover, deficient in ability of statement; and his position was achieved chiefly by hard work, a good knowledge of law and several lucky friendships.

Through the influence of Lord Thurlow, Kenyon in 1780 entered the House of Commons as member for Hindon, and in 1782 he was appointed attorney-general in Lord Buckingham's administration, an office which he continued to hold under Pitt. In 1784 he received the mastership of the rolls, and was created a baronet. In 1788 he was appointed lord chief justice as successor to Lord Mansfield, and the same year was raised to the peerage as Baron Kenyon of Gredington. As he had made many enemies, his elevation was by no means popular with the bar; but on the bench, in spite of his capricious and choleric temper, he proved himself not only an able lawyer, but a judge of rare and inflexible impartiality. He died at Bath, on April 4, 1802. Kenyon's contribution to the development of English law was a negative one. After the almost excessively progressive rationalizing policy of Mansfield, Kenyon in the king's bench and Eldon in the chancery initiated a period of conservatism, and the period of judicial adaptation of the law to modern conditions comes to an end, being replaced by the legislative reforms of the 19th century.

See *Life* by Hon. G. T. Kenyon, 1873.

KEOKUK, a city of Lee county, Iowa, U.S.A., in the south-eastern corner of the State, on the Mississippi river, at the mouth of the Des Moines. It is on Federal highways 61 and 161, and is served by the Burlington, the Rock Island, the Toledo, Peoria and Western, and the Wabash railways, and by river steamers and barges. The population in 1940 (federal census) was 15,076. Keokuk is at the foot of the Des Moines rapids in the Mississippi river, around which a navigable canal (opened 1877) was constructed by the Federal Government. Here was built by the Mississippi River Power company (1910–13) one of the largest hydro-electric power plants in the world, generating 200,000 horse power. The dam proper is nearly a mile long, set in a channel cut several feet into the hard limestone bed of the river. The water wheels are four times the size of the largest previously made. As part of the conditions imposed on the company it built and transferred to the United States a lock larger than any at Panama, and a drydock practically the size of the one at the Brooklyn navy yard. Over 1,200 transactions were involved in acquiring the land submerged by the lake (65 sq.m.) above the dam. Keokuk has a large wholesale trade and numerous and varied manufacturing industries. There is a national cemetery here, containing (1941) 1,045 graves. The city was named after Keokuk, a chief of the Sauk and Foxes (1780–1848) who remained peaceful during the Black Hawk War, and whose grave is in Rand park. The word meant "the watchful" or "he who moves alertly." The first house on the site of the city was built in 1820, but there was no further settlement until 1836. The town was laid out in 1837, chartered as a city in 1848, and in 1910 adopted a commission form of government.

KEONJHAR, one of the Orissa states in India in the Eastern States agency; area, 3,206 sq.mi.; pop. (1941) 529,786; estimated revenue, Rs. 957,000. Part of it consists of rugged hills, rising to more than 3,000 ft. above sea-level. There were rebellions of the Bhuiyas and other aboriginal tribes in 1868 and 1891. The state possesses considerable mineral wealth, notably in iron ore; the Tata Iron and Steel company holds a concession in it, and prospecting operations have been carried on by other companies. The trade in timber is also of some value.

KEONTHAL, a hill state in the Punjab, India, with an area of 186 sq.mi., pop. (1941) 51,645; estimated revenue, £9,700. The chief, a Rajput, received the title of raja in 1857. He exercises rights of lordship over the petty states of Kothi, Theog, Madhan, Ghund and Ratesh.

KEPLER, JOHANN (1571–1630), German astronomer, was born on Dec. 27, 1571, at Weil, Württemberg. He was the eldest child of an ill-assorted union. His father, Henry Kepler, was a reckless soldier of fortune; his mother, Catherine Guldenmann, the daughter of the burgomaster of Eltingen, was undisciplined and ill-educated. The misfortune and misconduct of his parents were not the only troubles of Kepler's childhood. He recovered from small-pox in his fourth year with crippled hands and eyesight permanently impaired. His schooling began at Leonberg in 1577. Bodily infirmity, combined with mental aptitude, were eventually considered to indicate a theological vocation; he was, in 1584, placed at the seminary of Adelberg, and thence removed, two years later, to that of Maulbronn. A brilliant examination for the degree of bachelor procured him, in 1588, admittance on the foundation to the university of Tübingen, where he learned Copernican principles from the private instructions of his teacher and life-long friend, Michael Maestlin. But it was with extreme reluctance that he turned aside from the career of the ministry to accept, early in 1594, the vacant chair of that science at Gratz.

Kepler found that the first duties required of him were of an astrological nature, and set himself to master the rules of the art

as laid down by Ptolemy and Cardan. He, moreover, sought in the events of his own life a verification of the theory of planetary influences; and it is to this practice that we owe the summary record of each year's occurrences which, continued almost to his death, affords for his biography a slight but sure foundation. He was convinced that for the actual disposition of the solar system some abstract intelligible reason must exist, and this, after much meditation, he believed himself to have found in relation between the "five regular solids" and the number and distances of the planets. His views, published in *Prodromus Dissertationum Cosmographicarum seu Mysterium Cosmographicum* (Tübingen, 1596) procured him much fame, and a friendly correspondence with the two most eminent astronomers of the time, Tycho Brahe and Galileo.

Kepler met at Gratz, Barbara von Mühleck, a wealthy heiress, and married her on April 27, 1597. Religious disturbances caused Kepler to leave Gratz, and to accept Tycho Brahe's offer to become assistant in his observatory near Prague. By Tycho's unexpected death (Oct. 24, 1601) a brilliant career seemed to be thrown open to Kepler. The emperor Rudolph II. immediately appointed him to succeed his patron as imperial mathematician, although at a reduced salary of 500 florins; the invaluable treasure of Tycho's observations was placed at his disposal; and the laborious but congenial task was entrusted to him of completing the tables to which Tycho had already affixed the title of *Rudolphine*. The first works executed by him at Prague were, nevertheless, a homage to the astrological proclivities of the emperor. In *De fundamentis astrologiae certioribus* (Prague, 1602) he declared his purpose of preserving and purifying the grain of truth which he believed the science to contain. He drew the horoscopes of the emperor and Wallenstein as well as of a host of lesser magnates; he made necessity his excuse for a compromise with superstition. "Nature," he wrote, "which has conferred upon every animal the means of subsistence, has given astrology as an adjunct and ally to astronomy." He dedicated to the emperor in 1603 a treatise on the "great conjunction" of that year (*Judicium de trigono igneo*); and he published his observations on a brilliant star which appeared suddenly (Sept. 30, 1604), and remained visible for seventeen months, in *De stella nova in pede Serpentarii* (Prague, 1606).

The main task of his life was not meanwhile neglected. This was nothing less than the foundation of a new astronomy, in which physical cause should replace arbitrary hypothesis. A preliminary study of optics led to the publication, in 1604, of his *Astronomiae pars optica,* containing important discoveries in the theory of vision, and a notable approximation towards the true law of refraction. From the time of his first introduction to Tycho he had devoted himself to the investigation of the orbit of Mars, which, on account of its relatively large eccentricity, had always been especially recalcitrant to theory, and the results appeared in *Astronomia nova αἰτιολογητός, seu Physica coelestis tradita commentariis de motibus stellae Martis* (Prague, 1609). In this, the most memorable of Kepler's multifarious writings, two of the cardinal principles of modern astronomy—the laws of elliptical orbits and of equal areas—were established (*see* ASTRONOMY: *History*); important truths relating to gravity were enunciated, and the tides ascribed to the influence of lunar attraction; while an attempt to explain the planetary revolutions in the then backward condition of mechanical knowledge produced a theory of vortices closely resembling that afterwards adopted by Descartes. Having been provided in 1610 with one of the new Galilean instruments, Kepler began to observe the wonders revealed by it. In his *Dioptrice* (Augsburg, 1611), he expounded the theory of refraction by lenses, and suggested the principle of the "astronomical" or inverting telescope. Indeed the work may be said to have founded the branch of science to which it gave its name.

On May 23, 1611, Matthias, brother of the emperor, assumed the Bohemian crown in Prague, compelling Rudolph to take refuge in the citadel, where he died early in 1612. Kepler's fidelity in remaining with him to the last did not deprive him of the favour of his successor. Payment of arrears was not, however, in the condition of the imperial finances, to be hoped for; and he was glad, while retaining his position as court astronomer, to accept (in 1612) the office of mathematician to the states of Upper Austria. In 1613 he appeared with the emperor Matthias before the diet of Ratisbon to advocate the introduction into Germany of the Gregorian calendar; but the attempt was for the time frustrated by anti-papal prejudice. About this period he published several essays in which he sought to prove that the birth of Christ took place five years earlier than the commonly accepted date. His wife died in 1611, and in 1613 he married Susanna Reutlinger, a poor orphan girl.

The abundant vintage of 1613 drew his attention to the defective methods in use for estimating the cubical contents of vessels, and his essay on the subject (*Nova Stereometria Doliorum,* Linz, 1615) entitles him to rank among those who prepared the discovery of the infinitesimal calculus. His observations on the three comets of 1618 were published in *De Cometis,* contemporaneously with *De Harmonice Mundi* (Augsburg, 1619), of which the first lineaments had been traced twenty years previously at Gratz. This extraordinary production is memorable as having announced the discovery of the "third law"—that of the connection between the planetary periods and distances. But the main purport of the treatise was the exposition of a system of celestial harmonies depending on the various and varying velocities of the several planets, of which the sentient soul animating the sun was the solitary auditor. The work was dedicated to James I. who invited Kepler to England, but, notwithstanding the distracted state of his own country, he refused to abandon it.

The insurmountable difficulties presented by the lunar theory forced Kepler, after much fruitless labour, to abandon his design of comprehending the whole scheme of the heavens in one great work. The *Epitome Astronomiae Copernicanae* (Linz and Frankfort, 1618–1621), a lucid and attractive textbook of Copernican science, was remarkable for the prominence given to "physical astronomy," as well as for the extension to the Jovian system of the laws recently discovered to regulate the motions of the planets. The first of a series of ephemerides, calculated on these principles, was published by him at Linz in 1617; and in that for 1620, dedicated to Napier of Merchiston (*q.v.*), he for the first time employed logarithms. This important invention was eagerly welcomed by him, and its theory formed the subject of a treatise entitled *Chilias Logarithorum,* printed in 1624, but circulated in manuscript three years earlier, which largely contributed to bring the new method into general use in Germany.

His studies were interrupted by family trouble. In 1620 his mother was arrested on a formal charge of witchcraft. Kepler immediately hastened to Württemberg, and owing to his exertions she was acquitted after having suffered thirteen months' imprisonment, and endured with undaunted courage the formidable ordeal of "territion," or examination under the imminent threat of torture. She survived her release only a few months, dying in 1622.

Kepler's whole attention was now devoted to the production of the new tables. But financial difficulties, combined with civil and religious convulsions, caused delay. From June 24 to Aug. 29, Linz was besieged, and its inhabitants reduced to the utmost straits by bands of insurgent peasants. In 1626 he obtained permission to transfer his types to Ulm, where, in Sept. 1627, the *Rudolphine Tables* were at length given to the world. Although by no means free from errors, their value appears from the fact that they ranked for a century as the best aid to astronomy. Appended were tables of logarithms and of refraction, together with Tycho's catalogue of 777 stars, enlarged by Kepler to 1,005. In July 1628 Kepler went with his family to Sagan in Silesia, where he applied himself to the printing of his ephemerides up to the year 1636, and whence he issued, in 1629, a *Notice to the Curious in Things Celestial,* warning astronomers of approaching transits. That of Mercury was actually seen by Gassendi in Paris on Nov. 7, 1631 (being the first passage of a planet across the sun ever observed); that of Venus, predicted for Dec. 6, following, was invisible in western Europe. Kepler died at Ratisbon on Nov. 15 (N.S.), 1630.

Kepler's demonstration that the planes of all the planetary orbits pass through the centre of the sun, coupled with his clear recognition of the sun as the moving power of the system, entitles him to rank as the founder of physical astronomy. But the relations

imagined by him of planetary movements and distances to musical intervals and geometrical constructions seemed to himself discoveries no less admirable than the achievements which have secured his lasting fame.

Kepler's extensive literary remains, purchased by the empress Catherine II. in 1724 from some Frankfort merchants, and long inaccessibly deposited in the observatory of Pulkowa, were fully brought to light, under the able editorship of Dr. Ch. Frisch, in the first complete edition of his works. This important publication (*Joannis Kepleri opera omnia,* Frankfort, 1858–1871, 8 vols. 8vo) contains, besides the works already enumerated and several minor treatises, a posthumous scientific satire entitled *Joh. Keppleri Somnium* (first printed in 1634) and a vast mass of his correspondence. A careful biography is appended, founded mainly on his private notes and other authentic documents. His correspondence with Herwart von Hohenburg, unearthed by C. Anschütz at Munich was printed at Prague in 1886.

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KEPPEL, AUGUSTUS KEPPEL, VISCOUNT (1725–1786), British admiral, second son of the 2nd earl of Albermarle, was born on April 25, 1725. He entered the navy, and at the age of 15 went round the world with Anson in the "Centurion." After the peace of Aix-la-Chapelle (1748) he was sent on a mission to persuade the dey of Algiers to put down piracy, and succeeded in making a treaty with him. During the Seven Years' War he saw constant service. In 1757 he was a member of the court-martial which condemned Admiral Byng, and actively endeavoured to secure his pardon. In 1762 he went with Sir George Pocock in the expedition which took Havana, and secured £25,000 of prize money. He became rear-admiral in Oct. 1762, a member of the Admiralty Board (July 1765–Nov. 1766), and vice-admiral in Oct. 1770. The most debated period of his life belongs to the opening years of the War of American Independence. He was a strong supporter of the Whigs, led by Rockingham and Richmond, and at that time excluded from power by George III. As M.P. for Windsor (1780), he was a steady opponent of the "King's Friends." When therefore he fought against France (1778) in command of the Western Squadron, he believed that Lord Sandwich, then first lord of the admiralty, would be glad to see his defeat. Unfortunately Sir Hugh Palliser, a member of the Admiralty board, whom he therefore held partly responsible for the condition of the navy, went to sea with him in a subordinate command. He believed his failure in the battle with the French (July 27, 1778), due in reality partly to his own incapacity, and partly to Palliser's disregard of his orders, to be a deliberate betrayal. He praised Sir Hugh in public, but attacked him in private, and a campaign of calumny was begun in the press which resulted in the trial and acquittal first of Keppel and then of Palliser, for neglect of duty. Keppel was ordered to strike his flag in March 1779. When Lord North's ministry fell in 1782 he became first lord, and was created Viscount Keppel and Baron Elden, but his career in office was not distinguished. He died on Oct. 2, 1786. His portrait was six times painted by Sir Joshua Reynolds. The copy which belonged originally to Burke is now in the National Gallery.

See T. Keppel, *Life of Keppel* (1842).

KEPPEL, SIR HENRY (1809–1904), British admiral, son of the 4th earl of Albemarle and of his wife Elizabeth, daughter of Lord de Clifford, was born on June 14, 1809, and entered the navy from the old naval academy of Portsmouth in 1822. His family connections secured him rapid promotion. He became lieutenant in 1829 and commander in 1833. His first command in the "Childers" brig (16) was largely passed on the coast of Spain, then in the midst of the convulsions of the Carlist war. Captain Keppel was then engaged with the squadron stationed on the west coast of Africa to suppress the slave trade. In 1837 he was promoted post captain, and appointed in 1841 to the "Dido" for service in China and against the Malay pirates, a service which he repeated in 1847, when in command of H.M.S. "Maeander."

In 1853 Keppel was appointed to the command of the "St. Jean d'Acre" of 101 guns for service in the Crimean War. He commanded the naval brigade landed to co-operate in the siege of Sevastopol. After the Crimean War he was again sent out to China, this time in command of the "Raleigh," as commodore to serve under Sir M. Seymour. The "Raleigh" was lost on an uncharted rock near Hongkong, but three small vessels were named to act as her tenders, and Commodore Keppel commanded in them, and with the crew of the "Raleigh," in the action with the Chinese at Fatshan Creek (June 1, 1857). He held successive commands till his retirement from the active list in 1879, two years after he attained the rank of Admiral of the Fleet. He died at the age of 95 on Jan. 17, 1904.

See his *A Sailor's Life under Four Sovereigns* (1899).

KER, JOHN (1673–1726), Scottish spy, whose original name was Crawfurd, was secretly employed both by the Jacobites and by the English government. In 1709 he obtained money in London from both sides by promises or threats, as the case demanded, to reveal Godolphin's relations with the Jacobites. He was in Vienna in 1713, and then in touch with the Electress Sophia, and claimed to have assisted in procuring the accession of George I. to the English crown. He died in prison for debt on July 8, 1726.

See his *Memoirs* (1726–27), in particular the "preface" to part i.; George Lockhart, *The Lockhart Papers* (2 vols., 1817); Nathaniel Hooke, *Correspondence,* ed. W. D. Macray (Roxburghe Club, 2 vols., 1870).

KER, WILLIAM PATON (1855–1923), British man of letters, was born at Glasgow on Aug. 30, 1855. He studied at Glasgow university and Balliol college, Oxford. He was elected fellow of All Souls college in 1879, professor of English literature and history at Cardiff in 1883 and of English literature at University college, London, in 1889, a post which he held until 1922. In 1920 he was elected professor of poetry at Oxford. Ker's principal work was done on mediaeval literature. His works include: *Epic and Romance* (1897); *The Dark Ages* (1904); *Essays on Mediaeval Literature* (1905); *Sturla the Historian* (1907); *The Art of Poetry* (1923); and posthumously collected essays and lectures (1925). Ker was a singularly inspiring teacher and a scholar of wide and humane sympathies. He died suddenly in the Alps, at Macugnaga on July 17, 1923, and was buried there.

KERAK (anc. KĪR MOAB, or KIR HARESETH or KIR HERES), a town in Trans-Jordan, 10 mi. E. of the southern shore of the Dead sea peninsula, El-Lisān, and about 3,000 ft. above sea level. Kir was destroyed by a Hebrew-Edonite coalition (2 Kings iii. 25), and railed at several times by Isaiah. It became in Christian times the see of an archbishopric suffragan to Petra. The crusaders fortified it (1136), calling it Krak. It yielded to Saladin after a long and desperate struggle in 1188. The fortifications were reconstructed by Bibars (13th century). After enjoying a semi-independence under the Turks it was taken by Ibrahim Pasha in 1832. The Turks taking advantage of a rebellion here in 1893 established a garrison. During World War I it came within the field of operations and suffered bombardment. The modern town of Kerak is a jumble of flat, mud-roofed houses, and is surrounded by a wall breached in several places. The castle, one of the most beautiful erected by the Franks, is in a good state of preservation. The entrance to the town was formerly through tunnels cut in the rocky substratum. Its mosque was, like so many others elsewhere, formerly a church. A water-supply was installed by the Trans-Jordanian government which also buttressed its castle against collapse. (E. Ro.)

KERALA or **CHERA,** the name of one of the three ancient Dravidian kingdoms of the Tamil country of southern India, the other two being the Chola and the Pandya. Its original territory comprised the country now contained in the Malabar district, with Travancore and Cochin, and later the country included in

the Coimbatore district and a part of Salem. The earliest references to this kingdom appear in the edicts of Asoka, where it is called *Keralaputra* (*i.e.*, son of Kerala). Of the political history of the Kerala kingdom nothing is known beyond a list of rajas compiled from inscriptions, until in the 10th century the struggle began with the Cholas, by whom it was conquered and held till their overthrow by the Mohammedans in 1310. These in their turn were driven out by a Hindu confederation headed by the chiefs of Vijayanagar, and Kerala was absorbed in the Vijayanagar empire until its destruction by the Mohammedans in 1565. For about 80 years it seems to have preserved a precarious independence under the naiks of Madura, but in 1640 was conquered by the Adil Shah dynasty of Bijapur and in 1652 seized by the king of Mysore.

See V. A. Smith, *Early Hist. of India,* revised by S. M. Edwardes (1924); the *Cambridge History of India,* ed. Prof. E. J. Rapson (1922 *et seq.*).

KERASUND or GIRESUN (anc. *Choerades, Pharnacia, Cerasus*), the capital of a vilayet on the north coast of Turkey, and the port—an exposed roadstead—of Kara-Hissar Sharki, with which it is connected. Pop. of vilayet (1940) 279,236. The town is situated on a rocky promontory, crowned by a Byzantine fortress, and has a growing trade. It exports filberts (for which product it is the centre), walnuts, hides and timber. Cerasus was the place from which the wild cherry was introduced into Italy by Lucullus and so to Europe (hence Fr. *cerise,* "cherry"). Town population (1940) 16,273.

KERB MARKET: *see* CURB MARKET.

KERCH or KERTCH, a seaport of the Crimean A.S.S.R. on the Strait of Kerch or Yenikale in 45° 21′ N. and 36° 28′ E. Pop. (1939) 104,471. It stands on the site of the ancient *Panticapaeum,* and, like most towns built by the ancient Greek colonists in this part of the world, occupies a beautiful situation, clustering round the foot and climbing up the sides of the hill (called after Mithridates) on which stood the ancient citadel or acropolis. The town is a railway terminus and seaport. The Kerch channel is 300 ft. wide and has been dredged to a depth of 17 ft. From April to August steamers drawing 16½ ft. of water can cross the bar, but from Sept. 1 to the close of navigation only vessels of 12½ ft. draught can pass. There are six quays. On the northwest side of the Shiroki mole the walls of a basin for a floating dock have been completed; when dredged it will have a depth of 32 ft. The old Genoese mole has been reconstructed, and protection for sailing vessels against the northeast winds has thus been afforded. The chief exports are wheat, barley, linseed, flour, wool and iron goods depending on the local iron mines opened in 1895. Asphalt, fish and jam preserves, tobacco and flour are produced in the town, which also has a considerable fishing industry. Its mineral mud baths, one in the town itself, and one near Lake Chokrak, 9 mi. distant, are increasingly frequented. About 6 mi. northeast is the former Turkish fortress of Yenikale. The church of St. John the Baptist, founded in 717, is a good example of the early Byzantine style. That of Alexander Nevsky was formerly the Kerch museum of antiquities, founded in 1825. The more valuable objects were later removed to the Hermitage at St. Petersburg.

The Greek colony of Panticapaeum was founded about the middle of the 6th century B.C., by the town of Miletus. From about 438 B.C. till the conquest of this region by Mithridates the Great, king of Pontus, about 100 B.C., the town and territory formed the kingdom of the (Cimmerian) Bosporus, ruled over by an independent dynasty. Phanaces, the son of Mithridates, became the founder of a new line under the protection of the Romans, which continued to exist till the middle of the 4th century A.D., and extended its power over the maritime parts of Tauris. After that the town—which had already begun to be known as Bospora—passed successively into the hands of the Eastern empire, of the Khazars, and of various barbarian tribes. In 1318, the Tatars, who had come into possession in the previous century, ceded the town to the Genoese, who soon raised it into new importance as a commercial centre. They usually called the place Cerchio, a corruption of the Russian name Kertchev (whence Kerch), which appears in the 11th century inscription of Tmutarakan (a Russian principality at the north foot of the Caucasus). Under the Turks, whose rule dates from the end of the 15th century, Kerch was a military port; and as such it played a part in the Russo-Turkish wars. Captured by the Russians under Dolgorukov in 1771, it was ceded to them along with Yenikale by the peace of Kuchuk-Kainarji, and it became a centre of Russian naval activity. Its importance was greatly impaired by the rise of Odessa and Taganrog; and in 1820 the fortress was dismantled. Kerch suffered severely during the Crimean War.

Archaeologically Kerch is of particular interest, the *kurgans* or sepulchral mounds of the town and vicinity having yielded since 1825 a rich variety of beautiful works of art. In the Altun or Zolotai-oba (Golden Mound) was found a great stone vault similar in style to an Egyptian pyramid; and within, among many objects of minor note, were golden dishes adorned with griffins and beautiful arabesques. In the Kul-oba, or Mound of Cinders (opened in 1830–1831), was a similar tomb, in which were found what would appear to be the remains of one of the kings of Bosporus, of his queen, his horse and his groom. The ornaments and furniture were of the most costly kind; the king's bow and buckler were of gold; his very whip intertwined with gold; the queen had golden diadems, necklace and breast-jewels, and at her feet lay a golden vase. In the Pavlovski kurgan (opened in 1858) was the tomb of a Greek lady, containing among other articles of dress and decoration a pair of fine leather boots (a unique discovery) and a beautiful vase on which is painted the return of Persephone from Hades and the setting out of Triptolemus for Attica. In a neighbouring tomb was what is believed to be "the oldest Greek mural painting which has come down to us," dating probably from the 4th century B.C. Among the minor objects discovered in the kurgans perhaps the most noteworthy are the fragments of engraved boxwood, the only examples known of the art taught by the Sicyonian painter Pamphilus.

Very important finds of old Greek art continue to be made in the neighbourhood, as well as at Tamañ, on the east side of the Strait of Kerch. The catacombs on the northern slope of Mithridates hill, of which nearly 200 have been explored since 1859, possess considerable interest, not only for the relics of old Greek art which some of them contain (although most were plundered in earlier times), but especially as material for the history and ethnography of the Cimmerian Bosporus. In 1890 the first Christian catacomb bearing a distinct date (491) was discovered. Its walls were covered with Greek inscriptions and crosses.

See H. D. Seymour's *Russia on the Black Sea and Sea of Azoff* (London, 1855); J. B. Telfer, *The Crimea* (London, 1876); P. Bruhn, *Tchernomore,* 1852–77 (Odessa, 1878); Gilles, *Antiquités du Bosphore Cimmérien* (1854); D. Macpherson, *Antiquities of Kertch* (London, 1857); *Compte rendu de la Commission Imp. Archéologique* (St. Petersburg); L. Stephani, *Die Alterthümer vom Kertsch* (St. Petersburg, 1880); C. T. Newton, *Essays on Art and Archaeology* (London, 1880); *Reports* of the [Russian] Imp. Archaeological Commission; *Izvestia* (Bulletin) of the Archives Commission for Taurida; *Antiquités du Bosphore Cimmérien, conservées au Musée Impérial de l'Ermitage* (St. Petersburg, 1854); *Inscriptiones antiquae orae septentrionalis Ponti Euxini graecae et latinae,* with a preface by V. V. Latyshev (St. Petersburg, 1890); *Materials for the Archaeology of Russia,* published by the Imp. Arch. Commission (No. 6, St. Petersburg, 1891); M. Rostovtzeff, *Iranians and Greeks in South Russia,* 1922 (with bibliography and illustrations).

KERENSKY (kā′rĕns-kĭ), **ALEXANDER FEODOROVICH** (1881–), Russian politician, born at Simbirsk, studied at the University of St. Petersburg, where he took his degree in law, and afterwards joined the St. Petersburg bar. In 1912 he was elected to the Fourth Duma and joined the Labour Group. He was in reality an adherent of the Social Revolutionary party, but as it was impossible in those days to enter the Duma under this flag he chose the Group of Toil (Labour) in preference to the Social Democrats, whom he considered to be too pedantic and distant from the people. As a member of the Duma he made his mark as an eloquent speaker. (*See* RUSSIA.)

When the first Provisional Government was formed after the Feb. 1917 revolution Kerensky took the portfolio of Minister of Justice. Later, on Guchkov's resignation he became War Minister on May 5, and set to work to reorganise the demoralised army. He had a temporary and partial success, reintroducing the death

penalty, himself visiting the front, and effecting a brief offensive in June. On July 25th he succeeded Prince Lvov as Prime Minister of the 2nd Provisional Government, holding this office until the outbreak of the Bolshevik revolution. But he was unable to rally a war-weary population to his support, and caught between the two forces of militaristic reaction and Bolshevik revolution, his government was marked by vacillation and indecision. He fled from Petrograd on the eve of the October revolution, and attempted to march with armed forces on the capital, but was defeated. For a time he was associated with attempts to recover Russia from the Bolsheviks, but finally retired to Paris.

See his books, *The Prelude to Bolshevism* (1919), and *The Catastrophe* (1927).

KERGUELEN or **DESOLATION ISLAND** or **LAND,** an island in the Southern Ocean, to the S.E. of the Cape of Good Hope, and S.W. of Australia, about 2,000 m. S.E. of Madagascar. Kerguelen lies between 48° 39′ and 49° 44′ S. and 68° 42′ and 70° 35′ E. Its extreme length is about 85 m., but the area is only about 1,400 sq.m. The island is throughout mountainous, presenting from the sea in some directions the appearance of a series of jagged peaks. The various ridges and mountain masses are separated by steep-sided valleys, which run down to the sea, forming deep fjords, so that no part of the interior is more than 12 m. from the sea. The chief summits are Mounts Ross (6,120 ft.), Richards (4,000), Crozier (3,251), Wyville Thomson (3,160), Hooker (2,600), Moseley (2,400). The coast-line is extremely irregular, and the fjords, at least on the north, east and south, form a series of well-sheltered harbours. As the prevailing winds are westerly, the safest anchorage is on the north-east. Christmas Harbour on the north and Royal Sound on the south are noble harbours, the latter with a labyrinth of islets interspersed over upwards of 20 m. of land-locked waters. The scenery is generally magnificent. A district of considerable extent in the centre of the island is occupied by snowfields, whence glaciers descend east and west to the sea. The whole island, exclusive of the snowfields, abounds in freshwater lakes and pools in the hills and lower ground. Hidden deep mud holes are frequent.

Kerguelen Island is of undoubted volcanic origin, the prevailing rock being basaltic lavas, intersected occasionally by dykes, and an active volcano and hot springs are said to exist in the south-west of the island. Judging from the abundant fossil remains of trees, the island must have been thickly clothed with woods and other vegetation, of which it has no doubt been denuded by volcanic action and submergence, and possibly by changes of climate. It presents evidences of having been subjected to powerful glaciation. The soundings made by the "Challenger" and "Gazelle" and the affinities which in certain respects exist between the islands, seem to point to the existence at one time of an extensive land area in this quarter, of which Kerguelen, Prince Edward's Islands, the Crozets, St. Paul and Amsterdam are the remains. The Kerguelen plateau rises in many parts to within 1,500 fathoms of the surface of the sea. Beds of coal and of red earth are found in some places. The summits of the flat-topped hills about Betsy Cove, in the south-east of the island, are formed of caps of basalt.

According to Sir J. D. Hooker the vegetation of Kerguelen Island is of great antiquity and may have originally reached it from the American continent; it has no affinities with Africa. The present climate is not favourable to permanent vegetation; the island lies within the belt of rain at all seasons of the year, and is reached by no drying winds; its temperature is kept down by the surrounding vast expanse of sea, and it lies within the line of the cold Antarctic drift. The temperature, however, is equable. The mean annual temperature is about 39° F, while the summer temperature has been observed to approach 70°. Tempests and squalls are frequent, and the weather is rarely calm. On the lower slopes of the mountains a rank vegetation exists, which, from the conditions mentioned, is constantly saturated with moisture. Several of the marine and many species of freshwater algae are peculiar to the island. The characteristic feature of the vegetation, the Kerguelen's Land cabbage, was formerly abundant, but has been greatly reduced by rabbits introduced to the island. Penguins and sea birds of various kinds are abundant; a teal (*Querquedula Eatoni*) peculiar to Kerguelen and the Crozets is also found in considerable numbers. There is a considerable variety of insects, many of them with remarkable peculiarities of structure, and with a predominance of forms incapable of flying.

The island was discovered by the French navigator, Yves Joseph de Kerguelen-Trémarec, a Breton noble (1745–1797), on the 13th of February 1772, and partly surveyed by him in the following year. He was one of those explorers who had been attracted by the belief in a rich southern land, and this island, the South France of his first discovery, was afterwards called by him Desolation Land in his disappointment. Captain Cook visited the island in 1776, and, among other expeditions, the "Challenger" spent some time here. It was occupied in 1874–75 by the expeditions sent to observe the transit of Venus. Projects for more permanent settlement have frequently been brought forward. In Jan. 1893 Kerguelen was annexed by France, and its commercial exploitation was assigned to a private company.

See Y. J. de Kerguelen-Trémarec, *Relation de deux voyages dans les mers australes* (Paris, 1782); Narratives of the Voyages of Captain Cook and the "Challenger" Expedition; *Phil. Trans.*, vol. 168, containing account of the collections made in Kerguelen by the British transit of Venus expedition in 1874–75; Lieutard, "Mission aux îles Kerguelen," etc., *Annales hydrographiques* (Paris, 1893).

KERGUELEN'S LAND CABBAGE, *Pringlea antiscorbutica* (family Cruciferae), a plant resembling in habit, and belonging to the same family as, the common cabbage (*Brassica oleracea*). The cabbage-like heads of leaves abound in a pale yellow highly pungent essential oil, which gives the plant a peculiar flavour but renders it extremely wholesome. It was discovered by Captain James Cook during his first voyage, but the first account of it was published by (Sir) Joseph Hooker in *The Botany of the Antarctic Voyage* of the "Erebus" and "Terror" in 1839–1843. During the stay of the latter expedition on the island, daily use was made of this vegetable either cooked by itself or boiled with the ship's beef, pork or pea-soup. Hooker observes of it, "This is perhaps the most interesting plant procured during the whole of the voyage performed in the Antarctic Sea, growing as it does upon an island the remotest of any from a continent, and yielding, besides this esculent, only seventeen other flowering plants." Though belonging to a family of insect-pollinated plants it has become modified for wind pollination, having projecting stamens and long thread-like projections on the stigma. This peculiarity is apparently an adaptation to the absence from the island of winged insects.

KERKRADE, a town of Holland, in the province of Limburg, upon the German frontier. Pop. (1940) 37,279. It is the centre of a coal-mining district. The most important mines are the Domaniale, Willem and Sophie.

KERKUK: *see* KIRKUK.

KERMADEC, a group of British-owned islands in the Pacific, 30° S., 178° W.; total area about 13 sq.mi. Largest of the Kermadecs is Sunday Island (11.3 sq.mi.), 20 mi. in circumference, which rises to a height of 1,723 ft.; in 1942 nine persons staffed a meteorological station and airfield. Other islands are uninhabited. The group was named in 1791 from Huon Kermadec, D'Entrecasteaux's captain; it was annexed in 1887 by the dominion of New Zealand. (*See* PACIFIC ISLANDS.)

KERMAN, a large province (ancient *Karmania*) and town of Iran. The province, which for administrative purposes includes Iranian Baluchistan (*q.v.*) and Makran, is bounded north by the Qainat district of Khurasan and Yezd, west by Fars, east by British Baluchistan, while south it extends to the Arabian sea. Situated to the southwest of the great Central Iranian desert, Dasht-i-Lut, the province is terminated in the east by steppes, while from the direction of Yezd and Fars, it is bordered by desert and uncultivated land. The chief feature which distinguishes Kerman from Fars and the country northwest and west is that the cultivated part of Fars is an uninterrupted territory, while Kerman consists of a number of fertile areas, widely separated by desert tracts, through which villages and settlements are scattered.

Divisions.—Geographically Kerman falls under five districts: that of Kerman to the north, Sirjan to the west, Jiruft in the

south and the two districts of Bam and Narmasir in the east. Chains of mountains stretch across much of the province from northwest to southeast. To the north is found the highest range which forms a part of the Kuh Rud and has peaks to the northwest of Bam, with an altitude of nearly 15,000 ft. This chain separates the district of Kerman from that of Sirjan; its continuation toward the southeast being the Jabal Bariz or Pariz. There are other parallel but less elevated chains to the southwest. Snow lies on these mountains for a considerable part of the year. Kerman has no important rivers: the cultivated areas receive their water from the mountains and from the most important stream, the Khalil Rud, which flows across the Jiruft district and empties itself into the Jaz Murian Hamun (or sweet-water lake) without reaching the sea.

Desert Areas.—The true desert of Kerman lies mainly in the north and northeast, where it merges into the great desert or "Lut" (a word meaning bare, void of vegetation) which itself stretches into Khurasan. The Kerman desert tracts differ from the *Kavir* of central Iran mainly in three respects: they are less saline, are drier and more sandy, and present in some places tracts of 80–100 miles almost absolutely destitute of vegetation. Yet they are crossed by well-known tracks, Kerman lying across the great roads leading from Fars to Seistan, Khurasan and India, and on the route for commerce and pilgrimage which leads from Bandar Abbas to the northeast of Iran and beyond. These sandy wastes are said to be continually encroaching on the fertile tracts even in the Narmasir district, which is being invaded by the sands of the desolate plains extending toward Bam. A feature of the country are the *Kefeh,* or salt swamps, which occur in isolated depressions, but nowhere in Kerman of so great extent as are the great *Kavir* farther north. The desert of Kerman lies about 1,000 ft. above the sea, apparently on much the same level as the Lut, from which it cannot be geographically dissociated.

Climate and Products.—The climate of Kerman varies much with the latitude and the relief of the land but has the reputation of being unhealthful, because the cool air from the hills is usually attended by chills and agues; but many of the upland valleys enjoy a genial and healthful climate. The desert part of Kerman is probably more extensive than in ancient times for, according to the historian Mustawfi, there were still forests affording cover for the larger beasts of prey in the first centuries of Islam. Now there are almost no trees, except date palms in great numbers around the villages and towns. Irrigation is very laboriously practised by the subterranean water channel or *kanat.* The principal products are wheat, barley and opium. The higher regions, or *sardsir,* produce in autumn millet, cotton and beet-root; in the *garmsir,* or warm region, rice and maize are cultivated in summer. Henna is produced around the towns of Bam and Khabis, and all sorts of fruits are found in abundance, the dates from the southern districts being noted. The chief animal products are wool and *kurk,* the soft under-hair of goats, the latter being used in the manufacture of Kerman shawls, which in delicacy of texture yield only to those of Kashmir, while often surpassing them in colour and design. Bandar Abbas is the natural outlet of Kerman, but since shipping has shown a preference for Bushire the trade of Kerman in this direction has greatly fallen off. The four main roads from the interior to the coast at Bandar Abbas are still only rough tracks, which are sometimes insecure.

Population.—The inhabitants of Kerman are described in general as of a dark brown colour and slight physique. As regards the settled population, it seems to be mainly of Iranian stock, while the nomads, who form a strong minority, are probably the descendants of the Arab, Turkish and Kurd invaders. Population of the province is estimated at 600,000 including a numerous community of Zoroastrians. Area 167,612 sq.mi. Kerman, the administrative headquarters, 30° 17′ N., 56° 59′ E., is situated at the meeting point of three valleys at an altitude of 5,680 ft. The surroundings of the town consist almost exclusively of steppe with very little cultivated land. The population was estimated at 59,000 in 1940. The majority are Shi'is, next come Shaikhis, Babis, Zoroastrians and a small community of Jews.

Town of Kerman.—The town is surrounded by a wall of baked clay 30 ft. high still in fair repair, with four gates, and there is a quarter outside the town, known as Mahalla-i-Gabr, peopled by Zoroastrians. The citadel is situated on the western side and the most ancient mosque, the Masjid-i-Malik built by the Seljuk Turan Shah (1084–1096), has been restored. The Jebel-i-Sang, a stone monument of the 12th century, is especially important. In the plain to the east and south are large numbers of remains of buildings of archaeological interest. Destroyed by an earthquake in 1794, Kerman was rebuilt by Fath Ali Shah, but only began to prosper toward the middle of the 19th century. It owes its industrial reputation to its shawls, but this industry has been surpassed by that of carpetmaking. Other important industries are the manufacture of felt and brasswork.

There is a British consulate at Kerman, an agency of the Imperial Bank of Persia was opened in 1904, and there is a telephone service.

The town is connected by a good road with Yezd and Isfahan (400 mi.). Another important road leads to Zahidan (Duzdab), by which route are exported nearly all the Kerman carpets. The average maximum temperature in June is recorded at 100.8° F. and the average minimum in January 26°; the annual rainfall as far as records are available is 4.7 in., the wettest month being December.

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KERMANSHAH, a province and town of Iran. The province is situated west of Hamadan, north of Burujird (Luristan), south of Kurdistan, and extends to the frontier of 'Iraq. It is one of the richest parts of Iran, producing wheat, maize, rice, clover, castor-oil, fruits and opium, while the hills have fertile pastures. The inhabitants are for the most part Kurds, but in the south of the province there are tribes of Lurs. The district is rich in monuments of the Achaemenids and Sassanians, such as the Taq-i-Bustan sculptures, 3 mi. E. of the town of Kermanshah.

The administrative headquarters of the province is Kermanshah (or Kermanshahan), situated in 34° 20′ N. and 47° E., in a very fertile plain at an elevation of about 4,860 feet, near the Qara Su, an upper reach of the Kerkha river. The population was estimated at 89,000, mostly Kurds, then Persians, Turks, Jews and a few Christians. Kermanshah owes its prosperity to its situation on a line of great transit trade, forming the principal entrance into Iran, through which the commerce of Baghdad (distant 250 mi.) passes. It is also a busy local distributing centre for grain, fruits, gum and opium. There is very little local industry, the making of carpets having died out. A large oil refinery is owned and operated by the Anglo-Iranian Oil Co. Kermanshah is known in Iran for an excellent kind of sweetbread. In 1915 the town was occupied by the Turks.

See A. V. Williams Jackson, *Persia Past and Present* (1906); F. Hale, *From Persian Uplands* (1920); H. L. Rabino, Kermanschah, *Rev. du Monde Mussulman,* 1920, XXXVIII, pp. 1–40.

KERMES is the most ancient dyestuff on record, for its use was known in the time of Moses and it is mentioned in Scripture by its Hebrew name "tola" or "tolaschani." The word "scarlet," so frequently found therein, refers without doubt to the colour produced by dyeing with this material. According to Tychsen (Bancroft, *Philosophy of Permanent Colours,* I., 394) "the scarlet or kermes dye was known in the East in the earliest ages before Moses, and was a discovery of Phoenicians in Palestine, but

certainly not of the small wandering Hebrew tribes." Under the name of "coccus" it is frequently referred to by Greek and Latin writers. Kermes consists of a wingless female insect which is found on the leaves of the oak kermes (*Quercus coccifera*), a tree which abounds in southern Europe. As soon as their eggs are about to be hatched these insects are collected, killed by exposure to the vapour of hot vinegar and dried, when they appear as reddish brown grains. Before the advent of cochineal, this material was extensively employed throughout Europe, and the red colour which is found on many ancient tapestries is to be ascribed to its use. Though similar to cochineal in dyeing property, it contains much less colouring matter, for according to Bancroft 10 to 12 lb. of kermes are necessary to produce the effect of 1 lb. of cochineal. It is now obsolete as a dyestuff. The colouring matter of Kermes is *Kermesic acid,* $C_{18}H_{12}O_9$, a compound closely allied to the carminic acid of cochineal (*q.v.*).

KERMESSE (also KERMIS and KIRMESS), originally the mass said on the anniversary of the foundation of a church and in honour of the patron, the word being equivalent to "Kirkmass." Such celebrations were regularly held in the Low Countries and also in northern France, and were accompanied by feasting, dancing and sports of all kinds. The Brussels Kermesse is still marked by a procession in which the effigies of the Mannikin and mediaeval heroes are carried. They still survive, but are now scarcely more than country fairs, and the old allegorical representations are uncommon. The word Kermesse (generally in the form "Kirmess") is often applied in the United States to any entertainment, especially one organized for charity.

KERN, JAN HENDRIK (1833–1917), Dutch orientalist, was born in Java April 6, 1833. He studied at Utrecht, Leyden and Berlin. After some years as professor of Greek at Maestricht, he became professor of Sanskrit at Benares in 1863, and in 1865 at Leyden. His studies included the Malay languages as well as Sanskrit. His chief work is *Geschiedenis van het Buddhisme in Indië.*

KERNER, JUSTINUS ANDREAS CHRISTIAN (1786–1862), German poet and medical writer, was born on Sept. 18, 1786, at Ludwigsburg, Württemberg. He studied medicine at Tübingen, and settled as a practising physician in Wildbad. With Uhland and Schwab he produced the *Poetischer Almanach für 1812,* which was followed by the *Deutscher Dichterwald* (1813), and in these some of Kerner's best poems were published. In 1815 he became district medical officer in Gaildorf, and in 1818 was transferred to Weinsberg, where he spent the rest of his life. In 1826 he met Friederike Hauffe (1801–29), the daughter of a forester in Prevorst, a somnambulist and clairvoyante, who forms the subject of Kerner's famous work *Die Seherin von Prevorst, Eröffnungen über das innere Leben des Menschen und über das Hineinragen einer Geisterwelt in die unsere* (1829). He also wrote popular medical books.

In 1851 failing eyesight compelled his retirement. He died Feb. 21, 1862, at Weinsberg.

Kerner's *Ausgewählte poetische Werke* appeared in 2 vols. (1878); *Sämtliche poetische Werke,* ed. by J. Gaismaier, 4 vols. (1905); a selection of his poems will also be found in Reclam's *Universalbibliothek* (1898). His correspondence was edited by his son in 1897. *See* also A. Watts, *Life and Works of Kerner* (1884); T. Kerner, *Das Kernerhaus und seine Gäste* (1894).

KEROSENE, a term used to describe mineral oil prepared for illuminating purposes. It is chiefly distilled from petroleum, although it may be distilled from any crude mineral oil that boils between the approximate limits of 150° C. and 300° C. It has a flash-point high enough (150° F.) to make its use safe for ordinary domestic and other employment. In Great Britain it is commonly called paraffin oil or American paraffin oil.

The process of turning crude oil into kerosene, which must burn with a steady, highly luminous flame, calls for great care throughout the refining process. The crude oil is first distilled in continuous stills, able to deal with upwards of 1,000 tons of oil a day. It is thus separated into naphtha and a heavy residue of a high flash oil that can be used as fuel or as a source of lubricating oil and waxes and pitch. The naphtha is sometimes redistilled and there is obtained from it a light gasoline fraction and a heavier kerosene. In many plants, however, redistillation is avoided. The crude oil is pumped through a tubular still under pressure and is discharged into a tall fractionating column that is provided with a series of perforated decks, the perforations being covered by serrated cast iron hemispherical caps. This arrangement brings about intimate contact between the vapours ascending and the condensed liquid descending. The vapour of the gasoline issues from the top of the tower, and the kerosene is taken from a deck lower down. At various decks still lower down, gas oil and lubricating oil are drawn, and finally residue is taken from the bottom.

The crude kerosene distillate thus obtained usually requires further chemical treatment to remove colour and objectionable compounds of sulphur which produce an unpleasant smell and poor burning qualities. There is a variety of methods by which this is accomplished. A widely used one is to agitate the crude oil with strong sulphuric acid, which dissolves out sulphur derivatives and the coloured impurities. If the mixture is allowed to stand after thorough agitation, there falls to the bottom of the agitator a heavy tar above which floats the treated oil. The tar is run off and the oil is purified by being washed with water and with weak caustic soda. This method has many drawbacks, and attempts are constantly being made to improve upon it. Edeleanu, the Rumanian chemist, agitated the oil with liquid sulphur dioxide, thus separating from the oil by means of their greater solubility those bodies that cause inferior burning. Other processes aim at removing objectionable materials by filtration through fuller's earth, ignited bauxite or other adsorptive materials and at removing objectionable odours by agitation with a solution of litharge in caustic soda. (*See* also PETROLEUM.)

(A. E. D.; X.)

KERR, WALTER TALBOT, G.C.B. (1839–1928), British admiral, 4th son of the 7th Marquis of Lothian, was born at Newbattle Abbey, Scotland on Sept. 28, 1839. He entered the navy in 1853, serving in the Baltic expeditions of 1854–55, throughout the Indian Mutiny and at the siege and capture of Lucknow. After further service in the channel and in China, he was promoted commander in 1868, and captain in 1872. In 1889 he became rear-admiral, and served in the Mediterranean until March 1892. He was second sea lord (1894–1895), vice-admiral commanding the Channel squadron (1895–97), and first sea lord (1899–1904). Kerr gave great encouragement to the reform of the system of naval education, which resulted in the opening of Osborne and Dartmouth colleges. He received a special promotion as admiral of the fleet (additional) on June 16, 1904. He was made G.C.B. in 1902, and retired in Oct. 1904. He died in 1928 at Melbourne hall, Derby.

KERRY, a county of Eire, province of Munster, bounded west by the Atlantic ocean, north by the estuary of the Shannon, which separates it from Clare, east by Limerick and Cork, and southeast by Cork. Area, 1,815 sq.mi., the county being the fifth of the Irish counties in extent. Pop. (1936) 139,834.

On the north and east are Carboniferous shales and sandstones, reaching unproductive coal-measures east of Listowel and on the Glanruddery mountains. The Carboniferous limestone fringes these beds and is cut off by the sea at Knockaneen bay, Tralee and Castlemaine. In the southwest, Hercynian trend lines are well marked. Dingle bay, Kenmare river, Bantry bay and Dunmanus bay are narrow steep-sided inlets occupying synclinal troughs of Carboniferous limestone between ribs of Old Red Sandstone. Maggillicuddy's Reeks reach a height of 3,414 ft. in Carntual (Carrantuohill); in the Dingle promontory Brandon mountain attains a height of 3,127 ft. Formerly the mountains were well wooded with fir, birch and yew, which were, however, extensively used as fuel for iron smelting. Constant pasturage of cattle prevents the growth of young trees. There is extensive evidence of glaciation. The principal rivers are the Blackwater, which, rising in the Dunkerran mountains, forms for a few miles the boundary line between Kerry and Cork, and then passes to the latter county; the Ruaughty, which falls into the head of the Kenmare river; the Inny and Ferta, which flow westward, the one into Ballinskellig

bay and the other into Valencia harbour; the Flesk, which flows northward through the lower lake of Killarney, after which it takes the name of Laune, and flows northwestward to Dingle bay; the Caragh which rises in the mountains of Dunkerran and after forming several lakes falls into Castlemaine harbour; the Maine, which flows from Castle island and southwestward to the sea at Castlemaine harbour, receiving the northern Flesk, which rises in the mountains that divide Cork from Kerry; and the Feale, Gale and Brick, the junction of which forms the Cashin, a short tidal river which flows into the estuary of the Shannon. The principal lakes, other than the lakes of Killarney (*q.v.*), are Lough Currane (Waterville lake) near Ballinskellig, and Lough Caragh near Castlemaine harbour.

Ciar, with his tribe, the Ciarraidhe, is stated to have inhabited about the beginning of the Christian era the territory lying between Tralee and the Shannon. That portion lying south of the Maine was at a later period included in the kingdom of Desmond (*q.v.*). Kerry suffered frequently from invasions of the Danes in the 9th and 10th centuries, until they were finally overthrown at the battle of Clontarf in 1014. In 1172 Dermot MacCarthy king of Cork and Desmond, submitted to Henry II on certain conditions, but was nevertheless gradually compelled to retire within the limits of Kerry, which is one of the areas generally considered to have been made shire ground by King John. In 1579–80 Spaniards landed at Limerick harbour, near Dingle, and erected a fortress, which was destroyed by the English in 1580. In 1652 a rebellion in Kerry was completely subdued, and a large number of estates were confiscated. There are remains of a round tower at Aghadoe, near Killarney, and another, one of the most perfect specimens in Ireland, 92 ft. high, at Rattoe, near Ballybunion. On a hill to the north of Kenmare river is Staigue fort. There are several stone cells in the principal Skellig island, and former monastic remains have been swept away by the sea. The principal groups of sepulchral stones are those on the Tomie mountains, a stone fort at Cahersiveen, a stone circle with cromlech in the parish of Tuosist, and inscribed stones near Dingle. Notable monastic ruins are those of Innisfallen, founded by St. Finian, a disciple of St. Columba, and the remains of Muckross abbey, founded by the Franciscans.

Ruined churches of interest are at Aghadoe, Kilcrohane, Lough Currane, Derrynane and Muckross. Ardfert cathedral, founded probably in 1253, was partly destroyed during the Cromwellian wars, but was restored in 1831. The climate is very moist and unsuitable for the growth of cereals, but it is so mild even in winter that arbutus and other trees indigenous to warm climates grow in the open air, and several flowering plants are found which are unknown in England. In the northern parts the land is generally coarse and poor, except in the valleys, where a rich soil has been formed by rocky deposits. In the Old Red Sandstone valleys there are many very fertile regions, and some districts now covered by bog admit of easy reclamation. Dairy farming is very largely followed. The Kerry breed of cattle—small black or red animals, with small upturned horns—are in considerable demand. Goats share with sheep the higher mountain pasture.

The linen trade in Kerry is now nearly extinct, the chief manufacture being that of coarse woollens and linens for home use. At Killarney a variety of articles are made from the wood of the arbutus. A considerable trade in agricultural produce is carried on at Tralee, Dingle and Kenmare, and in slate and stone at Valencia. The deep-sea and coast fisheries are prosperous; the centres of the two fishery districts are Valencia and Dingle. Kenmare and Killarney are centres for salmon fishing. There are chalybeate mineral springs near Killarney, near Valencia island, and near the mouth of the Inny; sulphurous chalybeate springs near Dingle, Castlemaine and Tralee; and a saline spring at Magherybeg in Corkaguiney. Killarney is an inland tourist centre. Among the coast resorts are Derrynane, at the mouth of Kenmare bay, Glenbeigh on Dingle bay, Parknasilla on Kenmare bay, Waterville (an Atlantic telegraph station) between Ballinskellig bay and Lough Currane, and Tarbert, a small coast town on the Shannon estuary. The Great Southern railway traverses the centre of the county, touching Killarney, Tralee and Listowel. Branches are from Headford to Kenmare; Farranfore to Killorglin, Cahersiveen and Valencia harbour, Tralee to Fenit and to Castlegregory, and Tralee to Dingle. The only inland branch is from Tralee to Castle island. The county of Kerry is divided into two constituencies—North Kerry, which returns four members, and South Kerry, which returns three members to Dáil Eireann.

KERSAINT, ARMAND GUY SIMON DE COETNEMPREN, Comte de (1742–1793), French sailor and politician, was born at Paris on July 29, 1742. Entering the navy in 1755, in 1782 he became a captain. At that time the officers of the French navy were divided into the reds or nobles, and the blues or *roturiers*. At the outbreak of the Revolution, Kersaint took the side of the latter, and in a pamphlet entitled *Le Bon Sens* attacked feudal privileges. On Jan. 1, 1793, Count Kersaint was appointed vice-admiral. He devoted himself to questions of national defense, prepared a report on the English political system and the navy, and caused a decree to be passed for the formation of a committee of general defense, which after many modifications became the Committee of Public Safety. He entered the ranks of the Girondins, but resigned his seat in the convention on Jan. 20. After the death of the king he denounced the September massacres, but when called upon to justify his attitude confined himself to attacking Jean Paul Marat, who was at the time all-powerful. He was arrested on Sept. 23. He was executed on Dec. 4, 1793.

See Kersaint, *Le Bon Sens* (1789); the *Rubicon* (1789); *Considérations sur la force publique et l'institution des gardes nationales* (1789); *Lettre à Mirabeau* (1791); *Moyens présentés à l'Assemblée nationale pour rétablir la paix et l'ordre dans les colonies;* also E. Chevalier, *Histoire de la Marine française sous la première République;* E. Charavay, *L'Assemblée électorale de Paris en 1790 et 1791* (1890); and Agénor Bardoux, *La Duchesse de Duras* (1898).

KERVYN DE LETTENHOVE, CONSTANTINE BRUNO, Baron (1817–1891), Belgian historian, was born and died at Saint-Michel-les-Bruges. He was a member of the Catholic Constitutional party and sat in the chamber as member for Eecloo. He was a member (1870) of the short-lived Anethan cabinet. His first important work was a book on Jean Froissart (Brussels, 1855), crowned by the French Academy. He edited a series of chronicles—*Chroniques relatives à l'histoire de la Belgique sous la domination des ducs de Bourgogne* (Brussels, 1870–73), and *Rélations politiques des Pays Bas et de l'Angleterre sous le regne de Philippe II* (Brussels, 1882–92).

KESHUB CHUNDER SEN (Keshava Chandra Sena) (1838–1884), Indian religious reformer, was born of a high-caste family at Calcutta in 1838. He was educated at one of the Calcutta colleges, and became a clerk in the Bank of Bengal, but resigned his post to devote himself exclusively to literature and philosophy. As early as 1857 he joined the Brahma Samaj, a religious association aiming at the reformation of Hinduism. In 1862 he helped to found the Albert college, and started the *Indian Mirror,* a weekly journal in which social and moral subjects were discussed. In 1863 he wrote *The Brahma Samaj Vindicated.* The steady development of his reforming zeal led to a split in the society, which broke into two sections, Chunder Sen putting himself at the head of the reform movement, which took the name "Brahma Samaj of India," and tried to propagate its doctrines by missionary enterprise. Its tenets at this time were the following: (1) the wide universe is the temple of God; (2) wisdom is the pure land of pilgrimage; (3) truth is the everlasting scripture; (4) faith is the root of all religions; (5) love is the true spiritual culture; (6) the destruction of selfishness is the true asceticism. In 1866 he delivered an address on "Jesus Christ, Europe and Asia," which led to the false impression that he was about to embrace Christianity. In 1870 he paid a visit to England where he was warmly welcomed. His own impression of Christianity in England was somewhat disappointing. It appeared to him too sectarian and narrow, too muscular and hard, even. Christian life, in England, he considered more materialistic and outward than spiritual and inward.

After his return to India, Chunder Sen developed a tendency towards mysticism and a greater leaning to the spiritual teaching of the Indian philosophies, as well as a somewhat despotic attitude towards the Samaj. He gave his child daughter in marriage to the rajah of Kuch Behar; he revived the performance of mys-

tical plays, and himself took part in one. These changes alienated many followers, who deserted his standard and founded the Sadhārana (General) Brahma Samaj (1878). Chunder Sen did what he could to reinvigorate his own section by a new infusion of Christian ideas and phrases. During the intervals of his last illness he wrote *The New Samhita, or the Sacred Laws of the Aryans of the New Dispensation.* He died in Jan. 1884, leaving many bitter enemies and many warm friends.

See the article BRAHMA SAMAJ; also P. Mozoomdar, *Life and Teachings of Keshub Chunder Sen* (1888).

KESTREL or WIND-HOVER, common name for a dozen species of small falcons (*q.v.*) noted for hovering in mid-air against the wind or on quivering wings while watching the ground below for beetles, grasshoppers and other large insects, and field mice, rarely sparrows and other small birds. They are usually 10 to 12 in. long, reddish brown above and whitish or rusty below. Their familiar cry is a rapid *kle kle kle kle kle,* usually uttered on the wing. The nest is a natural cavity or old woodpecker hollow with three to five rounded oval eggs, buffy and heavily mottled with brown and lavender. The common old world kestrel (*Falco* or *Cerchneis tinnunculus*) ranges over Europe, Asia, and Africa, to Japan, and on Madeira, the Canaries, and Cape Verde Islands. The lesser kestrel (*F.* or *C. naumanni*) ranges from the Mediterranean to Manchuria; the fox-coloured kestrel (*F.* or *C. alopex*), from the Gold Coast to Ethiopia; the large African kestrel (*F.* or *C. rupicoloides*), East and South Africa; the Madagascar kestrel (*F.* or *C. newtoni*), also on Aldabra, while nearby Mauritius and the Seychelles each possess a species (*F.* or *C. punctatus* and *araea*); the nankeen kestrel (*F.* or *C. cenchroides*), Australia, Tasmania and New Guinea; and the Moluccan kestrel (*F.* or *C. moluccensis*), Moluccas to Java. The familiar American kestrel or sparrow hawk (*F.* or *C. sparverius*) is the only new world species, with some 23 races ranging from Alaska and Newfoundland through Canada, the United States, northwestern Mexico, the West Indies, Guatemala, and over South America to Tierra del Fuego and on Juan Fernandez Islands off Chile. The face is black and white, the cap bluish centred with reddish, the upper parts and tail bright reddish-brown in the male (tail ending in broad black band narrowly tipped white), rufous barred with black in the female, under parts buffy, more heavily streaked in the female. Three species of gray kestrels, placed in another subgenus *Dissodectes,* sometimes as with *Cerchneis* rated of generic rank, occur in Africa and Madagascar, the commonest being *F.* or *D. ardosiaceus* of tropical Africa. (G. F. Ss.)

KESWICK, market town, urban district, Penrith and Cockermouth parliamentary division, Cumberland, England, 299 mi. N.W. of London, on the L.M.S. railway. Pop. (1938) 4,369. Area, 2 sq.mi. In the northern part of the Lake district, it stands in the beautiful valley of the Greta, with Skiddaw on the north and Derwentwater on the south. It is much frequented by visitors and contains many residences of Lancashire and Yorkshire business men. The town hall contains a museum; Fitz park was opened in 1887, and Greta Hall (the residence of Southey) is at Crosthwaite. The manufacture of lead pencils, from locally mined plumbago, and the potting of char, a fish caught in the lakes, are the chief industries.

KESWICK CONVENTION, an annual summer reunion which was held at the above town for the main purpose of "promoting practical holiness" by meetings for prayer, discussion and personal intercourse. The convention, which met first in 1875, had no denominational limits, but was largely supported by the "Evangelical" section of the Church of England.

KET (or KETT), **ROBERT** (d. 1549), English rebel, is usually called a tanner, but he certainly held the manor of Wymondham in Norfolk. With his brother William he led the men of Wymondham in their quarrel with a certain Flowerden, and he headed the men of Norfolk when they rose in rebellion in 1549 owing to the hardships inflicted by the extensive enclosures of common lands and by the general policy of the protector Somerset. A feast held at Wymondham in July 1549 developed into a riot and gave the signal for the outbreak. Leading his followers to Norwich, Ket formed a camp on Mousehold heath, where he is said to have commanded 16,000 men, introduced a regular system of discipline, administered justice and blockaded the city. He refused the royal offer of an amnesty on the ground that innocent and just men had no need of pardon, and on Aug. 1, 1549 attacked and took possession of Norwich. John Dudley, earl of Warwick, marched against the rebels, and forced his way into the city, driving its defenders before him. Strengthened by the arrival of some foreign mercenaries, he attacked the main body of the rebels at Dussindale on Aug. 27. Ket's men were easily routed by the trained soldiery, and Robert and William Ket were seized and taken to London, where they were condemned to death for treason. Both were executed early in Dec. 1549. *See* F. W. Russell, *Kett's Rebellion* (1859).

KETCH, JOHN (d. 1686), English executioner, who as "Jack Ketch" gave the nickname for nearly two centuries to his successors, is believed to have been appointed public hangman in the year 1663. The first recorded mention of him is in *The Plotters Ballad, being Jack Ketch's incomparable Receipt for the Cure of Traytorous Recusants and Wholesome Physick for a Popish Contagion,* a broadside published in December 1672. The execution of William, Lord Russell, on July 21, 1683 was carried out by him in a clumsy way, and a pamphlet is extant which contains his "Apologie," in which he alleges that the prisoner did not "dispose himself as was most suitable" and that he was interrupted while taking aim. He died in 1686.

KETCH, a two-masted fore-and-aft rigged type of sailing vessel now used chiefly for fishing.

KETCHIKAN, situated near the southern tip of southeast Alaska or the "Panhandle" in 55° 20′ N. and 131° 38′ W., some 600 mi. northwest from Seattle, via the inside passage, is the chief port of entry for the business of the Territory. Pop. (1939) 4,695.

The principal industries are halibut-fishing, king salmon trolling, fox-farming, mining (lode), timber and salmon-canning. Of these industries, halibut-fishing takes the lead. It is the outfitting centre for probably the largest fleet of halibut-fishing vessels in the world.

The catch, running into many millions of pounds annually, is taken care of temporarily in large cold storage plants or shipped fresh to Southern and Eastern markets.

KETENES, in chemistry, a class of organic compounds containing the carbonyl group, CO, combined with either methylene, CH_2, or its analogues, RCH and R_2C, where R may be either an alkyl or an aryl radical (*see* CHEMISTRY: *Organic;* for other carbonyl compounds *see* ALDEHYDES and KETONES).

Ketene, $CH_2{:}CO$, the prototype of the series, is a colourless gas at ordinary temperature, having a penetrating odour. It has been condensed to a liquid and even solidified (melting point −134.6° C.; boiling point −56° C.). It was discovered in 1907 by N. T. M. Wilsmore among the gaseous products formed when a platinum wire is heated electrically under the surface of acetic anhydride, and was subsequently obtained by H. Staudinger (1908) by the action of zinc on bromoacetyl bromide. The latter chemist and O. Kupfer also obtained ketene by passing carbon monoxide and diazomethane, $CH_2{:}N_2$, through a quartz tube at 400–500° C. It is prepared most conveniently by the thermal decomposition of acetone, acetic acid, or diketene (*see* below).

Ketene is a remarkably active chemical substance. It reacts with hydrogen chloride, acetic acid, ammonia and aniline, yielding respectively acetyl chloride, acetic anhydride, acetamide and acetanilide. It acetylates hydroxylated compounds by direct addition, the primary alcohols being most readily attacked, the tertiary alcohols and phenols least readily. When kept for some time, ketene polymerizes to a liquid dimeride $(CH_2{:}CO)_2$, known as diketene, boiling at 126–127° C., which combines with water to form acetoacetic acid and with aniline to yield acetoacetanilide. Diketene is now available commercially. At 600° C., ketene decomposes into carbon monoxide and ethylene.

The more complex ketenes are divisible into two classes: (a) aldoketenes, (b) ketoketenes. The aldo-group includes ketene itself and its monoalkyl and monoaryl derivatives $RHC{:}CO$. They are colourless, do not undergo autoxidation and are polymerized by pyridine. The keto-group consists of the dialkyl and diaryl ketenes, $R_2C{:}CO$. These derivatives are coloured, undergo autoxidation and form additive compounds with certain unsaturated nitrogen compounds, *e.g.,* Schiff's bases, pyridine, quinoline and

acridine. In addition to the foregoing aldoketenes and ketoketenes, carbon suboxide O:C:C:C:O is a ketene of unique type.

See H. Staudinger, *Die Ketene* (Stuttgart, 1912); A. B. Boese, Jr., *Industrial and Engineering Chemistry*, vol. 32, pp. 16–22 (1940).

(G. T. M.; X.)

KETONES, in chemistry, organic compounds containing the carbonyl group CO and having the general formula R.CO.R′, where R and R′ are alkyl or aryl groups (*see* CHEMISTRY: *Organic*). If the groups R and R′ are identical, the ketone is called a *simple* ketone, of which the best known and simplest example is acetone (*q.v.*), used in large amounts during both World Wars as a solvent in the manufacture of the explosive cordite. If the groups R and R′ are different, a *mixed* ketone results, and of this class acetophenone (*q.v.*), $CH_3.CO.C_6H_5$, may be cited as a typical representative. It is used as a soporific under the name of "hypnone."

The Aliphatic Ketones.—The lower members of this group are liquids and are lighter than water; the higher members containing C_{12} and upward are solid. (For the initial member of the series *see* ACETONE.) *Methyl ethyl ketone,* $CH_3.CO.C_2H_5$, the simplest of the mixed ketones, occurs in the products of thermal decomposition of wood and is also prepared by distilling a mixture of calcium acetate and propionate; it is a pungent liquid boiling at 81° C. This ketone is employed in the preparation of dimethylglyoxime, a useful analytical reagent for nickel (*q.v.*). *Pinacolone,* or methyl tertiary-butyl ketone, $CH_3.CO.C(CH_3)_3$, a liquid boiling at 106° C. and having a camphoraceous odour, is produced by the action of dilute sulphuric acid on pinacol (*see* GLYCOLS), this peculiar reaction being known as the "pinacol rearrangement." *Methyl nonyl ketone,* $CH_3.CO.(CH_2)_8.CH_3$ (m.p. 13.5° C.; b.p. 232° C.), is the main constituent of oil of rue, which also contains methyl heptyl ketone, $CH_3.CO.(CH_2)_6.CH_3$ (m.p.—17° C.; b.p., 195° C.).

The Aromatic Ketones.—The members of this group may be either partly aliphatic or totally aromatic. The simplest and most important examples of these two types of substances are given respectively, by the already mentioned acetophenone and by benzophenone (*q.v.*) $C_6H_5.CO.C_6H_5$.

General Methods of Preparation.—(1) From secondary alcohols, either by oxidation or by thermal dehydrogenation in the presence of catalysts, such as heated reduced copper: $(CH_3)_2CHOH-2H=(CH_3)_2CO$. (2) Dry distillation of calcium salts of fatty acids. This process works very well under reduced pressure in the production of methyl ketones containing large alkyl groups; thus calcium stearate distilled with excess of calcium acetate gives methyl heptadecyl ketone, $CH_3.CO.(CH_2)_{16}.CH_3$ (white leaflets, m.p. 55.5° C.), together with some acetone, which is readily removed. (3) The catalytic decomposition of fatty acids over thoria or zirconia at 400° C., or over manganous oxide at 450° C. Either simple or mixed ketones may be thus prepared. (4) Hydration of derivatives of acetylene, preferably in presence of sulphuric acid and of mercuric salts, $C_6H_5.C:CH+H_2O=CH_3.CO.C_6H_5$. (5) The interaction of Grignard reagents (*q.v.*) and nitriles; *e.g.,* acetonitrile, $CH_3.C.N$, and magnesium ethyl iodide, $I.Mg.C_2H_5$, give an additive compound, $CH_3.C(C_2H_5):N.MgI$, which on treatment with water yields methyl ethyl ketone. (6) The interaction of acid chlorides and organozinc or organo=cadmium compounds, *e.g.,* $C_6H_5.COCl+Cd(CH_3)_2=C_6H_5CO.CH_3+CH_3CdCl$. (7) The Friedel and Crafts reaction is applicable to ketones containing one or two aromatic radicals, *e.g.,* carbonyl chloride with benzene (2 mol.) gives benzophenone, $C_6H_5.CO.C_6H_5$; acetyl chloride with benzene gives acetophenone.

General Reactions. (1) *Oxidation and Reduction.*—Ketones are more resistant than aldehydes to oxidizing agents. They do not readily reduce ammoniacal silver nitrate. They are, however, attacked by chromic acid, generally giving rise to a mixture of two or more carboxylic acids. The process is used in descending the series of higher fatty acids, thus methyl heptadecyl ketone (*v. supra*) gives margaric acid, $C_{16}H_{33}.CO_2H$, together with acetic acid. Ketones are reduced by aluminum, sodium or zinc amalgams to mixtures of secondary alcohols and pinacols (*see* GLYCOLS).

(2) *Addition Products.*—Such products are formed less readily by ketones than by aldehydes. Water and the alcohols do not combine with ketones, but the latter and the mercaptans form addition compounds, the mercaptols, such as $(CH_3)_2C(SC_2H_5)_2$ from acetone and ethyl mercaptan. This mercaptol on oxidation furnishes the drug sulphonal. Grignard reagents (*q.v.*) add on to ketones, and the products when decomposed by water give rise to tertiary alcohols. Hydrogen cyanide and ketones give rise to nitriles hydrolysable to hydroxycarboxylic acids, some ketones containing the group $CH_3.CO$ unite with sodium hydrogen sulphite yielding bisulphite compounds from which the ketone can be regenerated by aqueous sodium carbonate.

(3) *Condensation Products.*—Ketones condense with hydroxylamine, giving ketoximes although not always so readily as aldehydes give aldoximes. With a mixed ketone, R.CO.R′, two oximes, R.CR′:NOH, are often obtained, the isomerism of which is usually explained by assuming a different spatial arrangement of the groups R, R′ and OH about the doubly-linked residue:C:N. (A. R. Hantzsch and A. Werner, 1890). In studying the stereoisomeric oximes (*see* STEREOCHEMISTRY), considerable use has been made of a characteristic chemical change undergone by ketoximes, known as the Beckmann rearrangement (1886), which results in each of these isomeric oximes, R.CR′:NOH, changing into the corresponding amide, R.CO.NHR′ or R′CO.NHR (*see* OXIMES). This change is effected by phosphorus pentachloride, benzenesulphonyl chloride or warm concentrated sulphuric acid. Ketones condense with phenylhydrazine and other hydrazines to yield characteristic hydrazones which are useful for the purposes of isolation and identification. Ketones condense with ketones and esters under the action of catalysts. Thus, acetone reacts with itself to give diacetone alcohol, $(CH_3)_2C(OH)CH_2.CO.CH_3$, and mesityl oxide, $(CH_3)_2C=CH.CO.CH_3$. (*Cf. Acetylacetone.*)

Diketones.—Compounds containing in their molecules two ketonic groups are termed diketones, and the group is divisible into subgroups depending on whether the two carbonyl groups are adjacent or separated by one or more carbon atoms.

Diacetyl, $CH_3.CO.CO.CH_3$, the simplest member of the 1:2- or α-diketones, is a yellowish-green liquid boiling at 88° C. and of specific gravity 0.9734 at 22° C. It is found in the aqueous distillates of many essential oils, for example, bay, cedarwood, iris and sandalwood oils, to which it communicates its colour and quinonelike odour. It occurs also in butter, for the characteristic odour of which it is largely responsible. Diacetyl polymerizes to a trimeric form, and with warm alkali it condenses to form *para*-xyloquinone. Diacetyl is made from methyl ethyl ketone by treatment of this ketone with amyl nitrite and subsequent hydrolysis of the resulting diacetyl-monoxime with dilute sulphuric acid. Diacetyldioxime or dimethylglyoxime is prepared by acting on methyl ethyl ketone successively with amyl nitrite in presence of hydrogen chloride and with hydroxylamine hydrochloride. The dioxime separates from alcohol in colourless crystals melting with partial sublimation at 245–246° C.; it is insoluble in water, but dissolves readily in alcohol or ether.

Acetylacetone, the simplest member of the 1:3- or β-diketones, is a colourless pungent liquid boiling at 139° C. It is soluble in eight parts of water and miscible in all proportions with alcohol, ether or chloroform. It is regarded as an equilibrium mixture of two isomeric forms, $CH_3.CO.CH_2.CO.CH_3$ and $CH_3.C(OH):CH.CO.CH_3$, the latter predominating. (*See* ISOMERISM, TAUTOMERISM.) Acetylacetone is prepared by adding successively ethyl acetate and acetone to sodium wire under dry ether. The mixture is left for some hours in a freezing mixture and then acidified, the β-diketone being isolated in the form of its copper derivative. The metallic derivatives of acetylacetone (aside from those of the alkali metals like sodium and potassium) have remarkable properties; they are usually insoluble in water but soluble in organic media; they are generally nonionized, and they are sometimes volatile without decomposition.

Acetonylacetone, the lowest member of the 1:4- or γ-diketone class, is a colourless liquid, boiling at 194° C. and solidifying to leaflets which melt at −9° C. It is miscible in all proportions

with water, alcohol or ether. In its preparation, 2 mols. of ethyl sodioacetoacetate are condensed together by means of iodine and the resulting diethyl diacetylsuccinate is hydrolysed with warm dilute caustic soda. Acetonylacetone is chiefly of interest when it reacts in its dienolic form, $HO.C(CH_3):CH-CH:C(CH_3).OH$, with fuming hydrochloric acid, zinc chloride or acetic anhydride to yield dimethylfuran (*see* FURFURAL), with phosphorus pentasulphide to give dimethylthiophen, and with ammonia to furnish dimethylpyrrole. These reactions afford general methods for passing from open-chain to cyclic organic compounds.

For comprehensive essays on ketones *see* J. F. Thorpe and M. A. Whiteley, *Dictionary of Applied Chemistry,* 4th ed. (1946, vol. vii); J. Houben, *Die Methoden der Organischen Chemie,* vol. iii (1930).
(G. T. M.; X.)

KETTERING, a municipal borough, Kettering parliamentary division, Northamptonshire, England, 72 mi. N.W. from London by the L.M.S. railway. Pop. (est. 1938) 33,900. Area, 7.1 sq.mi. The church of SS. Peter and Paul, mainly Perpendicular, has a lofty ornate tower and spire. The principal public buildings are the library, the Alfred East art gallery and the Corn Market hall, all modern. Although Kettering (*Cytringan, Cateringe, Keteringes*) became a considerable trading town following the grant in 1227 of the Friday market there to the abbot of Peterborough, who was lord of the manor until the dissolution of the abbey in 1540, its later prosperity began with the woollen manufacture, introduced towards the end of the 17th century. By the early part of the 19th century a substantial trade in silk, plush and lace had also grown up, but this, along with the woollen industry, gradually gave way to the manufacture of boots and shoes, which is the principal business of the town, though iron furnaces, brushes, and various articles of clothing are also made. Kettering became an urban district in 1894 and was incorporated in 1938, being governed by a mayor, six aldermen and 21 councillors.

KETTLEDRUM, the only kind of drum (*q.v.*) having a definite musical pitch. The kettledrum consists of a hemispherical pan of copper, brass or silver, over which a piece of vellum is stretched tightly by means of screws working on an iron ring, which fits closely round the head of the drum. In the bottom of the pan is a small vent-hole, which prevents the head from being rent by the concussion of air. The vellum head may be slackened or tightened at will to produce any one of the notes within its compass of half an octave. Each kettledrum gives but one note at a time, and as it takes some little time to alter all the screws, two or three kettledrums, sometimes more, each tuned to a different note, are used in an orchestra or band. The compass of the kettledrums collectively is not much more than an octave, from F below the bass stave upwards. When there are but two drums they are generally tuned to the tonic and dominant or to the tonic and subdominant. It is generally stated that Beethoven was the first to treat the kettledrum as a solo instrument, but in *Dido,* an opera by C. Graupner performed at the Hamburg Opera House in 1707, there is a short solo for the kettledrum. The opening of the violin concerto and the scherzo of the ninth symphony may be recalled as two typical examples of Beethoven's use of the kettledrum.

The origin of the kettledrum is remote and must be sought in the East. The Romans knew the instrument well, as also did the Greeks, though the latter regarded it merely as a warlike instrument of barbarians. Thus Plutarch mentions that the Parthians, in order to frighten their enemies, in offering battle used not the horn or *tuba,* but hollow vessels covered with a skin, on which they beat, making a terrifying noise.

KEUPER: *see* TRIASSIC SYSTEM.

KEW, a suburb of London and a parish in the borough of Richmond, in Surrey, England, on the Thames, 6 mi. W.S.W. of Hyde Park Corner, London. Pop. (1931) 3,101. The name first occurs in a document of the reign of Henry VII, where it is spelt Kayhough. The church of St. Anne (1714) is the burial place of Thomas Gainsborough. The old village was chiefly on the N. side of a green, to the S. of which is the church and churchyard and at the W. the principal entrance to Kew Gardens. From remains found in the river near Kew bridge it has been conjectured that the village is the site of an old British settlement. The free school originally endowed by Lady Capel in 1721 received special benefactions from George IV, and the title of "the king's free school."

The estate of Kew House which was pulled down in 1802 came into the possession of Lord Capel about the end of the 17th century. Dutch House, close to Kew House, was sold by Robert Dudley, earl of Leicester, to Sir Hugh Portman, a Dutch merchant, late in the 16th century, and in 1781 was purchased by George III as a nursery for the royal children. It is a plain brick structure, now known as Kew Palace.

The Royal Botanic Gardens of Kew originated in the exotic garden formed by Lord Capel and extended by the widow of Frederick, prince of Wales, and by George III, aided by the skill of William Aiton and of Sir Joseph Banks. In 1840 the gardens were adopted as a national establishment. The gardens, originally of 11 ac., were subsequently increased to 75 acres. The pleasure grounds adjoining extend to 270 acres. There are extensive conservatories, botanical museums, including the herbarium and a library. A Chinese pagoda was erected in 1761. In the neighbouring Richmond Old Park is Kew Observatory.

KEWANEE, a city of Henry county, Ill., U.S.A., 131 mi. W. by S. of Chicago, on federal highway 34 and the main line of the Burlington route. The population was 17,093 in 1930 and 16,901 in 1940 (federal census). It has manufacturing industries with an output in 1940 valued at $15,000,000. The city has an extensive park district. The county has fertile land, the chief agricultural products being corn and hogs. Coal is mined in the county. Kewanee was founded in 1836 by settlers from Wethersfield, Conn., and was chartered as a city in 1897.

KEY, ELLEN (1849–1926), Swedish author, was born Dec. 11, 1849, at Sundsholm, the daughter of Emil Key (1822–92), one of the leaders of the peasant party and a well-known historian, and of Countess Sophia Posse. She early showed a keen interest in religious, literary and political affairs and lectured on various subjects in her native village. In 1868 her father became a member of the Riksdag, and the family accordingly moved to Stockholm. It was then that she started to contribute to the feminist periodical *Idun.* In 1879, owing to family misfortune, she was forced to adopt the teaching profession. She also established lecture courses for young women, and in 1903 went abroad on a number of lecturing tours. Her works are chiefly concerned with the welfare of women and children. The *Century of the Child* (1900), and her views on love and marriage, led to much controversy. She died in April 1926. Her works include *Tankebilder,* "Ideas" (2 vol., 1898); *Lifslinjer,* Eng. trans. "Lines of Life" (3 vol., 1903–06), and biographies of Anna Charlotta Leffler and Rachel von Varnhagen.

See G. Brandes in vol. iv of her collected works (1903); G. Monod in *La Revue Bleue* (1907); E. Faguet in *La Revue Latine* (1907); J. Landquist, *Ellen Key* (1909).

KEY, FRANCIS SCOTT (1779–1843), American lawyer and author of the national anthem, "The Star-Spangled Banner," was born in Frederick Co., Md., Aug. 1, 1779. He graduated at St. John's College, studied law, and in 1801 began practice at Fredericktown, Md. A few years later he moved to Washington, where he was district attorney for three successive terms, 1833–41. In 1814 Key visited the British fleet in Chesapeake bay in an attempt to secure the release of a friend who had been captured. He was detained during the shelling of Fort McHenry, one of the forts defending Baltimore. During the night of the bombardment Key's anxiety was at high pitch and when in the morning he discerned the American flag still flying over the fortress he gave vent to his feelings in "The Star-Spangled Banner." The song immediately became popular, was later adopted by the army and navy as the national anthem, but it was not until 1931 that congress passed the necessary bill making it such. Key died in Baltimore, Maryland on Jan. 11, 1843.

KEY, THOMAS HEWITT (1799–1875), English classical scholar, was born in London and educated at St. John's and Trinity colleges, Cambridge. From 1825 to 1827 he was professor of mathematics in the University of Virginia, and in 1828 was appointed professor of Latin in the newly founded University of

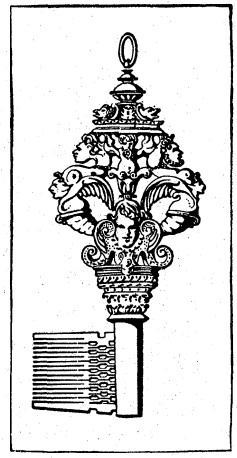
London. From 1832 till his death he was headmaster of University College school (first with a colleague and later alone). Key introduced the crude form (the uninflected form or stem of words) system, in general use among Sanskrit grammarians, into the teaching of classics. This system was embodied in his *Latin Grammar* (1846). In *Language, its Origin and Development* (1874), he upholds the onomatopoeic theory. He was a member of the Royal society and president of the Philological society.

See *Proceedings of the Royal Society* (1876), vol. xxiv; R. Ellis in the *Academy* (Dec. 4, 1875); J. P. Hicks, *T. Hewitt Key* (1893).

KEY, an instrument of metal used for the opening and closing of a lock (*see* LOCK). Until the 14th century bronze was most commonly used. The terminals of the stem of the keys were frequently decorated, the "bow" or loop taking the form sometimes of a trefoil, with figures inscribed within it; this decoration increased in the 16th century, the terminals being made in the shape of animals and other figures. More elaborate ceremonial keys were used by court officials; a series of chamberlains' keys used during the 18th and 19th centuries in several courts in Europe is in the British museum. The terminals are decorated with crowns, royal monograms and ciphers.

The word "key" is by analogy applied to things regarded as means for the opening or closing of anything, for the making clear of that which is hidden. Thus it is used of an interpretation as to the arrangement of the letters or words of a cipher, of a solution of mathematical or other problems, or of a translation of exercises or books, etc., from a foreign language. The term is also used figuratively of a place of commanding strategic position. Thus Gibraltar is called the "key of the Mediterranean."

The word is also frequently applied to many mechanical contrivances for unfastening or loosening a valve, nut, bolt, etc., such as a spanner or wrench; to the instruments used in tuning a pianoforte or harp or in winding clocks or watches, and to appliances which serve to fasten together distinct parts of a structure, as the "keystone" of an arch, or a small metal instrument, shaped like a U, used to secure the bands in the process of sewing in bookbinding.



STROZZI KEY TO THE APARTMENTS OF HENRI III. A FINE SPECIMEN OF RENAISSANCE ART IN IRONWORK

In music the term "key" has two meanings, the most important having reference to the mode (major or minor) in which a composition is written and the degree of the scale on which it is based (*see* MUSIC). The term is further applied in the case of certain wind instruments, particularly of the wood-wind type, to the levers which open and close valves in order to produce various notes, and in that of keyboard instruments, such as the organ or the pianoforte, to the external parts, constituting the keyboard, of the levers which operate the sound-producing mechanism (*see* KEYBOARD [MANUAL]); hence the term is used of the parts pressed by the finger in typewriters and in telegraphic instruments.

A key is the insignia of the office of chamberlain in a royal household (*see* CHAMBERLAIN and LORD CHAMBERLAIN). The "power of the keys" (*clavium potestas*) in ecclesiastical usage represents the authority given by Christ to Peter by the words, "I will give unto thee the keys of the kingdom of heaven" (Matt. xvi, 19). This power is claimed by the Roman Catholic Church to have been transmitted to the popes as the successors of St. Peter.

"Key" was formerly the common spelling of quay, a wharf, and is still found in America for "cay," an island reef or sandbank off the coast of Florida.

The origin of the name keys or house of keys, the lower branch of the legislature of the Isle of Man, is obscure, but it is supposed to be an application of the word "key" by English and not Manx-speaking people.

KEYBOARD or **MANUAL.** The two principal types of keyboard instruments today are the organ and the piano. Their keyboards, although similarly constructed, differ widely in scope and capabilities, that of the former being purely mechanical in its action and unlike that of the pianoforte, therefore, in the case of which the touch and force employed affect the quality of the sound produced. The first instrument provided with a keyboard was the organ. The earliest contrivance for opening the pipes was the simple slider, unprovided with a key or touch-piece and working in a groove like the lid of a box, which was merely pushed in or drawn out. The earliest trace of a keyboard with balanced keys which we possess is contained in Hero's description of the hydraulic organ said to have been invented by Ctesibius of Alexandria in the 2nd century B.C., in the case of which the sliders were pushed forward by a key and drawn back again when the key was released by a flexible strip of horn. Subsequently for many centuries all trace of this important development disappears, sliders of all kinds with and without handles doing duty for keys until the 12th or 13th century, when we find the small portative organs furnished with narrow keys which appear to have been balanced. During the same period keys were applied for the first time to stringed instruments in the organistrum (*see* PIANOFORTE) and the hurdy-gurdy (*q.v.*) and a little later to the clavichordium and clavicymbalum and other precursors of the pianoforte. The exact date at which our chromatic keyboard came into use has not been discovered, but it existed in the 15th century and may be studied in the picture of St. Cecilia playing the organ, on the Ghent altarpiece painted by the brothers Hubert and Jan van Eyck. Praetorius distinctly states that the large Halberstadt organ had the keyboard which he illustrates from the outset and reproduces the inscription asserting that the organ was built in 1361 by the priest Nicolas Fabri and was renovated in 1495 by Gregorius Kleng. The keyboard of this organ has the arrangement of the present day with raised black notes; it is not improbable that Praetorius' statement was correct, for Germany and the Netherlands led the van in organ-building during the middle ages.

In modern times many keyboards designed on novel lines and claiming to possess various advantages have been introduced. Of these one of the best known and most important is the double keyboard associated with the Duplex-Coupler pianoforte of Emanuel Moór, whereby the most remarkable results (in the facilitation of execution, enlargement of the instrument's resources and so on) are undoubtedly secured. But, as in the analogous case of improved methods of notation, it is vastly easier to invent a new and improved keyboard than to secure its general acceptance and adoption.

KEYES, ROGER JOHN BROWNLOW KEYES, 1ST BARON OF ZEEBRUGGE AND OF DOVER (1872–1945), British admiral, was born Oct. 4, 1872, and entered the navy in 1885. He took part in the Vitu expedition in 1890 and for his service in China in 1900 was promoted commander. From 1905 to 1907 he served as naval attaché at Rome, Vienna, Athens and Constantinople, and in 1912 was appointed commodore in charge of the submarine service. During World War I he took part in the battle of Heligoland Bight, Aug. 1914, and in 1915 he became chief of staff to Admiral John M. de Robeck, in command of the eastern Mediterranean squadron. He was promoted rear-admiral in 1917, appointed director of plans at the admiralty, and as commander of the Dover patrol, directed the naval raid on Zeebrugge and Ostend, April 23, 1918. He commanded the battle cruiser squadron of the Atlantic fleet from 1919 until 1921 when he was promoted vice-admiral and became deputy chief of the naval staff. He was commander-in-chief of the Mediterranean station, 1925–28, and of the Portsmouth station, 1929–31; was promoted full admiral 1926, and gazetted admiral of the fleet, 1930. He was a Conservative M.P. for Portsmouth (North) from 1934 until 1943 when he was raised to the peerage. After five years on the retired list, he returned to active duty during World War II as director of combined operations in charge of commandos (1940–41). He died in Buckingham on Dec. 26, 1945.

KEYNES, JOHN MAYNARD KEYNES, 1ST BARON, OF TILTON (1883–1946), British economist, was born at Cambridge,

June 5, 1883. He was educated at Cambridge university in the "classical" tradition. After entering the civil service and working on Indian monetary problems, he joined the British treasury in 1915. As its principal representative during the negotiations at Versailles, he resigned in order to write *The Economic Consequences of the Peace* (1919), in which he demonstrated Germany's inability to make payments on the scale proposed and forecast the adverse effects of the treaty provisions on the world economy. During the interwar years he continued to link his ideas closely to practical policy as chairman of *The Nation* and as a member of the governmental Committee on Finance and Industry (1929–31). Lord Keynes came to be regarded as the leading critic of orthodox economics. In his hands economics was less of a descriptive science defending the status quo, more an instrument of social control to achieve such broad objectives as maximum national income, full employment and international monetary stabilization. His most important work, *The General Theory of Employment, Interest and Money* (1936), attempts to show that the achievement of full employment is not likely to be accomplished by an automatic mechanism, but rather by the deliberate encouragement of the production of capital goods, a cheap money policy and public investment as well as by the stimulation of consumption through the reduction of saving. World War II brought him again to the centre of the stage as a member of the chancellor of the exchequer's consultative council and director of the Bank of England. He advocated control of inflation by compulsory savings and proposed (1942–46) to free international trade and investment by the creation of an international currency and a world bank. Lord Keynes died on April 21, 1946, at Firle, Sussex.

His works include *Indian Currency and Finance* (1913); *A Treatise on Probability* (1921); A *Tract on Monetary Reform* (1923); *The End of Laissez-Faire* (1926); *A Treatise on Money* (1930); *Essays in Persuasion* (1931); *Essays in Biography* (1933). (E. DE.)

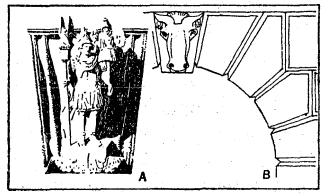
KEYPORT, borough, Monmouth county, New Jersey, U.S.A., on Raritan bay, 23 mi. S.S.W. of New York city. It is served by the Central railroad of New Jersey and by bus lines. The population was 4,940 in 1930 and 5,147 in 1940. It is a residential and manufacturing centre.

KEYSER, a city of northeastern West Virginia, U.S.A., 125 mi. N.W. of Washington, on the Potomac river; the county seat of Mineral county. It is served by the Baltimore and Ohio and the Western Maryland railways. The population was 6,248 in 1930 and 6,177 in 1940. It is in a fruit and stock-raising region, has railroad shops and other manufacturing industries, and is the seat of the Potomac state school, a junior college. A village called Paddytown, and later New Creek, grew up there early in the 19th century. When in 1874 the Baltimore and Ohio railroad chose it for the location of repair shops, the town was incorporated. It was chartered as a city in 1913.

KEYSERLING, HERMANN, COUNT (1880–1946), German philosopher, was born at Könno in Livonia on July 20, 1880, of a noble family. He studied natural sciences in Russia, Switzerland and Germany, and lived for a time in Paris, where he wrote criticism of art and philosophical essays. His first literary works were *Das Gefüge der Welt* (1906) and *Unsterblichkeit* (1907). During the years 1907–11 he travelled in Europe and in 1911–12 round the world, when he acquired that appreciation of Oriental philosophy which, blended with his scientific and political studies, goes to make up his strongly individual philosophical attitude. In 1910, the *Prolegomena zur Naturphilosophie* appeared, and he then turned his attention to the study of metaphysics. In 1919 he married the granddaughter of Prince Bismarck. His principal work *Das Reisetagebuch eines Philosophen* (1919, English *The Travel Diary of a Philosopher,* 1925), was followed by *Die Philosophie als Kunst* (1920), *Schöpferische Erkenntniss* (1922, English *Creative Understanding,* 1929), *Wiedergeburt* (1927), and *America Set Free* (1929). He died on April 26, 1946, at Innsbruck.

See H. Keyserling, *Der Weg zur Vollendung* (Darmstadt, 1919).

KEYSTONE, the central stone of an arch (*q.v.*); although of no more structural importance than any of the other voussoirs or wedge-shaped stones of which the arch is built, its position at the centre makes it a unit that can be advantageously accented. Thus, in Etruscan, Roman and Renaissance work, it is frequently projected beyond the face of the rest of the arch, and decorated with S-scrolls, masques or figures. In Gothic architecture, the pointed arch is usually built with a joint at the centre, so that no keystone exists. In vault ribs, however, keystones decorated with bosses (*see* Boss) often occur where two ribs intersect. The keystone serves as the popular symbol of the state of Pennsylvania in the United States.



FROM (A) D'ESPOUY, "FRAGMENTS D'ARCHITECTURE ANTIQUE"

KEYSTONES: (A) FROM THE ARCH OF SEPTIMIUS SEVERUS, (B) PORTION OF A TYPICAL ROMAN ARCH WITH KEYSTONE

KEY WEST (Span. *Cayo Hueso,* bone island), a city of Florida, U.S.A., on a small coral island 60 mi. S.W. of Cape Sable, the most southerly point of the mainland; a port of entry and the county seat of Monroe county. It is served by an overseas motor highway (formerly a railway trestle), and by steamers to Gulf and Atlantic coast ports. There is a navy landing field. The population in 1940 (according to federal census) was 12,927. Jasmine, almond, banana, cork, coconut palm and oleander trees flourish in the sub-tropical climate. Key West is a winter resort; a naval station, submarine base and army post; and has sponge and turtle fisheries and a cigar industry. The traffic of the port declined from 728,000 tons in 1927 to 8,000 tons in 1935. The harbour is defended by Ft. Taylor, built in 1846 and greatly improved and modernized after the Spanish-American War. The manufacture of cigars was introduced by Cubans who came to the island in 1869, after an unsuccessful attempt at a revolution. Immigrants from the Bahamas (sponge fishers) are another important element in the population. There are relics of early European occupation of Key West which suggest that the island was a resort of pirates. It was settled about 1822. In the Seminole War and the War with Mexico it had military importance.

KHABAROVSK, a town in the Far Eastern Area of the Russian S.F.S.R., in 48° 40′ N., 135° 5′ E., situated on a cliff 315 ft. high, on the right bank of the Amur, 29 mi. below its confluence with the Ussuri. The river is frozen from December to April and ice is often heaped up to a height of 20 feet. Its river front is three miles long and the town extends along three low hills, separated by two little streams. Wooden stairs lead from one hill to another. Many buildings are wooden, and the streets are unpaved and muddy. There is a large cathedral, a monument to Count Muraviev-Amurski, a branch of the Russian Geographical society with a museum, and technical and other schools. The town has increased in importance since the construction of the railway and its population (1939) was 199,364, mainly Russians, Koreans and Chinese. It is an entrepôt for goods coming down the Ussuri and its tributary, the Sungacha, and is a collecting centre for the fur trade. Its industries include tanning, fur-dressing, brewing and distilling, tobacco making and the manufacture of small ironware. It has wind-driven flour mills. There is a civic water and electricity supply and a wireless station. The town is named after the 17th century Russian merchant and explorer, Khabarovsk, who erected a fort on the present site in 1652. The Russians under Count Muraviev settled here in 1858. The town suffered severely during the anarchy following the 1917 revolution. When the Far Eastern Area was incorporated as a unit of the Russian S.F.S.R., Khabarovsk was made the administrative centre, and its trade recovered rapidly.

KHAIRAGARH, a feudatory state in Chhattisgarh agency within the Central Provinces of India. Area 931 sq.mi.; pop. (1941) 173,713. It is to the west of Nandgaon state and between it and the Bhandara district. The chief, who is descended from an old Gond royal family, received the title of raja as an hereditary distinction in 1898. The state includes a fertile plain yielding rice and some cotton and wheat. Its prosperity was promoted by the Bengal-Nagpur railway, which has a station at Dongargarh, the largest town (pop. 5,856), connected by road with Khairagarh town (pop., 1941, 5,015), the residence of the raja.

KHAIREDDIN (? –1890), Turkish statesman, was of Cir-

cassian race, but nothing is known about his birth and parentage. In early boyhood he was sold by a Tunisian slave dealer to Hamuda Pasha, then bey of Tunis, who gave him his freedom and a French education. He advised the three beys—Ahmet (1837), Mohammed (1855) and Sadok (1859)—in the liberal measures which distinguished their successive reigns. He later left Tunis, and entered the service of the sultan Abdul Hamid, who gave him a seat on the Turkish Reform Commission then sitting at Tophane.

Early in 1879 the sultan appointed Khaireddin grand vizier, and he prepared a scheme of constitutional government, but Abdul Hamid refused to have anything to do with it.

Khaireddin resigned on July 28, 1879. More than once the sultan offered him anew the grand vizierate, but Khaireddin persistently refused it. He died on Jan. 30, 1890, practically a prisoner in his own house.

KHAIRPUR, an Indian state in the Punjab states agency, geographically adjacent to Sind province. Area, 5,989 sq.mi.; pop. (1941) 305,787. A small ridge of limestone hills passes through the northern part of the state, being a continuation of a ridge known as the Ghar, running southwards from Rohri. The state is watered by five canals drawn off from the Indus, besides the Eastern Nara, a canal which follows an old bed of the Indus. (*See* also INDIAN DESERT.)

KHAIRPUR MIRS, the capital, is on a canal 15 mi. E. of the Indus, with a railway station, 20 mi. S. of Sukkur, on the Kotri-Rohri branch of the North-western railway, which here crosses a corner of the state. Pop. (1941) 17,510. There are manufactures of cloth, carpets, goldsmiths' work and arms, and an export trade in indigo, grain and oilseeds.

The chief, or mir, of Khairpur belongs to a Baluch family, known as the Talpur, which rose on the fall of the Kalhora dynasty of Sind. About 1813, during the troubles in Kabul incidental to the establishment of the Barakzai dynasty, the mirs were able to withhold the tribute which up to that date had been somewhat irregularly paid to the rulers of Afghanistan. In 1832 the individuality of the Khairpur state was recognized by the British government in a treaty under which the use of the river Indus and the roads of Sind were secured.

When the first Kabul expedition was decided on, the mir of Khairpur, Ali Murad, cordially supported the British policy; and the result was that, after the battles of Meeanee and Daba had put the whole of Sind at the disposal of the British, Khairpur was the only state allowed to retain its political existence under the protection of the paramount power. The state was formerly in political relations with the government of Bombay, but its relations are now with the government of India through the resident, Punjab states. The revenue of the state in 1940 was Rs. 24 lakhs ($722,880).

KHAJRAHO, a village of Central India, in the state of Chhatarpur, famous for its old temples. It is believed to have been the capital of the ancient kingdom of Jijhoti, corresponding with modern Bundelkhand. The temples consist of three groups: Saiva, Vaishnav and Jain, almost all built in the 10th and 11th centuries. They are covered outside and inside with elaborate sculptures, and also bear valuable inscriptions.

KHAKI, originally a dust-coloured fabric, of the character of canvas, drill or holland, used by the British and native armies in India (from Urdu *khak,* dust). It seems to have been first worn by the Guides, a mixed regiment of frontier troops, in 1848, and to have spread to other regiments during the following years.

Some at any rate of the British troops had uniforms of khaki during the Indian Mutiny (1857–58), and thereafter drill or holland (generally called "khaki," whatever its colour) became the almost universal dress of British and native troops in Asia and Africa.

During the South African War of 1899–1902, drill of a sandy shade of brown was worn by all troops sent out from Great Britain and the colonies. Khaki drill, however, proved unsuitable material for the cold weather in the uplands of South Africa, and after a time the troops were supplied with dust-coloured serge uniforms. Since 1900 all drab and green-gray uniforms have been commonly designated khaki.

KHALIFA (chah'lĭ-fah), **THE.** ABDULLAH EL TAAISHA (Sayyid Abdullah ibn Sayyid Mohammed) (1846–1899), successor of the mahdi Mohammed Ahmed, born in 1846 in the S.W. part of Darfur, was a member of the Taaisha section of the Baggara Arabs. The mahdi on his deathbed (1885) solemnly named him his successor; and for thirteen years Abdullah ruled over what had been the Egyptian Sudan.

Khartoum was deserted by his orders, and Omdurman, at first intended as a temporary camp, was made his capital. At length the progress of Kitchener's expedition compelled him to give battle to the Anglo-Egyptian forces near Omdurman, where on Sept. 2, 1898 his army, fighting with desperate courage, was almost annihilated. The khalifa fled to Kordofan with the remnant of his host. On Nov. 25, 1899 he gave battle to a force under Wingate, and was slain at Om Debreikat. (*See* KHARTOUM; SUDAN.)

Personal sketches of the khalifa are given in Slatin Pasha's *Fire and Sword in the Sudan* (London, 1896), and in Father Ohrwalder's *Ten Years in the Mahdi's Camp* (London, 1892). *See* also Sir F. R. Wingate's *Mahdiism and the Egyptian Sudan* (1891).

KHALĪL IBN AḤMAD (ABŪ 'ABDURRAHMĀN UL-KHALĪL IBN AḤMAD IBN 'AMR IBN TAMĪM) (718–791), Arabian philologist, was a native of Oman. He wrote the first Arabic dictionary and first classified the Arabic metres and laid down their rules. The dictionary known as the *Kitāb-ul-'Ain* is ascribed, at least in its inception, to Khalīl. The words were arranged in conformity with the position of the vocal organs, beginning with *'Ain* and ending with *Ya.*

Various grammatical works are ascribed to Khalīl, but their authenticity seems doubtful; *cf.* C. Brockelmann, *Gesch. der arabischen Literatur,* i. (Weimar, 1898).

KHALKHAS, a Mongoloid people mainly concentrated in the northern steppes of Mongolia near their kinsmen, the Buriats. They have yellowish skin, the Mongolian eyefold, a broad flat face, high cheekbones and lank black hair. Their territory is divided into four khanates of Tushetu (Tushiyetu), Tsetien (Setzen), Sai'noi'm (Sain Noyan) and Jesaktu (Jassaktu). For divisions of the Khalkhas and neighbouring tribes *see* Neville Whymant, *A Mongolian Grammar,* Appendix (1926).

KHAM, province of China: *see* SIKANG.

KHAMGAON, a town of India in the Buldana district of Berar and an important cotton centre. Pop. (1941) 26,402. (*See* BULDANA.)

KHAMSIN, a hot, dry, dust-laden, southerly wind blowing in Egypt usually in late spring and popularly supposed to last for 50 days, *khamsin* being the Arabic word for "fifty." But this is only an approximation.

KHAMTI, a branch of the Shan (*q.v.*) race inhabiting an isolated area in northeast Assam and Hkamtilong in Burma. They are Buddhists by religion, expert elephant-catchers and artisans in metal. They erect stepped pyramidal tumuli over the graves of the dead.

See Dalton, *Ethnology of Bengal* (1872).

KHAN (chahn), a title of respect in Mohammedan countries (Persian and Arabic *Khān*). It is a contracted form of *khāqān* (*khakan*), a word equivalent to sovereign, used among the Mongol and Turkī nomad hordes. The title khan was assumed by Jenghis when he became supreme ruler of the Mongols; his successors became known in Europe as the Great Khans (sometimes as the Chams, etc.) of Tatary or Cathay. Khan is still applied to semi-independent rulers, such as the khan of Kalat in Baluchistan.

The meaning of the term has also extended downwards, until in Persia and Afghanistan it has become an affix to the name of any Mohammedan gentleman. The title of Khan Bahadur is conferred by the British Government on Mohammedans and also on Parsees.

KHANDESH, EAST and **WEST,** two districts of British India, in the central division of Bombay, formed in 1906 by the division of the old district of Khandesh. Their areas are respec-

tively 4,598 sq.mi. and 5,320 sq.mi., and the population on these areas in 1941 was 1,327,722 and 912,214. The headquarters of East Khandesh are at Jalgaon, and those of West Khandesh at Dhulia.

The Tapti river flows through both districts from east to west and divides each into two unequal parts. Of these the larger lie towards the south, and are drained by the rivers Girna, Bori and Panjhra. Northwards beyond the alluvial plain, which contains some of the richest tracts in Khandesh, the land rises towards the Satpura hills. In the centre and east the country is level, save for some low ranges of barren hills, and is mostly arid and unfertile. Towards the north and west, the plain rises into a difficult rugged country, thickly wooded, and inhabited by wild tribes of Bhils. The drainage of the district centres in the Tapti, which receives thirteen principal tributaries in its course through Khandesh. None of the rivers is navigable, and the Tapti flows in too deep a bed to be useful for irrigation. The district on the whole, however, is fairly well supplied with surface water. A large area is under forest; but the jungles have been denuded of most of their valuable timber. Wild beasts are numerous. Of the aboriginal tribes the Bhils, formerly wild and lawless, are the most important. Since the introduction of British rule they have largely taken to an orderly life. The principal crops are millets, cotton, pulse, wheat and oilseeds, and cotton is the chief export. East Khandesh is now a prosperous cotton-growing district. West Khandesh is much less developed. There are factories for ginning and pressing cotton, and several cotton-mills. The eastern district is traversed by the Great Indian Peninsula railway, which branches at Bhusawal (an important railway centre) towards Jubbulpore and Nagpur. Both districts are crossed by the Tapti Valley line from Surat.

KHANDWA, a town of British India in the Nimar district of the Central Provinces, of which it is the headquarters, 353 m. north-east of Bombay by rail. Khandwa is an ancient town with Jain and other temples. It is an important railway junction where the Malwa line from Indore meets the main line of the Great Indian Peninsular. There are factories for ginning and pressing cotton and raw cotton is largely exported. Its population has expanded from 14,606 in 1872 to 38,493 in 1941.

KHANSĀ (Tumāḍīr bint 'Amr, known as al-Khansā) (d. *c.* 645), Arabian poetess of the tribe Sulaim, a branch of Qais. Before the time of Islam she lost her brothers Ṣakhr and Moawiya in battle. Her elegies written on these brothers and on her father made her the most famous poetess of her time. With her tribe she accepted Islam somewhat late, but persisted in wearing the heathen sign of mourning, against the precepts of Islam. When her four sons were slain in the battle of Kadisīya, Omar wrote her a letter congratulating her on their heroic end and assigned her a pension. Her daughter 'Amra also wrote poetry. (*See* ARABIC LITERATURE: *Pre-Islamic Poetry.*)

Her *diwan* has been edited by L. Cheikho (Beirut, 1895) and translated into French by De Coppier (Beirut, 1889). *Cf.* T. Nöldeke's *Beiträge zur Kenntniss der Poesie der alten Araber* (Hanover, 1864), and the *Kitāb ul-Aghāni,* xiii. 136–147.

KHARAGHODA (ċhah-rah-ghō′ḍa), a village of British India, in the Ahmedabad district of Bombay, on the Little Ran of Cutch, the terminus of a branch railway. Here are the large government factory of salt (Baragra salt) and works for recovering magnesium chloride.

KHARGA (WAHA EL-KHARGA, the outer oasis), the largest of the Egyptian oases, and hence frequently called the Great Oasis. It lies in the Libyan desert between 24° and 26° N. and 30° and 31° E., the chief town, also called Kharga, being 435 m. by rail S. by W. of Cairo. It is reached by a narrow-gauge line (opened in 1908) from Kharga junction, a station on the Nile valley line near Farshut. The oasis consists of a depression in the desert some 1,800 sq.m. in extent, and is about 100 m. long north to south and from 12 to 50 broad east to west. The inhabitants are of Berber stock. Administratively the oasis forms part of the mudiria of Assiut. It is practically rainless, and there is not now a single natural flowing spring. There are, however, numerous wells tapping the porous sandstone which underlies a great part of the Libyan desert. The oasis contains many groves of date palms; the dom palm, tamarisk, acacia and wild senna are also found. Rice, barley and wheat are the chief cereals cultivated, and lucerne for fodder. Besides agriculture the only industry is basket and mat making—from palm leaves and fibre. Since 1906 extensive boring and land reclamation works have been undertaken in the oasis.

In hieroglyphics the oasis is *Kenem* and its capital *Hebi* (plough). Palaeolithic peoples occupied it and there are neolithic remains; under the Pharaohs it was an abode of spirits; under the 27th Dynasty the Persians developed it economically. The principal ruin, a temple of Amen, built under Darius, is of sandstone, 142 ft. long by 63 ft. broad and 30 ft. in height. On the eastern escarpment of the oasis on the way to Girga are the remains of a large Roman fort with twelve bastions. On the road to Assiut is a fine Roman columbarium or dove-cote. Next to the great temple the most interesting ruin in the oasis is, however, the necropolis, a burial-place of the early Christians, placed on a hill 3 m. N. of the town of Kharga. There are some two hundred rectangular tomb buildings, most with a chamber in which the mummy was placed, the Egyptian Christians at first continuing this method of preserving bodies. The chapel is basilican; in it and in another building are crude frescoes of biblical subjects.

Kharga town is picturesquely situated amid palm groves. The houses are of sun-dried bricks, the streets narrow and winding and for the most part roofed over, the roofs carrying upper storeys. Some of the streets are cut through the solid rock. Kharga is usually identified with the city of Oasis mentioned by Herodotus as being seven days' journey from Thebes and called in Greek the Island of the Blessed. The oasis was traversed by the army of Cambyses when on its way to the oasis of Ammon (Siwa), the army perishing in the desert before reaching its destination. During the Roman period, as it had also been in Pharaonic times, Kharga was used as a place of banishment, the most notable exile being Nestorius, sent thither after his condemnation by the council of Ephesus.

KHARKOV (ċhar′kŏv) (Ukrainian *Kharkiv*), the administrative centre of the Ukrainian S.S.R., at the junction of two small rivers, the Lopan and Kharkov, which are not navigable, in 50° N., 36° 13′ E. The town was founded in 1654 as a fort of the Free Ukraine (*i.e.,* free from Polish domination) and was an outpost of Moscow in its struggle with the Tatars. The Cossacks of Kharkov remained faithful to the Tsar during the rebellions of the 17th century and received many privileges in return, Kharkov becoming the administrative centre of the Ukraine in 1765.

In the latter half of the 19th century, industrial development in the Donetz coal field and the Krivoi Rog iron district, led to rapid growth and the building of railways, six of which radiate from Kharkov and compensate for the absence of navigable waterways. Air services now run weekly to Moscow, Kiev and Odessa and there are air routes going via Grozny and Baku to Teheran and via Batum and Tiflis to Baku. The industrial progress of the town was interrupted by war conditions from 1914 onwards and especially by the civil war of 1917–20, during which the town was successively occupied by the Germans, the Ukrainian Nationalists, the Red army, Denikin's troops and was finally captured by the Red army in 1920, and declared the capital of the Ukrainian S.S.R. The Kharkov Kreshtenskaya fair was re-opened in 1923 and is a centre for the agricultural, peasant and metallurgical industries of the Ukraine. The manufactures of Kharkov are mainly metallurgical, smelting, engine building, the manufacture of machinery and agricultural implements, bicycles, electrical fittings, etc. Ropes, chemicals and wooden wares are made, and various chemical extracts from coal. The town is the headquarters of the Donetz State Coal trust, and of the Southern Machinery and Metallurgical trusts. Recently established industries are those connected with the growing air traffic, the manufacture of elevators, tractors, and hydro-electric generators.

The former university is now an Institute of People's Education, and there is an important agricultural and economic institute, and exhibitions of agricultural implements and methods are held in two museums, with sections on field culture, land surveying, cattle

breeding, forestry and fire prevention. Pop. (1939) 833,434.

KHAROSTHI AND BRAHMI, two alphabets of India, Kharosthi was a local alphabet of Aramaic origin, introduced after the Conquests of Darius.

The Brahmi alphabet developed characteristic forms in India where writing can be proved to have been in use from 600 B.C.

KHARPUT, the most important town in the Kharput (or Mamuret el-Aziz) vilayet of Turkey, situated at an altitude of 4,350 ft., a few miles south of the Murad Su or Eastern Euphrates, and almost as near the source of the Tigris, on the Samsun-Sivas-Diarbekr road. Population 5,000. The town is built on a hill terrace about 1,000 ft. above a well-watered plain of exceptional fertility which lies to the south and supports a large population. The vilayet has much mineral wealth and fertile soil. Now known as Harput.

KHARTOUM, the capital of the Anglo-Egyptian Sudan, on the left bank of the Blue Nile immediately above its junction with the White Nile in 15° 36′ N., 32° 32′ E., and 1,252 ft. above the sea. It is 432 mi. by rail S.W. of Port Sudan, on the Red sea, and 1,345 mi. S. of Cairo by rail and steamer. Pop. (1945) with suburbs, but excluding Omdurman, 55,933.

The city, laid out on a plan drawn up by Lord Kitchener in 1898, has a picturesque aspect with its numerous handsome stone and brick buildings surrounded by gardens and its groves of palms and other trees. The river esplanade, 2 mi. long, contains the chief buildings. Parallel with it is Gordon avenue, of equal length. The rest of the city is in squares, the streets forming the design of the union jack. In the centre of the esplanade is the governor-general's palace, occupying the site of the palace destroyed by the Mahdists in 1885. It is a three-storeyed building with arcaded verandas and a fine staircase leading to a loggia on the first floor. Here a tablet indicates the spot in the old palace where General Charles Gordon fell. In front of the southern façade, which looks on to Gordon avenue, is a bronze statue of General Gordon seated on a camel, a copy of the statue by Onslow Ford at Chatham, England.

Government offices and private villas are on either side of the palace, and beyond, on the east, are the Sudan club, the military hospital, and the Gordon Memorial college. At the western end of the esplanade are the zoological gardens, the chief hotel and the Coptic church. Running south from Gordon avenue at the spot where the Gordon statue stands, is Victoria avenue, leading to Abbas square, in the centre of which is the great mosque with two minarets. On the northeast side of the square are the public markets. The Anglican Cathedral, the post office, Mudirieh (governorate), agriculture and forests offices and the two banks are in Gordon avenue. There are Maronite and Greek churches, an Italian Roman Catholic cathedral and mission, a large and well-equipped civil hospital, a school of medicine and a museum for Sudan archaeology. A system of electric tramways, completed in 1928, serves the city as well as Khartoum North and Omdurman.

On the right bank of the Blue Nile is the suburb of Khartoum North, where are the government stores and dockyard. It is joined to the city by a bridge (completed 1910) containing a roadway and the railway. The steamers for the White and the Blue Nile start from the quay along the esplanade. West of the zoological gardens is the point of junction of the Blue and White Niles and here is the bridge, completed in 1928, to Omdurman (*q.v.*) on the west bank of the White Nile a mile below Khartoum. From its geographical position Khartoum is admirably adapted as a commercial and political centre. It is the great *entrepôt* for the trade of the Anglo-Egyptian Sudan. By the Nile waterways there is easy transport from the southern and western equatorial provinces and from Sennar and other eastern districts. Through Omdurman come the exports of Kordofan and Darfur, while by the Red sea railway there is access to the markets of the world.

The population is heterogeneous. The official class consists chiefly of Sudanese and British. Most of the former reside in Omdurman. The traders are mostly Greeks, Syrians and Copts, while many tribes of the Sudan are represented in the Negro and Arab inhabitants.

In 1822 the Egyptians established a permanent camp there and out of this grew the city, which in 1830 was chosen as the capital of the Sudanese possessions of Egypt. It got its name from the resemblance of the promontory at the confluence of the two Niles to an elephant's trunk, the meaning of *khartum* in the dialect of Arabic spoken in the locality. The city rapidly acquired importance as the Sudan was opened up by travellers and traders, becoming, besides the seat of much legitimate commerce, a great slave mart. In 1884, at the time of the Mahdist rising, General Gordon was sent to Khartoum to arrange for the evacuation by the Egyptians of the Sudan. At Khartoum he was besieged by the Mahdists, whose headquarters were at Omdurman. Khartoum was captured and Gordon killed on Jan. 26, 1885. Nearly every building in Khartoum was destroyed by the Mahdists and the city abandoned in favour of Omdurman, which place remained the headquarters of the mahdi's successor, the khalifa Abdullah, until Sept. 1898, when it was taken by the Anglo-Egyptian forces under General (afterward Lord) Kitchener, and the seat of government again transferred to Khartoum. In 1899 the railway from Wadi Halfa was completed to Khartoum, and in 1906 through communication by rail was established with the Red sea.

KHASI AND JAINTIA HILLS, a district of British India, in the Surma valley and the Hill Districts division of Assam. It occupies the central plateau between the valleys of the Brahmaputra and the Surma. Area, 2,353 sq.mi.; population (1941) 118,665.

The district consists of a succession of steep ridges, running east and west, with elevated tablelands between. On the southern side, toward Sylhet, the mountains rise precipitously from the valley of the Surma and form a plateau 4,000 to 6,000 ft. above sea level. Here is situated the station of Shillong, 4,900 ft. above the sea; behind lies the Shillong range, of which the highest peak rises to 6,450 feet. On the north side, toward Kamrup, are two similar plateaux of lower elevation. The general appearance of all these tablelands is that of undulating grassy downs. At 3,000 ft. elevation the indigenous pine (not found in the Himalayas or elsewhere) predominates and forms almost pure pine forests. The highest ridges are clothed with magnificent clumps of timber trees, chiefly oaks, chestnuts, magnolias. The flora is, in the opinion of Sir Joseph Hooker, the richest in India, in the extent and number of fine plants; of orchids alone there are 250 kinds.

Oranges, betel-nuts and pineapples are a source of wealth to the Khasis. The orange groves supply the greater part of Bengal and Assam; the pineapple is almost like a weed in the profusion of its growth. Potatoes are cultivated and exported on a large scale. Iron ore exists in the central plateau, where the remains of smelting furnaces may be seen for miles below Cherrapunji. The industry has almost died out owing to the competition of English iron and the exhaustion of local supplies of fuel. Vast deposits of limestone are found and quarried on the southern face of the hills. Coal of fair quality crops out at several places.

The Khasi hills were conquered by the British in 1833 but the people were left in semi-independence under their own chiefs. The Lushais still live in primitive communities under elective chiefs in political subordination to the British government. Shillong and a few villages are under direct British government. The remainder are grouped in 25 petty states, each under a chief, called a Siem, with a Darbar or council. The chiefs and Darbars exercise independent jurisdiction but heinous offences and cases in which subjects of different states are concerned are tried by the district authorities.

The Jaintia hills are British territory; they used to form a petty Hindu principality which was annexed in 1835, the rajah having kidnapped British subjects and sacrificed them to Kali. The inhabitants are called Syntengs.

The headquarters of the district were transferred in 1864 from Cherrapunji to Shillong, which was afterward made the capital of the province of Assam. A good road runs north from Cherrapunji, through Shillong to Gauhati on the Brahmaputra; total length 97 mi. The district was the focus of the great earthquake of 1897, which not only destroyed every permanent building, but broke up the roads and caused many landslips. The Welsh Presbyterian mission has been an agent of civilization in the district from 1841. Besides its evangelistic efforts, which have had much

success, it has done valuable educational and medical work. One-sixth of the population is now Christian. (L. S. O'M.)

The Khasi People.—The Khasis are of short stature, mesaticephalic, hair straight, or curly, light complexion, platyrrhine nose, of mixed origin (*see* ASIA: *Anthropology and Ethnology*), but speaking a Mon-Khmer language. The use of shouldered iron hoes and of long two-handled iron swords also suggests a Khmer culture. Iron is dug and smelted. Menhirs and table-stones as cenotaphs, generally speaking, of male and female ancestors respectively were until recently freely erected and are often of great size, a menhir at Nartiang measuring 26 ft. above ground and a table-stone at Laitlyngkot $28\frac{1}{2}$ x $13\frac{3}{4}$ x $1\frac{2}{3}$ ft. Menhirs are sometimes capped with a round stone and occasionally carved. They may be compared to the stones at Dimapur in the Naga hills and to certain types in Chota Nagpur, and are probably phallic in original intention. Ideas of ancestor worship are strong, but there is a belief also in a Creator or Creatrix. Tabu exists, also divination by egg-breaking. Property passes by the female line and is always inherited by the youngest daughter, and the social organization is by matrilineal exogamous clans some of which are eponymous while the names of some suggest a totemistic origin. Public affairs, however, are a purely male province. Their political organization is into a number of variously constituted states administered by chiefs called *Siems* in some cases hereditary, in others elective, where the hereditary principle obtains the succession goes to the youngest daughter's eldest son. The dead are burnt and the uncalcined bones placed in small stone cairns. Periodically the bones from these cairns are collected with ceremony and placed in a family burial cromlech, different cromlechs being used for the bones of males and of females. The bones and ashes are in some villages put into a hollowed erect post as an intermediate resting-place, and the Siem of Cherra is pickled, and can only be burnt by his successor after accession. Head-hunting used to be practised and the head placed on a table-stone. Remnants of human sacrifice and snake-worship survive in the cult of the Thlen, a phantom serpent whose cult is hereditary in certain families and requires the offering of a human life. Human victims were also regularly sacrificed in the Synteng Kingdom of Jaintia, and these sacrifices were accompanied by a form of ceremonial cannibalism.

See P. R. Gurdon, *The Khasis* (1914). (J. H. H.)

KHASKOVO (also *Chaskoi, Haskoi, Khaskioi, Chaskovo, Haskovo, Khaskoy*), a town of southern Bulgaria; 45 mi. E.S.E. of Philippopolis. Pop. (1934) 26,516. The town has a station 7 mi. N. on the Philippopolis-Adrianople section of the Belgrade-Istanbul railway. Carpets and woollen goods are manufactured, and in the surrounding country tobacco and silk are produced.

KHAZARS (known also as Chozars, *Akatziroi,* Khazirs, Khwalisses, and Ugri Bielii), an ancient people who occupied a prominent place amongst the secondary powers of the Byzantine state-system. They were the organizers of the transit between the Black Sea and the Caspian, the universal carriers between East and West. The area under their control varied greatly, but the normal Khazaria may be taken as the area between the Caucasus, the Volga, and the Don, with the outlying province of the Crimea (Little Khazaria).

History.—Amidst the white race of the steppe the Khazars can be first historically distinguished at the end of the 2nd century A.D. They burst into Armenia with the Barsileens, A.D. 198. They were repulsed and attacked in turn. The pressure of the nomads of the steppe, the quest of plunder or revenge, these seem the only motives of these early expeditions; but in the long struggle between the Roman and Persian empires, of which Armenia was often the battlefield, and eventually the prize, the attitude of the Khazars assumed political importance. Armenia inclined to the civilization and ere long to the Christianity of Rome, whilst her Arsacid princes maintained an inveterate feud with the Sassanids of Persia. It became, therefore, the policy of the Persian kings to call in the Khazars in every collision with the empire (200–350). During the 4th century, however, the growing power of Persia culminated in the annexation of eastern Armenia. The Khazars, endangered by so powerful a neighbour, passed from under Persian influence into that remote alliance with Byzantium which thenceforth characterized their policy, and they aided Julian in his invasion of Persia (363). Simultaneously with the approach of Persia to the Caucasus the terrible empire of the Huns sprang up among the Ugrians of the northern steppes. The Khazars, straitened on every side, remained passive till the danger culminated in the accession of Attila (434) The emperor, Theodosius, sent envoys to bribe the Khazars (Ἀκάτζιροι) to divert the Huns from the empire by an attack upon their flank. But there was a Hunnic party amongst the Khazar chiefs. The design was betrayed to Attila, and he extinguished the independence of the nation in a moment. Khazaria became the appanage of his eldest son and the centre of government amongst the eastern subjects of the Hun (448). Even the iron rule of Attila was preferable to the time of anarchy that succeeded it. Upon his death (454) the wild immigration which he had arrested revived. The Khazars and the Sarogours (*i.e.,* White Ogors, possibly the Barsileens of the Volga delta) were swept along in a flood of mixed Tartar peoples which the conquests of the Avars had set in motion. The Khazars and their companions broke through the Persian defences of the Caucasus. They appropriated the territory up to the Kur and the Aras and roamed at large through Iberia, Georgia and Armenia. The Persian king implored the emperor, Leo I., to help him defend Asia Minor at the Caucasus (457), but Rome was herself too hard pressed, nor was it for 50 years that the Khazars were driven back and the Pass of Derbent fortified against them (*c.* 507).

Throughout the 6th century Khazaria was the mere highway for the wild hordes to whom the Huns had opened the passage into Europe, and the Khazars took refuge (like the Venetians from Attila) amongst the 70 mouths of the Volga. The pressure of the Turks in Asia precipitated the Avars upon the West. The conquering Turks followed in their footsteps (560–80). They beat down all opposition, wrested even Bosporus in the Crimea from the empire, and by the annihilation of the Ephthalites completed the ruin of the White Race of the plains from the Oxus to the Don. The empires of Turks and Avars, however, ran swiftly their barbaric course, and the Khazars arose out of the chaos to more than their ancient renown. They issued from the land of Barsilia, and extended their rule over the Bulgarian hordes left masterless by the Turks, compelling the more stubborn to migrate to the Danube (641). The agricultural Slavs of the Dnieper and the Oka were reduced to tribute, and before the end of the 7th century the Khazars had annexed the Crimea, had won complete command of the Sea of Azov, and, seizing upon the narrow neck which separates the Volga from the Don, had organized the portage which has continued since an important link in the traffic between Asia and Europe. The alliance with Byzantium was revived. Simultaneously, and no doubt in concert, with the Byzantine campaign against Persia (589), the Khazars had reappeared in Armenia, though it was not till 625 that they appear as Khazars in the Byzantine annals. They are then described as "Turks from the East," a powerful nation which held the coasts of the Caspian and the Euxine, and took tribute of the Viatitsh, the Severians, and the Polyane. The khakan, enticed by the promise of an imperial princess, furnished Heraclius with 40,000 men for his Persian war, who shared in the victory over Chosroes.

Meanwhile the Muslim empire had arisen. The Persian empire was struck down (637), and the Muslims poured into Armenia. The khakan, who had defied the summons sent him by the invaders, now aided the Byzantine patrician in the defence of Armenia. The allies were defeated, and the Muslims undertook the subjugation of Khazaria (651). Eighty years of warfare followed, but in the end the Muslims prevailed. The khakan and his chieftains were captured and compelled to embrace Islam (737), and till the decay of the Mohammedan empire Khazaria, with all the other countries of the Caucasus, paid an annual tribute of children and of corn (737–861). Nevertheless, though overpowered in the end, the Khazars had protected the plains of Europe from the Mohammedans and made the Caucasus the limit of their conquests.

In the interval between the decline of the Mohammedan empire and the rise of Russia, the Khazars reached the zenith of their power. The merchants of Byzantium, Armenia and Bagh-

dad met in the markets of Itil (whither, since the raids of the Mohammedans, the capital had been transferred from Semender) and traded for the wax, furs, leather, and honey that came down the Volga. So important was this traffic held at Constantinople that, when the portage to the Don was endangered by the irruption of a fresh horde of Turks (the Petchenegs), the emperor, Theophilus, himself despatched the materials and workmen to build for the Khazars a fortress impregnable to their forays (834). Famous as the one stone structure in that stoneless region, the post became known far and wide amongst the hordes of the steppe as Sar-kel or the White Abode. Merchants from every nation found protection and good faith in the Khazar cities. The Jews, expelled from Constantinople, sought a home amongst them, developed the Khazar trade, and contended with Mohammedans and Christians for the theological allegiance of the Pagan people. The dynasty accepted Judaism (*c.* 740), but there was equal tolerance for all, and each man was held amenable to the authorized code, and to the official judges of his own faith. At the Byzantine court the khakan was held in high honour. The emperor, Justinian Rhinotmetus, took refuge with him during his exile and married his daughter (702). Justinian's rival, Vardanes, in turn sought an asylum in Khazaria, and in Leo IV. (775) the grandson of a Khazar sovereign ascended the Byzantine throne. Khazar troops were amongst the bodyguard of the imperial court; they fought for Leo VI. against Simeon of Bulgaria; and the khakan was honoured in diplomatic intercourse with the seal of three solidi, which marked him as a potentate of the first rank, above even the pope and the Carolingian monarchs. Indeed, his dominion became an object of uneasiness to the jealous statecraft of Byzantium, and Constantine Porphyrogenitus, writing for his son's instruction in the government, carefully enumerates the Alans, the Petchenegs, the Uzes, and the Bulgarians as the forces he must rely on to restrain it.

It was, however, from a power that Constantine did not consider, that the overthrow of the Khazars came. The arrival of the Varangians amidst the scattered Slavs (862) had united them into a nation. The advance of the Petchenegs from the East gave the Russians their opportunity. Before the onset of those fierce invaders the precarious suzerainty of the khakan broke up. By calling in the Uzes, the Khazars did, indeed, dislodge the Petchenegs from the position they had seized in the heart of the kingdom, between the Volga and the Don, but only to drive them inwards to the Dnieper. The Hungarians, severed from their kindred and their rulers, migrated to the Carpathians, whilst Oleg, the Russ prince of Kiev, passed through the Slav tribes of the Dnieper basin with the cry "Pay nothing to the Khazars" (884). The kingdom dwindled rapidly to its ancient limits between the Caucasus, the Volga, and the Don, whilst the Russian traders of Novgorod and Kiev supplanted the Khazars as the carriers between Constantinople and the North. When Ibn Faḍlān visited Khazaria 40 years later, Itil was even then a great city, with baths and market places and 30 mosques. But there was no domestic product or manufacture; the kingdom depended solely upon the now precarious transit dues, and administration was in the hands of a major domus also called khakan. At the assault of Swiatoslav of Kiev the rotten fabric crumbled into dust. His troops were equally at home on land and water. Sarkel, Itil, and Semender surrendered to him (965–969). He pushed his conquests to the Caucasus and established Russian colonies upon the Sea of Azov. The principality of Tmutarakan, founded by his grandson, Mstislav (988), replaced the kingdom of Khazaria, the last trace of which was extinguished by a joint expedition of Russians and Byzantines (1016).

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KHEDIVE, a Persian word meaning prince or sovereign, granted as a title by the sultan of Turkey in 1867 to his viceroy in Egypt, Ismail. The title was abandoned on the assumption of the style of "sultan" by Husein Kamel in 1914.

KHERI, a district of British India, in the Lucknow division of the United Provinces, which takes its name from a small town with a railway station 81 mi. N.W. of Lucknow. The area of the district is 2,972 sq.mi., and its population in 1941 was 1,024,025. It consists of a series of fairly elevated plateaus, separated by rivers flowing from the north-west, each bordered by alluvial land. North of the river Ule, flow two rivers, the Kauriala and Chauka, changing their courses constantly, so that the surface is seamed with deserted river beds much below the level of the surrounding country. The vegetation is very dense, and the stagnant waters are the cause of endemic fevers. South of the Ul, the scene changes. Between every two rivers or tributaries stretches a plain, considerably less elevated than the tract to the north. There is very little slope in any of these plains for many miles, and marshes are formed, from which emerge the headwaters of many secondary streams, which in the rains become dangerous torrents, and frequently cause devastating floods. Several large lakes exist, some formed by the ancient channels of the northern rivers, being fine sheets of water, fringed in places with magnificent groves. The whole north of the district is covered with vast forests, of which a considerable portion are government reserves. *Sāl* occupies about two-thirds of the forest area. The district is traversed by a branch of the Oudh and Rohilkhand railway from Lucknow to Bareilly.

KHERSON, a port of the Ukrainian S.S.R., on a hill above the right bank of the Dnieper, about 19 mi. from its mouth in 46° 37′ N., 32° 37′ E. Population (1939) 97,186. The river was dredged to a minimum depth of 21 ft., and a new harbour was constructed with accommodation for 18 steamers. There are 10 floating grain elevators, and a floating dock lifting 2,000 tons. Goods are mostly shipped from barges by floating elevators in the stream. Winter is severe and the port is closed for navigation from December till early March. The exports are mainly grain and timber, and the imports general merchandise for local needs. It has flourmills, and breweries and manufactures machinery. Its only railway link is via Nikolayev. The name was given to the town from the supposition that it was on the site of the former Chersonesus Heracleotica, a Greek city founded by the Dorians of Heraclea. Kherson was founded by Potemkin in 1778 as a naval station and seaport and by 1786 it had grown to be a place of 10,000 inhabitants.

Near Kherson lie the remains of John Howard, the English philanthropist, who died here in 1790.

KHEVENHÜLLER, LUDWIG ANDREAS (1683–1744), Austrian field-marshal, Count of Aschelberg-Frankenburg, first saw active service under Prince Eugène in the War of the Spanish Succession, and by 1716 had risen to the command of Prince Eugène's own regiment of dragoons. He distinguished himself greatly at the battles of Peterwardein and Belgrade, and became in 1723 major-general of cavalry, in 1726 proprietary colonel of a regiment and in 1733 lieutenant field marshal. In the War of the Polish Succession (1734) he was present at several actions, and for a time commanded the army in Italy. In 1737 he was made field marshal. His chief exploit in the Turkish War, which soon followed his promotion, was at Radojevatz (Sept. 1737), where he cut his way through a greatly superior Turkish army. In the War of the Austrian Succession he was commander-in-chief of the Army of the Danube, which he led brilliantly against the French and Bavarians in 1742, overrunning Bavaria and capturing Munich in the following campaigns; though placed under Prince Charles of Lorraine he showed equal skill. He died suddenly at Vienna, Jan. 26, 1744.

He was the author of various instructional works for officers and soldiers (*Des G.F.M. Grafen v. Khevenhüller Observationspunkte für*

sein Dragoner-regiment (1734 and 1748) and a *règlement* for the infantry (1737), and of an important work on war in general, *Kurzer Begriff aller militärischen Operationen* (Vienna, 1756; French version, *Maximes de guerre,* Paris, 1771).

KHEVSURS, a people of the Caucasus, kinsfolk of the Georgians. They live in scattered groups in East Georgia to the north and north-west of Mount Borbalo. Their name is Georgian and means "People of the Valleys." For the most part nomadic, they are still in a semi-barbarous state. In complexion and colour of hair and eyes they vary greatly. They are fond of fighting, and still wear armour of the true mediaeval type, when the law of vendetta, which is sacred among them as among most Caucasian peoples, compels them to seek or avoid their enemy.

Many curious customs still prevail among the Khevsurs, as for instance the imprisonment of the woman during childbirth in a lonely hut, round which the husband parades, firing off his musket at intervals. After delivery, food is surreptitiously brought the mother, who is kept in her prison a month, after which the hut is burnt. The boys are usually named after some wild animal, *e.g.,* bear or wolf, while the girls' names are romantic, such as Daughter of the Sun, Sun of my Heart. Children are betrothed by parents. Divorce is common, and some Khevsurs are polygamous. Formerly no Khevsur might die in a house, but was always carried out under the sun or stars. The Khevsurs call themselves Christians, but their religion is a mixture of Christianity, Mohammedanism and heathen rites. They keep the Sabbath of the Christian church, the Friday of the Mohammedans and the Saturday of the Jews. They worship sacred trees and offer sacrifices to the spirits of the earth and air. Their priests are a combination of medicine-men and divines.

See G. F. R. Radde, *Die Chevs'uren und ihr Land* (Cassel, 1878); E. Chantre, *Recherches anthropologiques dans le Caucase* (1885–87).

KHIDR (pronounced *Khisr* by the Persians and Turks, and with different vocalization pronounced also as *Khadir* and as *Khudr*), a Mohammedan saint who according to the popular belief still lives as an omnipresent being. He reveals himself to those worthy of his companionship and advises and aids them. He watches over the welfare of all and especially of sailors who regard him as their particular patron saint. Sacrifices are offered to him whenever boats are launched. Khidr is declared to have inspired many Mohammedan prophets and authors and to have revealed their doctrine to them. In Mohammedan literature and poetry he is often mentioned as the only one who gained immortal life by drinking from the fountain of life. The role of the Khidr figure conforms closely to the role played by the prophet Elijah in Judaism, especially in his being immortal, omnipresent, and a helping adviser and guide. He is also like Elijah the consoler of those bereaved. Several stories of Elijah which were current in the Jewish world of the early Christian era have been incorporated with slight changes into the Koran where they are identified with the Khidr figure. One chief difference, however, is that while Elijah is a figure of the land, Khidr is "one who traverses the seas." This identification of Khidr with the sea is believed to be a survival of pagan legends and myths which Mohammedanism accumulated in its spread over Islam countries. In Syria Khidr is revered and practically worshipped as a sacred divinity. Countless sanctuaries where sacrifices are offered up to him are scattered over the country. "Khidr is near but God is far," as one of the inhabitants expressed it to an inquirer.

The theologians of the official Mohammedan religion have tried to suppress these extravagant Khidr cults, but so far without success.

See S. I. Curtiss, *Primitive Semitic Religions To-day* (1903).

KHILCHIPUR, a state in Central India, under the Bhopal agency; area, 274 sq.mi.; pop. (1941) 48,642. The residence of the ruler, who is a Khichi Rajput of the Chauhan clan, is at Khilchipur (pop. 5,779). He pays tribute to India.

KHINGAN, two mountain ranges in east Asia consisting of Great Khingan and Little Khingan. Great Khingan, a tilted fault-block, trends north-north-east by south-south-west, and stretches through 15° of latitude from the northern border of Shansi province in China as far as the northern bend of the Amur river, so forming the easternmost bastion of the high Mongolian plateau, the surface of which slopes upwards to the axis of the Khingan, 4,500–5,500 feet. Suess regarded it as the edge of the ancient archean core of north central Asia which he termed Angaraland. This buttressing range, whose highest slopes and valleys are forested, also forms the western "wall" of the Manchurian basin. The base of its gradual western slope lies at an altitude of 3,000 ft., but to the east the range falls more rapidly to the plains of central Manchuria whose undulations are partly caused by projecting spurs from the Great Khingan. It forms one of the most important orographical divides in Asia, for it intercepts the moisture-laden south-east winds and is thus a main factor in the contrast between fertile Manchuria on one hand and arid Mongolia on the other. Several outlying ranges on its eastern fringe give it the form of a terraced escarpment; the whole system is from 80 to 100 m. wide.

Little Khingan range trends from west to east and separates the Sungari valley from that of the Amur. It may be regarded as an offshoot of the Great Khingan, and like its parent range consists of old archean schists and igneous rocks. It is probably continued to the north-east by the Bureya mountains and Dusse-alin across the Amur river which, in this section of its course, is transverse, piercing terraced scarps with the south-west by north-east trend characteristic of Trans-Baikalia.

KHIVA, a town of Asiatic Russia in the Kharezm district of the Uzbek S.S.R. in 41° 30′ N., 60° 18′ E., lying 25 m. west of the Amu Darya, on which it and the oasis around it depend for irrigation. Pop. (1935) 21,595. The town was formerly the centre of a flourishing kingdom of great antiquity, which has declined owing to various physiographical and political causes. In very ancient times the Amu Darya flowed to the Caspian and thus possibly linked the oasis kingdom with the west, by the Sary Kamish depression. Later the river changed its course and now flows into the Sea of Aral. The increasing desiccation of Turkistan and the constant shift of the river towards the east, with consequent difficulties of irrigation to the oasis are other physiographical factors in its decline. The final political blow, following on a long series of troubles, was the heavy war indemnity imposed upon the khanate after the capture of the town in 1873. The whole region was involved in the civil strife following the 1917 revolution and the khanate ceased to exist, becoming absorbed in the Uzbek republic, but the effects of civil war on the delicate balance of irrigated regions are disastrous and the oasis is at present much crippled, especially as no railway net yet reaches it, and funds are lacking for energetic measures to cope with the hydrographic problem of the Amu Darya. For its present economic condition *see* UZBEK or USBEG REPUBLIC. (X.)

History.—Khiva was once a great kingdom, under which the names of Chorasmia, Kharezm (Khwārizm) and Urgenj (Jurjānīya, Gurganj) held the keys of the mightiest river in Central Asia. The Oxus (Amu Darya) has changed its outlet, and no longer forms a waterway to the Caspian and thence to Europe.

Chorasmia is mentioned by Herodotus, it being then one of the Persian provinces, over which Darius placed satraps, but nothing material of it is known till it was seized by the Arabs in A.D. 680. When the power of the caliphs declined the governor of the province probably became independent; but the first king known to history is Mamun-ibn-Mohammed in 995. Khwārizm fell under the power of Mahmud of Ghazni in 1017, and subsequently under that of the Seljuk Turks. In 1097 the governor Kutb-ud-din assumed the title of king, and one of his descendants, 'Ala-ud-din Mohammed conquered Persia, and was the greatest prince in Central Asia when Jenghiz Khan appeared in 1219. Khiva was conquered again by Timur in 1379, and by the Uzbeks in 1512.

Russia established relations with Khiva in the 17th century. The Cossacks of the Yaik (ancient name of the river Ural) during their raids across the Caspian learnt of the existence of this rich territory and made more than one plundering expedition to the chief town, Urgenj. In 1717 Peter the Great, having heard of the presence of auriferous sand in the bed of the Oxus, desiring also to "open mercantile relations with India through Turan," and to release from slavery some Russian subjects, sent a military

force to Khiva. When within 100 mi. of the capital they encountered the troops of the khan. The battle lasted three days, and ended in victory for the Russian arms. The Khivans, however, induced the victors to break up their army into small detachments and treacherously annihilated them in detail. It was not until the third decade of the 19th century that the attention of the Muscovite government was again directed to the khanate. In 1839 a force under Gen. Perovsky moved from Orenburg (now Chkalov) across the Ust-Urt plateau to the Khivan frontiers, to occupy the khanate, liberate the captives and open the way for trade. This expedition likewise terminated in disaster. In 1847 the Russians founded a fort at the mouth of the Jaxartes or Syr-darya. This advance deprived the Khivans not only of territory, but of a large number of tax-paying Kirghiz, and also gave the Russians a base for further operations. For the next few years, however, the attention of the Russians was taken up with Khokand, their operations on that side culminating in the capture of Tashkent in 1865. Free in this quarter, they directed their thoughts once more to Khiva. In 1869 Krasnovodsk on the east shore of the Caspian was founded, and in 1871–72 the country leading to Khiva from different parts of Russian Turkistan was thoroughly explored and surveyed. In 1873 an expedition to Khiva was carefully organized on a large scale. The army of 10,000 men placed at the disposal of Gen. Kaufmann started from three different bases of operation—Krasnovodsk, Chkalov and Tashkent. Khiva was occupied almost without opposition. All the territory (35,700 sq.mi. and 110,000 souls) on the right bank of the Oxus was annexed to Russia, while a heavy war indemnity was imposed upon the khanate. In the summer of 1919 the soviet government firmly established itself in this area and the native dynasty was expelled. By autumn the khan of Khiva was deposed and a people's soviet republic was substituted for the khanate. The remaining sections of Russian Turkistan with Khiva and Bukhara and the Trans-Caspian province now constitute the two soviet socialist republics of Uzbekistan and Turkmenistan. In Oct. 1924 these two republics were admitted to membership of the U.S.S.R. The part of Khiva on the right bank of the Oxus is part of Turkmenistan. (C. El.; A. N. J. W.)

KHNOPFF, FERNAND (1858–1921), Belgian painter and etcher, was born at the château de Grembergen (Termonde), on Sept. 12, 1858, and studied under X. Mellery. He developed a very original talent, his work being characterized by great delicacy of colour, tone and harmony, as subtle in spiritual and intellectual as in its material qualities. "A Crisis" (1881) was followed by "Listening to Schumann," "St. Anthony" and "The Queen of Sheba" (1883), and then came one of his best-known works, "The Small Sphinx" (1884). Others are "Memories" (1889) and "White, Black and Gold" (1901) in the Brussels museum; "Portrait of Mlle. R." (1889); "A Stream at Fosset" (1897); "The Empress" (1899); "A Musician"; "Silence" (1890); "The Idea of Justice" (1905) and "Isolde" (1906), together with a polychrome bust "Sibyl" (1894) and an ivory mask (1897). "I Lock my Door upon Myself" (1891), which was exhibited at the New gallery, London, in 1902, and there attracted much attention, was acquired by the Pinakothek at Munich. He died on Nov. 14, 1921.

See L. Dumont-Wilden, *Fernand Khnopff* (Brussels, 1907).

KHOI. A district and city in the Iranian province of Azerbaijan, lying in the northwest corner of Iran between Lake Urmia and the R. Aras. The district, which contains many flourishing villages, consists of an elevated valley 16 to 18 miles long and 8 miles broad, well drained and highly cultivated under a skilful system of irrigation which produces rich crops of wheat, barley, rice, cotton, and many kinds of fruit. Timber however is scarce, as the surrounding hills are treeless.

The city of the same name lies in 38° 37′ N. by 45° 15′ E., at an elevation of 3,000 ft., 91 miles northwest of Tabriz, on the great trade route from Trebizond at its junction with the road from Urmia to the Aras. The Kotur Chai tributary of the latter river flows 2 miles to the east of the city and is crossed by a brick-built bridge of 7 arches, 75 yd. long, with a roadway of 18 ft. Owing to its topographical position with reference to the frontiers of Iran, Turkey and Russia, Khoi seems always to have been regarded as possessing considerable strategical importance, and in the early part of the 19th century was surrounded with strong fortifications under the direction of French engineers, General Gardane and staff. James Morier saw the building work in progress when he passed through in 1810. The design took the form of a quadrilateral with faces 1,200 yd. in length and fortifications consisting of 2 lines of bastions and fosses, which made Khoi the most strongly fortified town in Iran. The city was attacked by the Russians in 1827, but was successfully defended. Following the treaty of Turkmanchai (Feb. 1828) it was held by a garrison of 3,000 Russian troops as a guarantee for the payment of the war indemnity. During the Crimean War and again during the Russo-Turkish War of 1877–78 a considerable body of Persian troops was located there at the request of Russia. In the early part of 1911 the place was occupied by Turkish troops who, however, withdrew when a Russian consul general put in an appearance with an escort of 4,000 men, and during the ensuing year this number was increased to something between 9,000 and 10,000, of all arms.

If its extensive suburbs are included, the population of Khoi must approach 50,000, but of these only about 35,000 live within the walls. The community includes a considerable Armenian element, probably 500 families, who inhabit a quarter of their own outside the walls. The city within the walls is one of the best laid out in Iran, cool streams with lines of willows running along its broad and regular streets. There are some good buildings, including the governor's residence; several mosques, an extensive brick-built bazaar, a fine caravanserai and some beautiful gardens. The city is the centre of much transit trade and local traffic with districts across the Turkish border.

KHOJENT (re-named Leninabad), a town of Asiatic Russia, in the Khojent district of the Tajik S.S.R., on the left bank of the Syr-darya or Jaxartes, in 40° 18′ N., 69° 42′ E. Pop. (1935) 40,900, mainly Tajiks. The narrow Khojent pass is the entrance to the Ferghana valley, and the railway and the main road from Bukhara both utilize it. Before the Russian occupation there was much strife between the Khanates of Khokand and Bukhara as to the possession of this strategic point. In 1866 the town was stormed by the Russians and it played an important part in their war with Khokand in 1875. Irrigation from the Jaxartes is rendered difficult there by the height of the river bank. Cotton plantations, fruit gardens and vineyards surround the town, and silk worms are reared. There are a civic electric station and a cotton cleaning factory; the inhabitants weave and embroider cotton and silk goods.

KHOLM: *see* Chelm.

KHOLMOGORY, the capital of the district Kholmogory in Archangel, a former province of European Russia and now a region of the Russian S.F.S.R., situated southeast of the city of Archangel. Excellent cattle are raised on the Dvina in the district of Kholmogory, which also contains sulphurous springs.

KHOND (Kandh), a Kui-speaking aboriginal tribe found in Orissa and the Ganjam district of Madras in India. In 1835 the Khonds attracted attention by their human sacrifices known as *meriah.* These were offered to ensure good crops, and the greater the victim's sufferings the better the crop. The victims had to be purchased to be efficacious and strangers were preferred. The *meriah* was well treated and, if a female, was encouraged to bear children before being immolated. The rites were simple and accompanied by orgies which lasted three days. Ten or twelve days before the sacrifice the victim's hair was cut off, and the villagers having bathed, went with the priest to the sacred grove to forewarn the goddess. The Khonds are as tall as the average Hindu and not much darker, while in features they are very Aryan. They are undoubtedly a mixed Dravidian race, with much Aryan blood. The Khond language is more closely related to Telugu than is Gondi.

See E. Thurston, *Tribes and Castes of Southern India* (1915); H. V. Russell, *Tribes and Castes of the Central Provinces* (1921).

KHORSABAD, modern village of 'Iraq, about 12½ mi. N.E. of Mosul on left bank of the Khosr. It was excavated by Botta in 1842 and his finds are in the Louvre. It has been usual to iden-

tify this site with Dur Sharrukin, usually translated "Sargon's Burgh," although recently Langdon has suggested that this name should be applied to Agade, now definitely identified with Ed-deir (*see* under AGADE). The town at Khorsabad was of very large extent and must have taken a long time to build, covering as it did 741 acres, over a square mile. It is rectangular in form; partly within and partly outside the city walls stood the royal palace, which was built on a terrace 45 feet high and covered 25 acres. It includes a temple and great stage tower and the palace itself with long endless sculptured corridors. The whole was found in good state of preservation and has been of great importance as it was excavated very early in the history of Assyriology, but fortunately at the same time with considerable care.

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KHOTAN (HOTIEN), an oasis in the Tarim basin, situated on the Yurung-kash river, on the southern edge of the Takla Makan desert, China. The oasis is about 200 mi. S.E. of Yarkand, and from the earliest times it has been the largest and most important of the group of oases along the southern margin of the Tarim basin. The oasis which comprises three towns, Khotan, or Ilchi; Yurung-kash and Kara-kash, occupies a terrace of fertile loess extending for nearly 40 mi. along the northern foot of the Kunlun mountains. It owes its fertility to two rivers, the Yurung-kash and Kara-kash which later unite to form the Khotan-darya. These rivers afford good irrigation and are responsible for much of the loess on which the oasis has grown up. Some of it is alluvium, washed down by these rivers from the Kunlun, but most of it is the result of subaerial deposit.

Khotan was a relatively weak state in the time of the early Han dynasty, but, in the later part of the first century of our era when China was energetically establishing control over the Tarim basin, its geographical position as the largest oasis and best supply base on the more southerly of the two chief routes to the West, and as a connecting link between Central Asia and India, gave it great importance. Its connection with India is illustrated by the fact that Buddhism reached China via Khotan which was for a time a famous centre of Buddhist learning. A rich prize in itself and the key to many trade routes, Khotan has experienced many fluctuations of political fortune. Conquered by the famous general Pan Ch'ao in A.D. 70 it was held by China during the later Han dynasty, and again under the Tangs in the seventh century when it was one of the four garrison centres from which the Tarim basin was then administered. In the following century it was conquered by the Arabs from West Turkistan and in the tenth it was annexed by Kashgar. Genghis Khan captured it in the 13th century and later it was included in the Mongol Central Asian khanate (Changatai). During this period Marco Polo passed through it (1274) and noted its agricultural wealth, especially of cotton, its commercial importance and the unwarlike character of its inhabitants. In recent centuries it has been one of the chief centres of Mohammedan activity in Chinese Central Asia and played a prominent part in the Dungan revolt against Chinese authority (1864–75) and that of Yakub Beg of Kashgar a year or two later.

The surrender of Kashgar and Khotan to the famous "agricultural army" in 1878 marked the final stage in the reassertion of Chinese authority and Khotan is now included in the province of Sinkiang, of which it is one of the chief centres. Its administration is typical of an area where irrigation is the basis of economic organization. The oasis is divided into a series of communes, corresponding to the areas irrigated by each of the chief canals. This enables the water to be distributed fairly and ensures that the expenses incidental to the upkeep of the irrigation works are equally divided amongst the peasants.

The oasis is still of outstanding agricultural importance. The staple cereals are wheat, rice, oats, millet and above all Indian corn. The early harvest of the spring-sown crops and the abundant water-supply in summer permit of its being grown everywhere as a second crop. The cotton crop is also of great value and good fodder crops of lucerne are grown. So too are great quantities of olives and fruits, including apricots, peaches and apples. There is a considerable export of dried fruit, especially to Aksu in the north and to the smaller oases east of Khotan. The cultivation of the mulberry is carried on everywhere as the basis of the silk industry, of which Khotan is an important centre. It has in addition a large manufacture of carpets and felts and ranks as the chief industrial city of East Turkistan. Its metal work is famous and there is extensive mining including that of gold which is still washed from the alluvium in the rivers. For centuries Khotan was famous for jade or nephrite, a semi-precious stone greatly esteemed by the Chinese for making small fancy boxes, bottles and cups, mouthpieces for pipes, bracelets, etc.

The population of the oasis is approximately 220,000. Mongolian traits are rare and the peasants on the whole bear a strong resemblance to the "Aryan" Galchas.

KHULNA, a town and district of British India, in the Presidency division of Bengal.

The town stands on the river Bhairab, and is the terminus of a line of the Eastern Bengal State railway, on which much of the boat and steam traffic of Eastern Bengal converges. Pop. (1941), 31,749.

The DISTRICT OF KHULNA, which was formed out of Jessore in 1882, lies in the south of the delta of the Ganges between that district and the Bay of Bengal. Area 4,805 sq.mi.; forests in the Sundarbans extend over about 3,000 sq.mi. The district is intersected by large tidal rivers, which expanded into estuaries as they approach the sea; the rivers are connected by innumerable creeks and channels. The northeast part of the district is swampy; the northwest is more elevated and above flood level, the central part, though low-lying, is also under cultivation; the Sundarbans is an uninhabited area of swampy forest-clad islands. In 1941 the population was 1,943,218. Rice is the principal crop; jute ranks next in importance. The chief industries are fishing, boatbuilding and the manufacture of molasses from the date palm.

KHUNSAR, a town of Iran, sometimes included in the province of 'Iraq (Persian), and at others in that of Isfahan, situated in 33° 9′ N. by 50° 23′ E., at an elevation of 7,900 ft. The town, which lies on the Isfahan-Gulpaigan-Sultanabad highway and has a population of about 15,000, is picturesquely situated on both sides of a valley half-a-mile wide, through which runs a narrow stream of the same name, flowing in a northeasterly direction towards Qum. The town itself is 2 miles long and its gardens and orchards extend for a further 3 or 4 miles. They yield a great profusion of fruit, especially apples from which a kind of cider is brewed; but its keeping qualities are not sufficient to admit of its export. Grazing in the neighbourhood is good and fuel and timber plentiful. The town possesses 5 caravanserais, 3 mosques and a post office. The population, in which there is a considerable number of *mullahs* and *saiyids,* formerly had an especial reputation for orthodox piety.

KHURASAN originally signified a vast tract of country to the east of Iran, comprising the lands situated to the south of the Amu Darya and to the north of the Hindu Kush. To the Arab geographers, Khurasan had for its boundaries on the east Seistan and India, west the desert of Ghuzz and Jurjan, north Transoxiana, and south and southwest the desert of Iran. Under the present regime in Iran the meaning of the name has gradually become much more restricted and now indicates the northeasterly province of Iran, coterminous on the north with Russian Trans-Caspian territory (the river Atrak serving as the frontier as far as Chat), east with Afghanistan, west with the Iranian provinces of Asterabad, Shah Rud, Semnan and Damghan, and Yezd, and south with Kerman. It thus still embraces a tract of very considerable extent measuring some 500 mi. from north to south, and 300 mi. from east to west and having an area of not less than 125,000 sq.mi. It extends southward almost to 30° N. and includes the large district or sub-province of Qainat.

Physical Features.—The surface of the province is essentially mountainous, especially on the north and east. The ranges generally run in parallel ridges enclosing broad valleys with a normal direction from north-west to south-east and elevations in

the southern border of 11–13,000 ft. The whole of the north is occupied by an extensive highland system composed of the Elburz range and its prolongations from the neighbourhood of Shah Rud. The Great Kavir desert obtrudes into Khurasan and occupies its central and western part, and the Dasht i Lut obtrudes similarly in the south. The true character of these great salt depressions which form the distinctive feature of east Iran has scarcely been determined, some regarding them as the beds of dried up seas. The surface of Khurasan is thus very diversified, consisting mainly of highlands, saline swampy deserts and upland valleys, some of which are fertile and well watered. Broadly, the country offers the appearance of a group of oases watered by intermittent rivers and by wells. Of the fertile valleys—occurring mainly in the north—the chief are: the great longitudinal valley stretching northwestward from near the Afghan frontier and Herat, wherein are situated the important towns of Meshed, Kuchan, Shirwan and Bujnurd; the districts of Nishapur and Sabzavar farther south; and the districts around Birjand and Qain still farther south. These tracts produce, in particular, rice and other grains, cotton, tobacco, opium and fruits in profusion.

The rivers of Khurasan are comparatively small. The most important are: the Atrak rising northeast of Kuchan and flowing into the Caspian sea; the Kashaf Rud or Ab i Meshed which joins the Hari Rud from Afghanistan, the two eventually losing themselves north of the Trans-Caspian railway; and the Kaleh i Mura (of which the Kara Su is a tributary) which rising in the hills near Bujnurd flows south and eventually loses itself in the great desert. All the other rivers are mere torrents which, though they often have a perennial supply near their sources, are so much drawn on for irrigation that it is only in spate that they have sufficient water to reach their terminals in the desert.

Natural Resources and Agriculture.—The mineral products consist of turquoises from the mines at Maadan near Nishapur; salt is found over great areas in the form of a thick efflorescence; and iron, lead, alum, gold and copper are said to exist. Coal is found some 20 mi. S. of Meshed, but whether in workable quantities has yet to be determined. The agricultural products are fruits in great variety and most kinds of grain, some silk, saffron, large quantities of asafoetida, and cotton; also manna, tobacco, pistachio nuts and gums. The soil of the various districts is very varied in character and productivity: the northwest, north and northeast have a very rich soil, and being abundantly irrigated are all extremely productive, especially of wheat. Meshed is in a rich well watered plain as also is Kuchan where rice is said to yield four hundred fold.

Peoples.—Khurasan is peopled by a great variety of races, only that part of the province lying near the Meshed-Tehran roads being occupied mostly by Persians. To the northwest, on the frontier of Asterabad are Turkmans, largely of the Guklan and Yamut tribes. To the north and northeast are the Kurds of Bujnurd and Kuchan. South of Meshed are sections of the 'Amaq tribe of Timuris, while westward of these, around Turbet i Haidari (*q.v.*) are Turks and Baluchis. There are here and there Barbaris (of Mongol origin), Arabs, a few Jews and, scattered all over the country, are gypsies.

Communications and Trade.—The administrative capital of the province is Meshed (*q.v.*). A good motor road traverses the north of the province from Tehran, via Shah Rud to Meshed; and a similar road runs south from Meshed to railhead of the Indian railway system at Zahidan (Duzdab). The Trans-Caspian railway skirts the province on the north, the important station of Ashkhabad being only a few miles distant from the Iranian frontier. The articles of export, in order of value, are carpets, hides and skins, opium, timber, cotton stuffs, silk and turquoises.

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KHURJA, a town of British India, in the Bulandshahr district of the United Provinces, 27 mi. N.W. of Aligarh, near the main line of the East Indian railway. Pop. (1941), 35,376. It is an important centre of trade in grain, indigo, sugar and *ghi*, and has cotton gins and presses and a manufacture of pottery. The principal building in the town is a modern Jain temple, a fine domed structure, which is richly carved and ornamented in gold and colours.

KHURRAMABAD, an Iranian town, now the capital of the province of Luristan in 33° 32′ N., 48° 15′ E., at an elevation of 4,250 ft. Pop. about 12,000. It is situated 138 mi. W.N.W. of Isfahan on the Khurramabad river (also called Abi-i-Istaneh) on the shortest route from the Persian gulf to the main distributing centres of Iran, passing from Mohammerah via Ahwaz and Dizful to Tehran. Between the town and river stands the ruined Diz-i-Siyah (black castle), with annexes called Falak ul Aflak (heaven of heavens), built in the 10th century by a famous Kurdish chieftain, Hasanawaih.

It was well nigh impregnable.

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KHUZISTAN (formerly Arabistan), a province of Iran bounded west by the frontier of 'Iraq and the Shatt-al-Arab, north by the provinces of Burujird (Luristan) and Gulpaigan, east by those of Isfahan and Fars, and south by the Persian gulf. Khuzistan, meaning the "land of the Khuz," was a part of the Biblical Elam and corresponds largely to the ancient Susiana. It is watered and drained mainly by the Karun (*q.v.*) and the Karkheh river, whose waters are dissipated in the Hawiza marshes. Other independent but smaller streams are the Jerrahi, and Hindian or Tab rivers. All these rivers bring down much silt from the Zagros range and its offshoots in the north, and this goes to create extensive mud-flats in the south towards the coast of the Persian gulf. Thus, broadly, the province falls into two natural physical divisions: the northern mountainous part where the country slopes gently down from the Bakhtiari highlands, bare and shingly; and the southern part, which consists, to a great extent, of open alluvial plains or morasses which in places are fertile and grassy and in other parts wholly barren or else thickly sprinkled with desert scrub.

Population.—The population of Khuzistan has been estimated at about 250,000 settled, and 120,000 nomadic people, but in these figures no account is taken of the Bakhtiaris and Lurs who enter the northeastern districts in winter, the most important numerically being probably the Sagwand Lurs who encamp in the district of Dizful, sometimes to the number of 15,000. The bulk of the population of Khuzistan is either pure Arab or, more frequently, a mixture of Arab and Persian, and the tribes are settled, or nomadic, or in a transitional stage between the two modes of life. Speaking generally, the tribal system of Khuzistan is rather loose and does not rest upon a rigid basis of race. Whole tribes are sometimes merged and disappear, or are distributed as sections among other tribes. Among the more powerful or numerous of the tribal comunities are the Kaab, probably numbering 50,000, located in southern Khuzistan around Mohammerah, Jerrahi district and Ahwaz; the Dizfuli around Dizful; the Muhaisin in the Mohammerah and Ahwaz districts; the Shushtari in Snushtar district; the Tamim, Qanawati, and Khamis, nomadic. The Kaab claim to be Awamir or Bani Amir whose original home is stated to have been in Nejd; their political influence, formerly very powerful, has declined in recent years, while that of the Muhaisin has risen. Mention should also be made of the tribes who dwell in the Hawizeh district and who, in summer and autumn encamp

in the marshes and in winter roam the deserts with their flocks and herds and who are regarded as turbulent elements.

Soil and Productions.—The soil of Khuzistan is naturally very fertile, but since the Shahdurwan weir across the Karun at Ahwaz was swept away and the numerous canals which diverted the water of the river for irrigation purposes became useless, a great part of that district, once accounted among the richest in Iran, has become uncultivated. A project of irrigation and cultivation of an area of about 197,600 ac. was started by the Agricultural bank in Tehran. Pumps were installed to make use of the water of the Karun and Karkheh rivers. Land was divided among peasants, but the scarcity of population in Khuzistan made it necessary to bring peasants from other parts of the country. Most of the crops depend for water on rainfall or wells. The climate is hot, the relative humidity high and the low-lying swampy districts unhealthy. The prevailing winds are northwest and southeast: the former hot and dry from the arid regions west of Mesopotamia, the latter bearing much moisture from the Persian gulf. Khuzistan is productive in patches. Wheat and barley are the more general crops in their distribution, but rice, cotton, sesame, beans and sugar cane are grown in a number of districts, while linseed, maize and pulse are produced in other localities. Special crops are indigo in the Dizful district, opium and pepper in Shushtar, and tobacco around Ram Hormuz and Aqili.

Communications and Trade.—Ahwaz is the most important road and railway centre in the province, being in direct communication with Shiraz by way of Ram Hormuz on the east, with Wasit and Baghdad on the west, with Shushtar, Qum and Tehran on the north (a large part of this road being fit for motor traffic), with Isfahan on the northeast, and with Mohammerah and Basra on the south. Other chief centres of trade and distribution are Dizful, Shushtar and Ram Hormuz, the latter being the market for produce of the adjacent Bakhtiari and Lur country. The most important mineral product is petroleum, from the extensive oil fields of the Anglo-Iranian Oil Co., east of Shushtar, which is exported from Abadan (*q.v.*). The most important ports are Khoram Shar, the former Mohammerah (*q.v.*) at the estuary of the Shatt-al-Arab, and Bandar Shahpur, the end of the Trans-Iranian railway.

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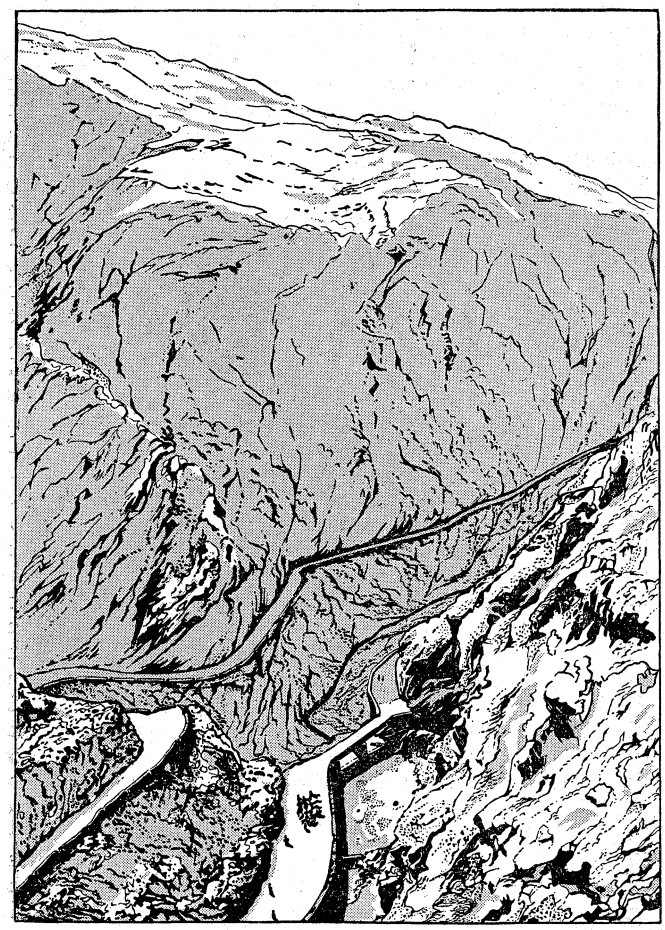
KHYBER PASS, the most important of the passes which lead from Afghanistan into India, and is now threaded by road and rail. It is a narrow defile winding between cliffs of shale and limestone 600 to 1,000 ft. high, stretching up to more lofty mountains behind. No other pass in the world has possessed such strategic importance or retains so many historic associations as this gateway to the plains of India. Owing to its difficulty and the intractability of the tribes on the route, it has not been so much used before modern times as has been generally supposed. The great invasions of India, either came via what is now British Baluchistan on Multan, or else if coming via Kabul turned aside somewhere below Jalalabad to travel the easier routes north of the Kabul river. The mountain barrier which separates the Peshawar plains from the Afghan highlands differs in many respects from the mountain barrier which intervenes between the Indus plains and the plateau farther south. To the south this barrier consists of a series of flexures folded parallel to the river, through which the plateau drainage breaks down in transverse lines forming gorges and clefts as it cuts through successive ridges. West of Peshawar the strike of the mountain systems is roughly from west to east, and this formation is maintained with more or less regularity as far south as the Tochi river and Waziristan. Almost immediately west of Peshawar, and stretching along the same parallel of latitude from the meridian of Kabul to within ten miles of the Peshawar cantonment, is the great central range of the Safed Koh, which forms throughout its long, straight line of rugged peaks the southern wall, or water-divide, of the Kabul river basin.

Pursuing the main road from Peshawar to Kabul, the fort of Jamrud, which commands the British end of the Khyber Pass, lies some 11 m. W. of Peshawar. The road leads through a barren stony plain and some three miles beyond Jamrud, enters the mountains at an opening called Shadi Bagiar, where the Khyber proper begins. The highway runs for a short distance through the bed of a ravine, and then ascends on the left-hand side to a plateau called Shagai. From here can be seen the fort of Ali Masjid, which commands the centre of the pass, and which has been the scene of more than one famous siege. Still going westward the road turns to the right, and by an easy zigzag descends to the river of Ali Masjid, and runs along its bank. The new road along this cliff was made by the British during the second Afghan War (1879–80), and converted during and after the third Afghan War (1920) to a double motor road. This is the narrowest part of the



THE KHYBER PASS, THROUGH WHICH THE MILITARY ROAD FROM THE PUNJAB TO AFGHANISTAN RUNS; CONSTRUCTED DURING THE AFGHAN WARS

Khyber, not more than 15 ft. broad, with the Rhotas hill on the right fully 2,000 ft. overhead. Some three miles farther on the valley widens, and on either side lie the hamlets and some sixty towers of the Zakka Khel Afridis. Then comes the Loargi Shinwari plateau, some seven miles in length and three in its widest part, ending at Landi Kotal, where is another British fort, which closes this end of the Khyber and overlooks the plains of Afghanistan. The broad gauge railway from Peshawar to Jamrud has now been extended to Landi Kotal, and half-trains can climb to that place, where since the third Afghan War a British brigade is

cantoned in the uplands. After leaving Landi Kotal the great Kabul highway passes between low hills, until it debouches on the Kabul river and leads to Dakka. The road has been greatly improved and motors and light lorries run through to Kabul.

The Khyber Pass has been adopted by the British government as the main road to Kabul, but the old road to India left the Kabul river near its junction with the Kunar, crossed the great divide between the Kunar valley and Bajour, and turned southwards to the plains. During the first Afghan War the Khyber was the scene of many skirmishes with the Afridis and some disasters to the British troops. It was at the fortress of Ali Masjid that Sir Neville Chamberlain's friendly mission to the amir Shere Ali was stopped in 1878, thus causing the second Afghan War; and on the outbreak of that war Ali Masjid was captured by Sir Samuel Browne.

The treaty which closed the war in May 1879 left the Khyber tribes under British control. In 1897 the Afridis seized the pass, on the withdrawal of the British officers, and held it for some months. This was the chief cause of the Tirah expedition of 1897.

See Sir Robert Warburton, *Eighteen Years in the Khyber* (1900); Sir T. Holdich, *Indian Borderland* (1901); Tate, *The Kingdom of Afghanistan* (Bombay, 1911).

KIAKHTA: *see* TROITSKOSAVSK.

KIAMIL PASHA (1832–1915), Turkish statesman, was the son of an artillery officer, Salih Agha. Having completed his military training in Egypt as a cavalry lieutenant, he was appointed by the Khedive, Abbas Pasha, tutor in English to his son Ibrahim Pasha. In 1861 Kibrizli Mehemmed Pasha took him into the service of the Ottoman government. He was twice governor of Jerusalem and three times governor of Beirut. In 1878 he was appointed governor of Kossova and soon afterwards of Aleppo, with the rank of Pasha. He resigned as the result of the British protest against his conduct during the Armenian revolt at Zeitoun, and returning to Constantinople became undersecretary for the interior. In 1881 he became minister of Evkaf, and after the resignation of the Kutchuk Said Pasha Cabinet in that year, grand vizier. In spite of his forced resignation from the governorship of Aleppo he steadily pursued a pro-British policy. He resigned the grand vizirate in 1887 owing to Russian intervention, but was reappointed in 1896. He was dismissed by Sultan Abdul Hamid, however, owing to his proposal that a Cabinet responsible to the nation should be formed, and was sent to Smyrna as governor, where he remained for 12 years. After the promulgation of the constitution (1908) Kiamil Pasha joined the Kutchuk Said Pasha Cabinet and soon after became grand vizier for the third time. He was, however, strongly opposed by the Union and Progress party. During the Balkan War (1912) he became grand vizier for the fourth time, but was forced to resign in 1913 as the result of a military *coup d'état* and the unpopularity of the peace terms accepted by him. He retired to Egypt, and although he returned later to Constantinople he was forced by the government immediately to leave. He went to Cyprus and died there in 1915. Kiamil Pasha knew English, French and Arabic and published a book on Turkish history.

KIANGSI, a province in the heart of China, lying within the South China highlands but drained to and linked up with the lower Yangtze valley. It is formed essentially of the basin of the Kan river with whose watershed the provincial boundaries for the most part coincide. As the life of Kiangsi is based on a tributary basin to the south of the arterial line of the Yangtze, its position and rôle are analogous to those of Hunan rather than of Hupeh or Kiang-su, great focal provinces lying astride the Yangtze valley proper. Like Hunan it is a corridor province, providing the chief alternative route across the South China highlands from the lower Yangtze valley to the Canton delta, the focus of south China. The Kiangsi route leading over the watershed by the Mei-ling pass was that followed by early British embassies, those of Macartney in 1793 and Amherst in 1816 on their journey overland between Canton and Peking. Communicating with the Yangtze valley midway in its course between the central (Hupeh) basin and the delta, Kiangsi is orientated partly to the one and partly to the other. Although formerly linked with Anhwei and Kiang-su to constitute the old province of Kiangnan, it is commercially tributary to Hankow rather than to Shanghai.

Kiangsi is made up of a succession of ridges and troughs trending N.E.–S.W. characteristic of the eastern half of the South China highlands. These, running diagonally across it, give the province a frame which, though mountainous, is pierced by numerous gaps giving comparatively easy communication with adjoining provinces. From Fu-kien alone is Kiangsi separated by a continuous mountain system. The N.E.–S.W. ridges which enter Kiangsi die down, however, along the axis of the province to leave two basin-like areas, an upper and a lower. The upper basin collects the headstreams of the Kan at the confluence of which stands Kanchow, the focus of the basin and the second city of the province. The lower basin, much the larger of the two, forms an extensive lowland plain sloping towards the Poyang lake through which the drainage of the province passes to the Yangtze. The lake has undergone extensive sedimentation and a ring of important towns, once on its shores, is now separated from it by wide stretches of fertile alluvium. The focus of this lowland plain and the capital of the province is the city of Nan-chang, on the Kan at the point where it once emptied into the lake, now over 30 mi. away. Kiangsi cultivates the crops characteristic of the Yangtze basin. Rice is grown throughout the province but especially in the alluvial soils bordering the Poyang lake. It is one of four provinces of China having a surplus production. This is collected at Nan-chang from both the Poyang plain and the upper valleys and sent to Wuhu, the great rice market of the Yangtze valley. Of the other crops entering commerce, both sugar and tea have declined in importance. Sugar cultivation has suffered from Japanese competition and is now practically confined to the upper valleys. The production of tea, grown on the hill slopes towards the Hupeh border and collected at Kiukiang, has declined with the general decay of the China tea trade. Kiangsi teas are now mainly green teas, destined for export to Russia. There is some tobacco production to the east of the lake, and this may increase in the future. Like the rest of the Yangtze valley, Kiangsi grows for subsistence crops in addition to the rice of summer, temperate cereals and legumes such as wheat and beans during the winter half year. Pop. (est. 1940) 13,794,159. Area 66,830 sq.mi. Kiangsi's communication system consisted of the navigation on the Poyang lake and the lower part of the Kan river, and of a road system built at first in connection with the government drives against the communist centres in the south of the province. In 1937 the completion of the railway from Hangchow to Nan-chang and to Chuchow on the Hankow-Canton line, linked the province with Shanghai and the lower Yangtze region as well as with Hankow and Canton. A short, older line from Nan-chang to Kiukiang connected this east-west rail-system with the Yangtze river. The southern part of the province was, between 1930 and 1934, the territory of the so-called Chinese Soviet Republic. When the communists were forced through the blockade to leave the province on their famous "long march," the Nanking government sought to transform Kiangsi into a model province. In 1934 the New Life movement was started by Chiang Kai-shek in Nan-chang, which remained for some time the centre of this movement. More than a year after the outbreak of the war the eldest son of Chiang Kai-shek became special administrative inspector and later a member of the provincial government committee for the administration of the southern part of the province, with his headquarters in Kanchow. He succeeded in introducing modern administrative reforms and started in 1940 a three-year reconstruction plan in the field of economy and of cultural and educational activities.

KIANG-SU, one of the smallest but one of the most important and the most densely peopled of the provinces of China, at the outlet of the Yangtze Kiang. In its natural state it was a water-logged deltaic plain, bounded north by the Shantung highlands and south by the scarps of southeast China. Except for outcrops of Carboniferous rocks around Nanking, the soils are almost wholly formed of recent deposits, loess and alkaline sands in the north and fertile silts and clays in the south. Lakes and swamps still occupy a considerable portion of the surface especially in the

region of the Hwai marshes where drainage is indefinite. This swamp belt in the centre of the province (long inhabited by aboriginal tribes, the Hwai barbarians) has localized population in two distinct regions to the north and south of it, linked, however, by a line of towns along the Grand Canal. In northern Kiang-su the agricultural resources are limited, the main crops being wheat, millet and fruit; it is purely agrarian in character and the population is of only moderate density.

But southern Kiang-su, *i.e.*, south of the marsh belt, is the richest region in the whole country. It is the "Garden of China" and supports an enormous population mainly by the close interaction of agricultural, industrial and commercial activities. Rice, wheat, sesamum, peanuts and melons are grown in large quantities, while mulberry and cotton provide the basis of the great silk and cotton industries of the region. The cotton is mainly of Chinese native kinds; experiments seem to show that the early autumn climate of the delta is too humid for American varieties. It was the industrial region of China *par excellence,* embracing many long-established domestic handicrafts and countless new manufactures resulting from western contact. It was also the chief commercial outlet of the country and the bulk of China's foreign trade passed through it. This is the historic Kiang-nan, the heart of Manzi, whose opulence and activity made such an impression on Marco Polo when he visited it in the second half of the 13th century. Its intrinsic importance and its geographical position as the gateway to central China have made the delta the chief scene of European commercial activity in the country since the beginning of the Treaty Port era and the problems arising out of this contact are here most clearly displayed. (*See* SHANGHAI.) The delta and its fringes are intersected by waterways, both natural and artificial, which afford the chief trade-routes. In addition to the Yangtze and the Grand Canal which intersects it at Chinkiang and runs from south to north, there is a network of canals which also serve to drain the land, especially in the districts immediately to the north of the river. The province also possessed about 400 miles of government railways comprising the important Shanghai-Nanking system with services to Hangchow and Ningpo, and a section of the transverse Lung-nai Railway in the north leading from Shensi province to the important new port of Hai-chow.

Pop. (est. 1935) 36,469,321; area 42,056 sq.mi.; density 867 per sq.mi. Of this total 66% lived in the deltaic tract, parts of which were among the most densely peopled areas in the world, the density rising to over 5,000 persons per square mile in the richest rice-growing districts. While the great majority of the people were farmers, Kiang-su contained a bigger industrial population, artisans in the western sense, than any other province in China and also had a large mercantile class. The province was rapidly becoming the centre of modern industrial and political development of China before the Japanese invasion in 1937. The concentration of Chinese and foreign industry, of government and educational institutions in the capital Nanking, the great industrial centre and port of Shanghai and other cities in the Yangtze delta tended to develop this region far in advance of the rest of the country. This over-concentrated advancement was interrupted by the Japanese invasion and the withdrawal of the government, industries and educational institutions, and brought the development of the "hinterland." But the industrial development of the past was an indication of the lasting importance of this region for China's economic and political future. In language there is an important distinction between northern Kiang-su which belongs to the Mandarin area of North China and the delta where the old Wu dialects are still the vernacular. Nanking, however, at the apex of the delta is mainly Mandarin-speaking and this, as the official language, is increasingly understood in the chief commercial centres of the deltaic region.

KIAOCHOW BAY: *see* TSINGTAO.

KIDD, BENJAMIN (1858–1916), British sociologist, was born on Sept. 9, 1858. He entered the civil service, becoming a clerk in the Inland Revenue office. During 1898 he travelled extensively in the United States and Canada for the purpose of economic study, and in 1902 he visited South Africa for the same reason. In 1894 he published *Social Evolution,* which was widely read and was translated into most European languages as well as into Chinese. His later publications included *The Control of the Tropics* (1898) and *Principles of Western Civilisation* (1902). He died at Croydon on Oct. 2, 1916.

KIDD, WILLIAM (CAPTAIN KIDD) (*c.* 1645–1701), privateer and pirate, was of obscure origin. In 1691 an award from the council of New York of £150 was given him for his services during the disturbances in the colony after the revolution of 1688. He served with credit against the French in the West Indies. In 1695 he came to London with a sloop of his own to trade. He was recommended to the colonial governor Lord Bellomont, as fit to command a vessel to cruise against pirates in the Eastern seas. Accordingly the "Adventure" galley was privately fitted out, and Captain Kidd received the king's commission to arrest all pirates, and a commission of reprisals against the French. Kidd sailed from Plymouth in May 1696 for New York, and in 1697 reached Madagascar where, instead of hunting the pirates down, he associated with them, capturing native trading vessels. During 1698–99 complaints of his proceedings reached the British Government. Kidd deserted the "Adventure" in Madagascar and eventually reached New England in a small sloop. He wrote to Bellomont, professing his ability to justify himself and sending the governor booty. He was arrested in July 1699, was sent to England for trial and found guilty of murder and piracy. He was hanged on May 23, 1701. About £14,000 of "Captain Kidd's Treasures" was recovered from Kidd's ship and from Gardiner's Island (off the E. end of Long Island).

See W. W. Campbell, *An Historical Sketch of Robin Hood and Captain Kidd* (New York, 1853). *See* also PIRATE.

KIDDERMINSTER, market town and municipal borough in the Kidderminster division of Worcestershire, England, 15 mi. N. of Worcester by the G.W.R.; on the river Stour and the Staffordshire and Worcestershire canal. Pop. (est. 1938) 32,570. Area 7.3 sq.mi. In 736, lands upon the river Stour, called Stour-in-Usmere, identified with the site of Kidderminster (Chideminstre), were given to *comes* Cyneberght by King Aethelbald to found a monastery. Cyneberght's son gave these lands to the bishop of Worcester, and in 816 Bishop Deneberht gave them to Coenwulf, king of the Mercians, in return for privileges. Kidderminster remained a royal manor until Henry II granted it to Manasser Biset. As a royal possession the town enjoyed many privileges in the 12th century. The first charter of incorporation granted in 1636, remained valid until the Municipal Reform act of 1835. Kidderminster sent two members to the parliament of 1295.

The cloth trade is first mentioned in 1334, when it was enacted that no one should make woollen cloth in the borough without the bailiff's seal. The manufacture of woollen goods was replaced by that of carpets, in 1735. At first only the "Kidderminster" carpets were made, but in 1749 a Brussels loom was set up in the town, and Brussels tapestry and carpets and Axminster carpets came to form the bulk of the manufacture, though worsted spinning and dyeing are carried on.

The Church of All Saints is Early English and Decorated, with Perpendicular additions. Richard Baxter became a minister in the town in 1641.

KIDDUSH (Hebrew "sanctification") and *Habdālah* (Hebrew, "separation") are in Judaism respectively the beginning and concluding ceremonies of sabbaths and festivals. The former rite includes the blessing or sanctification of the day (*Hay Yōm*), of the wine (*'Al Hay-Yáyin*) and of the bread (*'Al Hal-Léḥem*) and is recited at the first of the three statutory meals. The last two items, which were the earlier, are pronounced at other meals. From these, which, however, possess no sacramental significance, the eucharist may have been derived. The term *Habdālah* is applied (*a*) to the paragraph in the *'Amīdah* of the evening service proclaiming the distinction between light and darkness and marking the boundary between sacred and secular days: (*b*) to the subsequent synagogal and domestic ceremony which contains the four blessings of *Habdālah,* wine, light (*Nēr*) and spices (*Besāmim*). At the conclusion of festivals and fasts alterations and omissions are introduced. The prohibition against kindling fire on

sabbath (Exod. xxxv., 3) is modified on festivals (Ib., xii., 16) hence the festival *Habdālah* lacks the blessing over the light. The origin of this blessing may, however, be symbolical, as may be that of the spices or myrtles (*'Asābim*) which are substituted in the East. The spices may recall the bowl of incense used after banquets in Roman days.

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KIDERLEN-WÄCHTER, ALFRED VON (1852–1912), German diplomatist, was born at Stuttgart on July 10, 1852, the son of a banker Robert Kiderlen, who had married Baroness Marie von Wächter. He fought as a volunteer in the Franco-German War (1870–71) and then studied at different universities. In 1879 he entered the German Foreign Office: After holding various diplomatic posts, among them that of Prussian minister to Hamburg, he was sent to Bucharest in 1900 and was recalled in 1908 to act as deputy for the Foreign Secretary Von Schoen, and in June 1910 succeeded him in the office. He was soon in the thick of the negotiations with France (1911) over the Agadir incident, which, owing to the state of Kiderlen-Wächter's health, were partly conducted between him and the French ambassador, Jules Cambon, at the Bavarian spa of Kissingen. The mystery which Kiderlen-Wächter with the complicity of his chief, Bethmann-Hollweg, chose to maintain with regard to Germany's ultimate intentions in Morocco, was largely responsible for the crisis which arose between the western powers and Germany, and occasioned plain speaking in the House of Commons by Sir Edward Grey (Nov. 27, 1911), and by Lloyd George, then Chancellor of the Exchequer, at the Mansion House (July 21, 1911). An agreement on the basis of a cession of territory in the French Congo in exchange for a German declaration of complete *désintéressement* in Morocco was nevertheless ultimately effected. Kiderlen-Wächter died at Stuttgart, Dec. 30, 1912.

KIDNAPPING, one of the oldest of crimes, has had a sensational revival in depression America. The sight of large family fortunes has tempted many formerly law-abiding persons and some veteran criminal gangs to abduct favored children or adults. The case of the Lindbergh baby (1932) prompted enactment of more stringent Federal and state laws, many providing the penalty of death. The application of the latest methods of crime detection under the new Federal law, and the difficulty of passing the ransom money when the public has been aroused to watchfulness, led to the solution of the first fifty-two cases occurring after the law's enactment and to the conviction of Bruno Hauptmann as the Lindbergh kidnapper. (*See* IMPRESSMENT; ABDUCTION.)

KIDNEY, DISEASES OF. (For the anatomy of the kidneys, *see* URINARY SYSTEM.) The results of morbid processes in the kidney may be grouped under three heads: the lesions produced, the effects of these on the composition of the urine, and the effects of the kidney-lesion on the body at large. Affections of the kidney are congenital or acquired. When acquired they may be the result of a pathological process limited to the kidney, or an accompaniment of disease in other parts of the body.

Congenital Affections.—The principal congenital affections are anomalies in the number or position of the kidneys or of their ducts; atrophy; cystic disease and growths. The most common abnormality is the fusion of originally separate kidneys and production of a single *horse-shoe kidney,* or if the fusion is more complete, a disc-like mass with two ureters. The kidneys may be situated in *abnormal positions;* thus they may be mistaken for tumours. In some cases *atrophy* is associated with mal-development, so that only the medullary portion of the kidney is developed; in others it is associated with arterial obstruction, or obstruction of the ureter. In *congenital cystic disease* the organ is transformed in whole or part into a mass of cysts, and the enlargement of the kidneys may be so great as to produce difficulties in birth. The cysts found in granular kidney are of the retention variety and are produced by constriction of urinary tubules by the fibrous tissue. In some cases cystic degeneration is accompanied by anomalies in the ureters and in the arterial supply. *Growths of the kidney* are sometimes found in infants; they are usually malignant, and may consist of a peculiar form of sarcoma, termed rhabdo-sarcoma, owing to the presence in the mass of voluntary muscular fibres. These tumours depend on anomalies of development; the tissue which forms the primitive kidney belongs to the same layer as that which forms the muscular system (mesoblast). *Anomalies of the excretory ducts* are various. The ureter may be double or much dilated and the pelvis of the kidney may be greatly dilated, with or without dilatation of the ureter.

Acquired Affections.—One or both of the kidneys in the adult (especially women) may be preternaturally mobile, constituting a *movable kidney,* either because it has a partial mesentery (*floating kidney*) or, more commonly, because it is loose under the peritoneum and not efficiently supported in its fatty bed. Movable kidney produces a variety of indefinite symptoms, such as pain in the loin and back, faintness, nausea and vomiting.

In some cases the movable kidney may be kept in its place by a pad and belt, but in others it requires surgical fixation with sutures The operation is neither difficult nor dangerous, and its results are excellent.

Embolism.—The arrangement of the renal blood-vessels is peculiarly favourable to the production of cone-shaped areas of necrosis, the result of blockage by clots. Usually the clot is detached from the interior of the heart, and if the plug is infective owing to the presence of septic micro-organisms, a pyaemic abscess results. It is exceptional for the large branches of the renal artery to be blocked, so that the symptoms in ordinary cases are only the temporary appearance of blood or albumen in the urine. Blocking of the main renal vessels as a result of disease of the walls of the vessels may lead to disorganization of the kidneys. Blocking of the veins, leading to extreme congestion of the kidney, occurs in cases of extreme weakness and wasting and sometimes in septic conditions, as in puerperal pyaemia, where a clot formed in one of the pelvic veins spreads up the vena cava and secondarily blocks the renal veins

Passive congestion of the kidneys occurs in heart diseases and lung diseases, where the return of venous blood is interfered with. It may also be produced by tumours pressing on the vena cava. The engorged kidneys become brownish-red, enlarged and fibroid, and they secrete a scanty, high-coloured urine.

Active congestion, not easily distinguished from early acute inflammation, is produced by excretion in the urine of such materials as alcohol, turpentine, cantharides and the toxins of various diseases. Extreme congestion may follow exposure to cold, owing to the intimate relationship existing between the cutaneous and the renal vessels. Most acute specific diseases produce during their height a temporary nephritis, not usually followed by permanent alteration in the kidney; but some acute diseases cause a nephritis which may lay the foundation of permanent renal disease. This is most common as a result of scarlet fever.

Bright's Disease.—This is the term loosely applied to certain varieties of kidney affection. Three forms are usually recognized —acute, chronic and the granular or fibrotic kidney. Of these, acute Bright's disease (acute nephritis) has been dealt with elsewhere. Chronic Bright's disease (*q.v.*) (chronic nephritis) is sometimes the sequel of the acute form, but often the malady is chronic (or, rather, sub-acute) from the beginning. Both acute and chronic nephritis are inflammatory. Acute and chronic changes often co-exist in the same kidney because of recrudescences and remissions of the renal disease. An example will make this point clear. Assume that a person has (1) acute nephritis in the course of scarlet fever, (2) convalesces, (3) is exposed to cold six months later, (4) recovers again, and (5) is again exposed to cold. His kidneys show acute inflammatory changes due to (5), somewhat chronic changes due to (4), very chronic changes due to (2), and remnants of acute changes due to (1) and (3). Since all the acute changes lead to swelling of the organ and the chronic changes lead to contraction according to the degree of chronicity, it follows that such a kidney may be larger or smaller than, or the same size

as, a normal kidney; that its naked eye appearance may be greatly or little changed but, assuredly, that its microscopical texture will be profoundly altered. A granular kidney is not inflammatory in the usual sense of the term but, by reason of its abnormality, is liable to undergo inflammation. In this case acute nephritic changes are superposed on those characteristic of granular kidney, and a condition arises that may be mistaken for that occurring in the hypothetical case above.

In Bright's disease all the renal elements, glomeruli, tubular epithelium, interstitial tissue with its contained blood-vessels, are affected, though in differing degrees. In acute scarlatinal nephritis the most obvious changes are in the glomeruli; in acute nephritis due to exposure the blood-vessels are congested to such an extent that the capsule of the kidney may be ruptured and the tubular epithelium is profoundly changed; in granular kidney the primary change concerns the connective tissue framework and tubules and glomeruli are affected secondarily. Granular kidney, indeed, is a specialized part of a general condition affecting the arterial system and left side of the heart (arterio-sclerosis). Whether as a result of glomerular or tubal changes, or both combined, the character of the urine is changed. Blockage of the tubules by desquamated epithelium leads to diminution in amount of urine, and the damaged glomeruli and tubules allow albumen and blood to pass through their walls to become mixed with the urine, while "casts" of the tubules composed of epithelial or coagulated albuminous cylinders make their appearance. Such changes are to some degree a measure of the damage the kidney has undergone. In uncomplicated granular kidney with the associated high arterial tension the urine is increased in amount, of low specific gravity, contains no more than a trace of albumen and at most a few hyaline casts.

The causes of acute, sub-acute and chronic nephritis are those given above for acute congestion, with the addition of pregnancy. Chronic lead poisoning and gout are undoubtedly associated with granular kidney in some cases, but in the majority no other cause than that of arterio-sclerosis can be inculpated.

Tuberculosis.—The kidney may be infected by tubercle in two ways: *ascending,* in which the primary lesion is in the testicle, epididymis, or urinary bladder, the lesion travelling up by the ureter or the lymphatics to the kidney; *descending,* where the tubercle bacillus reaches the kidney through the blood-vessels. In the latter case, miliary tubercles, as scattered granules, are seen, especially in the cortex of the kidney; the lesion is likely to be bilateral. In primary and in ascending tuberculosis the lesion is at first unilateral. In an advanced case the pelvis of the kidney is filled with caseous material, and caseous foci breaking down in the centre are scattered through the solid part of the organ.

New Growths.—Malignant disease of the kidney takes the form of sarcoma or carcinoma. Sometimes it is a hypernephroma, starting in what are spoken of as "adrenal rests" in the cortex of the kidney. The kidney is not so prone to malignant disease as other organs, such as the stomach, bowel or liver.

Stone in the Kidney.—Calculi are frequently found in the kidney consisting usually of uric acid, sometimes of oxalates, more rarely of phosphates. Calculous disease of the bladder (*see* BLADDER AND PROSTATE DISEASES) is generally the sequel to the formation of a stone in the kidney, which, passing down, becomes coated by the salts in the urine. Calculi are usually formed in the pelvis of the kidney, and their formation is dependent either on the excessive amounts of uric acid, oxalic acid, etc., in the blood, or on an alteration in the composition of the urine, such as increased acidity, leading to abnormal deposition. The formation of abnormal crystals is often due to the presence of some colloid, such as blood, mucus or albumen, in the secretion, modifying the crystalline form. Once a minute calculus has been formed, its subsequent growth by deposition of further layers of the material is highly probable. Calculi formed in the pelvis of the kidney may be single and large, forming, indeed, an actual cast of the interior of the expanded kidney. At other times they are multiple and of varying size. Serious complications may result from the presence of a stone in the kidney, such as hydronephrosis, from the urinary secretion being pent up behind the obstruction, or complete suppression, which is apparently produced reflexly through the nervous system. In such cases the surgical removal of the stone is often followed by the restoration of the renal secretion. (*See* CALCULI.) The symptoms of *renal calculus* may be very slight, even entirely absent if the stone is moulding itself into the interior of the kidney; but if the stone is movable, heavy and rough it may cause great distress, especially during exercise. There will probably be blood in the urine; and there will be pain in the loin and thigh and down into the testicle. The testicle also may be drawn up by its suspensory muscle, and there may be irritability of the bladder. With stone in one kidney the pains may be actually referred to the kidney of the other side. Generally, but not always, there is tenderness in the loin. If the stone is composed of lime it may throw a shadow on the Röntgen plate, but other stones may give no shadow.

Renal colic is the acute pain felt when a small stone is travelling down the ureter to the bladder. The pain is at times so acute that fomentations, morphia and hot baths fail to ease it, and nothing short of chloroform gives relief. The treatment for renal calculus is surgical.

Pyelitis.—Inflammation of the pelvis of the kidney is generally produced by the extension of gonorrhoeal or other septic inflammation upwards from the bladder and lower urinary tract, or by the presence of stone or of tubercle in the pelvis of the kidney. Pyonephrosis, or distension of the kidney with pus, may result as a sequel to pyelitis or as a complication of hydronephrosis; in many cases the inflammation spreads to the capsule of the kidney and leads to the formation of an abscess outside the kidney—a *perinephritic abscess.* In some cases a perinephritic abscess results from a septic plug in a blood-vessel of the kidney, or it may occur as the result of an injury to the loose cellular tissue surrounding the kidney, without lesion of the kidney.

Hydronephrosis, or distension of the kidney with pent-up urine, results from intermittent obstruction of the ureter. Obstruction of the ureter, causing hydronephrosis, is likely to be due to the impaction of a stone, or to pressure on the ureter from a tumour in the pelvis—as, for instance, a cancer of the uterus—or to some abnormality of the ureter. Sometimes a kink of the ureter of a movable kidney causes hydronephrosis. The hydronephrosis produced by obstruction of the ureter may be intermittent; and when a certain degree of distension is produced, either as a result of the shifting of the calculus or of some other cause, the obstruction is temporarily relieved in a great outflow of urine, and the urinary discharge is re-established. When the hydronephrosis has long existed the kidney is converted into a sac, the remains of the renal tissues being spread out as a thin layer.

Effects on the Urine.—Diseases of the kidney produce alterations in the composition of the urine; either the proportion of the normal constituents being altered, or substances not normally present being excreted. There are two forms of suppression of the urine: *obstructive,* where the ureter is blocked by stone or other morbid process; *non-obstructive,* which is apt to occur in severe acute nephritis. In other cases complete suppression may occur as the result of shock or of injuries to distant parts of the body, as after severe surgical operations. In some diseases in which the quantity of urinary water excreted is normal, or even greater than normal, the efficiency of the renal activity is really diminished, inasmuch as the urine contains few solids. In estimating the efficiency of the kidneys it is necessary to take into consideration the quantity of solid matter daily excreted, as shown by the specific gravity of the urine. The nitrogenous constituents —urea, uric acid, creatinin, etc.—vary greatly in amount in different diseases. In most renal diseases the quantities of these substances are diminished because of the physiological impairment of the kidney. The chief abnormal constituents of the urine are serum-albumin, serum-globulin, albumoses (albumosuria), blood (haematuria), blood pigment (haemoglobinuria), pus (pyuria), chyle (chyluria), and pigments such as in melanuria and urobilinuria.

Effects on the Body at Large.—These may be persistent or intermittent or transitory. The most important persistent effects are, first, nutritional changes leading to general ill-health, wasting

and cachexia; and, secondly, cardio-vascular phenomena, such as enlargement (hypertrophy) of the heart, and thickening of the inner, and degeneration of the middle, coat of the smaller arteries. Amongst the intermittent or transitory effects are dropsy, secondary inflammations of certain organs and serous cavities, and uraemia. Some of these effects are seen in every form of severe kidney disease, and uraemia may occur in any advanced kidney disease. Renal dropsy is chiefly seen in acute and chronic Bright's disease, and the cardiac and arterial changes are commonest in cases of granular kidney, but may be absent in other diseases which destroy the kidney tissue, such as hydronephrosis. *Uraemia* is a toxic condition, and three varieties are recognized—the acute, the chronic and the latent. In part it depends upon the action of poisons retained in the body owing to the deficient action of the kidneys. It is also probable that abnormal substances having a toxic action, *e.g.*, carbamate of ammonia, are produced as a result of a perverted metabolism. The dropsy of renal disease, according to some authorities, is due to effects produced in the capillaries by the presence of abnormal substances in the blood, but the question is not beyond dispute. High arterial tension, cardiac hypertrophy, and arterial degeneration may also be of toxic origin, or they may be produced by an attempt of the body to maintain an active circulation through the greatly diminished amount of kidney tissue available.

See also UROLOGY.

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KIDWELLY (Cydweli), market town and municipal borough, Carmarthenshire, Wales, situated near the junction of two streams, the Gwendraeth Fawr and the Gwendraeth Fach, a short distance from the shores of Carmarthen bay. Pop. (est. 1938) 2,952. Area, 4.44 sq.mi. It lies on the South Wales coastal lowland, at this point narrow and swampy. The Normans realized the importance of this site for defense as it commanded the way along the coast, as well as two minor valley ways northwards whence Welsh raids were frequent. Consequently Kidwelly has a magnificent 13th century castle. The original castle was built in 1094 by William de Londres a follower of Fitz Hammon who conquered South Wales. In 1135 Kidwelly was furiously attacked by Gwenllian, wife of Griffith ap Rhys, prince of South Wales. The attack ended in the defeat and execution of Gwenllian on a site that still bears her name—Maes Gwenllian. The castle and town passed later into the house of Lancaster, and Kidwelly received its first charter from Henry VI., its present charter dating from 1618. The town has a fine 13th–14th century church, once a chapel of a Benedictine priory. The comparatively limited hinterland of Kidwelly prevented its growth during Stuart and Georgian times, although much coastal trading was carried on. Accumulation of sand has silted up the small harbour and the ever increasing power of Llanelly focussed the new developments of the coal field. Kidwelly naturally became a small station on the G.W.R. main line but this has left but a little mark on the town besides increasing its export of cockles. It also has old established brick works.

KIEL, the chief naval port of Germany on the Baltic, a town of the Prussian province of Schleswig-Holstein. Pop. (1939) 272,311, including the incorporated suburbs. The name of Kiel appears as early as the 10th century in the form Kyl (probably from the Anglo-Saxon *Kille*=a safe place for ships). In 1242 it received the Lübeck rights; in the 14th century it acquired various trading privileges, having in 1284 entered the Hanseatic League. By the treaty of Kiel in 1814 Norway was ceded to Sweden. In 1773 Kiel became part of Denmark, and in 1866 it passed with the rest of Schleswig-Holstein to Prussia. It is situated at the southern end of the Kieler Förde, 70 m. by rail N. from Hamburg. It consists of an old town, lying between the harbour and a sheet of water called Kleiner Kiel, and a new town. In the old town stands the palace, built in the 13th century, enlarged in the 18th and restored after a fire in 1838. Other buildings are the church of St. Nicholas (restored in 1877–1884), dating from 1240, with a lofty steeple; the old town-hall on the market square; and the church of the Holy Ghost. Farther to the north and facing the bay is the university, founded in 1665 by Christian Albert, duke of Schleswig. The new buildings were erected in 1876, and connected with them are a library and a school of forestry. The university has a good medical school.

Kiel has a magnificent harbour, which has a comparatively uniform depth of water, averaging 40 ft., and close to the shores 20 ft. Its length is 11 mi. and its breadth varies from $\frac{1}{4}$ mi. at the southern end to $4\frac{1}{2}$ mi. at the mouth. The government docks and ship-building yards are on the east side facing the town and comprise basins capable of containing the largest warships afloat. During World War II the naval base was subjected to frequent and very damaging bombing raids by the British royal air force. The principal industries are connected with the navy and ship-building, but ordinarily embrace also flour-mills, oil-works, iron-foundries, printing-works, saw-mills, breweries, brick-works, soap, margarine and chemical making and fish-curing. There is an important trade in coal, timber, oils, machinery, cereals, fish, butter and cheese.

KIEL CANAL. The Kiel canal connects the North sea and the Baltic. The sluices at the entrances at Holtenau (the harbour of Kiel) and Brunsbüttekoog (mouth of the Elbe) are 1,082·6ft. long, 147ft. wide and 45·9ft. high. The canal is 53·3 nautical m. long and 37·07ft. deep. Vessels are admitted on it which do not exceed the following dimensions: depth 29·7ft., width 131·2ft., length 1,033·5ft., height of masts over the waterline 131·2 feet. Steam and motor propelled vessels pass up the canal under their own power. The highest speed permitted is 8·1 knots, the lowest 5·4. Other vessels are tugged, either by private tugs or the tugs of the canal administration, as desired. Pilots are compulsory. They come on board outside the canal wharves in front of the entrances and are advisers to the ships' captains, who remain responsible for the conduct of their ships while using the canal

The Kiel canal is owned by the German Reich, which administers it through the Reichskanalamt in Kiel. The managing director in Kiel and the port captains at the entrances to the canal are in charge of the shipping and the administration of their sluices under the Reichskanalamt. Special officials are in charge of the preservation of the canal works. Art. 380–386 of the Treaty of Versailles (June 28, 1919) lay down certain regulations respecting the Kiel canal. Canal and pilotage dues are limited to a rate sufficient to cover the cost of administration, maintenance and improvements. All mercantile and war vessels of nations at peace with Germany have permanent free use of the canal, without special permission, and on an equal footing (but as foreign ships of war pass through German territorial waters in approaching or leaving the canal they are expected to obtain permission through diplomatic channels). Subjects, goods and vessels of all nations enjoy equal treatment as regards payments and attention. Traffic on the canal is subject only to general police, shipping and sanitary and customs regulations. Goods in transit arrive under seal or are accompanied by customs officers and are not subject to any further customs formalities. In the event of violations of any of these conditions, or of disputes as to the interpretation of them, any interested Power can appeal to the jurisdiction instituted for the purpose by the League of Nations. A local German authority at Kiel is qualified to deal with disputes in the first instance.

The Kiel canal, being the safest, most convenient, shortest and cheapest route from the North sea and the Baltic, is increasingly used by merchant vessels. In 1913, 55,382 ships passed of 10,350,000 tons net displacement; in 1924, 45,843 ships of 14,070,000 tons; in 1927, 53,711 ships of 19,912,069 tons.

(M. C. M.)

KIELCE (kē-ĕl'tse), a province in S.W. Poland, surrounded by the provinces of Lodz, Warsaw, Lublin, Cracow and Silesia; occupied by Germany in 1939. Area 25,589 sq.km. Pop. (1931), 2,936,976, of which 90% were Poles, the rest mostly Jews. Its surface is an elevated plateau 800 to 1,000 ft. in altitude, inter-

sected by ravines and rising to 1,350 ft., as in the Lysogóry hills, famous in legend and in war. The province is bounded on the north, south and east by the Vistula and its tributary, the Pilica, and is drained by the Nida, the Radomka and other rivers running through deep valleys. Silurian and Devonian quartzites, dolomite, limestones and sandstones prevail in the north, and contain rich iron ores, lead and copper ores. Carboniferous deposits containing rich coal seams occur, chiefly in the south, particularly in the Dombrova coalfield. The Triassic deposits contain very rich zinc ores of considerable thickness, and lead. The Cretaceous deposits yield gypsum, chalk and sulphur. White and black marble are also extracted. The soil is of great variety, and fertile in parts, but owing to the proximity of the Carpathians, the climate is severe. Rye, oats, wheat, barley and buckwheat are grown, modern intensive culture is spreading and land fetches high prices. Over 50% of the area is cultivated. Grain is exported. Gardening is a thriving industry in the south; beet is grown for sugar in the south-east. Industries are considerably developed; zinc ores are extracted, as well as iron and sulphur, and the coal-field in the south-west is the most thickly-populated part of the province. Tiles, metallic goods, leather, timber goods and flour are the chief products of the manufactures. The province was the central part of the early Polish State and contains some of the most thickly populated parts of Poland. The chief towns are Kielce, Radom, Czenstochowa, Bendzin, Sosnowiec, Dombrowa, Zawiercie, Olkusz, Sandomierz, Pinczów, Iłża and Opatów.

Kielce was vulnerable to German attack in World War II and was overrun in the early stages of the Polish campaign.

KIELCE, a town of Poland, capital of the province of Kielce, 152 mi. by rail S. of Warsaw, situated in a picturesque hilly country. It has a castle, built in 1638, and formerly held the Zaluski library, which was taken to St. Petersburg (Leningrad) after the Partitions, but was restored to Poland by the Treaty of Riga in 1921. The principal factories are hemp-spinning, cotton-printing and cement works. The town was founded in 1173 by a bishop of Cracow. Pop. (1931) was 58,397. Kielce was occupied by Germany in World War II.

KIEPERT, HEINRICH (1818–1899), German geographer, was born at Berlin on July 31, 1818. He studied geography at the university of Berlin and became professor there in 1854. He was a leading authority on Asia Minor, which he visited four times (1841–88). He died at Berlin on April 21, 1899.

His works include: *Atlas von Hellas und den hellenischen Kolonien* (1840–46); *Historisch-geographischer Atlas der alten Welt* (1848); *Atlas antiquus* (1st ed., 1854); *Neuer Hand-atlas über alle Teile der Erde* (1855, *et seq.*); *Lehrbuch der alten Geographie* (1877–78); *Leitfaden der alten Geographie* (1879, Engl. trans. 1881); *Formae orbis antiqui; Corpus inscriptionum latinarum;* also a map of Asia Minor, *Karte des osmanischen Reiches in Asien* (1844 and 1869).

KIEPERT, RICHARD (1846–1915), German cartographer, was born at Weimar on Sept. 13, 1846, the son of Heinrich Kiepert (1818–1899), also a noted cartographer. He received the doctorate of philosophy at Jena in 1874; from that year until 1878 he was engaged in the compilation of Richthofen's atlas of China, and from 1875 to 1887 he edited a geographical periodical *Globus.* He prepared maps from the data collected by many well-known German travellers, such as Rohlfs, Barth and Möllendorf. After his father's death in 1899 he continued or brought up to date many of his maps, including the *Formae Orbis Antiqui* (1894, etc.). Perhaps his most important single work was the *Spezialkarte von Kleinasien* (Asia Minor) (1:400,000) (1902–8). He died in Berlin on Aug. 4, 1915.

KIERKEGAARD, SÖREN AABY (1813–1855), Danish philosopher, was born in Copenhagen on May 5, 1813. After graduating at the university in 1840, he travelled in Germany, and in 1842 settled in his native town where he died on Nov. 11, 1855. In 1843 he published his chief work, *Euten—Eller* (*Either—or*), a discussion of the ethical and aesthetic ideas of life. His philosophy was a reaction against the speculative thinkers—Steffens (*q.v.*), Niels Treschow (1751–1833) and F. C. Sibbern (1785–1872); it was based on the absolute dualism of faith and knowledge, and of thought and reality. In his last years, especially in his *Ojeblikke,* he denounced the theology and practice of the State church on the ground that religion was a matter for the individual soul.

See his posthumous autobiography, *Syns punktetfor min Forfatter-virksomhed* ("Standpoint of my Literary Work"); Georg Brandes, *Sören Kierkegaard* (Copenhagen, 1877); H. Höffding, *Sören Kierkegaard als philosoph* (Stuttgart 1896).

KIEV (Kē'ĕf), a city of the Ukrainian S.S.R. in 50° 30′ N., 30° 28′ E., on right bank of the Dnieper. Pop. (1939) 846,293. The city is of peculiar interest, for its rise was the first step in the Slav domination of the land that was to become Russia. Situated on the navigable Dnieper, in a region where the broad corridor between the Carpathians and the Pripet marshes opens towards the illimitable steppe, it was a critical point in the eastward expansion of the Slavs. East of the marshes, it was possible to turn north along the Dnieper and a string of primitive markets was thus formed which attracted Varangian traders. Its position on the soil map at the northern boundary of the black earth zone, with the less fertile forest soil to the north is instructive in view of Mavor's comment that after the first period of nuclear trade development, the subsequent history of Russia is the history of the exploitation of the soil. Even in the early period of the foundation of Kiev, the hunters trading in furs, honey, wax and slaves were beginning to engage in agriculture; the Russian *Annals* state that they paid tribute partly in furs and partly in the products of the *rala* or old Russian plough (Kluchevsky, *Course of Russian History,* Moscow, 1906–10).

History.—At what precise date a settlement first existed is unknown, but archaeology indicates that the plains of the Dnieper were inhabited in Palaeolithic times, and burial mounds (kurgans) of subsequent populations are present in abundance. According to Nestor's legend Kiev was founded by three brothers Kiy, Shchek and Khoriv, and after their death was seized by two Varangians (Scandinavians) Askold and Dir, followers of Rurik, about 864, but the ancient trading link along the Dnieper is far older than this, and the Kiev which they captured was already sufficiently mature to be paying tribute to the Khazars. The princes of Kiev became the organizers and defenders of the flotilla of small craft that sailed each June down the Dnieper to the Black sea and Tsargrad (Byzantium), and through the Sea of Azov, the Don and Volga made contacts with eastern Islam. It was mainly a barter trade, Byzantine silks, stuffs, gold, wine and fruit in exchange for Russian furs, honey, wax, corn and slaves, and few Byzantine coins reached Russia, though colonial Roman coins of the 3rd and 4th centuries, and silver *dirhems* stamped at Samarkand, Balkh, Merv, etc., were found in 1869. By 880 Kiev had become the capital of the Varangian-Russian principality. From Kiev, too, marauding expeditions against Byzantium were made in the 9th and 10th centuries until, in 988, Prince Vladimir was baptized in the Dnieper and thus made Kiev the first home of the Greek Church in Russia.

The link with the Byzantine East survived the fall of Kiev; the decision of Vladimir and his council to reject Islam and Western Christianity and accept the Eastern, Greek or Orthodox faith had momentous consequences quite apart from its cultural importance. Its political implications are written in the union of the Orthodox Russian States under Moscow, in the deep cleavage between the Poles and the Russians and in the determination to free the country from the Mussulman yoke. Under the Kiev princes, Oleg, Svyatoslav, St. Vladimir and Yaroslav the Lawgiver, the principality of Kiev developed and the city became the centre of a wealthy court and the beauty and number of its churches was great, though the "400 churches and 8 markets" reported by Thietmar of Merseburg is probably an exaggeration. The learning of its princes and the beautiful workmanship of the frescoes and mosaics, the gold and silver ornaments, and the illuminated manuscripts bear witness to the culture of the ancient city. But civil strife among the Slav princes broke out and in 1169 Kiev was captured by Andrey Bogolyubski and never recovered its supremacy.

In 1240 the Tatars under Batu, a grand-nephew of Jenghiz Khan sacked Kiev and five years later, when Carpini passed

through the "Mother of Russian Cities," nothing remained but ruins and a few houses and survivors. From 1240 to 1320 it remained under Tatar rule, and passed to Lithuania until 1569, during which period it was laid in ruins by the khan of Crimea in 1483. It was under Polish rule until 1654 and was finally incorporated in Russia in 1686. Thus the proximity to western trade and to the rich steppe region, which at first led to its rise, later led to its embroilment in the political struggles of the west and to its exposure to devastation from the nomad conquerors of the steppe. In 1499 Kiev obtained the "Magdeburg Right," which secured to it self-government, its own court of law, coinage and Free Trade. The Ukrainian "Fraternities" which developed, on religious grounds, the struggle against Polish rule, had their centre in Kiev. From 1667 Kiev was governed by a *hetman* or elected city ruler: the hetman Mazeppa restored the old churches in the 18th century and built new ones. But from the time of Peter the Great, a policy of Russification of the Ukraine was organized from Kiev, and the fortress of Pechersk, around which a Great Russian population was settled, was erected. In 1797 the Contract Fair was removed from Dubno to Kiev and thus stimulated its trade, while in the early 19th century the development of agriculture and the growing of sugar beet in the Ukraine developed sugar refining in the town.

An industrial proletariat developed, and side by side with it, there grew the Young Ukrainian National movement. In 1905 the workers joined the revolutionary movement and the garrison rebelled, but the revolt was mercilessly suppressed and followed by a terrible Jewish pogrom which lasted for three days. Following these tragedies the Ukrainian National Movement took a more decisive character, but was checked by the outbreak of war in 1914. After the February 1917 revolution, a Central Rada was formed which aimed at separating the Ukraine from Russia. At the same time the Kiev Soviet was formed under Bolshevik leadership, and civil war broke out between the two parties. After the October 1917 revolution, the Rada proclaimed the Ukrainian Democratic Republic, with Kiev as its capital. In Jan. 1918 the Red Army captured the town and proclaimed a Soviet republic, but retreated before the German troops called in by the Rada. Friction between the German troops and the Rada brought about the downfall of the latter and the appointment of General Skoropadsky as *hetman.*

After the revolution in Germany and the consequent withdrawal of German troops in 1918 Petlura replaced General Skoropadsky, and in 1919 the Soviet troops again captured the city. They retreated in Aug. 1919, on the advance of Denikin's army. Conflicts then raged between the troops of Petlura and those of Denikin, and after fierce street fighting, Denikin obtained the mastery. Soviet troops again captured the city in Dec. 1919. But in May 1920, the Poles, aided by Petlura, retook the city. They were driven out in the following month and peace at last settled on the exhausted city, only to be followed by famine and disease. During the fighting and bombardment much of the city was burned or destroyed and many works of art irrevocably lost, especially those of the Pechersky district. Though repairs have been carried out since 1920, and the bridge, blown up by the Poles on their retreat, has been restored, many heaps of ruins still recall the terrible time, as do the graves of the victims and the name of the street "Victims of the Revolution." In view of the unsettled conditions in Kiev, Kharkov was made the capital of the Soviet Ukrainian Republic.

Post-Revolution Recovery.—The vitality of the city, however, has led to rapid recovery and it is now the third largest city of the Soviet Union. The Kiev Contract Fair, so called because the contracts made here formerly regulated production, held from Feb. 1 to March 15, was restored in 1923, and its turnover in 1927 amounted to 44 million gold roubles. Kiev industrial enterprises in 1927 included 15 smelting works, 12 tobacco and cigarette factories, mainly makhorka tobacco, 11 flourmills, and sugar refining, glass, nail, distilling, yeast, leather and shoe factories. Industries recently established include the production of machinery for leather manufactures, hydraulic presses for the ironing of chrome leather, and the manufacture of grain elevators. The freightage of goods on the Dnieper at Kiev is ... the town forms a distributing centre for goods tranship... sent by the four railway lines that converge on it, and ... collecting centre for export along the river. Formerly Bessa... goods formed a large item of trade and there was a Bessar... quarter in the town. In addition to its river and railway c... munications, a regular air service to Kharkov now runs tw... weekly, occupying 3½ hours, with a station at Poltava from wh... there is an air service to Odessa.

Topography.—The town is mainly built on the hilly bluffs of the right bank of the river rising to about 300 ft. above the level of the river and separated by ravines; the low, level country of the left bank stretches to the horizon. The river here divides into two arms, with the island of Tukhanov in the centre. In spring the river rises 15 to 20 ft. and the island, the left bank and the lower parts of the right bank, are submerged. The bed of the river is sandy and shifting and is only kept from returning to the more easterly channel along which it formerly flowed by costly engineering works. The low-lying Podol, in which the Contract Fair is held, and where, up to the end of the 14th century were the trading quarters of the Armenians and Genoese, surrounded by an earthen wall, is a very ancient part of the city, where, under Lithuanian and Polish rule, the life of Kiev was concentrated. There is a large Jewish quarter here, which has been the scene of many revolting *pogroms* (massacres).

Of the Old Town on the hills above, there remains the Golden Gate, a ruin of the 11th century earthen ramparts, bastions and gates. The gate was built in 1037, but only the side walls, enclosed by a railing, now remain. Near it is the theatre in which Stolypin, the prime minister of Russia, was shot in 1911 and which is now a forum for congresses. The cathedral of St. Sophia, the oldest in Russia, built in the 11th century, has been rebuilt so many times that its original form is lost, and only a few of its 19 domes date back to mediaeval times. The golden cupola of its four-storeyed campanile is visible for many miles across the steppe. The interior of the cathedral has beautiful 11th century frescoes and mosaics, covered with whitewash during the Uniat occupation of the cathedral in the 17th century and rediscovered in 1842. They are the oldest monuments of Russo-Byzantine art and represent hunting scenes, gladiatorial combats, games and dances. The church of St. Andrew, rebuilt in florid style (1744–67) stands on the spot where, according to Russian tradition, that apostle stood and declared that the hill would become the site of a great city. The monastery of St. Michael, sometimes called of the Golden Heads, because of the 15 gilded cupolas of the original church, was built in 1108 and restored by the Cossack chieftain, Bogdan Chmielnicki, who released the city from Polish rule in 1651, when it came under the rule of Moscow. Near it is a column of the Irene monastery, built in the 11th century, which was discovered during street levelling operations in the 19th century. The Decimal Church (1842) stands on the site of a 10th century church destroyed by the Tatars, in the environs of which were the market and palaces. Foundations of the palace of the Grand Dukes were discovered in its churchyard. The Andreas Church, built by Rastrelli in 1750, is picturesquely situated on the edge of a cliff overlooking the Dnieper and the Podol quarter of the town. Upon the Perun hill, where stood the ancient temple of the pagan god Perun, is the dome-crowned church of the Three Saints (1640).

On the Pechersky hill was the famous Pechersky (Cave) monastery; in the 18th century a fortress was erected here, and its arsenal was the scene of desperate fighting during the 1917–20 civil wars, when much of the district was reduced to ruins. The monastery or *Lavra* was an ancient and very sacred spot. The hetman Mazeppa replaced the wooden 12th century building by imposing towers and stone walls. In pre-revolution times it was visited annually by 250,000 pilgrims, its Cavern monastery, with its caves and catacombs where the bodies of the monks were buried, was a special object of pilgrimage. The foundation of the monastery is ascribed to the 11th century saints Anthony and Hilarion, and by the middle of the 12th century it had become wealthy and beautiful. Completely ruined by the Mongol Batu

and his hordes in 1240, it remained deserted for two centuries. The present building dates from the time of Peter the Great, a fire having destroyed a previous building. Among the more notable names of the saints buried in the catacombs are Nestor the Chronicler and Iliya of Murom, the old Cossack of the Russian epics. Under Soviet rule the monastery has been converted into a home for disabled soldiers, with workshops. The printing press, founded in the Lavra in 1601, became in the 17th century the centre of Ukrainian cultural achievements. When the Russianizing of the Ukraine became a policy of the tsarist Government, only books of a religious character were allowed to be printed here. At the present time the press is in the hands of the Ukrainian academy of science.

The school of painting and engraving organized by the monastery was famous throughout the empire; it is now a workshop for the production of ikons. A museum of religious cults has been formed since the revolution from the collections of the Ecclesiastical academy, the Bratsky monastery and the Pechersky Lavra itself and is situated in one part of the Lavra. The Nikolaiev cathedral, built by the hetman Mazeppa, was completely destroyed by bombardment in 1919. Near its ruins is the former graveyard of the Kiev nobility, with a chapel in classical style built on the supposed site of the grave of Askold. In the former Bratsky monastery is the cathedral of the Baptism of Christ (1695), typical of Ukrainian baroque, with grape vine decoration. The Academy of the Bratsky monastery was in the 16th century a school in which Ukrainian scientists, artists and statesmen were trained. Later it became a theological seminary. Its rich library was handed over to the Ukrainian science library after the 1917 revolution. The buildings of the Bratsky monastery are now partly the headquarters of the local Communist party and partly a medical school. Within the Florus monastery, a church of the Resurrection was built in 1920. Opposite the entrance to the Florus monastery is the former Catholic Dominican Church, erected during Polish rule in the 16th century, destroyed by the Cossacks under Bogdan Chmielnicki and transformed into the Greek Orthodox Church of Peter and Paul by Peter the Great. The former Pokrovsky monastery has been converted since the revolution into a Workers' Home, School, Club and Hospital.

The city has several theatres, including a Jewish state theatre. Of the museums, the All-Ukrainian historical museum is specially valuable for its rich archaeological exhibits, and the Zoological for its collections of insectivora. The State art museum contains fine examples of Dutch and Flemish schools, paintings by Spanish masters, Gobelin tapestries and Persian ceramics. Its former university is now an academy of science, and there are art, medical and agricultural institutes. An interesting experiment in the reclamation of homeless children is the Children's City, in which there are approximately 1,000 children, who cultivate their own fields and have workshops of their own.

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KIKUYU, a Presbyterian Mission station north of Nairobi, Kenya Colony, in eastern Africa. The Kikuyu reserve is the habitation of the Kikuyu, one of Kenya's principal tribes. It is a forest region which is being subjected to cultivation by the natives. (*See* BRITISH EAST AFRICA.)

KILBARCHAN, a town and civil parish, Renfrewshire, Scotland, with a station on the L.M.S. railway, 13 mi. W. by S. of Glasgow, and 1 mi. from Milliken Park station. Pop. (1931) 2,747. In a niche in the town steeple (erected in 1755) is the statue of the famous piper, Habbie Simson, who died about the beginning of the 17th century. The linen and cotton industries have languished. Two miles S.W. is a great rock of greenstone called Clochoderrick, 12 ft. in height, 22 ft. in length, and 17 ft. in breadth. About 2 mi. N.W. on Gryfe Water, lies Bridge of Weir (pop. 2,740), the industries of which include tanning and currying and calico-printing. It has a station on the L.M.S. railway. Immediately to the south-west of Bridge of Weir are the ruins of Ranfurly castle, the ancient seat of the Knoxes. About 4 mi. N.W. of Bridge of Weir lies the holiday resort of Kilmacolm (pop. *c.* 2,700), with station on L.M.S. railway. It has a golf-course, public park and hydropathic establishment. Civil parish pop. (1931) Kilbarchan 7,511; Kilmacolm 5,402.

KILBIRNIE, town, civil parish and county district, Ayrshire, Scotland, on the Garnock, 20½ mi. S.W. of Glasgow, with a station on the L.M.S.R. Pop. of civil parish (1931) 8,193. The industries include flax-spinning, rope, linen-thread and fishing net manufactures, and iron and steel works. The parish church dates mostly from the Reformation. In the churchyard are effigies of Capt. Thomas Crawford of Jordanhill (d. 1603), who in 1575 effected the surprise of Dumbarton castle, and his lady. Near Kilbirnie Place, a modern mansion, are the ruins of Kilbirnie castle, an ancient seat of the earls of Crawford, destroyed by fire in 1757. About 1 mi. E. is Kilbirnie Loch, 1¼ mi. long. Pop. of county district, 20,997.

KILDARE, EARLS OF: *see* FITZGERALD.

KILDARE, a county of Eire in the province of Leinster, bounded west by Co. Leix (formerly Queen's County) and Co. Offaly (formerly King's County), north by Meath, east by Dublin and Wicklow, and south by Carlow. The area is 418,644 acres or about 654 sq.mi. Pop. (1936) 57,892. The greater part of the county is formed of grey Carboniferous limestone, well seen in the flat land about Clane. Along the south-east the broken ground of Silurian shales forms the higher country, rising towards the Leinster chain, the granite core of which appears in the south round Castledermot. A parallel ridge of Silurian rocks rises from the plain north of Kildare town (Hill of Allen [300 ft.] and Chair of Kildare), with some Old Red Sandstone on its flanks. The low ground is diversified by eskers and masses of glacial gravel, notably at the dry sandy plateau of the Curragh; but in part it retains sufficient moisture to give rise to extensive bogs. The principal rivers are the Boyne, which with its tributary the Blackwater rises in the north of the county, but soon passes into Meath; the Barrow, which forms the boundary of Kildare with Co. Leix, and receives the Greese and the Lane shortly after entering Kildare; the Lesser Barrow, which flows southward from the Bog of Allen to near Rathangan; and the Liffey, which enters the county near Ballymore Eustace, and flowing north-west and then north-east quits it at Leixlip, having received the Morrel between Celbridge and Clane, and the Ryewater at Leixlip. Trout are taken in the upper waters, and there are salmon reaches near Leixlip.

History and Antiquities.—According to the *Book of Leinster* the original name of Kildare was *Druim Criaidh* (Drumcree), which it retained until the time of St. Brigit, after which it was changed to *Cilldara,* "the church of the oak," from an old oak under whose shadow the saint had constructed her cell. Kildare was a liberty of Dublin until 1296, when it was constituted a separate county.

There are several large standing stones, the principal being those at Punchestown, Harristown, Jigginstown and Mullamast. Among remarkable earthworks are the raths at Mullamast, Knockcaellagh near Kilcullen and Ardscull near Naas, and the numerous sepulchral mounds in the Curragh. Of the round towers the finest is that of Kildare; there are remains of others at Taghadoe, Old Kilcullen, Oughterard and Castledermot.

There are remains of a Franciscan abbey at Castledermot. At Graney are ruins of an Augustinian nunnery and portions of a building said to have belonged to the Knights Templars. The town of Kildare has ruins of four monastic buildings, including the nunnery founded by St. Brigit. The site of a monastery at Old Kilcullen, said to date from the time of St. Patrick, is marked by two stone crosses, one of which is curiously sculptured. On the Liffey are the remains of Great Connel abbey near Celbridge, of St. Wolstan's near Celbridge, and of New abbey. At Moone, where there was a Franciscan monastery, are the remains of an ancient cross with curious sculpturings. Among castles may be

mentioned those of Athy and Castledermot, built about the time of the Anglo-Norman invasion; Maynooth castle, built by the Fitzgeralds; Kilkea, restored within the 19th century; and Timolin, erected in the reign of King John.

Owing to a considerable degree to the large extent of bog, the climate of the northern districts is very moist, and fogs are frequent, but the eastern portion is drier, and the climate of the Liffey valley is mild and healthy. The soil is principally a rich deep loam inclining occasionally to clay, easily cultivated and very fertile if properly drained. About 40,000 acres in the northern part of the county are included in the Bog of Allen, which is, however, intersected in many places by elevated tracts of firm ground. To the east of the town of Kildare is the Curragh, an undulating down upwards of 4,800 acres in extent. The most fertile and highly cultivated districts of Kildare are the valleys of the Liffey and a tract in the south watered by the Greese. The demesne lands along the valley of the Liffey are finely wooded. The pastures which are not ploughed are generally very rich. Wheat is a scanty crop, but oats, barley, turnips and potatoes are all considerably cultivated. Cattle and sheep are grazed extensively. Of the former, crosses with the shorthorn or the Durham are the commonest breed. Leicesters are the principal breed of sheep. Poultry farming is a growing industry.

There are a few small cotton, woollen and paper mills, as well as breweries and distilleries, and several corn mills. Large quantities of turf are exported to Dublin by canal. The lines of the Great Southern follow the northern boundary of the county, with a branch to Carbury and Edenderry, and cross the county by way of Newbridge and Kildare, with southward branches to Naas (and Tullow, Co. Carlow) and to Athy and the south. The northern border is traversed by the Royal canal, which connects Dublin with the Shannon at Cloondara. Farther south the Grand canal, which connects Dublin with the Shannon at Shannon Harbour, occupies the valley of the Liffey until at Sallins it enters the Bog of Allen, passing into Co. Offaly near the source of the Boyne. Several branch canals afford communication with the southern districts.

The constituency of Kildare-Carlow returns 4 members to Dáil Eireann.

KILDARE, a market town and the county town of Co. Kildare, Eire, 30 mi. S.W. from Dublin by rail. Pop. (1936) 1,758. There is a Protestant cathedral church, the diocese of which was united with Dublin in 1846. St. Brigit, or Bridget founded the religious community in the 5th century. The cathedral suffered at the hands of the Danes and the Irish, and during the Elizabethan wars. Extensive restoration was begun in 1875; the choir, which dated from the late 17th century, was rebuilt in 1896. Close to the church are an ancient cross and a round tower with a doorway showing Romanesque ornament. There are remains of a 13th century castle and of a Carmelite monastery. Kildare was incorporated by James II., and returned two members to the Irish parliament.

KILHAM, ALEXANDER (1762–1798), English Methodist, was born at Epworth, Lincolnshire, on July 10, 1762. He was admitted by John Wesley in 1785 into the regular itinerant ministry. He became the leader and spokesman of the democratic party in the Connection which claimed for the laity the free election of class-leaders and stewards, and equal representation with ministers at Conference. They also contended that the ministry should possess no official authority or pastoral prerogative, but should merely carry into effect the decisions of majorities in the different meetings. Kilham further advocated the complete separation of the Methodists from the Anglican Church. In the violent controversy that ensued he wrote many pamphlets; for this he was arraigned before the Conference of 1796 and expelled, and he then founded the Methodist New Connection (1798, merged since 1906 in the United Methodist Church).

KILIAN (CHILIAN, KILLIAN), **ST.,** British missionary bishop and the apostle of eastern Franconia, where he began his labours towards the end of the 7th century. According to Hrabanus Maurus Kilian was a native of Ireland, whence with Coloman and Totman he went to eastern Franconia. After having preached the gospel in Würzburg, the whole party were put to death by the orders of an unjust judge named Gozbert. The relics of the three martyrs are venerated in the cathedral of that town. His festival is on July 8.

See *Acta Sanctorum,* Julii, ii. 599–619; F. Emmerich, *Der heilige Kilian* (Würzburg, 1896); J. O'Hanlon, *Lives of the Irish Saints,* vii. 122–143 (Dublin, 1875–1904); A. Hauck, *Kirchengeschichte Deutschlands,* 3rd ed., i. 382 *seq.*

KILIMANJARO (kĭ-lĭ-măn-jah′rō), a mountain in East Africa, its centre lying in 3° 5′ S. and 37° 23′ E.; the highest known summit of Africa, rising as a volcanic cone from a plateau of about 3,000 ft. to 19,321 feet. Though completely isolated it is one of several summits on the eastern edge of the plateau of equatorial Africa. Along with Mount Kenya (*q.v.*), 200 m. to the north, and Mount Meru, 25 m. due west, it stands on a line of volcanic cones. Kilimanjaro lies on an east to west fault which is crossed by other faults near the peak. The volcanic rocks are leucitic and the oldest flows are of kenyte (trachy-dolerite suite) covered by a nepheline-phonolite suite.

The major axis of Kilimanjaro runs almost east and west, and on it rise the two principal summits, Kibo (west), Mawenzi (east). Kibo, the higher, is a truncated cone with a nearly perfect extinct crater, and marks a comparatively recent period of volcanic activity; while Mawenzi (16,892 ft.) is the older core of a former summit, of which the crater walls have been removed by denudation. The two peaks, about 7 m. apart, are connected by a saddle (14,000 ft.), below which the vast mass slopes, in a typical volcanic curve, to the plains below. The sides are furrowed on the south and east by a large number of narrow ravines, the streams in which feed the Pangani and Lake Jipe (south) and the Tsavo tributary of the Sabaki (east). South-west of Kibo, the Shira ridge seems to be of independent origin, while in the north-west a rugged group of cones, of comparatively recent origin, has poured forth vast lava-flows. In the south-east is another ridge running down from Mawenzi.

The lava slopes of the Kibo peak are covered to a depth of some 200 ft. with an ice-cap, which, where ravines occur, takes the form of genuine glaciers. The crater walls are highest on the south. The rim here sinks precipitously some 600 ft. to the interior of the crater, which measures rather over 2,000 yd. in diameter, and is in part covered by ice, in part by a bare cone of ashes. On the west the rim is breached, allowing the passage of an important glacier. Lower down this cleft is occupied by two glaciers, one of which reaches a lower level (13,800 ft.) than any other on Kilimanjaro. On the north-west three large glaciers reach down to 16,000 ft.

Mawenzi peak has no permanent ice-cap. The rock of which it is composed has become very jagged by denudation, forming stupendous walls and precipices. On the east the peak falls with great abruptness some 6,500 ft. to a vast ravine, due apparently to dislocation. Below this the slope is more gradual and more symmetrical. Like the other high mountains of eastern Africa, Kilimanjaro presents well-defined zones of vegetation. The lowest slopes are arid and scantily covered with scrub, but between 4,000 and 6,000 ft. on the south side the slopes are well watered and cultivated. The forest zone begins, on the south, at about 6,500 ft., and extends to 9,500, but in the north it is narrower, and in the north-west, the driest quarter of the mountain, almost disappears. In the alpine zone, marked especially by tree lobelias and *Senecio,* flowering plants extend up to 15,700 ft. on the sheltered south-west flank of Mawenzi, but elsewhere vegetation grows only in dwarfed patches beyond 13,000 ft. The special fauna and flora of the upper zone are akin to those of other high African mountains. The southern slopes, between 4,000 and 6,000 ft., form the well-peopled country of Chaga, divided into small districts.

Johannes Rebmann of the Church Missionary Society journeyed inland from Mombasa in 1848 and discovered Kilimanjaro, which is some 200 m. inland. Visits were paid to the mountain by Baron Karl von der Decken (1861 and 1862) and Charles New (1867), Joseph Thomson (1883), Sir H. H. Johnston (1884) and others. The mountain was studied by F. Jaeger in 1907.

It has been the special study of Dr. Hans Meyer, who made four expeditions to it, accomplishing the first ascent to the summit in 1889. In 1884 the mountain was secured by a British company, in 1886 it was ceded to Germany and in 1919 was included in the British mandated territory of Tanganyika.

See Hans Meyer, *Across East African Glaciers* (1891); *Der Kilimanjaro* (Berlin, 1900); F. Jaeger, *Forsch. Hochregion d. Kilimandscharo* (*Mitt. deutsch. Schutzgeb., 1909*).

KILIN or CH'-I-LIN, one of the four symbolical creatures which in Chinese mythology are believed to keep watch and ward over the Celestial Empire. It is a unicorn, portrayed in Chinese art as having the body and legs of a deer and an ox's tail. Its advent on earth heralds an age of enlightened government and civic prosperity. It is regarded as the noblest of the animal creation and as the incarnation of fire, water, wood, metal and earth. It lives for a thousand years, and is believed to step so softly as to leave no footprints and to crush no living thing.

KILINDINI, a commodious landlocked harbour at the south-west end of Mombasa island, East Africa, and the port for Kenya and Uganda. Officially it forms part of Mombasa harbour. (*See* MOMBASA.)

KILKEE, a seaside resort on Moore bay in Co. Clare, Eire. Pop. (1936) 1,863. Bishop's Island, an isolated rock in the vicinity, has remains of an oratory and house ascribed to the recluse St. Senan.

KILKENNY, a county of Eire in the province of Leinster, bounded north by Co. Leix, east by Carlow and Wexford, south by Waterford, and west by Waterford and Tipperary. Area 509,470 ac. or about 800 sq.mi. Pop. (1936), 68,614. The greater part of Kilkenny forms the south-eastern extremity of the central plain of Ireland and is composed largely of Carboniferous limestone. The Old Red Sandstone, with a Silurian core, forms the high ridge of Slievenaman in the south, and its upper laminated beds contain *Archanodon,* the earliest known fresh-water mollusc, and plant remains, at Kiltorcan near Ballyhale. The Leinster granite appears mainly as inliers in the Silurian of the south-east. The high synclinal coalfield forms the most important feature of the north of the county. A prolongation of the field runs out south-west by Tullaroan. The coal of the basin is anthracite, and the most productive portions are at Castlecomer. Hematitic iron of a rich quality is found in the Cambro-Silurian rocks at several places; and tradition asserts that silver shields were made about 850 B.C. at Argetros or Silverwood on the Nore. Manganese is obtained in some of the limestone quarries, and also near the Barrow. Marl is abundant in various districts. Pipeclay and potter's clay are found, and also yellow ochre. Copper occurs near Knocktopher.

The principal rivers, the Suir, the Barrow and the Nore, rise in the Slieve Bloom mountains (Co. Tipperary and Co. Leix), and flow into Waterford harbour. The Suir forms the boundary of the county with Waterford, and is navigable for small vessels to Carrick. The Nore, navigable to Inistioge, enters the county at its north-western boundary, and flows by Kilkenny to the Barrow, 9 m. above Ross, having received the King's river at Jerpoint and the Argula near Inistioge. The Barrow, navigable beyond the limits of Kilkenny into Kildare, forms the eastern boundary of the county from near New Bridge. Turloughs or temporary lakes are occasionally formed by the bursting up of underground streams.

Kilkenny is believed to have been created by King John. It had previously formed part of the kingdom of Ossory, and was one of the liberties granted to the heiresses of Strongbow with palatinate rights. There are ancient stone circles on Slieve Grian and on the hill of Cloghmanta. Many dolmens and raths (or encampments) occur in the county. Five round towers are known, one adjoining the Protestant cathedral of Kilkenny, and others at Tulloherin, Kilree, Fertagh and Aghaviller. There are remains of a Cistercian monastery at Jerpoint, said to have been founded by Dunnough, King of Ossory, and of another of the same order at Graigue, founded in 1212. The Dominicans had an abbey at Rosbercon, founded in 1267, and another at Thomastown of which there are some remains. The Carmelites had a monastery at Knocktopher. There are remains of an Augustinian monastery at Inistioge, and of priories at Callan and Kells. There are also ruins of the castles of Callan, Legan, Grenan and Clonamery, besides the ancient portions of Kilkenny castle.

The surface occupied by bog or wet land is very small. Myrtle and arbutus grow in the open in winter. There is less rain than at Dublin, and vegetation is earlier than in the adjacent counties. Along the banks of the Suir, Nore and Barrow are rich alluvial deposits. Above the coal-measures in the northern part of the county there is a moorland tract devoted chiefly to pasturage. Above the limestone is a deep rich loam well adapted for the growth of wheat. The heath-covered hills afford excellent honey. Oats, barley, turnips and potatoes are grown; the cultivation of wheat has declined. Cattle, sheep, pigs and poultry are reared, the Kerry cattle being in considerable request.

The linen manufacture introduced in the 17th century to supersede the woollen manufacture gradually became extinct and that now carried on is also very small. There are, however, breweries, distilleries, tanneries and flour-mills, as well as marble polishing works. The Carboniferous sandstones furnish the hard pavement slabs sold as "Carlow flags." The black limestone with white shells in it at Kilkenny is quarried as an ornamental marble. Good slates are quarried at Kilmoganny, in the Silurian inlier on the Slievenaman range. The county is traversed from north to south by the Maryborough, Kilkenny and Waterford branch of the Great Southern railway, and the Waterford and Limerick line runs for a short distance through the southern part of the county.

Kilkenny returns three members to the Dáil Eireann.

KILKENNY, a city and municipal borough, the capital of Co. Kilkenny, Eire, on the Nore, 81 mi. S.W. of Dublin by rail. Pop. (1936), 22,080; city proper, 10,237.

Kilkenny proper owes its origin to an English settlement in the time of Strongbow, and it received a charter from William Marshall, who married Strongbow's daughter. This charter was confirmed by Edward III., and from Edward IV. Irishtown received the privilege of choosing a portreeve independent of Kilkenny. By Elizabeth, the boroughs, while retaining their distinct rights, were constituted one corporation, which in 1609 was made a free borough by James I., and in the following year a free city. James II. constituted the city and liberties a distinct county, to be styled the county of the city of Kilkenny, the burgesses of Irishtown continuing, however, to elect a portreeve until the passing of the Municipal Reform Act. Frequent parliaments were held at Kilkenny from the 14th to the 16th century. In 1642 it was the meeting-place of the assembly of confederate Catholics. In 1650 it surrendered to the parliamentary forces.

It consists of Englishtown (or Kilkenny proper) and Irishtown, separated by a rivulet, but although Irishtown retains its name, it is now included in the borough of Kilkenny. The present cathedral of St. Canice, from whom the town takes its name, dates from about 1255. The see of Ossory, which originated in the monastery of Aghaboe founded by St. Canice in the 6th century, and was named after the early kingdom of Ossory, was probably moved to Kilkenny about the year 1200. In 1835 the diocese of Ferns and Leighlin was united to it. The cathedral has a length from east to west of 226 ft., and a breadth along the transepts from north to south of 123 ft. It is mainly in Early English style, but was extensively restored in 1865. The north transept incorporates the parish church. The adjacent library of St. Canice contains many ancient books. A short distance from the south transept is a round tower 100 ft. high. The episcopal palace near the east end of the cathedral was erected in the time of Edward III. and enlarged in 1735. The Protestant church of St. Mary is of earlier foundation than the present cathedral; that of St. John includes a portion of the hospital of St. John founded about 1220; and the Roman Catholic cathedral, of the diocese of Ossory, dedicated to St. Mary (1843–1857), is a cruciform structure in the Early Pointed style. There are important remains of two monasteries—the Dominican abbey founded in 1225, and now

used as a Roman Catholic church; and the Franciscan abbey on the banks of the Nore, founded about 1230. The castle stands on a precipice above the Nore. It was built by Strongbow, but rebuilt by William Marshall after the destruction of the first castle in 1175. The Protestant college of St. John, originally founded in the 16th century, and re-endowed in 1684, stands near the river opposite the castle. In it Swift, Farquhar, Congreve and Bishop Berkeley received part of their education. The Roman Catholic college of St. Kyran (Kieran) was completed about 1840.

In the neighbourhood are collieries as well as long-established quarries for marble, the manufactures connected with which are an important industry of the town. The city also possesses corn-mills, breweries and tanneries. Not far from the city are the limestone caverns of Dunmore, which have yielded numerous human remains.

KILKENNY, STATUTE OF, the name given to a body of laws promulgated in 1366 with the object of strengthening the English authority in Ireland. In 1361, Edward III. sent his second son, Lionel, duke of Clarence, who was already married to an Irish heiress, to represent him in Ireland. From the English point of view the country was in an unsatisfactory condition. Lawless and predatory, the English settlers were hardly distinguishable from the native Irish, and the authority of the English king over both had almost vanished. Lionel and his advisers summoned a parliament to meet at Kilkenny early in 1366 and here the statute of Kilkenny was passed into law. It began by relating how the existing lawlessness was due to the malign influence of the Irish and, like Magna Carta, its first positive provision declared that the church should be free. As a prime remedy for the prevailing evils all marriages between the two races were forbidden. Englishmen must not speak the Irish tongue, nor receive Irish minstrels into their dwellings, nor even ride in the Irish fashion; while to give or sell horses or armour to the Irish was made a treasonable offence. Moreover English and not the Brehon law was to be employed, and no Irishman could legally be received into a religious house, nor presented to a benefice. The statute also contained clauses for compelling the English settlers to keep the laws. For each county four wardens of the peace were to be appointed, while the sheriffs were to hold their tourns twice a year and were not to oppress the people by their exactions. An attempt was made to prevent the emigration of labourers, and finally the spiritual arm was invoked to secure obedience by threats of excommunication. The statute, although continually re-enacted represents an ideal rather than a practical legislative measure, and under the conditions then prevalent in Ireland little could be done toward carrying out its provisions.

The full text is published in the *Statutes and Ordinances of Ireland. John to Henry V.*, by H. F. Berry (1907). *See* also E. Curtis, *Mediaeval Ireland* (1923), pp. 283–286.

KILLALA (pron. *Killálla*), a small town on the north coast of Co. Mayo, Eire. Pop. (1936) 449. It was for many centuries a bishop's see, the foundation being attributed to St. Patrick in the 5th century, but the diocese was joined with Achonry early in the 17th century and with Tuam in 1833. The cathedral church of St. Patrick is a plain 17th century structure. There is a souterrain, evidently connected with a rath, or encampment, in the graveyard. A round tower, 84 ft. in height, stands on a hill. Near the Moy river, south of Killala, are the abbeys of Moyne and Roserk or Rosserick, both Decorated in style, and both possessing fine cloisters. At Rathfran, 2 m. N., is a Dominican abbey (1274), and in the neighbourhood are camps, cromlechs, and an inscribed ogham stone, 12 ft. in height. Killala gives name to a Roman Catholic diocese, the seat of which, however, is at Ballina.

KILLALOE, a town of Co. Clare, Eire, at the lower extremity of Lough Derg on the river Shannon, at the foot of the Slieve Bernagh mountains. Pop. (1936) 890. The cathedral of St. Flannan occupies the site of a 6th century church founded by St. Dalua. The present building is mainly of the 12th century, with a Romanesque doorway. In the churchyard is an ancient oratory said to date from the period of St. Dalua. Near Killaloe stood Brian Boru's palace of Kincora, the capital of the kings of Munster. The town is connected with Ballina (Co. Tipperary) by a bridge of 13 arches.

Slate is quarried and there were formerly woollen manufactures.

It is a centre for the Shannon salmon-fishing and for trout-fishing in Lough Derg. It gives name to Protestant and Roman Catholic dioceses.

KILLARNEY, a market town of Co. Kerry, Eire, 185¼ mi. S.W. from Dublin by rail. Pop. of urban district (1936) 5,609. Here are the Roman Catholic cathedral and bishop's palace of the diocese of Kerry. The only manufacture of importance now carried on at Killarney is that of fancy articles from arbutus wood; but it owed its origin to iron-smelting works, for which abundant fuel was obtained from the neighbouring forests.

The lakes of Killarney, about 1½ m. from the town, are surrounded by mountains. The lower lake, or Lough Leane (area, 5,001 ac.), is studded with islands, on the largest of which, Ross island, are the ruins of Ross castle, an old fortress of the O'Donoghues; and on another island, the "sweet Innisfallen" of Moore, are the ruins of a late 6th century abbey founded by St. Finian. Between the lower lake and the middle or Torc lake (680 ac. in extent) stands Muckross abbey, built by Franciscans about 1440. The Long Range, a winding and wooded channel, 2½ m. in length, leads to the upper lake (430 ac.). Notable ruins and remains, besides Muckross and Innisfallen, include Aghadoe, with its ruined church of the 12th century (formerly a cathedral) and remains of a round tower; and the Ogham Cave of Dunloe, a souterrain containing inscribed stones. The waters of the neighbourhood provide trout and salmon.

KILLDEER, the commonest American plover, so called in imitation of its whistling cry. About the size of a snipe, it is sooty-brown above, but with cinnamon on the tail coverts, and a white wing-bar; beneath it is white except for two black pectoral bands. It is the largest of the ringed plovers and is assigned to the genus *Charadrius*. Wintering in the south or on the seashore, in spring it spreads over the interior, breeding on plowed lands or grass fields. The nest is in a slight hollow, and is often surrounded with small pebbles and fragments of shells. Here the hen lays her four pear-shaped, stone-coloured eggs, always arranged with their pointed ends touching each other. The killdeer (*C. vociferus*) ranges over most of Canada across the United States to Lower California, central Mexico, the Gulf Coast, Florida, the Bahamas, and with a separate race (*C. v. ternominatus*) in the Greater Antilles and another (*C. v. peruvianus*) on the coast of Peru. Northern birds winter from southern British Columbia and the northern U.S. to the West Indies and northern South America. (G. F. Ss.)

KILLER WHALE, another name for the grampus (*q.v.*). The false killer (*Pseudorca crassidens*) is readily distinguished by being completely black, instead of having white underparts. It is of very irregular occurrence. In 1861, a hundred grounded at Kiel; a few were seen in European waters in the following year, and its next appearance in this region was in 1927, when about 125 were stranded in Scotland.

KILLIECRANKIE, pass, Perthshire, Scotland, 3¾ m. N.N.W. of Pitlochry by the L.M.S. railway. Beginning close to Killiecrankie station it extends southwards to the bridge of Garry, through the narrow, wooded glen in the channel of which flows the Garry. A road constructed by General Wade in 1732 runs up the pass, and between this and the river is the railway. The battle between the Jacobites (1689) under Viscount Dundee and the royal force, led by General Hugh Mackay, though named from the ravine, was not actually fought in the pass. The Highlanders were drawn up where the railway station now stands and before Mackay had time to form his force was swept back into the pass, and lost nearly half their number. Viscount Dundee was killed near Urrard House.

KILLIGREW, SIR HENRY (d. 1603), English diplomatist, was the fourth son of John Killigrew of Arwenack. He became M.P. for Launceston in 1553. He lived on the continent during Mary's reign but returned to England when Elizabeth came to the throne and served the queen as a diplomatist. He was employed on a mission to Germany, and in conducting negotiations with Mary

queen of Scots in Scotland. In 1572 he was M.P. for Truro. He was knighted in 1591, and after other diplomatic missions he died early in 1603. Many of Sir Henry's letters on public matters are in the Record Office, London, and in the British Museum. He married Catherine (d. 1583), daughter of Sir Anthony Cooke.

SIR ROBERT KILLIGREW (*c.* 1579–1633), son of Sir William Killigrew, M.P. (d. 1622), was a member of all the parliaments between 1603 and 1633. A man of some scientific knowledge, he had been in the habit of supplying powders to Robert Carr, earl of Somerset, and it was alleged, though without certainty, that the powder administered to Sir Thomas Overbury came from him. He died early in 1633, leaving five sons, three of whom attained some reputation.

KILLIGREW, THOMAS (1612–1683), English dramatist and wit, son of Sir Robert Killigrew, was born in Lothbury, London, on Feb. 7, 1612. Pepys says that as a boy he satisfied his love of the stage by volunteering at the Red Bull to take the part of a devil, thus seeing the play for nothing. In 1633 he became page to Charles I., and was faithfully attached to the royal house throughout his life. In 1641 he published two tragi-comedies, *The Prisoners* and *Claracilla,* both of which had probably been produced before 1636. In 1647 he followed Prince Charles into exile. At the Restoration he became groom of the bedchamber to Charles II., and later chamberlain to the queen. He received in 1660, with Sir William Davenant, a patent to erect a new playhouse, the performances in which were to be independent of the censorship of the master of the revels. This infringement of his prerogative caused a dispute with Sir Henry Herbert, then holder of the office, but Killigrew settled the matter by generous concessions. He acted independently of Davenant, his company being known as the King's Servants. They played at the Red Bull, until in 1663 he built for them the original Theatre Royal in Drury Lane. Pepys writes in 1664 that Killigrew intended to have four opera seasons of six weeks each during the year, and that he paid several visits to Rome to secure singers and scene decorators. In 1664 his plays were published as *Comedies and Tragedies. Written by Thomas Killigrew.* They are *Claracilla; The Princess, or Love at First Sight; The Parson's Wedding; The Pilgrim; Cicilia and Clorinda, or Love in Arms; Thomaso, or the Wanderer;* and *Bellamira, her Dream, or Love of Shadows. The Parson's Wedding* (acted *c.* 1640, reprinted in the various editions of Dodsley's *Old Plays* and in the *Ancient British Drama*) is an unsavoury play, which displays nevertheless considerable wit, and some of its jokes were appropriated by Congreve. It was revived in 1664 and 1672 or 1673, all the parts being in both cases taken by women. Killigrew succeeded Sir Henry Herbert as master of the revels in 1679. He died at Whitehall on March 19, 1683. He was twice married, first to Cecilia Crofts, maid of honour to Queen Henrietta Maria, and secondly to Charlotte de Hesse, by whom he had a son Thomas (1657–1719), who was the author of a successful little piece, *Chit-Chat,* played at Drury Lane on Feb. 14, 1719, with Mrs. Oldfield in the part of Florinda.

Killigrew enjoyed a greater reputation as a wit than as a dramatist. Sir John Denham said of him:—

> Had Cowley ne'er spoke, Killigrew ne'er writ,
> Combined in one, they'd made a matchless wit.

Many stories are related of his bold speeches to Charles I. Pepys (Feb. 12, 1668) records that he was said to hold the title of king's fool or jester, with a cap and bells at the expense of the king's wardrobe, and that he might therefore revile or jeer anybody, even the greatest, without offence.

KILLIN, village and civil parish, Perthshire, Scotland, on Loch Tay, on a branch of the L.M.S. from Killin junction, 4 mi. distant, which also runs to Loch Tay pier. Population (1931) 1,414. The village is near the confluence of the rivers Dochart and Lochay, and is a popular tourist centre. It manufactures tweeds. Near the village a stone marks the site of Fingal's Grove. An island in the Dochart (which is crossed at Killin by a bridge of five arches) is the ancient burial-place of the clan Macnab. Finlarig castle, a ruin, was a stronghold of the Campbells of Glenorchy, and several earls of Breadalbane were buried adjoining it, where the modern mausoleum of the family stands. The Lochay rises in the hills beyond the forest of Mamlorn and has a course of 15 m. The Dochart, issuing from Loch Dochart, flows north-east for 13 m. and falls into Loch Tay. The ruined castle on an islet in the loch once belonged to the Campbells of Lochawe.

KILLIS or KILIS, a town of Turkey, 60 mi. N. of Aleppo near the boundary of Syria. By the Franco-Turkish Convention of May 30, 1926, it was assigned to Turkey.

The country around is extremely fertile; olives especially are cultivated. The population in the 1940 census was 26,558 (Circassians, Turks, Arabs). Killis is in the area served by the Baghdad railway and lies also on the highway from Aleppo to Aintab and Birejik.

See E. Honigmann, "Killiz" in *Encyc. Islam* (bibl.).

KILLYBEGS, a seaport and market town of Co. Donegal, Eire. Pop. (1936) 631. Its land-locked harbour is used as a naval station, and is the centre of an important fishery. The manufacture of Donegal carpets is important. There are slight remains of a castle and ancient church; and a mineral spring is still used. The town received a charter from James I., and was a parliamentary borough, returning two members, until the Union.

KILLYLEAGH, a small seaport town of Co. Down, Northern Ireland, on the W. shore of Strangford lough. Pop. (1937) 1,550. Linen manufacture is the principal industry, and agricultural produce is exported. The castle incorporates a 13th-century tower and other portions, duplicated in 1666 to form the present building after damage caused by Monk (1648). The town was incorporated by James I, and returned two members to the Irish parliament.

KILMAINE, CHARLES EDWARD (1751–1799), French general, was born at Dublin on Oct. 19, 1751. In 1762 he went with his father to France, where he changed his name from Jennings to Kilmaine, after a village in Mayo. He entered the French army in 1774, and afterwards served as a volunteer in the Navy (1778), fighting in Senegal. He took part in the War of American Independence (1780–1783), rejoining the army on his return to France. In 1791 he was recalled to active service and rose rapidly to the rank of lieutenant-general (1793). He distinguished himself in the wars on the northern and eastern frontiers but aroused suspicion by his foreign birth and his relations with England. He was suspended from Aug. 4, 1793 until 1795. He took part in the Italian campaigns of 1796 and 1797, and was made commandant of Lombardy. He afterwards received the command of the cavalry in Bonaparte's "army of England" and was commander-in-chief during the absence of Desaix (1798). He died on Dec. 15, 1799.

KILMALLOCK, a market town of Co. Limerick, Eire, 124¼ mi. S.W. of Dublin by rail. Pop. (1936) 861. It received a charter in the reign of Edward III., at which time it was walled and fortified, with four gates, two of which remain. Its fortifications were for the most part demolished by order of Cromwell. Two castellated mansions may still be seen. The church of St. Peter and St. Paul belonged to a former abbey, and its north-west tower is a converted round tower. The 13th century Dominican abbey has Early English remains. The foundation of Kilmallock is attributed to the Geraldines. Eight miles from the town is Lough Gur, near which are numerous stone circles and other remains.

KILMARNOCK, a large burgh, Ayrshire, Scot., on Kilmarnock Water, a tributary of the Irvine, 24 mi. S.W. of Glasgow by the L.M.S.R. Pop. (1938) 40,151. Area 5.6 sq.mi. The town has an institute with a good museum; a corn exchange with a tower; an art gallery; an observatory, and an academy and a technical school. The grounds of Kilmarnock house, presented to the town in 1893, have been laid out as a public park, and the house itself was given to the town by Lord Howard de Walden in 1921. In Kay park, purchased from the duke of Portland, stands the Burns memorial, consisting of two stories and a tower, and containing a museum in which have been placed many important mss. of the poet and the McKie library of Burns's books. The marble statue of the poet, by W. G. Stevenson, stands on a terrace on the southern face. A Reformers' monument was unveiled in Kay park in 1885. Dean castle, to the north of the town, which

was burned down in 1735, was restored in 1915. Kilmarnock rose into importance in the 17th century by its production of striped woollen "Kilmarnock cowls" (Scotch bonnets), and afterward acquired a great name for its carpets. Woollen spinning is carried on; tweeds, shawls, lace curtains, cottons and winceys are produced; and there are extensive manufactures of shoes, china and earthenware, tanneries, and engineering and machinery works. The iron industry is the staple trade of the town, which is situated in the midst of a rich mineral region. Here, too, are workshops of the L.M.S.R. Kilmarnock is famous for its dairy produce, and every October holds one of the largest cheese shows in Scotland. Alexander Smith, the poet (1830–1867), whose father was a lace-pattern designer, and Sir James Shaw (1764–1843), lord mayor of London in 1806, to whom a statue was erected in the town in 1848, were natives of Kilmarnock. It dates from the 15th century, and in 1591 was made a burgh of barony under the Boyds, the ruling house of the district. The last Boyd who bore the title of Lord Kilmarnock was beheaded on Tower Hill, London, in 1746, for his share in the Jacobite rising. The first edition of Robert Burns's poems was published here in 1786. The town forms the greater part of the Kilmarnock parliamentary division of Ayrshire, which returns one member. The burgh was extended by nearly 2,000 ac. in 1935.

KILMAURS, village and civil parish, Ayrshire, Scotland, on the Carmel, 21½ mi. S. by W. of Glasgow by the L.M.S. railway. Pop. (1931) 1,820. The chief industry is the manufacture of hosiery, though there are coal mines in the neighbourhood. The parish church, dating from 1170, and dedicated either to the Virgin or to a Scottish saint of the 9th century called Maure, was largely rebuilt in 1888. Adjoining it is the burial-place of the earls of Glencairn, some of whom bore the style of Lord Kilmaurs. The town was made a burgh of barony in 1527 by the earl of that date. Burns's patron, the 13th earl, on whose death the poet wrote his touching "Lament," sold the Kilmaurs estate in 1786 to the marchioness of Titchfield. Pop. of civil parish (1931) 4,396.

KILMER, JOYCE (1886–1918), American poet, was born at New Brunswick, N.J., on Dec. 6, 1886, and educated at Rutgers and Columbia (A.B., 1908). Shortly after graduation he took up editorial and journalistic work in New York city and rose rapidly to prominence as an accomplished journalist, serving on the staff of the *New York Times,* 1913–18, and contributing to many magazines. It is as a poet, however, that he is chiefly remembered, his love of the common and beautiful things finding a simple and delicate expression in verse that won for many of his poems, such as "Trees," "Stars," "Roofs," "The Snow Man," "Roses," wide-spread favour both with literary critics and with the people. He was killed in action near the village of Seringes, France, on July 30, 1918. His books were *Summer of Love* (1911); *Trees and Other Poems* (1914); *The Circus and Other Essays* (1916); *Main Street and Other Poems* (1917); and *Literature in the Making* (1917).

See the "Memoir" by R. C. Holliday in *Joyce Kilmer; Poems Essays and Letters* (1918); Annie K. Kilmer *Memories of My Son* (1920); R. Le Gallienne "Joyce Kilmer" *Bookman* (Amer.), vol. xlviii. (1918); K. Bregy, *Poets and Pilgrims* (1925).

KILN, a place for burning, baking or drying. Kilns may be divided into two classes—those in which the materials come into actual contact with the flames, and those in which the furnace is beneath or surrounding the oven. Lime-kilns are of the first class, and brick-kilns, pottery-kilns, etc., of the second, which also includes places for merely drying materials, such as hop-kilns, usually called "oasts" or "oast-houses."

KILPATRICK, NEW, a civil parish, partly in Dumbartonshire and partly in the city of Glasgow, Scotland. It lies N.W. of Glasgow and has two stations on the L.N.E.R. branch line from Glasgow to Milngavie. Pop. (1931) 28,894. The town is largely inhabited by business men from Glasgow, and that part of it now in the city was added in 1912, with a population of 3,598. St. Peter's college, a fine structure, was presented to the Roman Catholic Church in 1892. Remains of the Wall of Antoninus are close to the town, and Roman remains occur in the district. Old Kilpatrick (pop. 55,641), 10½ mi. from Glasgow, has stations on the L.M.S. and L.N.E.R., and is traditionally the birthplace of St. Patrick. To the north, occupying an area of about 6 m. from east to west and 5 m. from north to south run the Kilpatrick Hills, of which the highest points are Duncomb and Fynloch Hill (each 1,313 ft.).

KILRUSH, a seaport and watering-place of Co. Clare, Eire, on the north shore of the Shannon estuary 45 mi. below Limerick. Pop. of urban district (1936) 3,426. It has extensive fisheries, and flagstone quarries, and exports peat fuel; while general fairs, horse fairs and annual agricultural shows are held. Off the harbour lies Scattery island (*Inis Cathaigh*), where St. Senan (d. 544) founded a monastery. There are the remains of his oratory and house and of seven rude churches or chapels, together with a round tower and a holy well.

KILSYTH, a small burgh in the county of Stirlingshire, Scotland, on the Kelvin, 13 mi. N.N.E. of Glasgow by the L.N.E. railway. There is another station on the L.M.S. railway, and the town is close to the Forth and Clyde canal. Pop. (est. 1938) 8,703. Chief industries are coal mining and ironworks; there are also manufactures of paper and cotton, besides quarrying of whinstone and freestone. There are considerable remains of the Wall of Antoninus south of the town, and to the north the ruins of the old castle. Kilsyth dates from the middle of the 17th century and became a burgh of barony in 1826. It was the scene of Montrose's defeat of the Covenanters on Aug. 15, 1645.

KILT, properly the short loose skirt or petticoat, reaching to the knees and usually made of tartan, forming part of the dress of a Scottish Highlander (*see* DRESS). The word means that which is "girded or tucked up," and is probably of Scandinavian origin (*cf.* Danish *kilte,* to tuck up). The early kilt was not a separate garment but was merely the lower part of the plaid, in which the Highlander wrapped himself.

KILWA, a seaport of Tanganyika Territory, East Africa, about 200 mi. S. of Zanzibar. There are two Kilwas, one on the mainland—Kilwa Kivinje; the other, the ancient city (Kilwa on an island) Kilwa Kisiwani. Kilwa Kivinje, on the northern side of Kilwa bay, is regularly laid out, the houses in the European quarter being large and substantial. Pop. (1936) about 3,000. The harbour is poor and this with the lack of a railway hinders trade development. Kilwa Kisiwani, 25 mi. to the south of the modern town, possesses a deep harbour sheltered from all winds by projecting coral reefs. The island on which it is built is separated from the mainland by a shallow and narrow channel. The ruins of the ancient city include massive walls and bastions, remains of a palace and of two large mosques, of which the domed roofs are in fair preservation, besides several Arab forts. On the island of Songa Manara, at the southern end of Kilwa bay, hidden in dense vegetation, are the ruins of another city, unknown to history. Fragments of palaces and mosques in carved limestone exist, and on the beach are the remains of a lighthouse. Chinese coins, dating between A.D. 713 and 1201, and pieces of porcelain have been found on the seashore, washed up from the reefs. It was known to the Portuguese as Ouiloa and to the Arabs as Kiloat.

The sultanate of Kilwa is reputed to have been founded about A.D. 975 by Ali bin Ḥasan, a Persian prince from Shiraz, upon the site of the ancient Greek colony of Rhapta. The new state, at first confined to the town of Kilwa, extended its influence along the coast from Zanzibar to Sofala, and the city came to be regarded as the capital of the Zenj "empire" (*see* ZANZIBAR: *History*). An Arab chronicle gives a list of over forty sovereigns who reigned at Kilwa in a period of five hundred years (*cf.* A. M. H. J. Stokvis, *Manuel d'histoire,* Leiden, 1888, i. 558). Pedro Alvares Cabral, the Portuguese navigator, was the first European to visit it. His fleet, on its way to India, anchored in Kilwa bay in 1500. Kilwa was then a large and wealthy city, possessing, it is stated, three hundred mosques. In 1502 Kilwa submitted to Vasco da Gama, but the sultan neglecting to pay the tribute imposed upon him, the city in 1505 was occupied by the Portuguese. They built a fort there; the first erected by them on the east coast of Africa. Fighting ensued between the Arabs and the Portuguese, the city was destroyed; and in 1512 the Portuguese,

whose ranks had been decimated by fever, temporarily abandoned the place. Subsequently Kilwa became one of the chief centres of the slave trade. Towards the end of the 17th century it fell under the dominion of the imams of Muscat, and on the separation in 1856 of their Arabian and African possessions became subject to the sultan of Zanzibar. It is stated by Sir Richard Burton that about 1830 the people of Kilwa Kisiwani migrated to the mainland and founded Kilwa Kivinje because of the unwelcome attentions of British warships engaged in suppressing the slave trade. In 1885 Kilwa came under German rule, and the modern town was laid out by the Germans. Since 1919 Kilwa has been under British rule as part of Tanganyika Territory.

A version of the Arabic chronicles of Kilwa was published in the *Journal* of the Royal Asiatic Society for 1895.

KILWARDBY, ROBERT (d. 1279), archbishop of Canterbury and cardinal, studied at the University of Paris, where he soon became famous as a teacher of grammar and logic. He joined the order of St. Dominic, and was chosen provincial prior of his order in England in 1261, and in Oct. 1272 Pope Gregory X. terminated a dispute over the vacant archbishopric of Canterbury by appointing Kilwardby. In 1278 Pope Nicholas III. made him cardinal-bishop of Porto and Santa Rufina; he resigned his archbishopric and left England, carrying with him the registers and other valuable property belonging to the see of Canterbury. He died in Italy on Sept. 11, 1279. Kilwardby was the first member of a mendicant order to attain a high position in the English Church. Among his numerous writings, which became very popular among students, are *De ortu scientiarum, De tempore, De Universale,* and some commentaries on Aristotle.

See N. Trevet, *Annales sex regum Angliae,* ed. T. Hog (London, 1845); W. F. Hook, *Lives of the Archbishops of Canterbury,* vol. iii. (1860–76); J. Quétif and J. Échard, *Scriptores ordinis Predicatorum* (Paris, 1719–21).

KILWINNING, a small burgh and market town of Ayrshire, Scotland, on the right bank of the Garnock, 24 mi. S.W. of Glasgow with two stations on the L.M.S. railway. Pop. (1938), 5,563. The ruined abbey, originally one of the richest in Scotland, was founded about 1140 by Hugh de Morville, lord of Cunninghame, for Tyronensian monks of the Benedictine order, and was dedicated to St. Winnin, who lived on the spot in the 8th century and has given his name to the town. This beautiful specimen of Early English architecture was largely destroyed in 1561, and its lands were granted to the earl of Eglinton and others. Kilwinning is the traditional birthplace of Scottish freemasonry, the lodge, believed to have been founded by the foreign architects and masons who came to build the abbey, being regarded as the mother lodge in Scotland. The royal company of archers of Kilwinning—dating, it is said, as far back as 1488—meet every July to shoot at the popinjay. Fairs and an annual cattle show are held. The large iron, coal and fire-clay works at Eglinton, engineering works and worsted spinning, employ most of the inhabitants.

KIMBERLEY, JOHN WODEHOUSE, 1ST EARL OF (1826–1902), English statesman, was born Jan. 7, 1826, being the eldest son of the Hon. Henry Wodehouse and grandson of the 2nd Baron Wodehouse (the barony dating from 1797), whom he succeeded in 1846. He was educated at Eton and Christ Church, Oxford. He married Lady Florence Fitzgibbon (d. 1895), daughter of the last earl of Clare. In 1852–1856 and 1859–1861 he was under secretary of state for foreign affairs in Lord Aberdeen's and Lord Palmerston's ministries. In the interval (1856–1858) he had been envoy-extraordinary to Russia; and in 1863 he was sent on a special mission to Copenhagen on the forlorn hope of finding a peaceful solution of the Schleswig-Holstein question. In 1864 he became under secretary for India, but towards the end of the year was made lord-lieutenant of Ireland. He was created earl of Kimberley in 1866. In July 1866 Russell's ministry fell. Kimberley was lord privy seal in Gladstone's cabinet of 1868, and in July 1870 was transferred to the colonial office. The new town of Kimberley was named after him. Kimberley returned to the Colonial Office in 1880, but at the end of 1882 he was transferred to the duchy of Lancaster and then to the secretaryship of state for India, a post he retained during the remainder of Gladstone's tenure of power (1882–1886, 1892–1894), though in 1892–1894 he combined with it that of the lord presidency of the council. In the Rosebery cabinet (1894–1895) he was foreign secretary. Lord Kimberley was a loyal Gladstonian. As leader of the Liberal party in the House of Lords he acted with undeviating dignity; and in opposition he was a courteous antagonist and a critic of weight and experience. He was for many years a member of the senate of London University, and its chancellor in 1899. He died in London on April 8, 1902, being succeeded in the earldom by his eldest and only surviving son, Lord Wodehouse.

KIMBERLEY, town, 29° S., 24° 40′ E.; altitude 4,012 ft.; centre of the Griqualand West diamond industry, and 647 mi. by rail from Capetown. Pop. (1936 census), including suburbs, was 40,231 of whom 15,741 were Europeans, 14,499 natives, 9,014 "coloured" and 977 Asiatics. In 1921 there were 18,288 Europeans, 13,048 natives, 920 Asiatics and 7,446 "coloured." The town is built on bare veld midway between the Modder and Vaal rivers. Its plan is unusually irregular for South Africa, owing to the town having grown out of several mining camps. Among the principal buildings are the High Court of Griqualand, a clock tower, the post office and the town hall, grouped about the market square. The public library has a good collection of books, and the museum has a considerable number of objects relating to the Bushmen and their culture. In the district of Newton is a memorial to those killed in the siege of 1899–1900. Most of the white workmen employed in the mines live in the suburb of Kenilworth, which was laid out by the De Beers company as a model village. Here Siege Avenue, has been planted with 16 rows of trees, shrubs and vines.

The chief attraction of the town is the diamond mines. (*See* DIAMOND.) The Kimberley is within a few minutes' walk of the market square. The De Beers mine is one mile east of the Kimberley mine. The other principal mines, Bultontein, Du Toits Pan and Wesselton, are still farther distant from the town. Barbed wire fencing surrounds the mines, which cover about 180 acres.

Kimberley was founded in 1870 by diggers who discovered diamonds on the farms of Du Toits Pan and Bultontein. In 1871 richer diamonds were found on the neighbouring farm of Vooruitzight. There were at first three distinct mining camps, one at Du Toits Pan, another at De Beers (called De Beers Rush or Old De Beers) and the third at the Colesberg Kopje (called De Beers New Rush or New Rush simply). The Colesberg Kopje mine was in July 1873 renamed Kimberley in honour of the then secretary of state for the colonies, the 1st earl of Kimberley, by whose direction the mines were—in 1871—taken under the protection of Great Britain. Kimberley was also chosen as the name of the town into which the mining camps developed. In 1880 the town was incorporated in Cape Colony. (*See* GRIQUALAND EAST AND GRIQUALAND WEST.) Among those early attracted to Kimberley were Cecil Rhodes and "Barney" Barnato, who in time came to represent two groups of financiers controlling the mines. The amalgamation of their interests in 1889—when the De Beers group purchased the Kimberley mine for £5,338,650—put the whole diamond production of the Kimberley fields in the hands of one company, the De Beers Consolidated Mines, Ltd., so named after the former owners of the farm on which are situated the chief mines. Kimberley in consequence became largely dependent on the good-will of the De Beers corporation, the town having practically no further industries other than diamond mining. The importance of the industry led to the building of a railway from Cape Town, opened in 1885. On the outbreak of war between the British and the Boers in 1899 Kimberley was invested by a Boer force. The siege began on Oct. 12, and lasted until Feb. 15, 1900, when the town was relieved by General Sir John French. In 1906 the town was put in direct railway communication with Johannesburg, and in 1908 the completion of the line from Bloemfontein gave Natal direct access to Kimberley, which thus became an important railway centre.

KIMERIDGIAN: *see* JURASSIC SYSTEM.

KIMHI or **OIMHI,** the family name of three Jewish grammarians and biblical scholars who worked at Narbonne in the 12th and 13th centuries.

JOSEPH ḲIMḤI (*c.* 1105–70), a native of southern Spain, settled in Provence, where he was one of the first to set forth in Hebrew the results of Hebraic philology as expounded by the Spanish Jews in Arabic. His acquaintance with Latin grammar led him to divide the Hebrew vowels into five long vowels and five short, previous grammarians having simply spoken of seven vowels without distinction of quantity. His grammatical textbook, *Sefer Ha-Zikkaron,* "Book of Remembrance" (ed. W. Bacher, Berlin, 1888), was marked by methodical comprehensiveness, and introduced into the theory of the verbs a new classification of the stems which has been retained by later scholars. In the more ample *Sefer Ha-Galuy,* "Book of Demonstration" (ed. Matthews, Berlin, 1887), he attacks the philological work of the Frenchman R. Jacob Tam, who espoused the antiquated system of Menaḥem b. Saruq, and this he supplements by an independent critique of Menaḥem. This work is a mine of varied exegetical and philological details. He also wrote commentaries on various scriptural books, those on Proverbs and Job being published. He composed an apologetic work *Sefer Ha-Berith* ("Book of the Bond"), and translated into Hebrew the ethico-philosophical work of Baḥya ibn Paquda ("Duties of the Heart").

MOSES ḲIMḤI (d. *c.* 1190) was the author of a Hebrew grammar, *Mahalak Shebile Ha-daat.* He was the first to make the verb *paqadh* a model for conjugation, and the first also to introduce the now usual sequence in the enumeration of stem-forms. In the first half of the 16th century it became the favourite manual for the study of Hebrew among non-Judaic scholars (1st ed., Pesara, 1508). Of his Biblical commentaries, those on Proverbs, Ezra and Nehemiah are in the great rabbinical bibles falsely as the work of Abraham ibn Ezra.

DAVID ḲIMḤI (*c.* 1160–1235), also known as *Redaq,* eclipsed the fame both of his father and his brother. His *magnum opus* is the *Sefer Miklol,* "Book of Completeness," which covers the grammar (first printed in Constantinople, 1532–4) and the lexicon, *Sefer Hashorashim,* "Book of Roots" (first printed in Italy before 1480). In the grammar he combined the paradigmatic method of his brother Moses with the procedure of the older scholars who devoted attention to details. In his dictionary, again, he recast the lexicological materials independently, and enriched lexicography itself, especially by his numerous etymological explanations. Under the title *Eṭ Sofer,* "Pen of the Writer" (Lyk, 1864), David composed a sort of grammatical compendium as a guide to the correct punctuation of the Biblical manuscripts; it consists mainly of extracts from the *Miklol.* His Biblical commentaries include those on Chronicles, on the Psalms, on the prophets and on Genesis. His annotations on the Psalms are especially interesting for the polemical excursuses directed against the Christian interpretation; his commentary on Genesis (ed. A. Günsburg, Pressburg, 1842) explains Biblical narratives as visions. The popularity of his Biblical exegesis is demonstrated by the fact that the first printed texts of the Hebrew Bible were accompanied by his commentary.

His commentaries have been reprinted, many of them in Latin translations. A new edition of that on the Psalms was begun by Schiller-Szinessy (*First Book of Psalms,* Cambridge, 1883).

Abr. Geiger wrote of the three Ḳimḥis in the Hebrew periodical *Oẓar Neḥmad* (vol. ii, 1857=A. Geiger, *Gesammelte Schriften,* v. 1–47). *See* further the *Jewish Encyclopaedia.*

KIN, a collective word for persons related by blood, as descended from a common ancestor. In law, the term "next of kin" is applied to the person or persons who, as being in the nearest degree of blood relationship to a person dying intestate, share according to degree in his personal estate. (*See* INTESTACY; INHERITANCE; LAW OF SUCCESSION.)

KINCARDINESHIRE, or THE MEARNS, eastern county, Scotland, bounded east by the North sea, south and southwest by Angus, and northwest and north by Aberdeenshire. Land area, 378.8 sq.mi. In the west and northwest the Grampian hills extend into the county, reaching 2,555 ft. in Mount Battock, where the counties of Aberdeen, Angus and Kincardine meet. This is one of several masses of granite rising through the crystalline schists of the Dalradian group which occupy the portion of the country north of the great fault crossing it from near Stonehaven to Edzell (in Angus), and continuing southwestward across Scotland. In the extreme north the Hill of Fare, famous for its sheep walks, reaches 1,545 ft. In the north the county slopes from the Grampians to the picturesque and finely wooded valley of the Dee, and in the south it falls to the Howe (Hollow) of the Mearns, a continuation northeastward of Strathmore. There, and generally south of the great fault mentioned above, the rocks are of old red sandstone age, with diabase and other volcanic intrusions. The Dee and North Esk serve as boundary streams during part of their courses, the one of Aberdeenshire, the other of Angus. The other principal rivers are Bervie Water (20 mi. long), flowing southeastward to the North sea; the Water of Feugh (20 mi.) taking a northeasterly direction and falling into the Dee at Banchory, and forming near its mouth a beautiful cascade; the Dye (15 mi.) rising in Mount Battock and ending its course in the Feugh; Luther Water (14 mi.) rising not far from the castle of Drumtochty and joining the North Esk; the Cowie (13 mi.) and the Carron (8½ mi.) entering the sea at Stonehaven. Glen Dye in the north centre of the county is very beautiful, and the small Den Fenella, southeast of Laurencekirk, contains a fine waterfall. Except in the vicinity of St. Cyrus, the coast from below Johnshaven to Girdle Ness presents rugged cliffs, with an average height of 100 to 250 ft., interrupted only by occasional creeks and bays, as at Bervie, Stonehaven, Portlethen, Findon, and Nigg. The evidences of glacial action show that the flow during the ice age was northward along the coast, though it approached the coastal district with a southeastward direction from the hills and an eastward trend across the lower ground; as the shore was approached it gradually took on an easterly and finally a northerly direction.

History.—The county belonged of old to the district of Pictavia and apparently was overrun for a brief period by the Romans. In the parish of Fetteresso are the remains of the camp of Raedykes, in which, according to tradition, the Caledonians under Galgacus were lodged before their battle with Agricola. Mearns, the alternative name for the county, is believed to have been derived from Mernia, a Scottish king, to whom the land was granted, and whose brother, Angus, had obtained the adjoining shire of Angus. The antiquities consist mostly of stone circles, cairns, tumuli, standing stones and a structure in the parish of Dunnottar vaguely known as a "Picts' kiln." The town which gave the shire its name stood about 2 mi. N.E. of Fettercairn. By the end of the 16th century it had declined to a mere hamlet, and is now represented only by the ruins of the royal castle and an ancient burial ground. The Bruces, earls of Elgin, also bear the title of earl of Kincardine.

Agriculture and Industries.—Much of the Grampian territory is occupied by grouse moors, but the land by the Dee, in the Howe and along the coast, is scientifically farmed and yields well. The most fertile region is along the coast, where the soil is generally deep loam resting on clay, although in some places it is poor and thin, or stiff and cold. Oats, with 28,390 ac. in 1938, are the principal crop followed by barley with 5,096 ac.; wheat occupied only 2,471 ac. About 27% of the total area is mountain and heath land. Turnips and swedes (13,088 ac.) form the main green crop, but potatoes are raised. About 48% of the 1,462 holdings in 1938 consisted of 50 ac. and under. Large stocks of cattle are kept. There were 30,173 in 1938. Blackfaced sheep are chiefly kept on the hill runs, Cheviots or a cross with Leicesters being found on the lowland farms. Pigs are reared in fair numbers. Apart from agriculture, the principal industry is fishing, of which Stonehaven is the centre, in spite of the difficult coast. The village of Findon (pron. *Finnan*), no longer a fishing centre, gave its name to the smoked haddocks. The salmon fisheries of the sea and the rivers yield a substantial return. Manufactures are of little importance. Woollens are made at Stonehaven, flax is spun at Inverbervie and Johnshaven. There are also a large distillery and a tannery at Stonehaven, which is the chief port for seaborne trade. The Deeside railway runs through the portion of the county on the northern bank of the Dee. The L.M.S. and L.N.E.R. run to Aberdeen via Laurencekirk to Stonehaven, using the same metals, and there is a branch line of the L.N.E. from Montrose

to Bervie.

Population and Government.—The population was estimated in 1938 at 26,443, excluding that portion of Aberdeen within the county. In 1931 Gaelic and English were spoken by only 76 persons. There are four small burghs—Banchory (est. 1938 pop., 1,830), Inverbervie (952), Laurencekirk (1,337), and Stonehaven (4,229). There are five county districts. The county returns one of the three Aberdeenshire members to parliament, and Inverbervie, the only royal burgh, belongs to the Montrose group of parliamentary burghs. Kincardine is united in one sheriffdom with the shires of Aberdeen and Banff, and one of the Aberdeen sheriffs-substitute sits at Stonehaven. The county is under school-board jurisdiction. The academy at Stonehaven and a few of the public schools earn grants for higher education. At Blairs, in the northeast of the shire near the Dee, is a Roman Catholic training college for priests.

KINDERGARTEN, the name given by Friedrich Froebel (*q.v.*) to an institution founded by him in Blankenburg, Germany, in 1837, to meet the educational needs of children between the ages of four and six years, through the agency of play. Froebel was at this time a teacher of varied experience whose training had included study at the University of Jena and Pestalozzi's school at Yverdun. From these he had gained a knowledge of the principle of evolution, and from it had drawn the conclusion that education is, in essence, the guidance of children's development from stage to stage, and that the chief agency in that development is their spontaneous play activity. He therefore concluded that the early years are of strategic importance, and that the work of these should receive careful attention. He had tried to improve the work of his boys at Keilhau but felt that they lacked the foundation which they might have had if the earlier years had been utilized.

Froebel had long wished to organize a programme of activities for a group of children of preschool age, when the opportunity to do so came to him through his appointment to the directorship of an orphanage in Burgdorf, Switzerland, in 1835. Here he experimented with a group of young children, working out with them games, songs, marches, handwork and other play forms. He also devised a progressive series of play materials from which the children might gain certain definite ideas, and by means of which they might give expression to others. For the first he selected a set of six soft balls, one of each of the six colours; for the second, a wooden sphere, cube and cylinder; for the third, a two-inch cube divided into eight smaller cubes; and for the fourth, a two-inch cube divided into eight oblong blocks, two inches long, one inch wide and half an inch thick. The fifth and sixth were three-inch cubes with more complex sub-divisions for building purposes. All of these were contained in boxes appropriate to their sizes and shapes. The remaining playthings in the series consisted of wooden tablets of different sizes and shapes; sticks of different lengths; and rings of different diameters. To distinguish these from other play material Froebel named those in this series "gifts" and the flexible material that accompanied them, "occupations."

The success of this experiment assured Froebel that he was working along right lines and he therefore left Burgdorf in 1837, and settled in Blankenburg. Here a little later he announced the opening of "a school for the psychological training of little children by means of play and occupations." To this the name "Kindergarten," meaning "a garden of children," was given in 1840. The new institution attracted many visitors, and through these and Froebel's demonstrations and lectures, soon became well known. It continued in operation until 1844, when it was merged with the school at Keilhau, and Froebel's training classes moved to Liebenstein, and later to Marienthal. Here his work was continued until his death in 1852. The number of Kindergartens that had been established at this time was quite small—probably less than 20. His work was carried on, however,—at first through his ablest co-workers—Madame Froebel, his widow, the Baroness von Marenholtz-Bülow, his most brilliant pupil, and Fräulein Henrietta Breyman, his grand-niece. Madame Froebel built up a strong training centre in Hamburg. The baroness lectured in practically all the countries of Europe, and established a training school in Berlin. Fräulein Breyman supervised Kindergartens in Belgium and Switzerland, and (as Frau Schröder) later established the Pestalozzi-Froebel Haus in Berlin. In Italy the Kindergarten was introduced by Madame Salis-Schwabe. The movement gained favour everywhere, and during the 25 years after Froebel's death, Kindergartens had been established in the leading cities of Germany, Great Britain, Holland, Belgium, Switzerland, Austria, Hungary, Canada, Japan and the United States.

THE UNITED STATES

It is in the United States that the Kindergarten has had its fullest development. The first Kindergartens were established in Boston, New York, Milwaukee, Chicago and St. Louis in the early '70s; and these, with the demonstration Kindergarten at the Philadelphia Exposition in 1876 gave the American people the opportunity to judge of its merits. Within the next decade Kindergartens had been established in all the large cities of the country. These early Kindergartens were all private or supported by organizations. As they proved their merit they were gradually adopted by the schools of their communities. This could not be done, however, without the enactment of a law in the State in question permitting the use of public school funds for the education of children of Kindergarten age. The first States to enact such laws—Connecticut, Indiana and Vermont—did so during the '80s. These laws made it possible to organize Kindergarten training courses in the State-supported teacher's training institutions. The first States to offer such courses were Minnesota, Connecticut, Kansas and New York.

The adoption of the Kindergarten by the school was an advantage to both. The housing and equipment which the school afforded was better than that which the isolated Kindergartens could provide, and the teachers were better trained. The Kindergarten shared with the grades such other advantages as the services of health experts and other specialists. It in turn contributed new ideals and types of work, and a better attitude toward children than the school had shown. The most important result of the combination was the change brought about in the Kindergarten play material and methods. The period was one of emphasis on health, and the health experts pointed out the injury to children's eyes and nerves caused by the smallness of the materials. They also pointed out weaknesses in the methods used. These and other criticisms were taken seriously by the teachers and school authorities and a programme of improvement in materials and methods was inaugurated. As a result all the materials were enlarged by 1900. These materials gave the children much satisfaction. The size of the blocks led to their use on the floor by small groups, and the working out of little group projects. For this, however, still larger blocks and a variety of forms were felt to be needed. This need was met by sets of patented building blocks, and others involving similar features worked out in different cities. Such blocks are based wholly on children's needs, and have no relation to the Froebelian series of "gifts and occupations."

The gradual changes in the Kindergarten materials have been accompanied by corresponding changes in the methods of using them, all the changes being such as to contribute to the children's health and development. The best methods of using the materials have not all been worked out, but these problems are being given much thought. As a whole, the Kindergarten is doing better work and is held in higher esteem than ever before. (N. C. V.)

GREAT BRITAIN

The movement towards freedom in America has had its counterpart in England, and emphasis is nowadays laid by the followers of Froebel in England on the choice and variety of material and on detailed study of the individual both by educational toys and by careful observation of the effect of giving children freedom to develop. The influences, however, of the doctrines of Froebel have during the last 50 years gradually extended far beyond the Kindergarten proper. They have profoundly affected the education of young children in all countries modifying existing practices

in infant schools and combining with newer influences to create other schools of a fresh and thoroughly modern type. (*See* NURSERY SCHOOLS.) The term is loosely used today in England and elsewhere either of method, when speaking of the infant school, or as descriptive of the preliminary classes attached to the preparatory department of the ordinary secondary school.

OTHER COUNTRIES

In Austria, the Kindergarten is recognized and regulated by the government, though the Volks-Kindergarten are not numerous. In Belgium the mistresses of the *Ecoles Gardiennes* are instructed in the "idea of the kindergarten" and "Froebel's method," and in 1880 the minister of public instruction issued a program for the *Ecoles Gardiennes Communales,* which is both in fact and profession a kindergarten manual. (*See* NURSERY SCHOOLS.)

(M. G. O.)

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KINDERSLEY, ROBERT MOLESWORTH, G.B.E., 1920 (1871–), British financier, was born Nov. 21, 1871, and educated at Repton school. He entered upon a business career in London and became a partner in the banking firm of Lazard Bros. and Co. Ltd. During World War I he was president of the National Savings committee and returned to head it in 1939 on the outbreak of World War II. He became a director of the Bank of England and in 1924 was a member of the Dawes committee on Germany's war debts. He was governor of Hudson's Bay company 1916–25. In later years he became a student of British overseas investments, and in 1941 was created 1st Baron of West Hoathly. (W. D. C.)

KINDĪ or **ALKINDI** (ABŪ YŪSUF YA QŪB IBN ISHĀQ UL-KINDĪ) (died *c.* 873), sometimes called "the Philosopher of the Arabs," was born in Kufa where his father was governor, and studied at Basra and Baghdad. In the orthodox reaction under Motawakkil, when all philosophy was suspect, his library was confiscated, but he himself seems to have escaped. He was one of the earliest translators and commentators of Aristotle, but like Fārābī appears to have been superseded by Avicenna.

Kindī's philosophy is a combination of Aristotelian and Neo-Platonic elements. He stresses the unity of God, whose influence on the world he believes to be transmitted through intermediate agencies, the lowest of which is the human soul. He has an original fourfold division of intelligence: (*a*) the intellect which is always active, (*b*) the passive intellect of the human soul, (*c*) the intellect of the human soul which passes from potentiality to actuality and (*d*) the intellect which demonstrates the necessary relations between premises. In place of Aristotle's categories he substitutes matter, form, movement, place and time.

Of Kindī's 270 works, covering philosophy, cosmology, astronomy, astrology, optics, mathematics and medicine, about 20 are extant. During the middle ages some were translated into Latin by Gerald of Cremona and others, and exercised a considerable influence on the west. His philosophical opuscula were edited by A. Nagy (Münster, 1897).

See G. Flügel, *Al Kindi genannt der Philosoph der Araber* (Leipzig, 1857); T. J. de Boer, *Geschichte der Philosophie im Islam* (Stuttgart, 1901); H. Suter, *Die Mathematiker u. Astronomen der Araber* (Leipzig, 1900); P. Mandonnet, *Siger de Brabant ii.: De Collectione errorum* Alkindi (Louvain, 1911); C. de Vaux, *Les Penseurs de l'Islam,* t. 4 (1923).

KINEMATICS, the branch of mechanics which discusses the phenomena of motion without reference to force or mass; Gr. *Κινημα,* motion. *See* MECHANICS; MATHEMATICAL MODELS.

KINETICS, the branch of mechanics which comprises the phenomena of motion as affected by force; it is the modern equivalent of dynamics in the restricted sense (*see* MECHANICS).

KINETIC THEORY OF MATTER.—The kinetic theory of matter rests upon two distinct but closely related hypotheses, the hypothesis of the molecular structure of matter and the hypothesis that heat is a manifestation of the random to-and-fro motion of the molecules.

In the beginning the hypothesis of the molecular structure of matter merely asserted that all matter is composed of very small particles, which later came to be known as molecules. Soon after 1800 it was recognized that each chemical element consists of small particles that are all exactly alike; these were called atoms. It was concluded further that most molecules consist of two or more atoms in close combination. In the case of such compound molecules, motions of the atoms within the molecules must also be taken into account in considering the heat energy of matter.

The heat motion of the molecules is especially simple in matter that is in the gaseous state. At normal temperature and pressure the density of a substance in the gaseous state is of the order of one-thousandth of the density of the same substance in the solid or liquid state. It follows that the average distance apart of the molecules in the gaseous state is roughly ten times as great as in the solid or liquid state, and hence that in the gaseous state the molecules must be at distances apart which are large compared with their linear dimensions. If the molecules in the air at normal temperature and pressure were arranged in cubical order, the edge of each cube would be about 3.3×10^{-7} cm.; the average diameter of a molecule in air is 3.7×10^{-8} cm. Further important evidence as to the nature of the gaseous state of matter is provided by the experiments of J. P. Joule and W. T. Kelvin. (*See* VAPORIZATION: *Modified Joule-Thomson Equation.*) These experiments showed that when a gas is allowed to stream out into a vacuum, its change of temperature is in general very slight. In terms of the molecular theory this indicates that the total energy of the gas is very approximately equal to the sum of the separate energies of its different molecules; the potential energy arising from intermolecular forces between pairs of molecules may be treated as negligible when the matter is in the gaseous state.

These two simplifying facts bring the properties of the gaseous state of matter within the range of mathematical treatment. The kinetic theory of gases attempts to account, in terms of the molecular structure of matter, for all the nonchemical and nonelectrical properties of gases. A brief statement of the methods and results of the kinetic theory of gases will be given first, to be followed by a brief consideration of the kinetic theory of matter in the solid or liquid state.

The Kinetic Theory of Gases.—One of the earliest triumphs of the kinetic theory was its explanation of the laws which had been found to connect the density, pressure and temperature of a gas. The kinetic theory regards a mass of gas as a collection of independently moving molecules; if these are shut up in a closed vessel, molecules must continually collide with the walls of the vessel, exerting pressure at the moment of collision, and the kinetic theory interprets the pressure of the gas as the aggregate of the pressures exerted by the various molecules when they collide with the boundary. A quantitative relation between the pressure and the molecular velocities is easily obtained.

Calculation of the Pressure in a Gas.—The molecules of a gas will be moving in different ways, but they can be divided up into a system of showers, such that all the molecules in any one shower have approximately the same velocity and are moving in the same direction. Let u, v, w denote the components of the velocity of any molecule in three directions at right angles in space, and let us fix our attention on any one shower, whose molecules have components u_1, v_1, w_1. Let us consider the impact of the molecules of this shower upon an area S of the boundary of the containing vessel, and for simplicity let S be perpendicular to the direction of u. Then each molecule of the shower that strikes the area gives up momentum mu to it before its motion in the u direction is arrested, and as it rebounds with equal velocity it also acquires momentum mu in the opposite direction,

so that the total transfer of momentum is $2mu$. The number of molecules belonging to the shower which strike the area S in a small interval of time dt is equal to the number that lay within a distance u_1dt of S at the beginning of this interval and so occupied a small disk of volume Su_1dt of the gas. If there are ν_1 molecules in unit volume belonging to the shower, the number inside the disk was $Su_1\nu_1dt$.

Thus these molecules transfer momentum $2mu_1^2\nu_1Sdt$ to the area S of the boundary; and the total momentum so transferred by the molecules of all showers can be written

$$2m\ Sdt(\nu_1u_1^2+\nu_2u_2^2+\ldots)$$

where the sum includes a term for each shower whose molecules are moving with a component u directed toward S. The sum can also be written $\frac{1}{2}\nu\ U^2$ where ν is the total number of molecules in unit volume and U^2 denotes the average value of u^2 for the different molecules; the factor $\frac{1}{2}$ is introduced because half of all the showers will be moving with a component u directed away from S and hence cannot contribute to the pressure on S. Or, let C^2 stand for the average value of $u^2+v^2+w^2$, or the square of the actual velocity, for all the molecules. Since as many molecules will be moving in one direction as in another, the average values of u^2, v^2 and w^2 will be the same. Hence $U^2=\frac{1}{3}\ C^2$; and the momentum transferred to the area S during the interval dt is $\frac{1}{3}\ m\nu SC^2dt$.

Since the momentum transferred must be equal to $pSdt$, where p is the pressure or force per unit area on the boundary, the value of p is

$$p=\tfrac{1}{3}m\nu C^2, \qquad (1)$$

or, since $m\nu$ is the total mass in unit volume and hence equals the density ρ, expressed in grams per cubic centimetre,

$$p=\tfrac{1}{3}\rho\ C^2. \qquad (2)$$

Since p and ρ can be measured for any gas, the value of C can be calculated. C is called the root-mean-square velocity of the molecules; the pressure would be the same as it actually is if all the molecules were moving with the velocity C. The distribution of the molecular velocities will be considered presently. Some values of C at 15° C. are as follows:

	Hydrogen	Air	Mercury vapour
C in cms. per sec.:	188,800	49,820	18,930
C in ft. per sec.:	6,190	1,634	621

The Gas Laws.—It was found by Boyle that as a gas is compressed without change of its temperature its pressure increases directly as its density. This conclusion follows from formula (2) if the assumption is made that C^2 depends only on the temperature. The latter assumption can be shown to be a consequence of the laws of dynamics.

Furthermore, it was shown by J. A. C. Charles and by J. L. Gay-Lussac that, when a gas is heated at constant volume, its pressure increases at a rate which is the same for all gases. The pressure increases, in fact, in proportion to the thermodynamic absolute temperature T, as can be shown by a thermodynamical argument. Thus the laws for a gas as established by observation can be expressed in the single formula

$$p=\rho\ RT \qquad (3)$$

where R is a constant depending upon the kind of gas, or, as the equation is more commonly written,

$$pv=RT \qquad (4)$$

where v equals $1/\rho$ and represents the specific volume or the volume of a gram. Let T be expressed in degrees centigrade.

Comparison of formulas (2) and (3) shows that

$$C^2=3\ RT \qquad (5)$$

Thus the average velocity of the molecules varies in proportion to the square root of the absolute temperature.

The Specific Heat.—The total kinetic energy of translation of all the molecules in unit volume is $\nu(\frac{1}{2}mC^2)$ or $\frac{1}{2}\rho C^2$ or $\frac{3}{2}\ \rho RT$. Since ρ represents the mass in unit volume, the energy in unit mass is $\frac{3}{2}\ RT$. This energy increases by the amount $\frac{3}{2}R$ when the temperature is increased by one degree. Hence the specific heat of a gas at constant volume should be $\frac{3}{2}\ R$, provided the molecules contain no variable energy other than that associated with the motion of translation.

The specific heat at constant volume is found by experiment to equal $\frac{3}{2}R$ or $\frac{3}{2}pv/T$ for helium and the other inert gases, whose molecules consist each of a single atom. For gases with polyatomic molecules, the specific heat exceeds $\frac{3}{2}R$ except at extremely low temperatures. The difference is ascribed to the existence of energy of rotation of the molecules, or of vibration of the atoms is gases having polyatomic molecules.

The Equipartition of Energy.—According to a famous principle known as the equipartition of energy, when a dynamical system is in statistical equilibrium at a given temperature T, the same amount of average kinetic energy is associated with each degree of freedom, *i.e.* each independent mode of motion of the system. A molecule in translation has three degrees of freedom corresponding to the three mutually perpendicular directions in which it can move independently. It follows that in gases composed of different kinds of molecules, the average translational energies of the molecules, or the values of $\frac{1}{2}mC^2$, should be the same for all the different kinds of molecules. When the molecules are actually mixed together, this conclusion can be verified by an analysis of the effects of their collisions with each other. Even if the different kinds of molecules are in different vessels, the same conclusion can be reached by a more abstruse argument based upon the Newtonian or "classical" laws of dynamics.

Since C^2 has been found to be proportional to the absolute temperature T, it is possible to write for the average translational energy of a molecule

$$\tfrac{1}{2}mC^2=\tfrac{3}{2}\ kT$$

where k is a constant of proportionality. The average kinetic energy for each degree of freedom, according to the principle of equipartition, is then a third of $\frac{1}{2}mC^2$ or $\frac{1}{2}kT$. Since C^2 also equals 3RT, it is seen that $k=mR$. The numerical magnitude of k, which is known as the Boltzmann constant or the "gas constant for one molecule," is 1.38×10^{-16} in centimetre-gram-second units.

Soon after 1925, however, it came to be realized that the classical laws of dynamics represent only an approximation, which is close to the truth in dealing with masses that are sufficiently large, or moving sufficiently rapidly, or subjected to sufficiently weak forces. The classical laws, one of which has just been used in calculating the pressure in a gas, are sufficiently accurate for a description of the translational motion of the molecules in a gas; but they fail badly in dealing with the rotational and vibrational motions of the molecules. An adequate theory of the specific heat of gases composed of polyatomic molecules must be based upon the newer quantum or wave mechanics.

Counting the Molecules.—Since, as has just been seen, the quantity $\frac{1}{2}mC^2$ has the same value for all gases at a given temperature, it follows from formula (1) that the number of molecules in unit volume or ν is the same for all gases at the same temperature and pressure. This remarkable fact is known as Avogadro's law (*see* AVOGADRO'S CONSTANT.)

The kinetic theory of gases does not furnish any reliable method of ascertaining the numerical value of ν. The best method is to start from the well-attested fact that in electrolysis each atom of hydrogen carries an electric charge numerically equal to the charge on an electron which has been measured. The total amount of electric charge delivered by a gram of hydrogen in being deposited electrolytically is also known. (*See* ELECTRICITY, CONDUCTION OF: *Conduction in Liquids.*) The charge on a gram divided by the charge on an atom then gives the number of atoms in a gram of hydrogen; and this number, divided by 2, is the number of molecules in a gram of hydrogen gas. This number again, multiplied in turn by the density or the mass in unit volume, gives the number of molecules in unit volume or ν. It is thus found that in a gas under a pressure of one atmosphere and at a temperature of 0°C.,

$$\nu = 2.69 \times 10^{19}.$$

In a similar way it is found that the number of molecules in a gram-molecule of any substance is $N_0 = 6.02 \times 10^{23}$. This is an enormous number.

The Law of Distribution of Molecular Velocities.—The molecules of a gas are not all moving with the same velocity. When the gas is at rest and free from disturbance, the effect of collisions between its molecules was shown by J. C. Maxwell and L. Boltzmann to be such that the molecular velocities soon come to be distributed in a definite manner. The gas is then in a steady or normal state. When this state has been attained, the statistical equilibrium is actually maintained in a very simple manner. Let us divide all possible velocities into distinct ranges *a, b, c.* . . . . When two molecules moving with velocities *a,b* collide, the collision changes the motion of both and they assume new velocities *p,q*. Thus the collision takes one molecule away from each of the classes *a,b* and adds one to each of the classes *p,q*. When the gas is in its steady state, there occur just as many collisions of the inverse type, in which a molecule is taken from each of the classes *p,q* and added to one of the classes *a,b*. The statistical effect of the collisions is thus nil.

The distribution of the molecular velocities in the steady state may be described as follows.

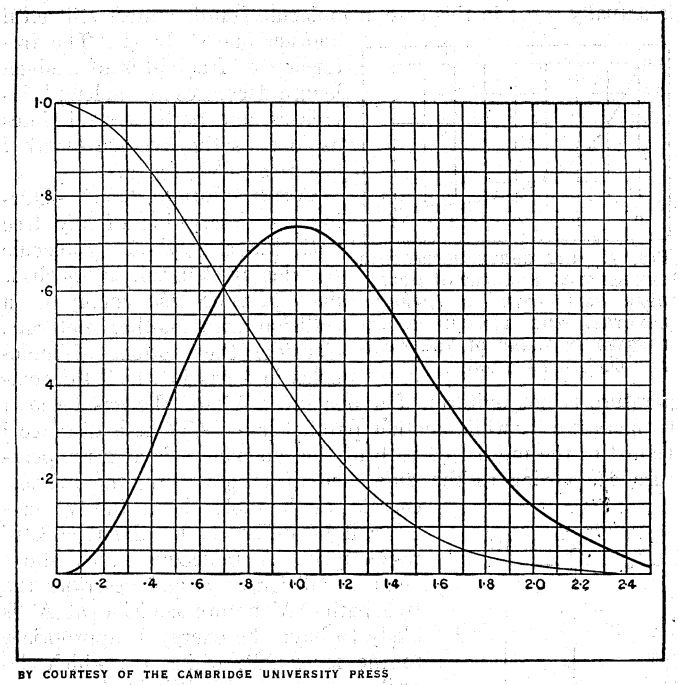

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FIG. 1.—KINETIC THEORY OF GASES. GRAPHS ILLUSTRATING THE LAW OF DISTRIBUTION OF VELOCITIES

Horizontal=values component of velocity. Vertical=number of molecules in Maxwell's steady state. Thin curve=number of molecules in steady state for each value of velocity component. Thick curve=number of molecules in steady state for each value of the total velocity

Confining our attention to one component of velocity u, it is found that the values of u for the different molecules conform to what is called the law of trial and error—they are distributed at random around the value $u=0$ according to the same law that determines the distribution of shots around the middle point of a line-target. To express the result mathematically, if u, v, w denote the three components of velocity in three directions at right angles in space, then the number of molecules whose velocity is such that

u lies between u and $u+du$
v ,, ,, v and $v+dv$
w ,, ,, w and $w+dw$

is found to be

$$N\left(\frac{hm}{\pi}\right)^{\frac{3}{2}} e^{-hm(u^2+v^2+w^2)}\, du\, dv\, dw. \qquad (6)$$

Here N is the total number of molecules and m is the mass of each, while h is a constant, which will be found to depend on the temperature. This law is commonly known as Maxwell's law of distribution of velocities.

If we fix our attention on any one component of velocity, say u, disregarding the values of v and w entirely, it is found that the number of molecules for which this component lies between u and $u+du$ is

$$N\left(\frac{hm}{\pi}\right)^{\frac{1}{2}} e^{-hmu^2} du. \qquad (7)$$

This partition of values of u is shown graphically in the thin curve in fig. 1. The numbers along the horizontal axis represent values of u, and the corresponding height of the thin curve is proportional to the total number of molecules which have this particular value of u in Maxwell's steady state. The whole area of this curve is equal to $100\sqrt{\pi}$, or 177.25, of the small squares. Let us, for instance, suppose that each of these small squares represents a million molecules, then we find that in a gas of 177,250,000 molecules, rather less than 20,000,000 have values of u between 0 and 0.1, about 19,000,000 have values of u between 0.1 and 0.2 and so on, while less than a million have values between 1.7 and 1.8, and less than 40,000 have values between 2.4 and 2.5. These values of u are measured on an arbitrary scale which has not yet been determined. But whatever the scale on which u is measured, we see that high values of u are very rare, the majority of molecules keep to moderate values and the favourite value of all is zero.

In many problems the total velocity of a molecule is of greater importance than its individual components. If c^2 is written for $u^2+v^2+w^2$, so that c is the total velocity of a molecule, it can readily be deduced from formula (6) that the total number of molecules for which c lies between c and $c+dc$ is

$$4\pi N\left(\frac{hm}{\pi}\right)^{\frac{3}{2}} e^{-hmc^2} c^2 dc. \qquad (8)$$

This distribution of velocities is represented graphically by the thick curve in fig. 1. We see that both very high and very low values of c are now rare, the favourite value for c being unity.

From formula (8) it can be shown by integration that the average of the square of the velocity of the molecules, which was previously denoted by C^2, is also equal to $3/(2hm)$. Since $\frac{1}{2}mC^2$ also equals $\frac{3}{2}kT$ in terms of the Boltzmann constant k and the absolute temperature T, it follows that

$$h = \frac{1}{2kT}.$$

Dalton's Law.—Imagine that a gas consists of a mixture of gases of different kinds, so that unit volume contains a mass ρ_1 of one kind, ρ_2 of another and so on. The pressure on the boundary is now the sum of the pressures exerted by molecules of all kinds. The pressure exerted by the first kind is $\rho_1 RT$, that by the second kind is $\rho_2 RT$ and so on; hence the total pressure p is given by

$$p = \rho_1 RT + \rho_2 RT + \cdots = \rho RT$$

where ρ equals $\rho_1+\rho_2+$. . . . and represents the total mass in unit volume. This formula shows that the pressure of a mixture of gases equals the sum of the pressures which would be exerted separately by the several constituents if each alone were present.

Brownian Movement.—From the value $k = 1.38 \times 10^{-16}$ it is readily calculated that a molecule, or aggregation of molecules, of mass 10^{-12} grams, ought to have a mean velocity of about 2 mm. a second at 0° C. Such a velocity ought accordingly to be set up in a particle of 10^{-12} grams mass immersed in air or liquid at 0° C., by the continual jostling of the surrounding molecules or particles. A particle of this mass is easily visible microscopically, and a velocity of 2 mm. per second would of course be visible if continued for a sufficient length of time. Each bombardment will, however, change the motion of the particle, so that changes are too frequent for the separate motions to be individually visible. But it can be shown that from the aggregation of these separate short motions the particle ought to have a resultant

motion, described with an average velocity which, although much smaller than 2 mm. a second, ought still to be microscopically visible. R. von S. Smoluchowski and Albert Einstein have shown that this theoretically predicted motion is simply that seen in the "Brownian movement" first observed by the botanist Robert Brown in 1827. From observations of the motion, values of ν and N_0 can be deduced that are in fair agreement with those found by the method previously described. Thus the Brownian motion provides visual demonstration of the reality of the heat motion postulated by the kinetic theory. (*See* BROWNIAN MOVEMENT.)

Correction of the Gas Equation.—The laws which have just been stated are obeyed very approximately, but not with perfect accuracy, by all gases of which the density is not too great or the temperature too low. Van der Waals in 1873 ascribed the imperfections of the foregoing formula for the pressure to two causes:—

(a) the calculation has not allowed for the finite size of the molecules, and their consequent interference with one another's motion, and

(b) the calculation has not allowed for the attractive force between the molecules, which, although small, is known to have a real existence. The presence of this force results in the molecules, when they reach the boundary, being acted on by forces in addition to those originating in their impact with the boundary.

To allow for the first of these two factors, on the assumption that a molecule is a hard elastic sphere, Van der Waals found that v in formula (4) should be replaced by $v-b$ where b is four times the aggregate volume occupied by all the molecules in a gram; while to allow for the second factor, on the assumption that the attraction is weak, he replaced p by $p+a/v^2$ where a is a new constant. He thus obtained for the pressure-volume relation the famous equation,

$$\left(p+\frac{a}{v^2}\right)(v-b)=\mathrm{RT},$$

which is known as Van der Waals's equation.

This equation has the great advantage that it predicts a general behaviour of gases under high pressure similar to that which is actually observed. (*See* LIQUEFACTION OF GASES.) Values can be assigned to a and b which make the equation fit the observations roughly, but it cannot be made to fit exactly for any gas.

Several reasons are recognized for the limited success of Van der Waals's equation. The principal one is that the molecules are not elastic solids and cannot even be said really to possess a definite size. When not too close together, two molecules attract each other; as they approach, this attraction increases to a maximum, then decreases to zero and is replaced by a rapidly mounting repulsion. Because of this strong repulsion when close together, the molecules behave in many respects as if they were hard objects having a certain size and shape. The equivalence is not exact, however, and no simple formula can be written to represent exactly the relation between p,v and T. In dealing with certain other phenomena in gases it is convenient to make the same arbitrary assumption that the molecules are small elastic spheres. The properties of such an elastic-sphere gas can then be deduced, and they are found to agree in large measure, although never exactly, with the properties of actual gases.

The Free Path in a Gas.—Let us regard each molecule of a gas provisionally as a small round shot. Each shot travels on in a straight line until it strikes some sort of target, after which its speed is changed and its direction of motion altered. Some molecules strike the target formed by the boundary of the vessel containing the gas; others strike another molecule. If the diameter of each molecule is σ, two molecules cannot pass so close that the distance between their centres is less than σ without a collision taking place, so that each molecule can be regarded as forming a target of area $\pi\sigma^2$. If there are ν molecules per unit volume, the number in a small layer of thickness t and cross section S is νtS, and these form a target of total area $\pi\sigma^2\nu t$S. This quantity is proportional to t, and for a certain value of t it becomes equal to S. When t has this value, the target formed by the combined molecules precisely fills up the whole area S, so that no molecule can get through without a collision. The value of t which makes $\pi\sigma^2\nu t$S equal to S is

$$t=\frac{1}{\pi\nu\sigma^2},$$

so that in travelling through a layer of this thickness in the gas each molecule will collide with some other molecule and have its speed and direction of motion changed.

The foregoing simple calculation requires adjustment, however, in several respects. The molecules are distributed irregularly in space, and allowance must also be made for the variation in their velocities. An exact calculation, first given by Maxwell, shows that the average distance l which a molecule travels before colliding with another molecule is given by

$$l=\frac{1}{\sqrt{2}\,\pi\nu\sigma^2}. \qquad (9)$$

In ordinary air the length of the average free path is 0.000006 cm. or $\frac{1}{400,000}$ of an inch. Since the molecule of air travels at a rate of 50,000 cm. a second, it must describe 8,000,000,000 free paths every second, and so collides with 8,000,000,000 other molecules in each second of its existence.

The individual free paths between collisions will be distributed statistically on both sides of l. The favourite length of free path is actually zero; in this case, a molecule stands almost still until another one strikes it. The frequency of free paths of a given length decreases as the length increases, and paths several times as long as the average length l are rare. (*See* fig. 2.)

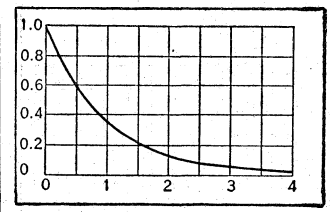
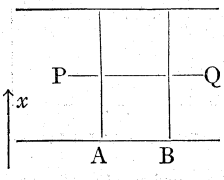


FIG. 2.—THE CURVE REPRESENTS THE RELATIVE NUMBERS OF MOLECULAR FREE PATHS OF VARIOUS LENGTHS. THE LENGTH IS EXPRESSED IN TERMS OF THE AVERAGE LENGTH AS A UNIT

Conduction of Heat.—During the description of any free path the energy of a molecule remains unchanged, although it may gain or lose energy at a collision with another molecule. Consider the motions of molecules in a gas in which the temperature is not uniform. Let one layer AB of the gas be at a temperature T, while another parallel layer A′B′ at a distance l (equal to the mean free path of the molecules) is at a temperature T′. Owing to the difference of temperature, the average energies of the molecules in the two layers will be different; let them be E,E′ respectively. A molecule which starts from a collision at A and describes the free path AA′ before collision at A′ is likely to have the energy E appropriate to the layer AB, while one which describes the free path B′B in the reverse direction is likely to have the energy E′ appropriate to the layer A′B′. If the temperature T is higher than T′, E will be greater than E′, so that more energy is carried from the hot layer AB to the cold layer A′B′ than travels in the reverse direction, and there is a resultant flow of heat-energy from the hot parts of the gas to the cold. In this way the kinetic theory explains the conduction of heat in a gas.



To study the amount of this flow of heat, let us fix our attention on the molecules which cross a unit area PQ, halfway between the two layers AB, A′B′. Half of these will cross PQ in one direction and half in the other. If there are molecules per unit volume each travelling with an average velocity c, then $\frac{1}{2}\nu c$ molecules will cross in each direction per unit time. The stream which crosses in the direction AA′ will transport energy $\frac{1}{2}\nu c$E across the unit area in that direction, while the other stream will transport energy $\frac{1}{2}\nu c$E′ in the reverse direction. The net transport of energy across the plane in unit time is accordingly

$$\tfrac{1}{2}\nu c\,(\mathrm{E}-\mathrm{E}').$$

The foregoing simple discussion needs correction, since the

free paths which cross the plane PQ are not, in general, perpendicular to PQ. A simple mathematical investigation shows that the necessary correction consists in multiplication by a factor $\frac{2}{3}$, so that the net transport of energy is

$$\tfrac{1}{3}\nu c\,(\mathrm{E}-\mathrm{E}').$$

Now by definition of ν and E, νE is the total energy per unit volume at A, and this is equal to $\rho\,\mathrm{C}_v\,\mathrm{T}$, where ρ is the density and C_v is the specific heat of the gas at constant volume. Thus the net transport of energy in unit time may also be taken to be

$$\tfrac{1}{3}\rho\mathrm{C}_v c\,(\mathrm{T}-\mathrm{T}').$$

If x is a co-ordinate measured perpendicular to PQ in the direction AA′, we may put

$$\mathrm{T}-\mathrm{T}'=-l\frac{d'\mathrm{T}}{dx}.$$

The flow of heat-energy per unit area per unit time is then

$$-\vartheta\frac{d'\mathrm{T}}{dx}. \qquad (10)$$

where

$$\vartheta=\tfrac{1}{3}\rho\mathrm{C}_v cl. \qquad (11)$$

In the theory of heat the flow of heat is given by expression (10) where ϑ is the coefficient of conduction of heat. Thus the kinetic theory explains the conduction of heat and predicts a definite value for the coefficient of conduction. This value needs minor adjustments of various kinds, and these result in ϑ assuming a value substantially larger than that given by equation (11).

Viscosity.—The phenomenon of gaseous viscosity can be discussed in a similar way. We now suppose the layers AB and A′B′ of the gas to be moving parallel to PQ with different velocities v,v' so that a molecule in the layer AB is likely to have momentum mv parallel to AB. We now investigate the transfer of momentum mv across the plane PQ. The net transfer per unit time is

$$\tfrac{1}{3}\nu c(mv-mv').$$

Since the density ρ of the gas is equal to mv, this may be put in the form

$$\tfrac{1}{3}\rho c(v-v')$$

or

$$-\tfrac{1}{3}\rho cl\frac{dv}{dx}.$$

This is equal to

$$-\mu\frac{dv}{dx}$$

where

$$\mu=\tfrac{1}{3}\rho cl. \qquad (12)$$

The coefficient in this equation again requires correction. The best value of the coefficient, for molecules in the form of spheres, is 0.499 instead of $\frac{1}{3}$.

Equations (11) and (12) give the following interesting relation between the coefficient of heat conduction ϑ, the viscosity μ and the specific heat at constant volume: $\vartheta=\mu\mathrm{C}_v$. The fully corrected value, for spherical molecules, is close to

$$\vartheta=\tfrac{5}{2}\mu\mathrm{C}_v.$$

This equation is verified experimentally to a close approximation for monatomic gases such as helium or neon. For other gases the coefficient lies between 5/2 and 1, as further analysis indicates that it should do.

Diffusion.—The phenomenon of diffusion can be treated in a very similar manner. We consider a mixture of two gases G_1 and G_2, supposing that the proportion of G_1 in the mixture is θ at AB and is θ' at A′B′. The chance of a molecule which describes a free path AA′ being a molecule of G_1 is θ, so that the mass of the gas G_1 which is carried by each molecule describing such a free path is, *on the average* equal to θm. As in formula (8), the net transport of G_1 across the plane PQ per unit time is

$$\tfrac{1}{3}\nu c(\theta m-\theta' m')$$

or

$$-\tfrac{1}{3}\nu cl\frac{d}{dx}(\theta m).$$

This can be put in the form

$$-\mathrm{D}\frac{d}{dx}(\nu m\theta)$$

where D, which is the coefficient of diffusion, is given by

$$\mathrm{D}=\tfrac{1}{3}cl.$$

The coefficient $\frac{1}{3}$ in this formula is again changed considerably when a more exact calculation is made.

The Size of Molecules.—We have seen that the kinetic theory explains the three phenomena of the conduction of heat, viscosity and diffusion as all three are dependent on transport by molecules describing free paths. The three coefficients for these phenomena are all found to be proportional to the average length of the free paths, and this in turn depends in a definite way upon the diameters of the molecules. Thus a comparison of the theoretical values of these coefficients with observational values provides three distinct means of evaluating the molecular mean free path and, from this, the molecular diameter.

The values of the average free path that are obtained in this way from the conduction of heat agree with those obtained from the viscosity as well as could be expected in view of the fact that the heat energy of the molecules includes energy of rotation and vibration, and the effect of molecular collisions in transferring this part of the energy from one molecule to another is not precisely known. The molecular diameters calculated from observations on diffusion are a little smaller. This is not surprising, in view of the fact that the theoretical formulas are based on the assumption that the molecules are elastic spheres, whereas there is no doubt that in reality they do not possess sharply defined surfaces but merely repel each other with a certain finite force when brought close together. A close examination of the collision process shows that the behaviour of molecules of this sort in the phenomenon of diffusion ought to resemble that of spheres of a somewhat smaller diameter than in the phenomenon of diffusion.

In the following table are shown values of the average free path l of the molecules of several gases at 15° C., as obtained by substituting the observed value of μ for μ in formula (12), with the factor $\frac{1}{3}$ replaced by 0.499, as already explained. Values of the molecular diameter σ calculated from formula (9) using this value of l are also shown. For comparison, there are shown also values of the molecular diameter calculated from the constant b in Van der Waals's equation, in which a and b were chosen to secure the best fit with observations on the gases at ordinary pressures and temperatures. The approximate agreement between the values of σ for many gases as obtained from viscosity and from b furnishes another confirmation of the correctness of the theory.

Gas	Average free path l, centimetres	Molecular diameter σ from viscosity, centimetres	Molecular diameter σ from Van der Waals's b, centimetres
Hydrogen . .	11.8×10^{-6}	2.74×10^{-8}	2.56×10^{-8}
Helium . . .	18.6×10^{-6}	2.18×10^{-8}	2.02×10^{-8}
Nitrogen . .	6.28×10^{-6}	3.75×10^{-8}	3.56×10^{-8}
Oxygen . . .	6.79×10^{-6}	3.61×10^{-8}	3.59×10^{-8}
Carbon dioxide .	4.19×10^{-6}	4.59×10^{-8}	5.60×10^{-8}

In general, the kinetic theory is found to give a satisfactory account of all physical phenomena in gases which are not compressed to too great a density.

Gases at Very Low Density.—As the pressure and density of a gas are reduced, it might be anticipated that the viscosity of the gas and the conduction of heat through it would be reduced, since less density means that less matter is present to cause these phenomena. The kinetic theory indicates, on the other hand, as was pointed out by Maxwell in 1866, that the viscosity and the

conduction of heat ought both to be independent of the density. This conclusion appears at once from formulas (11) and (12), in which the average free path increases in proportion as the density is reduced, as is obvious from formula (9). This surprising conclusion from the theory was soon confirmed by experiment.

Ultimately, however, the viscosity and the conduction of heat must decrease, becoming zero when all of the gas has been removed. The theory indicates that these phenomena should begin to decrease in magnitude when the density has been reduced until the average free path of the molecules becomes greater than the width of the space across which a viscous effect or the flow of heat is being observed. As the density is further decreased, both phenomena should ultimately become proportional to the density of the gas. These conclusions from the theory also have been confirmed by experiment.

CONDENSED PHASES

Kinetic Theory of the Solid and Liquid States.—As has been stated, two molecules are assumed to repel each other only when extremely close together, when the distance between their centres is about the same as the so-called molecular diameter σ; at somewhat greater distances they attract each other. Under the influence of this attraction, as the temperature is reduced and the molecular velocities are thereby diminished, it eventually becomes possible for groups of molecules to cling together. In this way is explained the occurrence of the liquid and solid phases of matter.

Either a liquid or a solid may be in contact with its own vapour at the same temperature, which has the form of a gas. The equilibrium between the vapour and the condensed phase is interpreted in kinetic theory as being statistical in nature. Molecules coming from the vapour are continually impinging upon the liquid or solid phase, and many of them become attached to it, while other molecules which happen to acquire exceptionally high velocities are continually leaving the condensed phase and re-entering the vapour. Thus a continual process of evaporation and condensation is going on. If the temperature is raised, the process of evaporation increases in rapidity and predominates over the process of condensation; the net result is evaporation of the liquid or sublimation of the solid.

As a molecule leaves the liquid or solid phase, it is slowed down in its motion by the attraction of the remaining molecules. In this way, during evaporation or sublimation, heat energy becomes converted into potential energy representing work done against the attractive forces. This process is believed to constitute the chief reason for the large amount of heat that must be supplied in order to convert a substance into the vapour state. Another reason probably lies in a difference between the energy of the molecular motions in the vapour phase as compared with those in the liquid or solid phase at the same temperature. It is only the faster moving molecules that escape in the process of evaporation, and the decrease in their velocities due to the attraction just suffices on the average to lower their kinetic energies to the value proper to the temperature of the vapour. For this reason steam, for example, has the same temperature as the water from which it comes.

The Solid State.—In a solid the molecules are assumed to be so firmly held by their mutual attractions and repulsions that they seldom move far from their equilibrium positions. Thus are explained many facts of everyday experience. For instance, the surface of a finely-carved metal (such as a plate used for steel engraving) will retain its exact shape for centuries, and again, when a metal body is coated with gold-leaf, the atoms of the gold remain on its surface indefinitely; if they moved through any but the smallest distances they would soon become mixed with the atoms of the baser metal and diffused through its interior.

The molecules composing a solid may be compared with a collection of heavy particles connected by light spiral springs, one spring being supposed to connect each pair of adjacent particles. If left to themselves, the particles would settle into certain positions of equilibrium. By the application of external forces, the entire collection of particles could be either compressed or dilated or twisted, just as solid bodies can be.

Let two such masses of molecules be suspended by strings from the same point, and then let one mass be drawn aside, pendulum-wise, and allowed to impinge on the other. After impact the two masses will rebound, and the process may be repeated any number of times, but ultimately the two masses will be found again hanging in contact side by side. At the first impact each layer of surface molecules which takes the shock of the impact will be thrust back upon the layer behind it; this latter layer will in this way be set into motion and so influence the layer still further behind; and so on indefinitely. The impact will accordingly result in all the molecules in the mass being set into motion, and by the time that the masses have ceased impinging on one another the molecules of which they are composed will be performing oscillations about their positions of equilibrium. The kinetic energy with which the moving mass originally impinged on that at rest is now represented by the energy, kinetic and potential, of the small motions of the individual molecules of which the bodies are composed. Thus, in harmony with common experience, when two bodies impinge, the kinetic energy which appears to be lost from the mass-motion of the bodies is in reality transformed into heat-energy.

Again, suppose that two bodies, both devoid of heat, are placed in contact with one another, and that the surface of the one is then rubbed over that of the other. The molecules of the two surface-layers will exert forces upon one another, so that, when the rubbing takes place, each layer will set the molecules of the other into motion, and the energy put into the act of rubbing will be used in establishing this heat-motion. In this we see the explanation of the phenomenon of the generation of heat by friction. At first the heat-motion will be confined to molecules near the rubbing surfaces of the two bodies, but, as already explained, these will in time set the interior molecules into motion, so that ultimately the heat-motion will become spread throughout the whole mass. Here we have an instance of the conduction of heat; it does not, however, explain the whole phenomenon of conduction of heat, for other processes also help in the process, especially in substances which are conductors of electricity.

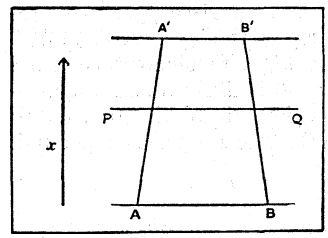


FIG 3.—KINETIC THEORY OF GASES

Diagram showing conduction of molecular heat. A B, A^1B^1 represent layers of a gas at different temperatures. PQ is a layer intermediate between AB and A^1B^1, while AA^1 and B^1B represent the free paths of molecules passing both ways between the two layers

When the molecules of a solid are oscillating about their equilibrium positions there is no reason why their mean distance apart should be the same as when they are at rest. This leads to an interpretation of the fact that a change of dimensions usually attends a change in the temperature of a substance. Suppose, for instance, that two molecules, when at rest in equilibrium are at a distance a apart. It is very possible that the repulsive force they exert when at a distance a–e may be greater than the attractive force they exert when at a distance a–e. If so, their mean distance apart, averaged through a sufficiently long interval of their motion, will be greater than a. A body made up of molecules of this kind will expand on heating.

As the temperature of a body increases, the average energy of its molecules will increase, so that the range of their excursions from their positions of equilibrium will also increase. At a certain temperature a stage will be reached in which it becomes a frequent occurrence for molecules to wander so far from their position of equilibrium that they do not return but fall into a new position of equilibrium and oscillate about this. In this way is explained the slow process of diffusion that occurs in solids at elevated temperatures. If the molecules change positions sufficiently easily, the shape of the body can be altered; the substance has become plastic. Finally, when the energy of motion of the molecules is so great that there is constant rearrangement of position among them, the substance attains to a completely liquid

state. Crystalline solids, however, appear to pass immediately into the liquid state, without becoming plastic, by a process of progressive melting at the surface of the crystals.

Theory of the Solid State.—If the molecules composing a solid are analogous to a set of heavy particles connected by springs, so that the net force on a molecule is proportional to its displacement from its equilibrium position relative to neighboring molecules, then the irregular heat motion of the molecules will cause them to possess potential energy, analogous to the work done in stretching or compressing the springs; and it can be shown from Newton's laws of motion that the average value of this potential energy will be the same as the average value of the kinetic energy of translation of the molecules. According to the principle of the equipartition of energy, the average kinetic energy of translation is the same for all molecules. It follows that monatomic molecules, that is, molecules each consisting of a single atom, should have twice as much heat energy in a solid as in a gas, where potential energy is absent.

In this way was explained the rule that the heat required to raise in temperature by one degree a given number of molecules of a solid consisting of a single chemical element is approximately the same for nearly all elements, and is twice as great as the heat required for the same number of molecules composing a gas such as helium. There are notable exceptions to this rule, however, for example, carbon in the form of diamond; and it was later found that the heat required diminishes for all substances when the temperature is lowered sufficiently, becoming almost zero at 20° or 10° absolute. A mathematical explanation of this failure of equipartition has been obtained from the newer quantum mechanics, but the new theory does not furnish a concrete picture of the molecular motions.

In the solids for which the rule just mentioned holds, each molecule consists of a single atom. Many simple chemical compounds also have the property that in the solid state the atoms enter into the crystalline structure as independent units. The molecule of common salt, for instance, contains two atoms, one of sodium and one of chlorine; but in a crystal of salt the atoms are arranged in a regular crystal lattice in such a way that each atom of sodium is equally distant from six atoms of chlorine and is not united more closely with one than with another. Such a crystal might be said to constitute one big molecule.

In the crystals of other substances, however, the atoms are distinctly grouped into ions or molecules. The heat motion of such crystals can be resolved into a motion of these groups as wholes together with a vibration of the atoms within the groups. (*See* SOLID STATE, THEORY OF; BROWNIAN MOVEMENT; QUANTUM MECHANICS; THERMODYNAMICS; HEAT.)

BIBLIOGRAPHY.—Besides books on the kinetic theory (or dynamical theory) of gases, *see* F. K. Richtmyer and E. H. Kennard, *Introduction to Modern Physics* (3rd. ed. 1942) and F. Seitz, *The Modern Theory* of Solids (1942). (J. H. J.; E. H. KD.)

KING, CLARENCE (1842–1901), U.S. geologist, was born at Newport, R.I., on Jan. 6, 1842. He was known as an organizer and for ten years chief of the U.S. geological exploration of the 40th parallel, which laid the foundation of a systematic survey of the country. In 1862 he graduated from the Sheffield Scientific school of Yale. In the following years he was a student of glaciology under J. L. R. Agassiz; undertook a trip across the continent on horseback; and accepted a position as volunteer geologist on the California geological survey. The high mountain mass of the southern Sierras was discovered by him at this time, and he explored the desert regions of southern California and Arizona.

King persuaded the government to make a thorough geological survey of California in order to develop its mineral resources, and accomplished the famous exploration of the 40th parallel against almost insuperable difficulties. The final summary of this work, a masterpiece of writing, was published in 1878, under the title *Systematic Geology*. He was instrumental in organizing the surveys of the country into one U.S. geological survey in 1879, of which he was made the first director, but retired in order to devote himself to some of the deeper problems of geology. He also gave much of his time to his profession as a mining engineer and skilled adviser in mining suits, and added to his literary reputation by his occasional articles and his book *Mountaineering in the Sierra Nevada*. His exposure of a great diamond fraud in 1872, which might otherwise have equalled the "Mississippi Bubble" as a financial disaster, gave him much prominence in the public eye. He died at Phoenix, Arizona, Dec. 24, 1901.

See S. F. Emmons, "Clarence King," Silliman's *Journal*, series 4, vol. xiii., p. 224–237.

KING, EDWARD (1612–1637), the subject of Milton's *Lycidas*, was born in Ireland, the son of Sir John King, a member of a Yorkshire family which had migrated to Ireland. Edward King was admitted a pensioner of Christ's College, Cambridge, on June 9, 1626, and four years later was elected a fellow. Milton, though two years his senior and himself anxious to secure a fellowship, remained a close friend of his rival, whose amiable character seems to have endeared him to the whole college. King served from 1633 to 1634 as praelector and tutor of his college, and was to have entered the church. His career, however, was cut short by the tragedy which inspired Milton's verse. In 1637 he set out for Ireland to visit his family, but on Aug. 10, the ship in which he was sailing struck on a rock near the Welsh coast, and King was drowned. Of his own writings many Latin poems contributed to different collections of Cambridge verse survive.

KING, EDWARD (1829–1910), English bishop, was the second son of Walter King, archdeacon of Rochester. Graduating from Oriel College, Oxford, he was ordained in 1854, and four years later became chaplain and lecturer at Cuddesdon Theological College. He was principal at Cuddesdon from 1863 to 1873, when he became regius professor of pastoral theology at Oxford and canon of Christ Church. He was a friend of Pusey and a leading member of the English Church Union. In Oxford, and especially among the younger men, he exercised an exceptional influence, due to his remarkable charm in personal intercourse, and his sincerity and goodness. In 1885 he was made bishop of Lincoln, where he won the respect of all by his saintliness. The most eventful episode of his episcopate was his prosecution (1888–90) for ritualistic practices before the archbishop of Canterbury, Dr. Benson, and, on appeal, before the judicial committee of the Privy Council (*see* LINCOLN JUDGMENT). He died at Lincoln on March 8, 1910.

See B. W. Randolph and J. W. Townroe, *The Mind and Work of Bishop King* (1918).

KING, ERNEST JOSEPH (1878–), United States naval officer, was born in Lorain, Ohio, Nov. 23, 1878, and entered the Naval academy in 1897. During the Spanish-American War, as a midshipman, he served on the U.S.S. "San Francisco" on patrol duty off the Atlantic coast, and on blockade duty off Cuba. He graduated from the academy in 1901, ranking fourth in a class of 67. For the subsequent five years he served on the Asiatic, European and Atlantic stations, and, after a three-year tour of duty on land, became aide on the staff of the commander of one of the divisions of the Atlantic fleet, and, later, of the Atlantic fleet proper. Just prior to World War I, King was commander of a destroyer division, and during the war, as a captain, was chief of staff to Admiral Mayo, commanding the Atlantic fleet. For this service he received the Navy cross in 1919. In 1923 he commanded the submarine base at New London, and was awarded the distinguished service medal for directing the salvage operations of the S-51 which sank off Block Island in 1925. Two years later he qualified as a naval flier, and commanded the aeroplane tender "Wright." A second distinguished service medal was awarded him in 1927 for directing the salvaging operations of the S-4, which sank off Provincetown, Mass. King's time from then on was spent largely in naval aviation. He became a rear admiral in 1933, and chief of the bureau of aeronautics the same year. By 1938 he was commanding the aircraft battle forces with the rank of vice admiral, and on Feb. 1, 1941, became commander-in-chief of the Atlantic fleet.

Immediately after Pearl Harbor, King was appointed commander-in-chief of the U.S. fleet. On March 13, 1942, by executive order, the posts of commander-in-chief of the fleet and chief of naval operations were combined into one office. President

Roosevelt nominated King for the position, and the senate confirmed the appointment on March 20, 1942, for a term of four years.

On Dec. 16, 1944 King was given the highest office in the navy —the newly created post of admiral of the fleet. (W. B. Ck.)

KING, HENRY (1591–1669), English bishop and poet, eldest son of John King, afterward bishop of London, was baptized on Jan. 16, 1591. Educated at Westminster school to Christ Church, Oxford, he was made bishop of Chichester in 1642, receiving at the same time the rich living of Petworth, Sussex. After the capture of Chichester by the parliament he was imprisoned for a short time. King was a close friend of Brian Duppa and personally acquainted with Charles I. In one of his poems dated 1649 he speaks of the *Eikon Basilike* as the king's own work. Restored to his benefice at the Restoration, King died at Chichester on Sept. 30, 1669. His works include *Poems, Elegies, Paradoxes and Sonets* (1657), *The Psalmes of David from the New Translation of the Bible, turned into Meter* (1651), and several sermons. He was one of the executors of John Donne, and prefixed an elegy to the 1663 edition of his friend's poems.

King's Poems and Psalms were edited, with a biographical sketch, by J. Hannah (1843); *The Poems of Bishop Henry King,* edited by John Sparrow (London, 1925).

KING (OF OCKHAM), PETER KING, 1ST BARON (1669–1734), lord chancellor of England, was born at Exeter in 1669. He studied at Leiden university, entered the Middle Temple in 1694 and was called to the bar in 1698. In 1700 he was returned to parliament for Beer Alston in Devonshire; he was appointed recorder of Glastonbury in 1705 and recorder of London in 1708. He was chief justice of the common pleas from 1714 to 1725, when he was appointed speaker of the house of lords and was raised to the peerage. In June of the same year he was made lord chancellor, holding office until compelled by a paralytic stroke to resign in 1733. He died at Ockham, Surrey, on July 22, 1734. Lord King as chancellor failed to sustain the reputation which he had acquired at the common law bar. Nevertheless he left his mark on English law by establishing the principles that a will of immovable property is governed by the *lex loci rei sitae,* and that where a husband had a legal right to the personal estate of his wife, which must be asserted by a suit in equity, the court would not help him unless he made a provision out of the property for the wife, if she required it. He was also the author of the act (4 Geo. II. c. 26) by virtue of which English superseded Latin as the language of the courts.

He published some books on Church History: *An Enquiry into the Constitution . . . of the Primitive Church* (anonymous, 1691), and *History of the Apostles' Creed* (1702).

KING, RUFUS (1755–1827), U.S. political leader, was born on March 24, 1755, at Scarborough, Me., then a part of Massachusetts. He graduated from Harvard in 1777 and was admitted to the bar in 1780. He served in the Massachusetts general court in 1783–84 and in the confederation congress in 1784–87. During these critical years he adopted the "states' rights" attitude. It was largely through his efforts that the general court in 1784 rejected the amendment to the Articles of Confederation authorizing congress to levy a 5% impost. On Feb. 21, 1787, he introduced the resolution in congress sanctioning the call for the Philadelphia Constitutional convention, in which he supported the large-state party. In 1788 he was one of the most influential members of the Massachusetts convention which ratified the federal constitution. He removed to New York in 1788, was elected to the New York assembly in the spring of 1789, and was chosen one of the first representatives of New York in the U.S. Senate. In this body he served in 1789–96, becoming one of the recognized leaders of the Federalist party. He was minister to Great Britain in 1796–1803 and again in 1825–26; was the Federalist candidate for vice-president in 1804 and 1808, and for president in 1816. He was returned to the senate in 1813 and re-elected in 1819. In the Missouri compromise debates he supported the antislavery program, but for constitutional reasons voted against the second clause of the Tallmadge amendments providing that slaves born in the state after its admission into the union should be free at the age of 25 years. He died at Jamaica, L.I., on April 29, 1827.

The Life and Correspondence of Rufus King, begun about 1850 by his son, Charles King, was completed by his grandson, Charles R. King, and published in six volumes (1894–1900).

Rufus King's son, JOHN ALSOP KING (1788–1867), was educated at Harrow School, England, and in Paris, served in the War of 1812 as a cavalry lieutenant, and was a member of the New York assembly in 1819–21 and of the New York senate in 1823. When his father was sent as minister to Great Britain in 1825 he accompanied him as secretary of the U.S. legation and remained as chargé d'affaires until Aug. 1826. He was a member of the New York assembly again in 1832 and in 1840, was a Whig representative in congress in 1849–51, and in 1857–59 was governor of New York state. In 1861 he was a delegate to the peace conference in Washington.

Another son, CHARLES KING (1789–1867), was also educated abroad, served in 1814 in the New York assembly and was president of Columbia college in 1849–64.

A third son, JAMES GORE KING (1791–1853), was an assistant adjutant-general in the War of 1812, was a banker in Liverpool and in New York, and was president of the New York and Erie railroad until 1837. In London in 1835 he secured the loan to U.S. bankers of £1,000,000 from the governors of the Bank of England. In 1849–51 he was a representative in congress from New Jersey.

Charles King's son, RUFUS KING (1814–76), graduated from the U.S. military academy in 1833, and was adjutant-general of New York state in 1839–43, a brigadier-general of volunteers in the union army in 1861 and U.S. minister to the Papal states in 1863–67.

His son, CHARLES KING (1844–1933), served in the artillery until 1870 and in the cavalry until 1879; he was appointed brigadier-general U.S. volunteers in the Spanish War in 1898 and served in the Philippines. He wrote *Famous and Decisive Battles* (1884), *Campaigning with Crook* (1890) and stories of military life.

BIBLIOGRAPHY.—*See* E. H. Brush, *Rufus King and His Times* (1926); S. F. Bemis (editor), *The American Secretaries of State* (1927).

KING, THOMAS (1730–1805), English actor and dramatist, was born in London on Aug. 20, 1730, and died on Dec. 11, 1805. Garrick saw him act in a booth at Windsor, and engaged him for Drury Lane. He made his first appearance there in 1748 as the Herald in *King Lear.* He played the part of Allworth in Massinger's *New Way to Pay Old Debts* (1748), and during the summer he played Romeo and other leading parts in Bristol. For eight years he was the leading comedy actor at the Smock Alley theatre in Dublin, but in 1759 he returned to Drury Lane and took leading parts until 1802. One of his earliest successes was as Lord Ogleby in *The Clandestine Marriage* (1766), which was compared with Garrick's *Hamlet* and Kemble's *Coriolanus,* but he reached the height of his reputation with his creation of the part of Sir Peter Teazle in *The School for Scandal* (1777).

KING, WILLIAM (1650–1729), British divine, archbishop of Dublin, the son of James King, an Aberdeen man who migrated to Antrim, was born in May 1650. He was educated at Trinity College, Dublin, and became dean of St. Patrick's in 1689, bishop of Derry in 1691, and archbishop of Dublin in 1702. In 1718 he founded the King lectureship in divinity at Trinity College, Dublin. He died in May 1729. King was a convinced supporter of the revolution and author of *The State of the Protestants in Ireland under King James's Government* (1691). His chief work is *De Origine Mali* (1702; Eng. trans., 1731).

See *A Great Archbishop of Dublin, William King, D.D.,* ed. Sir C. S. King, Bart. (1908).

KING, WILLIAM (1663–1712), English poet and miscellaneous writer, son of Ezekiel King, was educated at Westminster school, and at Christ Church, Oxford. He became known as a humorous writer on the Tory and High Church side. He took part in the controversy aroused by the conversion of the once stubborn nonjuror William Sherlock, one of his contributions being an entertaining ballad, "The Battle Royal," in which the disputants are Sherlock and South. A pamphlet in defense of Den-

mark was rewarded by a secretaryship to the princess Anne. He wrote various pamphlets in support of Charles Boyle in his controversy with Richard Bentley over the genuineness of the *Epistles of Phalaris*. He satirized Bentley in ten *Dialogues of the Dead relating to . . . the Epistles of Phalaris* (1699). In 1700 he published *The Transactioneer, with some of his Philosophical Fancies, in two Dialogues,* ridiculing Hans Sloane, who was then the secretary of the Royal society. This was followed up later with some burlesque *Useful Transactions in Philosophy* (1709). King wrote four pamphlets in support of H. Sacheverell. He held various government offices in Ireland between 1701 and 1708, and in 1711 Swift obtained for King the office of gazetteer, worth from £200 to £250. King was now very poor, but he had no taste for work, and he resigned his office on July 1, 1712. He died on Dec. 25 in the same year.

King's *Remains . . .* were edited by J. Brown in 1732; and in 1776 John Nichols produced an excellent edition of his *Original Works . . . with Historical Notes and Memoirs of the Author.* Dr. Johnson included him in his *Lives of the Poets,* and his works appear in subsequent collections.

KING, WILLIAM LYON MACKENZIE (1874–), Canadian statesman, was born at Berlin—now Kitchener—Ontario, Dec. 17, 1874, the son of John King and Isabel Grace, daughter of William Lyon Mackenzie, M.P., who had been prominent in the struggle for political freedom in 1837. He was educated at Toronto university, and became fellow of political economy in the University of Chicago and of political science in Harvard university. Mr. King entered the public service of Canada in 1900 as deputy Minister of Labour, and acted as editor of *The Labour Gazette* for some years. He was chairman of several royal commissions on industrial and immigration problems. In 1906 he represented Canada in negotiations with the British government on immigration from Britain, and in the same year the honour of C.M.G. was conferred on him. He was Canadian representative to the government of India on immigration from the orient and was one of the British delegates on the International Opium commission in China in 1909. He was elected as a Liberal member of parliament for North Waterloo in 1908, and in 1909 was minister of labour in the Laurier administration.

From 1914–17, under the auspices of the Rockefeller foundation, Mr. King investigated the subject of industrial relations, and afterward wrote *Industry and Humanity, a Study in the Principles Underlying Industrial Reconstruction* (1918), as well as other studies on economic subjects. During World War I he assisted leading industrial corporations in the U.S. to maintain a continuous maximum output of essential war supplies, and industrial representation plans were drafted under his direction which were adopted by the Colorado Fuel and Iron Co., the Bethlehem Steel corporation, the Bethlehem Shipbuilding corporation, the General Electric Co., the Consolidation Coal Co., the International Harvester Co. and other industrial corporations in America. At the National Liberal convention at Ottawa in 1919 he was selected as the successor to Sir Wilfrid Laurier, and became leader of the opposition in the same year. In 1921 he became prime minister of Canada, and in this capacity he attended the Imperial conference in 1923. He held office until 1926, and after one general election in June of that year found himself with a majority of only six in the dominion house of commons. His advice to Governor-General Lord Byng, to dissolve parliament not being taken, he resigned office, which was assumed by the Conservative leader, Arthur Meighen, and a second general election was held in September. The deadlock was then broken by the return of Mr. King to office with a substantial majority. In 1928 he signed the Kellogg Pact on behalf of Canada. His government fell in 1930, but in 1935 Mr. King was again prime minister, supported by an overwhelming majority.

As Premier.—Mr. King's first administration followed the coalition government which had been created during World War I, and, although formerly there had been two parties in the house, a third party, known as the Progressives, was also returned in the general elections of 1921. It was this party which supported the Liberal government. On the dissolution of the house in 1925 an attempt was made to return to the two-party system of government, but the Progressives were still given support. The prime minister himself was defeated, together with several of his ministers, but owing to the support and co-operation of the Progressives he was able to maintain the government until June, 1926, when charges of corruption in the customs service and the refusal of Governor-General Lord Byng to dissolve parliament persuaded King and his ministry to resign. The Conservative Arthur Meighen (*q.v.*) government was unable to maintain a majority. In the succeeding election (1926) the Liberals triumphed and Mackenzie King formed a new government, pledged to the constitution and to a reasonably low tariff. A reaction toward strong Canadian nationalism carried the Conservatives and Premier Bennett into power in 1930. Mackenzie King was able to survive the Beauharnois scandal which besmirched some of his party associates in 1931, and, as the "Bennett Deal" made little headway against the depression that clouded his term, King rode triumphantly back to power in 1935. The strength of the Co-operative commonwealth federation and of the Social credit agitation together with the decisive defeat of the Conservatives seemed to indicate a moderate shift to the left, and King, entering office on Oct. 23, promised to set up a national commission to grapple with unemployment and to plan an extensive public works program.

KING, WILLIAM RUFUS DEVANE (1786–1853), U.S. statesman, was born in Sampson county, N.C., on April 7, 1786. He graduated at the University of North Carolina in 1803, and was admitted to the bar in 1806. He served in the State legislature, 1806–09 and in 1810 was elected to the U.S. house of representatives where he served six years as an ardent supporter of Madison's administration. In 1816 he was appointed secretary of the legation to the Kingdom of Naples and afterward to Russia, serving in both countries under William Pinkney, minister. Upon his return to the United States in 1818 he settled in Alabama, was a delegate to the convention which organized the new state government, and in 1819 was elected one of the first U.S. senators from that state. He served in the senate without intermission until 1844 when he was appointed minister to France. He was instrumental in persuading the French government not to join England in protest against the annexation of Texas by the United States. He returned to Alabama in 1848 and was again elected to the senate to fill an unexpired term, and re-elected for a full term in 1849. In 1850 he became president of the senate. In 1853 he was nominated for vice-president on the Democratic ticket which carried the name of Franklin Pierce at its head and was successful in the election. King died near Cahawba, Ala., on April 18, 1853, soon after taking the oath of his office.

KING, a title, in its actual use generally implying sovereignty of the most exalted rank (O. Eng. *cyning,* abbreviated into *cyng, cing; cf.* O.H.G. *chun- kuning, chun- kunig;* M.H.G. *künic, künec, künc;* Mod. Ger. *König;* O. Norse *konungr, kongr;* Swed. *konung, kung*). Any inclusive definition of the word "king" is, however, impossible. It always implies sovereignty, but in no special degree or sense; *e.g.,* the sovereigns of the British empire and of Siam are both kings, and so too, at least in popular parlance, are the chiefs of many barbarous peoples, *e.g.,* the Zulus. The use of the title is, in fact, involved in considerable confusion, largely the result of historic causes. It is used to translate the Homeric ἄναξ equally with the Athenian βασιλεύς or the Roman *rex.* Yet the Homeric "kings" were but tribal chiefs; while the Athenian and Roman kings were kings in more than the modern sense, as supreme priests as well as supreme rulers and lawgivers (*see* ARCHON; and ROME: ANCIENT HISTORY). In the English Bible, too, the title of king is given indiscriminately to the great king of Persia and to potentates who were little more than Oriental sheikhs. A more practical difficulty, moreover, presented itself in international intercourse, before diplomatic conventions became, in the 19th century, more or less stereotyped. Originally the title of king was superior to that of emperor, and it was to avoid the assumption of the superior title of *rex* that the chief magistrates of Rome adopted the names of *Caesar, imperator* and *princeps* to signalize their authority. But with the develop-

ment of the Roman imperial idea the title emperor came to mean more than had been involved in that of *rex;* very early in the history of the empire there were subject kings; while with the Hellenizing of the East Roman empire its rulers assumed the style of *βασιλεύς,* no longer to be translated "king" but "emperor."

From this Roman conception of the supremacy of the emperor the mediaeval empire of the west inherited its traditions. With the barbarian invasions the Teutonic idea of kingship had come into touch with the Roman idea of empire and with the theocratic conceptions which this had absorbed from the old Roman and oriental views of kingship. With these the Teutonic kingship had in its origin but little in common.

Etymologically the romance and Teutonic words for king have quite distinct origins. The Latin *rex* corresponds to the Sanskrit *rājā,* and meant originally steerman. The Teutonic king on the contrary corresponds to the Sanskrit *janaka,* and "simply meant father, the father of a family, the king of his own kin, the father of a clan, the father of a people." The Teutonic kingship, in short, was national; the king was the supreme representative of the people, "hedged with divinity" in so far as he was the reputed descendant of the national gods, but with none of that absolute theocratic authority associated with the titles of *rex* or *βασιλεύς.* This, however, was modified by contact with Rome and Christianity. The early Teutonic conquerors had never lost their reverence for the Roman emperor, and were from time to time proud to acknowledge their inferiority by accepting titles, such as "patrician," by which this was implied. But by the coronation of Charles, king of the Franks, as emperor of the west, the German kingship was absorbed into the Roman imperial idea, a process which exercised a profound effect on the evolution of the Teutonic kingship generally. In the symmetrical political theory of mediaeval Europe, pope and emperor were sun and moon, kings but lesser satellites; though the theory only partially and occasionally corresponded with the facts. But the elevation of Charlemagne had had a profound effect in modifying the *status* of kingship in nations that never came under his sceptre nor under that of his successors. The shadowy claim of the emperors to universal dominion was in theory everywhere acknowledged; but independent kings hastened to assert their own dignity by surrounding themselves with the ceremonial forms of the empire and occasionally, as in the case of the Saxon *bretwaldas* in England, by assuming the imperial style. The mere fact of this usurpation showed that the title of king was regarded as inferior to that of emperor; and so it continued, as a matter of sentiment at least, down to the end of the Holy Roman empire in 1806 and the cheapening of the imperial title by its multiplication in the 19th century. To the last, moreover, the emperor retained the prerogative of creating kings, as in the case of the king of Prussia in 1701, a right borrowed and freely used by the emperor Napoleon. Since 1814 the title of king has been assumed or bestowed by a consensus of the powers; *e.g.,* the elector of Hanover was made king by the congress of Vienna (1814), and *per contra* the title of king was refused to the elector of Hesse by the congress of Aix-la-Chapelle (1818).

In general the title of king is now taken to imply a sovereign and independent international position. This was implied in the recognition of the title of king in the rulers of Greece, Rumania, Serbia and Bulgaria when these countries were declared absolutely independent of Turkey. The fiction of this independent sovereignty was preserved even in the case of the kings of Bavaria, Saxony and Württemberg, who were technically members of a free confederation of sovereign states, but were not independent, since their relations with foreign powers were almost entirely controlled by the king of Prussia as German emperor.

Divine Right of Kings.—The theory of the "divine right" of kings, as at present understood, is of comparatively modern growth. The principle that the kingship is "descendible in one sacred family," as George Canning put it, is not only still that of the British constitution, as that of all monarchical states, but is practically that of kingship from the beginning. This is, however, quite a different thing from asserting, with the modern upholders of the doctrine of "divine right," not only that "legitimate" monarchs derive their authority from, and are responsible to, God alone, but that this authority is by divine ordinance hereditary in a certain order of succession. The power of popular election remained, even though popular choice was by custom or by religious sentiment confined within the limits of a single family. The custom of primogeniture grew up owing to the obvious convenience of a simple rule that should avoid ruinous contests; the so-called "Salic law" went further, and by excluding females, removed another possible source of weakness. Neither did the Teutonic kingship imply absolute power. The idea of kingship as a theocratic function which played so great a part in the political controversies of the 17th century, is due ultimately to oriental influences brought to bear through Christianity. The crowning and anointing of the emperors, borrowed from Byzantium and traceable to the influence of the Old Testament, was imitated by lesser potentates; and this "sacring" by ecclesiastical authority gave to the king a character of special sanctity. The Christian king thus became, in a sense, like the Roman *rex,* both king and priest. Shakespeare makes Richard II say, "Not all the water in the rough rude sea can wash the balm off from an anointed king" (act iii, sc. 2); and this conception of the kingship tended to gather strength with the weakening of the prestige of the papacy and of the clergy generally. Before the Reformation the anointed king was, within his realm, the accredited vicar of God for secular purposes; after the Reformation he became this in Protestant states for religious purposes also. In England it is not without significance that the sacerdotal vestments, generally discarded by the clergy—dalmatic, alb and stole—continued to be among the insignia of the sovereign (*see* CORONATION). Moreover, this sacrosanct character he acquired, not by virtue of his "sacring," but by hereditary right; the coronation, anointing and vesting were but the outward and visible symbol of a divine grace adherent in the sovereign by virtue of his title. Even Roman Catholic monarchs, like Louis XIV, would never have admitted that their coronation by the archbishop constituted any part of their title to reign; it was no more than the consecration of their title.

In England the doctrine of the divine right of kings was developed to its extremest logical conclusions during the political controversies of the 17th century. Of its exponents the most distinguished was Hobbes, the most exaggerated Sir Robert Filmer. It was the main issue to be decided by the Civil War, the royalists holding that "all Christian kings, princes and governors" derive their authority direct from God, the parliamentarians that this authority is the outcome of a contract, actual or implied, between sovereign and people. In one case the king's power would be unlimited, according to Louis XIV's famous saying: *"L'état, c'est moi!",* or limitable only by his own free act; in the other his actions would be governed by the advice and consent of the people, to whom he would be ultimately responsible. The victory of this latter principle was proclaimed to all the world by the execution of Charles I. The doctrine of divine right, indeed, for a while drew nourishment from the blood of the royal "martyr"; it was the guiding principle of the Anglican church of the Restoration; but it suffered a rude blow when James II made it impossible for the clergy to obey both their conscience and their king; and the revolution of 1688 made an end of it as a great political force. These events had effects far beyond England. They served as precedents for the crusade of republican France against kings, and later for the substitution of the democratic kingship of Louis Philippe, "king of the French by the grace of God and the will of the people," for the "legitimate" kingship of Charles X, "king of France by the grace of God."

The theory of the crown in Britain, as held by descent modified and modifiable by parliamentary action, and yet also "by the grace of God," is in strict accordance with the earliest traditions of the English kingship; but the rival theory of inalienable divine right is not dead. It survives among the Carlists in Spain and the Royalists in France (*see* LEGITIMISTS); and even in England there is a remnant of enthusiasts who still maintain the claims of a remote descendant of Charles I to the throne (*see* JACOBITES).

See J. Neville Figgis, *Theory of the Divine Right of Kings* (Cambridge, 1896). (W. A. P.)

KINGBIRD (*Tyrannus tyrannus*), a common inhabitant of North America, extending from 57° N. lat. southward from southern Canada to Oregon, northern New Mexico, central Texas and Florida, wintering in Central America, Peru and Bolivia. The bird owes its name to the fury with which the cock will attack any bird that approaches his nest. The plumage is slaty-gray above and white beneath, with erectile feathers on the crown,

which part to reveal an orange base, passing into scarlet and then to white farther back. The kingbird lives on insects. The nest is large, neatly lined with fine grass and containing five or six pale salmon-coloured eggs, spotted with purple, brown and orange, especially near the larger end. The gray kingbird (*T. dominicanus*) breeds in the West Indies, Georgia and, rarely, southeastern South Carolina. The Arkansas kingbird (*T. verticalis*), gray above with a conspicuous yellow belly and white edge on either side of the blackish tail, ranges over the western United States. Cassin's kingbird (*T. vociferans*), with white chin, gray breast and yellow belly, breeds in the higher country from Montana, Colorado, central California and western Texas southward. The Tyrannidae are a numerous and diverse group, confined to America. They are the tyrant flycatchers, numbering about 365 species, including the familiar phoebe (*q.v.*), pewee (*q.v.*) and many more brilliantly coloured, including the gorgeous little vermilion flycatcher (*Pyrocephalus rubinus*) from southeastern California, southern Utah and south-central Texas southward to northern South America. (*See* FLYCATCHER.) (G. F. Ss.)

BY COURTESY OF THE AMERICAN MUSEUM OF NATURAL HISTORY

KINGBIRD (TYRANNUS TYRANNUS), A NEW WORLD FLYCATCHER

KING CRAB, or horseshoe crab, a common name applied to any species of the class Xiphosura (*q.v.*).

KINGFISHER. The common kingfisher, *Alcedo ispida,* is a beautiful European bird, extending also to northern Africa and southwest Asia to Sindh. Nowhere very abundant, the brilliant blue-green back and chestnut breast render it conspicuous. The sexes are alike. Its food, which it obtains by plunging into the water, consists of small fish, crustacea and aquatic insects. The legend of the kingfishers, the transformed Ceyx and Alcyone, nesting on the waves during the seven "Halcyon days" (Ovid, *Metam.* bk. xi) is but a legend. In actual fact, the birds nest, early in the year, in a tunnel which they excavate in a bank. The nest consists of the fishbones which the parents throw up, and in it six to eight white, translucent eggs are laid. When the young hatch, the mixture of these bones with the faeces (which the parents, unlike most birds, do not remove) and decaying fish forms a dripping, fetid mass. The flesh of the kingfisher is said to be distasteful to birds of prey. The American belted kingfisher (*Megaceryle alcyon*) is larger and less brilliantly coloured.

BY COURTESY OF THE NATIONAL ASSOCIATION OF AUDUBON SOCIETIES

BELTED KINGFISHER (MEGACERYLE ALCYON), OF NORTH AMERICA

The family *Alcedinidae* to which the kingfisher belongs is related to the hornbills (*Bucerotidae*) and consists of two subfamilies, *Alcedininae* and *Daceloninae.* Very uniform in structure, the kingfishers are characterized by the feebleness of the feet, in which the third and fourth digits are united (*syndactylism*); in two genera, *Alcyone,* and *Ceyx,* the second digit is aborted. *Tanysiptera* is remarkable for the elongation of the middle pair of tail feathers, which are spatulate. The family is cosmopolitan, though only one genus, *Megaceryle alcyon,* is found in America. The Australian region is the headquarters of the group, and here are found the "laughing jackass," *Dacelo gigas,* and its relatives. Many kingfishers live on insects.

The only fossil kingfisher known is *Halcyornis toliapicus,* from the Eocene of Sheppey.

KINGHORN, a royal and small burgh of Fifeshire, Scotland. Pop. (1938) 2,008. It is situated on the Firth of Forth, 2¼ mi. E. by N. of Burntisland, on the L.N.E. railway. It enjoys some repute as a summer resort. The leading industries are shipbuilding, bleaching and the making of flax and glue. Alexander III, who created Kinghorn a burgh, was killed by a fall from his horse over the cliffs, afterward called King's Wud End, a little to the west of the burgh. A monument was erected in 1887, to mark the supposed scene of the accident. Kinghorn belongs to the Kirkcaldy district group of parliamentary burghs. At Pettycur, 1 mi. to the south, is a good small harbour, and at Kinghorn Ness a battery in connection with the fortifications on Inchkeith. About 1 mi. north of Kinghorn is the estate of Grange, which belonged to Sir William Kirkcaldy. Inchkeith, an island, nearly 1 mi. by ¼ mi., in the fairway of the Firth of Forth, 2½ mi. S. by E. of Kinghorn and 3½ mi. N. by E. of Leith, belongs to the parish of Kinghorn. It is a barren rock, with a harbour, and a lighthouse on the summit.

KINGLAKE, ALEXANDER WILLIAM (1809–1891), English historian and traveller, was born at Taunton on Aug. 5, 1809. His father, a successful solicitor, intended his son for a legal career. Kinglake went to Eton and Trinity college, Cambridge, where he matriculated in 1828, being a contemporary and friend of Tennyson and Thackeray. After leaving Cambridge he joined Lincoln's Inn, and was called to the bar in 1837. While still a student he travelled, in 1835, throughout the east. *Eothen,* a sensitive and witty record of impressions keenly felt and remembered, was published in 1844; it remains a classic. In 1854 he went to the Crimea, and was present at the battle of the Alma. Lord Raglan suggested to Kinglake the plan for an elaborate *History of the Crimean War,* and placed his private papers at the writer's disposal. For the rest of his life Kinglake was engaged upon this monumental history. Its eight volumes appeared at intervals between 1863 and 1887. Kinglake lived principally in London, and sat in parliament for Bridgwater from 1857 to 1868. He died on Jan. 2, 1891.

KINGLET: *see* GOLDCREST.

KING-OF-ARMS: *see* HERALDRY.

KING-POST, the vertical member in a king-post truss, which consists of a triangle, whose sloping sides form the main rafters, tied together at the bottom by a horizontal member, which is connected to the apex of the rafters by a vertical member, or king-post, in the centre. The king-post is not a true post, but, being in tension, is actually a tie.

KINGS, FIRST AND SECOND BOOKS OF, in the Bible, the last two books of the "Earlier (or Former) Prophets." They were originally reckoned as a single book (Josephus, Talmud, etc.), though modern Bibles follow the Septuagint, where they are called the third and fourth books of "kingdoms," the first and second being our books of Samuel. All four are closely connected. (*See* SAMUEL, BOOKS OF.)

General Character.—The most noticeable feature in Kings is the recurring interest in the centralization of worship in the Temple at Jerusalem as prescribed in Deuteronomy and enforced by Josiah. To this 2 Sam. vii and xxiv are introductory. Amid the great variety in style and manner which marks the several parts of the history, features which reflect the teaching of Deuteronomy recur regularly in similar stereotyped forms. They point to a specific redaction, and it would seem that the "Deuteronomic" editor who treated the foundation of the Temple, the central event of Solomon's life, as a religious epoch of the first importance, regarded this as the beginning of a new era—the history of Israel under the one sanctuary. Another characteristic feature is the chronological scheme; the events of each king's reign are thrown into a framework on this type: "In the twentieth year of Jeroboam, king of Israel, Asa began to reign over Judah, and reigned in Jerusalem forty-one years." . . . "In the third year of Asa, king of Judah, Baasha began to reign over Israel in Tirzah twenty-four years." The history moves between Judah and Israel according to the date of each accession; as soon as a new king has been introduced, everything that happened in his reign is discussed, and wound up by another formula as to the death and burial of the sovereign; and to this mechanical arrangement the natural connection of events is often sacrificed. The elaborate synchronisms give an aspect of precision; but in reality the data for Judah and Israel do not agree, and remarkable deviations are sometimes found. (*See* BIBLE: *Old Testament: Chronology.*)

Another characteristic is the retrospective application to the history of a standard belonging to the later developments of

Hebrew religion. Thus the redactor regards the sins of Jeroboam as the cause of the downfall of Israel (2 Ki. xvii. 21 *seq.*), and passes an unfavourable judgment upon all its rulers, not merely to the effect that they did evil in the sight of Yahweh but that they followed in the way of Jeroboam. But his opinion was manifestly not shared by Elijah or Elisha, nor by the original narrator of the lives of these prophets. Moreover, the redactor in 1 Ki. iii. 2 *seq.* regards worship at the high places as sinful after the building of the Temple, although even the best kings before Hezekiah made no attempt to suppress these shrines. This feature in the redaction displays itself especially in the speeches placed in the mouths of actors in the history.

For his sources the compiler refers chiefly to two distinct works, the "words" or "chronicles" of the kings of Israel and those of the kings of Judah. How much is copied from these works and how much is expressed in the compiler's own language is, of course, uncertain. The history consists usually of an epitome of each reign. It states the king's age at succession (Judah only), length of reign, death and burial, with allusions to his buildings, wars, and other political events. In the case of Judah, also, the name of the royal or queen-mother is mentioned. The use which the compiler makes of his sources shows that his aim was not the *history* of the past but its *religious significance*.

DIVISION OF THE BOOK

Solomon.—We may divide the book into three sections: (1) the life of Solomon, (2) the kingdoms of Ephraim (or Samaria) and Judah, and (3) the separate history of Judah after the fall of Samaria. The events which lead up to the death of David and the accession of Solomon (1 Ki. i., ii.) are closely connected with 2 Sam. ix.–xx. The unity is broken by the appendix 2 Sam. xxi.–xxiv. which is closely connected, as regards subject-matter, with v.–viii.; the literary questions depend largely upon the structure of the books of Samuel (*q.v.*). It is evident that either the compiler drew upon other sources for the occasion and has been remarkably brief elsewhere, or that his epitomes have been supplemented by the later insertion of material not necessarily itself of late origin. At present 1 Ki. i., ii. are both the close of David's life (no source is cited) and the necessary introduction to Solomon. But both Lucian's recension of the Septuagint (ed. Lagarde) and Josephus, begin the book at ii. 12, thus separating the annalistic accounts of the two. Since the contents of 1 Ki. iii.–xi. do not form a continuous narrative, the compiler's authority ("Acts of S." xi. 41) can hardly have been an ordinary chronicle. The chapters comprise (*a*) sundry notices of the king's prosperous and peaceful career, severed by (*b*) a description of the Temple and other buildings; and they conclude with (*c*) some account of the external troubles. After an introduction (iii.), (*a*) contains generalizing statements of Solomon's might, wealth and wisdom (iv. 20 *seq.*, 25, 29–34; x. 23–25, 27) and stories of a late and popular character (iii. 16–28, x. 1–10, 13). The Septuagint has many deviations from the Hebrew text, and this, together with the present form of the parallel passages in Chronicles, show that the text was not fixed even at a late period (4th–2nd century B.C.). The account of the end of Solomon's reign deals with his religious laxity (xi. 1–13, now in a Deuteronomic form), as the punishment for which the separation of the two kingdoms is announced; and the rise of the adversaries who, according to xi. 25, had troubled the whole of his reign, and are, therefore, not the penalty for the sins of his old age. Both, however, form an introduction to subsequent events, and the life of Solomon concludes with a brief annalistic notice of his death, length of reign, successor, and place of burial. (*See* SOLOMON.)

Ephraim and Judah.—In the history of the two kingdoms the redactor follows a scheme determined by the order of succession. The fluctuation of tradition concerning the schism is evident from a comparison with the Septuagint; and all that is related of Ahijah falls under suspicion of being foreign to the oldest history. The story of the man of God from Judah (xiii.) is shown to be late by its conceptions of prophetism and revelation, and by the term "cities of Samaria" (*v.* 32, for Samaria as a *province*, *cf.* 2 Ki. xvii. 24, 26; for the building of this city by Omri *see* 1 Ki. xvi. 24). It is a late Judaean narrative inserted after the Deuteronomic redaction, and breaks the connection between xii. 31 and xiii. 33 *seq.* The latter describe the idolatrous worship instituted by the first king of the schismatic north, and the religious attitude occurs regularly throughout the compiler's epitome, however brief the reigns of the kings. The brief reign of Elah preserves an important extract in xvi. 9, but the date in *v.* 10*a* (LXX. omits) presupposes the late finished chronological scheme. Zimri's seven days receive the inevitable condemnation, but the older material embedded in xvi. 15*b*–18 is closely connected with *v.* 9 and is continued in the non-editorial portions of Omri's reign (xvi. 21 *seq.*, length of reign in *v.* 23, and *v.* 24).

As regards *Judah*, the vivid account of the accession of Rehoboam in xii. 1–16 is reminiscent of the full narratives in 2 Sam. ix.–xx. and 1 Ki. i., ii. (*cf.* especially *v.* 16 with 2 Sam. xx. 1). Ch. xii. 15*b* refers to the prophecy of Ahijah (*see* above) and "unto this day," *v.* 19, cannot be by a contemporary author; *v.* 17 (LXX. omits) finds a parallel in 2 Chron. xi. 16 *seq.* and may represent an Ephraimite standpoint. The Judaean standpoint is prominent in *vv.* 21–24, where (*a*) the inclusion of Benjamin and (*b*) the cessation of war (at the command of Shemaiah) conflict with (*a*) xi. 32, 36, xii. 20 and (*b*) xiv. 30 respectively. Rehoboam's history, resumed by the redactor in xiv. 21–24, continues with a brief account of the spoiling of the Temple and palace by Sheshonk (Shishak). (The incident appears in 2 Chron. xii. in a rather different context, *before* the details which now precede *v.* 21 *seq.*) The reign of Abijam is entirely due to the editor, whose brief statement of the war in xv. 7*b* is supplemented by a lengthy story in 2 Chron. xiii. (where the name is Abijah). The account of Asa's reign contains a valuable summary of his war with Baasha xv. 16–22; the isolated *v.* 15 is possibly related to *v.* 18 (*cf.* also vii. 51). Jehoshaphat is dealt with in xxii. 41–50 after the death of Ahab; but the Septuagint, which follows a different chronological scheme (placing his accession in the reign of Omri), gives the summary (with some variations) after xvi. 28.

THE OVERTHROW OF OMRI'S DYNASTY

Ahab to Jehu.—The history of the few years between the close of Ahab's life and the accession of Jehu covers about one-third of the entire book of Kings. This is due to the inclusion of narratives, partly of a political character, and partly interested in the work of prophets. The climax is the overthrow of Omri's dynasty by the usurper Jehu, when, after a period of close intercourse between Israel and Judah, their two kings perished. The annals of each kingdom would naturally deal independently with these events, but the present literary structure of 1 Ki. xvii.–2 Ki. xi. is extremely complicated by the presence of the narratives referred to. As regards the framework, the epitome of Ahab is preserved in xvi. 29–34 and xxii. 39; it contains some unknown references (his ivory house and cities), and a stern religious judgment upon his Phoenician alliance, on which the intervening chapters throw more light. The colourless summary of his son, Ahaziah (xxii. 51–53), concludes in 2 Ki. i. 17 *seq.* where *v.* 18 should precede the accession of his brother, Jehoram (*v.* 17*b*). Jehoram is again introduced in iii. 1–3 (note the variant synchronism), but the usual conclusion is wanting. In Judah, Jehoshaphat was succeeded by his son, Jehoram, who had married Athaliah, the daughter of Ahab and Jezebel (viii. 16–24); to the annalistic details (*vv.* 20–22) 2 Chron. xxi. 11 *sqq.* adds a novel narrative. His son, Ahaziah (viii. 25 *sqq.*) is, like his father, denounced for his relations with Israel. He is again introduced in the isolated ix. 29, and Lucian's recension adds after x. 36 a variant summary of his reign but *without* the regular introduction. Further confusion appears in the Septuagint, which inserts after i. 18 (Jehoram of Israel) a notice corresponding to iii. 1–3, and concludes "and the anger of the Lord was kindled against the house of Ahab." This would be appropriate in a position nearer ix. *seq.*, where the deaths of Jehoram and Ahaziah are described.

In 1 Ki. xx., xxii. 1–28 (xxi. follows xix. in the LXX.) Ahab is viewed rather more favourably than in the Elijah-narratives (xix., xxi.) or in the compiler's summary. Ch. xxii. 6, moreover, proves that there is some exaggeration in xviii. 4, 13; the great contest between Elijah and the king, between Yahweh and Baal, has been idealized. Ch. xxii. is important for its ideas of prophetism (es-

pecially *vv.* 19–23; *cf.* Ezek. xiv. 9; 2 Sam. xxiv. 1 (in contrast to 1 Chron. xxi. 1); a gloss at the end of *v.* 28, omitted by the Septuagint, wrongly identifies Micaiah with the well-known Micah (i. 2). Although the punishment passed upon Ahab in xxi. 20 *sqq.* (20*b*–26 betray the compiler's hand; *cf.* xiv. 10 *seq.*) is modified in *v.* 29, this is ignored in the account of his death, xxii. 38, which takes place at Samaria. The ascension of Elijah (2 Ki. ii.) is the introduction to the work of Elisha. Of the stories of Elisha some find him at the head of the prophetic gilds (iv. 1, 38–44, vi. 1–7), in others he has friendly relations with the "king of Israel" and the court. As a personage of almost superhuman dignity he moves in certain narratives where political records appear to have been utilized to describe the activity of the prophets. With vi. 24–vii. 20 (after the complete cessation of hostilities in vi. 23) compare the general style of 1 Ki. xx., xxii.; with the famine in Samaria, vi. 25, *cf. ibid.* xvii.; with the victory, *cf. ibid.* xx. The account of Elisha and Hazael (viii. 7–15) implies friendly relations with Damascus (in *v.* 12 the terrors of war are in the future). Ch. ix. 7–10*a* are a Deuteronomic insertion amplifying the message in *vv.* 3–6 (*cf.* 1 Ki. xxi. 20 *seq.*). The oracle in ix. 25 *seq.* is not that in 1 Ki. xxi. 19 *seq.* and mentions the additional detail that Naboth's sons were slain. Here his field or portion is located near Jezreel, but in 1 Ki. xxi. 18 his vineyard is by the royal palace in Samaria (*cf.* xxii. 38 and contrast xxi. 1, where the LXX. omits reference to Jezreel). This variation reappears in 2 Ki. x. 1, 11 *seq.*, and 17; in ix. 27 compared with 2 Chron. xxii. 9; and in the duplication of an historical incident, viz., the war against the Aramaeans at Ramoth-Gilead (*a*) by Jehoshaphat and Ahab, and (*b*) by Ahaziah and Jehoram, in each case with the death of the Israelite king, at Samaria and Jezreel respectively (*see* above, and observe the contradiction in 1 Ki. xxi. 29 and xxii. 38). These and other questions here are involved with (*a*) the probability that Elisha's work belongs rather to the accession of Jehu, with whose dynasty he was on most intimate terms until his death some 45 years later (2 Ki. xiii. 14–21), and (*b*) the problem of the wars between Israel and Syria which appear to have begun only in the time of Jehu (x. 32). (*See* ELIJAH, ELISHA.)

Dynasty of Jehu.—There is no editorial introduction to Jehu (x. 32 *sqq.*). The summary mentions the beginning of the Aramaean wars, the continuation of which is found in the redactor's account of his successor, Jehoahaz (xiii. 1–9). But xiii. 4–6 modify the disasters, and by pointing to the "saviour" or deliverer (*cf.* Judges iii. 9, 15) seem to anticipate xiv. 27. The self-contained account of Jehoash (xiii. 10–13) is supplemented (*a*) by the story of the death of Elisha (*vv.* 14–21), who would seem to have flourished *after* the rise of Jehu and not *before*, and (*b*) by some account of the Aramaean wars (*vv.* 22–25). Here, *v.* 23 is noteworthy for the sympathy towards the northern kingdom (similarly *vv.* 4–6). (*c*) The defeat of Amaziah of Judah appears in xiv. 8–14 after the annals of Judah, although from an Israelite source (*v.* 11*b* Bethshemesh is defined as Judaean.)

In Judah Jehu's reform and the overthrow of Jezebel (ix., x. 15–28) find their counterpart in the murder of Athaliah and the destruction of the temple of Baal (xi. 18). The editorial conclusion of the reign of Ahaziah, the introduction to that of Athaliah, and the sources for both are wanting. The lengthy document describing the accession of Joash and the abruptly introduced priest, Jehoiada, shows an obvious interest in the Temple and temple-procedure; and both xi. and xii. resemble xxii. *seq.* Azariah (Uzziah) is briefly summarized in xv. 1–7, hence the notice in xiv. 22 seems out of place; perhaps the usual statements of Amaziah's death and burial (*cf.* xiv. 20*b*, 22*b*), which were to be expected after *v.* 18, have been supplemented by the account of the rebellion (*vv.* 19, 20*a*, 21). Both xiv. 22 and xv. 5 presuppose fuller records of which 2 Chron. xxvi. 6–7, 16–20 may represent later and less trustworthy versions. The chronological notes for the accession of Azariah imply different views of the history of Judah after the defeat of Amaziah; with xiv. 17, *cf.* xiii. 10, xiv. 2, 23, but contrast xv. 1, and again *v.* 8.

The important reign of Jeroboam II. of Israel is dismissed as briefly as that of Azariah (xiv. 23–29). Of his successors Zechariah, Shallum and Menahem only the briefest records remain, now embedded in the editorial framework (xv. 8–25). The summary of Pekah (?the same as Pekahiah) contains excerpts which form the continuation of the older material in *v.* 25 (*cf.* also *vv.* 10, 14, 16, 19, 20). For a similar adjustment of an earlier record to the framework, *see* above on 1 Ki. xv. 25–31, xvi. 8–25. Two accounts of the fall of Samaria are given, one under the reign of the contemporary Judaean Hezekiah (xvii. 1–6, xviii. 9–12). Reflections on the disappearance of the northern kingdom appear in xvii. 7–23 and xviii. 12; the latter belongs to the Judaean history. The former is composite: xvii. 21–23 (cf. *v.* 18) look back to the introduction of calf-worship by Jeroboam I., and agree with the compiler's usual standpoint; but *vv.* 19–20 include Judah and presuppose the exile. The remaining verses survey types of idolatry partly of a general kind (*vv.* 9–12, 16*a*), and partly characteristic of Judah in the last years of the monarchy (*vv.* 16*b*. 17). The brief account of the subsequent history of Israel in xvii. 24–41 is not from one source; the piety of the new settlers (*v.* 32–34*a*, 41) conflicts with the later point of view in 34*b*–40. The last-mentioned supplements the epilogue in xvii. 7–23, forms a solemn conclusion to the history of the northern kingdom, and is apparently aimed at the Samaritans.

Later History of Judah.—The summary of Jotham (xv. 32–38) alludes to the hostility of Pekah (*v.* 37) upon which the Israelite annals are silent. This is resumed in the account of Ahaz (xvi. 5 *sqq.*; *v.* 6 is confused), and is supplemented by a description, evidently from the Temple records, in which the ritual innovations by "King Ahaz" are described (*vv.* 10–18). The summary of Hezekiah (xviii. 1–8) emphasizes his important religious reforms and includes two references to his military achievements. Of these *v.* 7 is supplemented by (*a*) the annalistic extract in *vv.* 13–16, and (*b*) narratives in which the great contemporary prophet, Isaiah, is the central figure. (On these *see* HEZEKIAH ISAIAH.) In the accounts of the reactionary kings Manasseh and Amon, xxi. 7–15, refer to the exile and find a parallel in xxiii. 26 *seq.*; and xxi. 10 *sqq.* are replaced in 2 Chron. xxxiii. 10–20 by a novel record of Manasseh's penitence (*see* also *ibid. v.* 23 and note omission of 2 Ki. xxiii. 26 from Chron.).

Josiah's reign forms the climax of the history. The usual framework (xxii. 1; 2, xxiii. 28, 30*b*) is supplemented by narratives dealing with the Temple repairs and his reforms. These are closely related to xi. *seq.* (*cf.* xxii. 3–7 with xii. 4 *sqq.*), but have signs of revision; xxii. 16 *seq.*, xxiii. 26 *seq.*, point distinctly to the exile, and xxiii. 16–20 are an insertion (the altar in *v.* 16 is already destroyed in *v.* 15) after 1 Ki. xiii. The reforms of Josiah are described in terms that point to an acquaintance with the teaching of Deuteronomy which promulgates the reforms themselves. (*See* DEUTERONOMY, JOSIAH.)

For the last four kings of Judah, the reference to the worship at the high places (presumably abolished by Josiah) are wanting; xxiv. 3 *seq.*, and probably *v.* 2, which treat the fall of Judah as the punishment for Manasseh's sins, are a Deuteronomic insertion; *v.* 13 *seq.* and *v.* 15 *seq.* are duplicates. With xxiv. 18–xxv. 21 *cf.* Jer. lii. 1–27 (the text of the latter, especially *vv.* 19 *sqq.*, is superior); and the fragments *ibid.* xxxix. 1–10. Ch. xxv. 22–26 appears in much fuller form in Jer. xl. 7–9, xli. 1–3, 17 *seq.* It is noteworthy that Jeremiah (in contrast to Isaiah, above) does not enter into the history in Kings. The book of Chronicles in general has a briefer account of the last years, and ignores both the narratives which also appear in Jeremiah and the concluding hopeful note struck by the restoration of Jehoiachin (xxv. 27–30).

Conclusions.—It would seem that there was an independent history of (north) Israel with its own chronological scheme. It was based upon annals and fuller political records and at some period apparently passed through circles where the purely domestic stories of the prophets (Elisha) were current (*cf.* similarly the prophetic narratives in the books of Samuel). This was ultimately taken over by a Judaean editor who was under the influence of the far-reaching reforms ascribed to the 18th year of Josiah (621 B.C.). Certain passages seem to imply that in his time the Temple was still standing and the Davidic dynasty uninterrupted. On the other hand this could apply to the *second*

Temples and to the resumption of the Davidic monarchy under Zerubbabel; and if the object of the compiler was to show from past history that "the sovereign is responsible for the purity of the national religion" (G. F. Moore, *Ency. Bib.*, col. 2,079), a later date would satisfy the conditions. Moreover, although the phrase "unto this day" sometimes seems to presuppose a pre-exilic date, it is retained even in the very late books of Chronicles (2 Chron. v. 9, viii. 8, xxi. 10, compared with 1 Ki. viii. 8, ix. 21, 2 Ki. viii. 22). Again, not only is the history carried down to the death of Jehoiachin (2 Ki. xxv. 27, 29 *sqq.*), but the chronological scheme (480 years from the beginning of the Temple to the return from Babylon) points to a date subsequent to 537.

One may contrast the Israelite detailed narratives (relatively early) with those of Judaean origin (often secondary, and with an anti-Israelite bias). The sympathetic treatment of the northern history in 2 Ki. xiii. 4 *seq.* 23, xiv. 26, has literary parallels in the Deuteronomic redaction of Judges (where Israelite tradition is again predominant); and is quite distinct from the hostile (Judaean) feeling to the north which is also Deuteronomic. In other words, a *twofold* Deuteronomic redaction of Kings can be traced (similarly in the Book of Joshua); and, as the northern prophet Hosea (*q.v.*) approximates the Deuteronomic standpoint, it is possible that the first Deuteronomic compilation of Kings originated outside Judah. Note that an Israelite source could be drawn upon for an impartial account of Judaean history (2 Ki. xiv. 8–14), and that the book of Jeremiah, with its strong Deuteronomic colouring takes a sympathetic view of (north) Israel. Although ultimately Judaean writers rejected as heathen a people who claimed to be followers of Yahweh (Ezr. iv. 2; 2 Ki. xvii. 28, 33; contrast *ib.* 34–40, a *secondary* insertion) the violent anti-Samarian feeling had once been less prominent; and it may reasonably be supposed that relations between north and south had been closer. But the age wherein the composition of the book of Kings may be placed has been left exceptionally obscure; the Chronicler's history (Chron.–Ezra–Nehemiah) has its own ideas of the course of events, and it has virtually superseded both Kings and Jeremiah, which now have an abrupt conclusion. (*See* further: JEWS.)

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KING'S BENCH, COURT OF, is descended from the court held *coram rege* when it was part of that undifferentiated *Curia Regis* which was still performing legislative and executive as well as judicial functions. It was a court to hear cases which concerned the king, or cases affecting great persons privileged to be tried only before the king himself. If the king was absent abroad, such cases were heard *coram consilio nostro.* It was also a court to correct the errors and defaults of all other courts, and after the close of the civil wars of Henry III.'s reign was mainly occupied with the trial of criminal or quasi-criminal cases. In 1268 it obtained a chief justice of its own, but only very gradually did it become a separate court of common law. It still followed the king whenever summoned to do so, although the presence of the king in court became a fiction by the end of the 14th century, during which it lost its former close connection both with the king himself and with the king's council. Thus it was not until a century after the court of common pleas (*q.v.*) had become a distinct court of common law that the court of king's bench attained a similar position. It exercised a supreme and general jurisdiction, which comprised (1) criminal jurisdiction; (2) civil jurisdiction; and (3) jurisdiction over the errors of inferior courts including those of the court of common pleas, until by the Act of 1830 the court of exchequer chamber became a court of appeal intermediate between the three common law courts and parliament. It also heard appeals from the court of king's bench in Ireland till 1783, and exercised jurisdiction over officials and others by means of the prerogative writs; *e.g., habeas corpus, certiorari, prohibition, mandamus, quo warranto* and *ne exeat regno.*

By the Judicature act, 1873, the court became the king's bench division of the High Court of Justice. It consists of a chief justice—now lord chief justice of England—and 18 puisne judges. Appeals from inferior courts come before a divisional court, composed of two or three judges of the division. For appeals from the divisional court to the court of appeal *see* PRACTICE and PROCEDURE.

See Baldwin, *The King's Council;* Holdsworth, *Hist. Eng. Law,* vol. i. (H. H. L. B.)

KINGSBRIDGE, a market town of Devonshire, England, 48 mi. S.S.W. of Exeter, on a branch of the G.W.R. Pop. of urban district (1938) 3,084. Area 1.8 sq.mi. Kingsbridge (*Kyngysbrygge*) was formerly included in the manor of Churchstow, the first trace of its separate existence being found in the Hundred Roll of 1276, which records that in the manor of Churchstow there is a new borough, which has a Friday market and a separate assize of bread and ale. The name Kingsbridge however does not appear till half a century later. Kingsbridge became a separate parish before 1414 when the church was rebuilt and consecrated to St. Edmund. In 1461 the abbot of Buckfastleigh obtained a Saturday market at Kingsbridge and a three-days' fair at the feast of St. Margaret, both of which are still held. The manor remained in possession of the abbot until the Dissolution, when it was granted to Sir William Petre. Kingsbridge was never represented in parliament or incorporated by charter, the government being by a portreeve. In 1798 the town mills were converted into a woollen manufactory, which up to recent times produced large quantities of cloth, and the serge manufacture was introduced early in the 19th century. The town has been famous from remote times for a beverage called "white ale." Included in Kingsbridge is the little town of Dodbrooke, which at the time of the Domesday Survey had a population of 42, and a flock of 108 sheep and 27 goats; and in 1257 was granted a Wednesday market and a fair at the Feast of St. Mary Magdalene. It lies 6 mi. from the English channel, at the head of an inlet, on a sharply sloping site. The church of St. Edmund is mainly Perpendicular, but there are Transitional Norman and Early English portions. Kingsbridge is an important agricultural town; there is also an iron foundry, a brewery, a flour mill and implement works.

KING'S COUNSEL, a title conferred on barristers by Royal patent on the recommendation of the lord chancellor, the patent of appointment being contained in the words "one of His Majesty's counsel learned in the law." It confers certain rights of precedence. The first such counsel was Sir Francis Bacon, appointed by Queen Elizabeth. The official costume includes a silk gown, hence the expression to "take silk."

KING'S COUNTY: *see* OFFALY COUNTY.

KING'S EVIDENCE, the evidence given to the Crown by an accomplice in crime upon an explicit promise of pardon. The conditions governing such evidence are subject to the discretion of the court. It is usually obtained, on application by the counsel for the prosecution, after acquittal of the person about to be examined in order that the full facts may be revealed without fear of reprisal.

In the United States such evidence goes under the name of "State's evidence." This device of securing the testimony of one criminal by a promise of immunity is in common use. The promise is generally merely an agreement by the prosecuting attorney with the consent of the court to *nol. pros.* the case against the testifying criminal if full disclosure be made, though the attorney may also agree to use his efforts to secure a pardon.

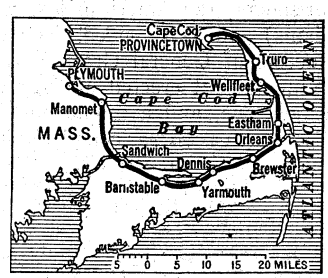
KING'S EVIL, an old, but not yet obsolete, name given to the scrofula, which in the popular estimation was deemed capable of cure by the royal touch. The practice of "touching" for the scrofula, or "King's Evil," was confined amongst the nations of Europe to the two Royal Houses of England and France. It cannot be traced back to an earlier date than the reign of Edward III. in England, and of St. Louis (Louis IX.) in France; consequently, it is believed that the performance of healing by the touch emanated in the first instance from the French crusader-king, whose miraculous powers were subsequently transmitted to his descendant and representative, Isabella of Valois, wife of Ed-

ward II. of England. In any case, Queen Isabella's son and heir, Edward III., claimant to the French throne by his mother, was the first English king to order a public display of an attribute that had hitherto been associated with the Valois kings alone. From his reign dates the use of the "touch-piece," a gold medal given to the sufferer as a kind of talisman, which was originally the angel coin, stamped with designs of St. Michael and of a three-masted ship.

The actual ceremony seems first to have consisted of the sovereign's personal act of washing the diseased flesh with water, but under Henry VII. the use of an ablution was omitted, and a regular office was drawn up for insertion in the Service Book. The king now merely touched his afflicted subject in the presence of the court chaplain who offered up certain prayers and afterwards presented the touch-piece, pierced so that it might be suspended by a ribbon round the patient's neck. The Hanoverian kings declined to touch, and there exists no further record of any healing ceremony thenceforward at the English court. The practice, however, was continued by the exiled Stuarts, and was constantly performed in Italy by James Stuart, "the old Pretender," and by his two sons. *See* A. M. Hocart, *Kingship* (1927).

KINGSFORD, WILLIAM (1819–1898), British engineer and Canadian historian, was born in London on Dec. 23, 1819. He first studied architecture, but enlisted in the 1st Dragoon Guards, from which he obtained his discharge in Canada in 1841. After serving in the office of the city surveyor of Montreal, he made a survey for the Lachine canal (1846–48), and was employed in the building of the Hudson River railroad in 1849, and on the Panama railroad in 1851. From 1853 to 1864 he was surveyor, and later district superintendent, for the Grand Trunk railroad. From 1872 to 1879 he held a Government post in charge of the harbours of the Great Lakes and the St. Lawrence. He died on Sept. 28, 1898. Besides a *History of Canada* (10 vols., 1887–97), ending with the union of Upper and Lower Canada in 1841, his works include *Canadian Archaeology* (1886); and *Early Bibliography of Ontario* (1892).

KING'S HIGHWAY, an American thoroughfare 90 m. in length extending from Plymouth, Mass., to Provincetown, in the same State. First called King's highway during colonial days, this name was revived during the Pilgrim Tercentenary of 1920. Within sight of Cape Cod bay and the Atlantic ocean through much of the distance, nearly every mile contains historic landmarks associated with the struggles of the hardy New Englanders who helped to found the Union. Cape Cod, throughout which the highway passes, is a Mecca for the tourist. Its attractions include woods, ponds, sea views and quaint, picturesque villages, among which are Manomet, Sandwich, Barnstable, Yarmouth, Brewster, Eastham, Wellfleet, Orleans and Truro.



KINGSLEY, CHARLES (1819–1875), English clergyman, poet and novelist, was born on June 12, 1819, at Holne vicarage, Dartmoor, Devon. His early years were spent at Barnack in the Fen country and at Clovelly in North Devon. The scenery of both made a great impression on his mind, and was afterwards described with singular vividness in his writings. He was educated at private schools and at King's college, London, after his father's promotion to the rectory of St. Luke's, Chelsea. In 1838 he entered Magdalene College, Cambridge, and in 1842 he was ordained to the curacy of Eversley in Hampshire, to the rectory of which he was not long afterwards presented, and this, with short intervals, was his home for the remaining thirty-three years of his life. In 1844 he married Fanny, daughter of Pascoe Grenfell, and in 1848 he published his first volume, *The Saint's Tragedy.* In 1859 he became chaplain to Queen Victoria; from 1860 to 1869 he was professor of modern history at Cambridge. In 1873 he became a canon of Westminster. He died at Eversley on Jan. 23, 1875.

Kingsley threw himself heartily into the movement known as Christian Socialism, of which Frederick Denison Maurice was the recognized leader, and for many years he was considered as an extreme radical in a profession the traditions of which were conservative. While in this phase he wrote his novels *Yeast* and *Alton Locke,* in which he showed sympathy with the aims of the Chartists. Yet even then he considered that the true leaders of the people were a peer and a dean, and there was no real inconsistency in the fact that at a later period he was among the defenders of Governor Eyre in the measures adopted by him to put down the Jamaican disturbances. He looked rather to the extension of the co-operative principle and to sanitary reform for the amelioration of the condition of the people than to any radical political change. His politics might therefore have been described as Toryism tempered by sympathy, or as Radicalism tempered by hereditary scorn of subject races. He was bitterly opposed to what he considered to be the mediaevalism and narrowness of the Oxford Tractarian movement. In *Macmillan's Magazine* for Jan. 1864 he asserted that truth for its own sake was not obligatory with the Roman Catholic clergy, quoting as his authority John Henry Newman (*q.v.*). In the ensuing controversy Kingsley was completely discomfited. He was a broad churchman, who held what would be called a liberal theology, but the more orthodox and conservative elements in his character gained the upper hand as time went on.

As a novelist his chief power lay in his descriptive faculties. The descriptions of South American scenery in *Westward Ho!,* of the Egyptian desert in *Hypatia,* of the North Devon scenery in *Two Years Ago,* are among the most brilliant pieces of word-painting in English prose-writing; and the American scenery is even more vividly and more truthfully described when he had seen it only by the eye of his imagination than in his work *At Last,* which was written after he had visited the tropics. His sympathy for children taught him how to secure their interests. His version of the old Greek stories entitled *The Heroes,* and *Water-babies* and *Madam How and Lady Why,* in which he deals with natural history, rank high among books for children.

In person Charles Kingsley was tall and spare, sinewy rather than powerful, and of a restless excitable temperament. His complexion was swarthy, his hair dark, and his eye bright and piercing. His temper was hot, kept under rigid control; his disposition tender, gentle and loving, with flashing scorn and indignation against all that was ignoble and impure; he was a good husband, father and friend. One of his daughters, Mary St. Leger Kingsley (Mrs. Harrison), became well known as a novelist under the pseudonym of "Lucas Malet."

Kingsley's life was written by his widow in 1877, entitled *Charles Kingsley, his Letters and Memoirs of his Life,* and presents a very touching and beautiful picture of her husband, but perhaps hardly does justice to his humour, his wit, his overflowing vitality and boyish fun.

The following is a list of Kingsley's writings:—*Saint's Tragedy,* a drama (1848); *Alton Locke,* a novel (1849); *Yeast,* a novel (1849); *Twenty-five Village Sermons* (1849); *Phaeton, or Loose Thoughts for Loose Thinkers* (1852); *Sermons on National Subjects* (1st series, 1852); *Hypatia,* a novel (1853); *Glaucus, or the Wonders of the Shore* (1855); *Sermons on National Subjects* (2nd series, 1854); *Alexandria and her Schools* (1854); *Westward Ho!* a novel (1855); *Sermons for the Times* (1855); *The Heroes,* Greek fairy tales (1856); *Two Years Ago,* a novel (1857); *Andromeda and other Poems* (1858); *The Good News of God,* sermons (1859); *Miscellanies* (1859); *Limits of Exact Science applied to History* (Inaugural Lectures 1860); *Town and Country Sermons* (1861); *Sermons on the Pentateuch* (1863); *Water-babies* (1863); *The Roman and the Teuton* (1864); *David and other Sermons* (1866); *Hereward the Wake,* a novel (1866); *The Ancient Régime* (Lectures at the Royal Institution, 1867); *Water of Life and other Sermons* (1867); *The Hermits* (1869); *Madam How and Lady Why* (1869); *At last* (1871); *Town Geology* (1872); *Discipline and other Sermons* (1872); *Prose Idylls* (1873); *Plays and Puritans* (1873); *Health and Education* (1874); *Westminster Sermons* (1874); *Lectures delivered in America* (1875). He was a large contributor to periodical literature; many of his essays are included in *Prose Idylls* and other works in the above list. His contributions to the *Christian Socialist* and *Politics for the People* were frequently signed "Parson Lot."

KINGSLEY, HENRY (1830–76), English novelist, younger brother of Charles Kingsley, was born at Barnack, Northampton-

shire on Jan. 2, 1830. In 1853 he left Oxford, where he was an undergraduate at Worcester college, for the Australian goldfields. This venture, however, was not a success, and after five years he returned to England. He then wrote *Recollections of Geoffrey Hamlyn* (1859), a novel of Australian life. This was the first of a series of novels of which *Ravenshoe* (1861), his best work, and *The Hillyars and The Burtons* (1865) are the best known. He edited for 18 months the *Edinburgh Daily Review,* for which he had acted as war correspondent during the Franco-German War. He died at Cuckfield, Sussex, on May 24, 1876.

See a memoir by C. K. Shorter prefixed to a reprint (1894) of Kingsley's novels.

KINGSLEY, MARY HENRIETTA (1862–1900), English traveller, ethnologist and author, daughter of George Henry Kingsley (1827–1892), brother of Charles Kingsley (*q.v.*), was born in Islington, London, on Oct. 13, 1862. She studied sociology at Cambridge, and on the death of her parents she resolved to study native religion and law in West Africa. From 1893–94, she pursued her investigations at Kabinda, Old Calabar, Fernando Po, and on the Lower Congo. After a short visit to England, she returned in Dec. 1894, and, proceeding via Old Calabar to the French Congo, ascended the Ogowé river, traversing much unknown country. Returning to the coast Miss Kingsley went to Corisco and to the German colony of Cameroon, where she made the ascent of the Great Cameroon (13,760 ft.) from a direction until then unattempted. She returned to England in Oct. 1895. The story of her adventures and her investigations in fetish is vividly told in her *Travels in West Africa* (1897).

Her chief concern was for the development of the negro on African lines and for the government of the British possessions on the West Coast by methods which left the native "a free unsmashed man—not a whitewashed slave or an enemy." Miss Kingsley made preparations for a third journey to the West Coast, but the Boer War changed her plans, and she went first to South Africa to nurse fever cases. She died of enteric fever at Simon's Town, where she was engaged in tending Boer prisoners, on June 3, 1900. Miss Kingsley's works, besides her *Travels,* include *West African Studies, The Story of West Africa,* a memoir of her father prefixed to his *Notes on Sport and Travel* (1899), and many contributions to the study of West African law and folk-lore.

See a notice by George A. Macmillan prefixed to a second edition (1901) of the *Studies.*

KING'S LYNN, municipal borough and seaport in Norfolk, England, on the estuary of the Great Ouse near its outflow into the Wash. Pop. (1938) 24,150. Area, 10.4 sq.mi.

As Lynn (Lun, Lenne, Bishop's Lynn) owes its origin to the trade which was carried by the Ouse and its tributaries, its history dates from the period of settled occupation by the Saxons. It belonged to the bishops of Thetford before the Conquest. Herbert de Losinga (*c.* 1054–1119) granted its jurisdiction to the cathedral of Norwich, but this right was resumed by a later bishop, John de Gray, who in 1204 had obtained from John a charter establishing Lynn as a free borough. A grant in 1206 gave the burgesses a guild merchant, the husting court to be held once a week only, and general liberties according to the customs of Oxford, saving the rights of the bishop and the earl of Arundel, whose ancestor William D'Albini had received from William II the moiety of the tolbooth.

Henry VIII granted Lynn two charters, the first (1524) incorporating it under mayor and aldermen; the second (1537) changing its name to King's Lynn and transferring to the corporation all the rights hitherto enjoyed by the bishop. Edward VI added the possessions of the guild of the Trinity, or guild merchant, and St. George's guild, while Queen Mary annexed South Lynn. Admiralty rights were granted by James I. Lynn, which had declared for the crown in 1643, surrendered its privileges to Charles II in 1684, but recovered its charter on the eve of the Revolution. The pleasure fair is still held in February. A royal charter of 1524 established the cattle, corn and general provisions market, still held every Tuesday and Saturday. Lynn has ranked high among English seaports from early times. The parishes of Gaywood and West Lynn were added to the borough in 1935.

It is 99 mi. N. by E. from London, by the L.N.E.R. On the land side the town was formerly defended by a fosse; there are remains of the old wall, including the handsome 15th century South gate. Several by-channels of the river are known as fleets, recalling the similar *flethe* of Hamburg. In the centre of the Public Walks is an octagonal Chapel of the Red Mount (Perpendicular), once frequented by pilgrims. The church of St. Margaret, formerly the priory church, has two towers, and contains two of the finest monumental brasses known (dated 1349 and 1364). St. Nicholas chapel is also Perpendicular, with a tower of earlier date. All Saints' church in South Lynn is a Decorated cruciform structure. Of a Franciscan friary there remains the Perpendicular Grey Friars' Steeple, and the doorway remains of a priests' college founded in 1502. The grammar school was founded in the reign of Henry VIII. The guildhall has a Renaissance front, the custom-house is of the 17th century. Fanny Burney was born there.

The fisheries are important, including mussel-fisheries under the jurisdiction of the corporation, and there are also malt houses, breweries, corn-mills, iron and brass foundries, agricultural implement manufactories, shipbuilding yards, rope and sail works.

KING'S MOUNTAIN, a mountainous ridge in Gaston county, North Carolina, and York county, South Carolina, U.S.A. It is an outlier of the Blue Ridge running parallel with it, *i.e.,* north-east and south-west; but in contrast with the other mountains of the Blue Ridge, King's Mountain has a crest marked with sharp and irregular notches. Its highest point and great escarpment are in North Carolina. About 1½m. S. of the line between the two States, where the ridge is about 60ft. above the surrounding country and very narrow at the top, the battle of King's Mountain was fought on Oct. 7, 1780, between a force of about 100 Provincial Rangers and about 1,000 Loyalist militia under Maj. Patrick Ferguson, and an American force of about 900 backwoodsmen under Cols. William Campbell, Benjamin Cleveland, Isaac Shelby, John Sevier and James Williams, in which the Americans were victorious. The British loss is stated as 119 killed (including the commander), 123 wounded and 664 prisoners; the American loss was 28 killed (including Col. Williams) and 62 wounded. The victory largely contributed to the success of General Greene's campaign against Lord Cornwallis. A monument erected in 1815 was replaced in 1880 by a much larger one, and a monument for which Congress appropriated $30,000 in 1906 was completed in 1909.

See L. C. Draper, *King's Mountain and its Heroes* (Cincinnati, 1881); Edward McCrady, *South Carolina in the Revolution 1775–1780* (1901); Kathrine Keogh White, *The King's Mountain Men* (Dayton, Va., 1924).

KINGSPORT, a rapidly growing industrial city of Sullivan county, Tennessee, U.S.A., on the Holston river, in the mountainous north-eastern part of the State. It is on Federal highway 11, and is served by the Clinchfield railroad. The population was 11,914 in 1930 and it had increased to 14,404 by the federal census of the year 1940. It is in a rich lumbering, mining and farming region of beautiful scenery, and has large manufacturing industries, including pulp and paper mills, book printing and binding plant, textile mills, and plants making brick, cement, glass, rayon, plastics, hosiery and chemicals. The city was planned by John Nolen, laid out in 1916 and incorporated in 1917.

KING'S PROCTOR, the proctor or solicitor representing the Crown in the courts of probate and divorce. By the Matrimonial Causes Act of 1860 the king's proctor may, under the direction of the attorney-general, intervene in petitions of divorce or declarations of nullity of marriage for the purpose of proving collusion between the parties concerned (*see* DIVORCE). The king's proctor may also act in an official capacity as Treasury solicitor to administer the personal estate of an intestate which has lapsed to the Crown. In this capacity he is responsible for the enforcement of payments due to the Treasury and conducts its legal business in general. *See* PROCTOR and SOLICITOR.

KING'S REGULATIONS, the regulations governing the organization and discipline of the British navy and army, issued in volume form under the authority of the king.

KINGSTON, WILLIAM HENRY GILES (1814–80), English novelist, son of Lucy Henry Kingston, was born in London on Feb. 28, 1814. Much of his youth was spent at Oporto, where his father was a merchant, and he entered the London office of the firm. He early wrote newspaper articles on Portuguese subjects. These were translated into Portuguese, and the author received a Portuguese order of knighthood and a pension for his services in the conclusion of the commercial treaty of 1842. In 1844 his first book, *The Circassian Chief,* appeared, and in 1845 *The Prime Minister, a Story of the Days of the Great Marquis of Pombal.* The *Lusitanian Sketches* describe Kingston's travels in Portugal. In 1851 *Peter the Whaler,* his first book for boys, indicated his true vocation. Kingston retired from business, and within 30 years he wrote upwards of 130 tales of adventure for boys. He had a practical knowledge of seamanship, and his stories of the sea, full of thrilling adventures and hairbreadth escapes, exactly hit the taste of his boy readers. Classic examples are *The Three Midshipmen* (1862); *The Three Lieutenants* (1874); *The Three Commanders* (1875); and *The Three Admirals* (1877). He died at Willesden on Aug. 5, 1880.

KINGSTON, the chief city of Frontenac county, Ontario, Canada, at the northeastern extremity of Lake Ontario, and the mouth of the Cataraqui river. Pop. (1941) 30,126. It is an important station on the Canadian National and Canadian Pacific railways, and has steamboat communication with other ports on Lake Ontario and the Bay of Quinte, on the St. Lawrence and the Rideau canal. It contains a stone graving dock, 280 ft. long, 100 ft. wide, and with a depth of 16 ft. at low water on the sill. The fortifications, which at one time made it one of the strongest fortresses in Canada, are now out of date. The sterility of the surrounding country and the growth of railways have lessened its commercial importance, but it still contains a number of small factories and important locomotive works and shipbuilding yards, an aluminum plant and nylon factory. As an educational and residential centre it retains high rank, and it is a popular summer resort. It is the seat of an Anglican and of a Roman Catholic bishopric, of the Royal Military college (founded by the Dominion government in 1875), of an artillery school, and of Queen's university, an institution founded in 1839 under the nominal control of the Presbyterian church, now embracing all faculties. In the suburbs are a Dominion penitentiary and a provincial lunatic asylum. Founded by the French in 1673, under the name Kateracoui, soon changed to Fort Frontenac, it played an important part in the wars between English and French. Taken and destroyed by the English in 1758, it was refounded in 1782 under its present name, and was from 1841 to 1844 the capital of Canada.

KINGSTON, a city of New York, U.S.A., on the W. bank of the Hudson, at the mouth of Rondout creek, 90 mi. N. of New York city; the county seat of Ulster county and the first capital of the state. It is served by the New York, Ontario and Western, the Ulster and Delaware, and the West Shore railways, and by river steamers. The population in 1940 was 28,589. It is in the midst of beautiful mountain scenery: the Catskills to the northwest, the Shawangunk mountains to the southwest, and the Berkshires in the distance across the river. The immense Ashokan reservoir (with a shore line of 40 mi.) of the New York city water-supply system is 6 mi. west. The diversified products of Kingston's many factories were valued in 1937 at $10,972,314. In 1609 Henry Hudson established a trading post there and in 1614 a small fort was built by the Dutch at the mouth of the Rondout. In 1652 a settlement was made near by, which was abandoned after three or four years because of threatened attacks from the Indians. In 1658 a stockade was built by order of Gov. Peter Stuyvesant, who in 1661 named the place Wiltwyck and gave it a municipal charter. In 1663 it was burned by the Indians, and most of the inhabitants were massacred or taken captive. The English took possession in 1664, naming it Kingston (1669) after Kingston Lisle, the family seat of Gov. Francis Lovelace. In 1673–1734 it was again under the Dutch, who called it Swanenburg. The convention which drafted the first State constitution met in Kingston in 1777; and here the constitution was adopted (April 20), Gov. Clinton was inaugurated (July 30), John Jay held the first term of the New York supreme court, and the New York council of safety met. The low stone building (erected *c.* 1676) where the first state senate met, is one of the oldest public buildings in the U.S. and houses a colonial museum. On Oct. 16, 1777, the town was sacked and burned by the British under Gen. Sir John Vaughan. Kingston was one of the places considered in 1787 for the site of the national capital. It was incorporated as a village in 1805; chartered as a city in 1872.

KINGSTON, a borough of Luzerne county, Pa. U.S.A., on the Susquehanna river, opposite Wilkes-Barre. It is on federal highway 11 and is served by the Lackawanna and the Lehigh Valley railways. The population was 8,952 in 1920 (20% foreign-born white) and was 20,679, 1940 by federal census. Anthracite mining is the dominant industry, and there are railway repair shops and factories making silk, hosiery, underwear and adding machines. In the early days Kingston (or Kingstown, from Kings Towne, R.I.) was commonly known as the "Forty Township," because the first permanent settlement was made by 40 pioneers from Connecticut, sent out by the Susquehanna company in 1769. In 1772 the famous stockade called "Forty Fort" was built here, and in 1777 it was enlarged and strengthened. Here on July 3, 1778, gathered 400 men and boys who went out under the command of Col. Zebulon Butler (1731–95) to meet a force of 1,100 British troops and Indians, commanded by Major John Butler and Old King (Sayenqueraghte). The Americans were defeated in the engagement that followed, and many of those captured were massacred or tortured by the Indians. A monument has been erected near the site of the fort. (*See* WYOMING VALLEY.) Kingston was incorporated as a borough in 1857.

KINGSTON, the capital and chief port of Jamaica, West Indies. Pop. (1943) 109,056, mostly Negroes. It is situated on the south of the island, near the eastern end, fronting a splendid land-locked harbour. Area, with suburbs, 7.6 sq.mi. The town has good modern equipment including electric trams. The Institute of Jamaica maintains a public library, museum and art gallery especially devoted to local interests. The old parish church in King street, built soon after 1695, was the burial place of Admiral Benbow (1702); when reconsecrated, after damage by earthquake in 1907, the church was dedicated to St. Thomas. Temperatures range from 70.7° to 87.8° F. Kingston was founded in 1693 after Port Royal, at the mouth of the harbour, had been ruined by an earthquake in 1692. In 1703, Port Royal having been again laid waste by fire, Kingston became the commercial, and in 1872 the political, capital of the island, superseding Spanish Town. On several occasions Kingston has been almost entirely consumed by fire, the conflagrations of 1780, 1843, 1862 and 1882 being particularly severe. On Jan. 14, 1907, it was wrecked by a violent earthquake. A long immunity had led to the erection of many buildings not specially designed and practically the whole town had to be rebuilt. In 1923 Kingston and the adjacent Parish of St. Andrew were incorporated under a joint mayor and council which administers all municipal services. (*See* JAMAICA.)

KINGSTON-ON-THAMES, a royal, municipal and parliamentary borough in Surrey, England, 11 mi. S.W. of Charing Cross, London; on the S.R. Pop. (1938) 39,790. Area 2.2 sq.mi. The position of Kingston on the Thames where it was fordable accounts for its origin; its later prosperity was due to the bridge which existed in 1223 and possibly long before. It was replaced by a stone one in 1828. In 836 or 838 it was the meeting place of the council under Ecgbert, and in the 10th century some if not all of the West Saxon kings were crowned at Kingston. In Edward the Confessor's time it was a royal manor, and in 1086 included a church, five mills and three fisheries. The original charters were granted by John in 1200 and 1209. Henry VI incorporated the town. It is near Richmond and Bushey Parks and is a residential district. All Saints church, mainly Perpendicular, contains several brasses of the 15th century. The grammar school, rebuilt in 1878, is mentioned in 1264 but was founded in 1561 by Elizabeth, and a chantry founded by Edward Lovekyn in 1309 was used as the schoolroom. Near the parish church stood the chapel of St. Mary, where the Saxon kings were crowned. The ancient stone used as

a throne at these coronations was removed to the market-place in 1850. A new guild-hall, including four courts, was opened in 1935. There are large market gardens in the neighbourhood. The town possesses oil-mills, flour-mills and iron foundries and makes paper and machinery.

KINGSTON-UPON-HULL, EARLS AND DUKES OF. These titles were borne by the family of Pierrepont, or Pierrepoint, from 1628 to 1773.

ROBERT PIERREPONT (1584–1643), second son of Sir Henry Pierrepont of Holme Pierrepont, Nottinghamshire, was M.P. for Nottingham in 1601 and was created Baron Pierrepont and Viscount Newark in 1627, being made earl of Kingston-upon-Hull in the following year. He remained neutral on the outbreak of the Civil War, but afterward he joined the king and was appointed lieutenant-general of the eastern counties. While defending Gainsborough he was taken prisoner and was accidentally killed on July 25, 1643, while being conveyed to Hull. The earl had five sons, one of whom was Francis Pierrepont (d. 1659), a colonel in the parliamentary army and afterward a member of the Long Parliament; and another was William Pierrepont, a leading member of the parliamentary party.

His son HENRY PIERREPONT (1606–1680), 2nd earl of Kingston and 1st marquess of Dorchester, represented Charles I during the negotiations at Uxbridge. In 1645 he was made a privy councillor and created marquess of Dorchester; but in 1647 he compounded for his estates by paying a large fine to the parliamentarians. After the Restoration he was restored to the privy council and was made recorder of Nottingham and a fellow of the Royal society. The title of marquess of Dorchester became extinct at his death on Dec. 8, 1680. He was succeeded as 3rd earl of Kingston by Robert (d. 1682), a son of Robert Pierrepont of Thoresby, Nottinghamshire, and as 4th earl by Robert's brother William (d. 1690).

EVELYN PIERREPONT (*c.* 1655–1726), 5th earl and 1st duke of Kingston, another brother, had been member of parliament for East Retford before his accession to the peerage. He was made a privy councillor and in 1715 was created duke of Kingston, afterward serving as lord privy seal and lord president of the council. The duke, who died on March 5, 1726, was a prominent figure in society. He was twice married and had five daughters, among whom was Lady Mary Wortley Montagu (*q.v.*), and one son, William, earl of Kingston (d. 1713).

The latter's son, EVELYN PIERREPONT (1711–1773), succeeded his grandfather as second duke of Kingston. When the rebellion of 1745 broke out he raised a regiment called "Kingston's light horse," which distinguished itself at Culloden. The duke, who attained the rank of general in the army, is chiefly famous for his connection with Elizabeth Kingston, who claimed to be duchess of Kingston. The Kingston titles became extinct on the duke's death without children on Sept. 23, 1773.

See R. B. Moffat, *Pierrepont Genealogies* (1913).

KINGSTOWN (DUN LAOGHAIRE), a seaport of Co. Dublin, Eire, at the southeastern extremity of Dublin bay, 6 mi. S.E. from Dublin by rail. Pop. of urban district (1936) 39,785. The original name of Kingstown was Dunleary, which was changed after the embarkation of George IV at the port in 1821. The town was a fishing village before the construction of an extensive harbour, begun in 1817 and completed in 1859. The eastern pier has a length of 3,500 ft. and the western of 4,950 ft., the total area enclosed being about 250 ac., with a varying depth of from 10 to 28 ft. Kingstown is the station of the mail steamers to Holyhead in connection with the L.M.S. railway. The principal export is cattle and the principal imports corn and provisions. Kingstown is the centre of an extensive sea-fishery.

KINGSVILLE, a town of southern Texas, U.S.A., 42 mi. S.W. of Corpus Christi, served by the Missouri Pacific railway. The population was 7,782 in 1940. There are oil and gas fields near by. The town ships cotton, corn, fruits, vegetables and cattle and has cottonseed oil and cotton mills, railroad car shops and other manufacturing industries. It is the seat of the Texas College of Arts and Industries.

KING-TE-CHEN, an historic centre of porcelain manufacture in China. It lies in northeast Kiangsi at the mouth of a valley rising across the Anhwei border and from the upper reaches of which King-te-chen draws is supplies of clay and kaolin. There are workable coal-beds in the vicinity of the town. The industry had its beginnings as far back as the Ch'en dynasty (A.D. 557–587) and early in the 11th century during the reign of King Te of the Sung dynasty it began to make porcelain for imperial use. The town then adopted the name of the emperor. After the T'aiping rebellion of the mid-19th century the industry declined somewhat, and the Japanese occupation in 1938 caused the destruction of many kilns and a serious setback.

KINGUSSIE, small burgh, Inverness-shire, Scotland. Pop. (1938) 981. It lies at a height of 750 ft. above sea level, on the left bank of the Spey, here crossed by a bridge, 46½ mi. S.S.E. of Inverness by the L.M.S. railway. It was founded toward the end of the 18th century by the duke of Gordon, in the hope of its becoming a centre of woollen manufactures. This expectation was not realized, but in time the place grew popular as a health resort, the surrounding scenery being beautiful. On the right bank of the river is Ruthven, where James Macpherson was born in 1736.

KINGWILLIAMSTOWN is situated 1,314 ft. above sea level on the left bank of the Buffalo river, South Africa, 42 mi. by rail W.N.W. of East London. In 1936 the population was 10,669 of which 3,564 were natives, 113 Asiatics, 1,152 coloured (mixed), and 5,840 whites. "King," as the town is locally called, stands at the foot of the Amatola mountains and in the midst of a thickly populated agricultural district. The town is well laid out and most of the public buildings and merchants' stores are built of stone. There are manufactories of sweets and jams, candles, soap, matches and leather, and a large trade in wool, hides and grains is done with East London. "King" is also an important entrepôt for trade with the natives throughout Kaffraria, with which there is direct railway communication. Founded by Sir Benjamin D'Urban in May 1835 during the Kaffir War of that year, the town is named after William IV. It was abandoned in Dec. 1836, but was reoccupied in 1846 and was the capital of British Kaffraria from its creation in 1847 to its incorporation in 1865 with Cape Colony. Many of the colonists in the neighbouring districts are descendants of members of the German legion disbanded after the Crimean War and provided with homes in Cape Colony; hence such names as Berlin, Potsdam, Braunschweig, Frankfurt, given to settlements in this part of the country.

KINKAJOU (*Potos flauus*), the single species of an aberrant genus of the raccoon family (Procyonidae). A native of the forests of the warmer parts of South and Central America, the kinkajou is about the size of a cat, of a uniform pale, yellowish-brown colour, nocturnal and arboreal in habits, feeding on fruit, honey, eggs and small birds and mammals. It is often tamed as a pet. (*See* CARNIVORA.)

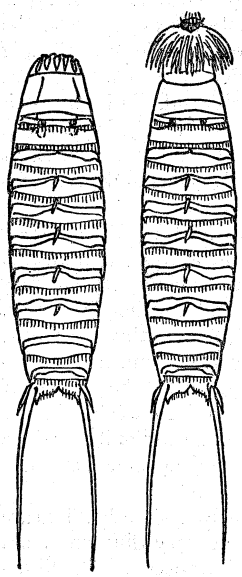
KINKEL, JOHANN GOTTFRIED (1815–1882), German poet, was born on Aug. 11, 1815 at Obercassel, and in 1846 became extraordinary professor of art at Bonn. He had already published his *Gedichte* (1843), and his prettily told verse tale, *Otto der Schütz, eine rheinische Geschichte in zwölf Abenteueren* (1846; 75th ed. 1896). Captured fighting in the revolutionary outbreak of 1848, he was sentenced to imprisonment for life but escaped from Spandau in 1850. He spent some time in the United States, and in England, until 1866, when he became a professor at Zurich. There he died on Nov. 13, 1882. His works include an unfinished lyric-epic cycle, *Der Grobschmied von Antwerpen* (1868), and a history of Christian art (1845).

KINNOR, the Hebrew name for an ancient stringed instrument, the first mentioned in the Bible (Gen. iv, 21), where it is now always translated "harp." The identification of the instrument has been much discussed, but the weight of evidence supports the view that the Semitic *kinnor* is the Greek cithara (*q.v.*).

KINO, an astringent drug obtained from East India, Malabar, or Amboyna. It is the evaporated juice flowing from incisions in the trunk of *Pterocarpus marsupium,* a tree of the family Leguminosae, though Botany Bay or eucalyptus kino is used in Australia. When exuding from the tree it resembles red-currant

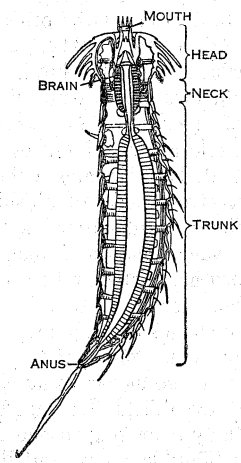
jelly, but hardens in a few hours after exposure to the air and sun and breaks up into angular, brittle fragments of a blackish-red colour and shining surface. In cold water it is only partially dissolved, leaving a pale flocculent residue which is soluble in boiling water but deposited again on cooling. It is soluble in alcohol and caustic alkalis, but not in ether. The chief constituent is kino-tannic acid (about 75%). It is not absorbed at all from the stomach and only very slowly from the intestine. Other constituents are gum, pyrocatechin, and kinoin, a crystalline neutral principle. Kino-red is also present in small quantity, being an oxidation product of kino-tannic acid. The drug is frequently used in diarrhoea, its value being due to the relative insolubility of kino-tannic acid, which enables it to affect the lower part of the intestine. In this respect it is parallel with catechu.

KINORHYNCHA, a group of minute, wormlike animals which dwell chiefly in the slime of the ocean floor, although some species live in sand and others in vegetation. Usually they inhabit the littoral region, but specimens have been taken at depths of several hundred metres. Species which live in algae feed largely on diatoms, while burrowing forms ingest fine organic detritus, mud and sand. The entire body is covered by a cuticula which in many places is prolonged into spines. From 0.2 to 1 mm. long, the body is externally divided into segments. The first, enlarged and bearing a conspicuous crown of recurved spines, is called the head; the second segment is termed the neck; the remaining segments collectively, the trunk. The mouth, at the anterior tip of the head, is guarded by a circle of stylets and opens into a tubular digestive system. At rest, the head is invaginated within the front end of the body. Alternate evagination and invagination of the head produces a squirming movement which is the chief means of locomotion.



REDRAWN, WITH MODIFICATIONS, AFTER ZELINKA

FIG. 1.—SPECIMENS OF ECHINODERES, GREATLY ENLARGED. (A) WITH HEAD INVAGINATED, (B) WITH HEAD EVERTED



REDRAWN FROM BRONN'S TIERREICHS, AFTER REMANE

FIG. 2.—DIAGRAMMATIC MEDIAN SECTIONAL VIEW (GREATLY ENLARGED) SHOWING GENERAL PLAN OF ORGANIZATION IN THE KINORHYNCHA

The sexes are separate, but full details of development were not known in 1945 for any species, although many larval stages were recognized. In 1928, Karl Zelinka prepared a comprehensive monograph on the group. Four genera of adult worms (*Echinoderes, Echinoderella, Centrodes* and *Campyloderes*) include about 15 species. In addition, 10 provisional genera had been proposed for larval forms, for most of which the adult stage is unknown.

See Karl Zelinka, *Monographie der Echinodera* (Leipzig, 1928); A. Remane, *Gastrotricha and Kinorhyncha in Bronn's Klassen und Ordnungen des Tierreichs* (Leipzig, 1936). (H. J. V. C.)

KINROSS-SHIRE, county of Scotland, bounded on the north and west by Perthshire, on the southwest by Clackmannanshire, and on the south and east by Fife; land area 52,392 ac., or 81.9 sq.mi. It is the least populated county in Scotland and, excepting Clackmannanshire, the smallest. In the north and west it includes several summits of the Ochil hills, consisting of volcanic lava and agglomerates of lower old red sandstone age. In the east are the Lomond hills and in the south Benarty and the Cleish hills, where hard caps of intensive basalt have preserved the soft sandstones and marls of the upper old red sandstone which have been denuded to a lower level in the central lowland or plain of Kinross. Gravel, sand and other glacial detritus overlie wide areas. The lowland borders Loch Leven (*q.v.*), which is less noted for scenic beauty than for its historical associations and trout fishing. On the river Devon, which forms part of the boundary with Perthshire, there is beautiful scenery, notably at the gorge of the Devil's Mill, at Rumbling Bridge and at Caldron Linn. The parishes of Kinross and Orwell, previously part of Fife, seem to have been constituted a shire about the middle of the 13th century. At the date of Edward I's ordinance for the government of Scotland (1305) this shire had become an hereditary sheriffdom, John of Kinross then being named for the office. Close to the town of Kinross, on the margin of Loch Leven, stands Kinross house, built in 1685 by Sir William Bruce for the duke of York (James II) in case the Exclusion bill should debar him from the throne of England, but the mansion, however, never was occupied by royalty.

A little less than half of the 269 holdings in 1938 exceeded 100 ac., but the average size was 117 ac. Much of the land has been reclaimed. Oats, with 5,866 ac. in 1938, are the principal crop, and wheat is grown. Turnips and swedes and potatoes are the chief green crops. The raising of livestock is widely pursued. Many cattle are pastured on the lowland farms. The number of sheep (40,937 in 1938) is high for the area. Tartans, plaids and other woollens, and linen are manufactured at Kinross and Milnathort (a centre for livestock sales). The L.N.E. railway runs through the county via Kinross with a branch line from Mawcarse Junction. Pop. (est. 1938) 7,028. In 1931 Gaelic and English were spoken by 54 persons. Kinross, the county town and the only small burgh (est. 1938 pop., 2,391), is of considerable antiquity. There are no county districts. Kinross unites with Perthshire to return two members to parliament. It forms a sheriffdom with Fifeshire and a sheriff-substitute sits at Kinross.

KINSALE, a market town and seaport of Co. Cork, Eire, on the east shore of Kinsale harbour (the estuary of the Bandon river) 24 mi. south of Cork by rail. Pop. of urban district (1936) 2,422. Kinsale is said to derive its name from *cean taile,* the headland in the sea. At an early period the town belonged to the De Courcys, a representative of whom was created baron of Kinsale or Kingsale in 1181. It received a charter of incorporation from Edward III, having previously been a borough by prescription. It was the scene of an engagement between the French and English fleets in 1380, was forcibly entered by the English in 1488, captured by the Spaniards and retaken by the English in 1601, and entered by the English in 1641, who expelled the Irish inhabitants. It was the scene of the landing of James II and of the French army sent to his assistance in 1689, and was taken by the English in the following year. The Charles Fort was completed in 1677 and captured by the earl of Marlborough in 1690. The parish church of St. Multose is said to have been founded as a conventual church in the 12th century. Kinsale, with the neighbouring villages of Scilly and Cove, is much frequented by summer visitors, and is the headquarters of the South of Ireland Fishing company, with a fishery pier and a harbour with a depth at the pier of 20 ft. at spring tide, at the quay 14 ft., while at neap tide both have 9 ft. of water; but the general trade is of little importance owing to the proximity of Queenstown and Cork.

KINSHIP. I. **Kinship in Human Culture.**—Birth, suckling and the tender cares bestowed by the parents on their offspring establish bonds of union between the members of a family, both in human and in animal societies. The devotion of the suckling mother is not an exclusively human virtue; the watchful and protecting father is to be found among many species of birds and mammals; and the pathetic response of the young to their parents moves the heart of the animal lover as well as of the philanthropist. With many animals, kinship, the protective sentiment of the parents, and the child's response to it, constitute part of the innate endowment indispensable for the survival of the species.

With man, however, we find physiological kinship deeply modi-

fied and grown into what is perhaps the most important social institution of mankind. Kinship controls family life, law, social organization and economics, and it deeply influences religion, morality and art. With us the parental relation figures in the ten commandments; maternal love remains the symbol and prototype of many moral virtues; the relations within the Trinity, the obligations between man and his Maker, and those of Christian to Christian are conceived in terms of kinship—Son to Father; child to One addressed as "our Father which art in heaven"; brother to brother. In other societies, the cult of a Mother Goddess, or again ancestor-worship, or kinship with animals or spirits give the dominant tone to religion, morality and art, and directly influence law, social organization and economics. Every human culture is built upon its own system of kinship, that is, upon a special type of personal bonds primarily derived from procreation and family life. Without a deeper understanding of kinship it is impossible to grasp the organization, the modes of thought and the general character of human civilization from its humblest origins to its highest development.

II. **The Family as the Source of Kinship.**—At first sight kinship, the bonds of union between parents and children and between more remote relatives, appear to be simple enough: the typical family (*q.v.*), a group consisting of mother, father and their progeny, is found in all communities, savage, barbarous and civilized; everywhere it plays an important rôle and influences the whole extent of social organization and culture.

Indeed it seems hardly to differ at all from its modern, civilized counterpart, as we know it from our own experience. Among native tribes mother, father and children share the camp, the dwelling, the food and the life. The intimacy of family existence, the daily round of meals, the domestic occupations and outdoor work, the rest at night and the awakening to a new day, run in both civilized and savage societies on strictly parallel lines, allowing for the difference in levels of culture. The members of the household are as a rule as closely bound together in a native tribe as they are in a European society, attached to each other, sharing life and most of its interests, exchanging counsel and help, company, cheer and economic co-operation. The same bonds unite them as unite our family, the same distances and barriers separate them from other households. In Australia, as well as among most North American Indians, in Oceania and in Asia, among the African tribes and in South America, the individual undivided family stands out conspicuous, a definite social unit marked off from the rest of society by a clear line of division.

It would be easy to illustrate this picture by a host of actual descriptions. In no ethnographic area is the family absent as a domestic institution. Putting these facts together with our childhood's vision of the first marriage—Adam and Eve in paradise—with the patriarchal traditions of the Bible and of classical antiquity, with the early sociological theories from Aristotle onwards, we might conclude with Sir Henry Maine that it would be impossible to imagine any form of social organization at the beginning of human culture, but that of the patriarchal family. And we might be led to assume that our own type of family is to be found wherever we go, and that kinship is built on the same pattern in every part of the world.

III. **The Controversy on Kinship.**—The layman is therefore not unjustifiably taken aback, when on opening a modern scientific book on primitive society, he finds himself confronted by extreme dissension and acrimonious controversy about the very subject on which he expected a simple statement of obvious fact. Broadly speaking, anthropologists are divided on the questions: does the essential unit consist of the family, or of a wider group, such as the clan, the horde, the "undivided commune"; was marriage between single pairs present from the outset or did it evolve from a preceding promiscuity or group marriage; was human kinship originally individual or communistic? One school stands by individual marriage and kinship, and the importance of the family, the other affirms an original communism in sex, economics and kinship—and the two schools are still disputing the issue.

This great anthropological rift, however, is not due merely to the perversity and pugnacity of specialists, nor to any inherent vice of method or insufficiency of material. It often happens in science that the seemingly simplest and most fundamental problems are really the most difficult and remain longest debated and unsettled. As the physicists cannot make up their minds on matter, force or energy, as the chemists change their views on the atom and the elements, as the mathematicians are least certain about space, time and numbers, so the social anthropologists may be forgiven if they still debate, at times hotly, kinship—that conception in which centre all their other problems and ideas.

IV. **Modes of Counting Descent.**—Kinship, indeed, apparently simple when regarded as ties of union arising within the family out of procreation and the rearing of the young, becomes far more complex when we study it in its further ramifications in tribal life. On one point of great importance a correction has to be made in the traditional view that had undivided sway, before Bachofen, McLennan and Morgan revolutionised social anthropology during the latter half of the 19th century. Kinship is by no means invariably patriarchal; it is not always based on the recognition of the father's primary importance in establishing descent; nor is his right to exercise authority or to hand over his position, wealth and privileges to his son universal. In many societies the mother is the parent through whom kinship is counted, her brother is the male head of the family and inheritance of goods, succession of office and all rights, obligations and privileges are passed from a man to his sister's children.

This legal system is called *mother-right* (*see* MATRIARCHY), or more correctly *matriliny;* and the relation between a man and his sister's son, *avunculate* (*q.v.*). The circumstance that kinship can be traced through both father and mother has been termed (by Lowie) "the bilateral principle of counting descent"; while the almost universal fact that in any given culture emphasis is laid upon one side only has been defined as the *unilateral* mode of regarding kinship. The bilateral aspect of kinship is never completely obliterated and unilateral counting only means a more or less limited emphasis on one side and never a complete elimination of the other.

V. **The Hypertrophy of Primitive Bonds.**—Another feature which makes kinship in many a native culture very different from our own is its extraordinary hypertrophy: it transcends the limits of the family, of the local group, at times even of the widest circle of acquaintances.

Perhaps the most baffling and disquieting symptom of these collective aspects of kinship is the queer linguistic usage known as the "classificatory" system of kinship nomenclature. In most savage tongues a man applies such terms as father, mother, brother, sister and so on, not only to the members of his family but, according to rules which vary with the social organization, to classes of people who stand in a definite relation to his parents. In some communities, indeed, for example in Australia, kinship terms go as far as actual social relations and even beyond—that is, even distant strangers never met or seen are regarded as potentially belonging to one class of kindred or another.

Thus language and linguistic usage seem apparently to break the bonds of family, to obliterate parenthood by substituting a "group of fathers" for the individual one, a "group of mothers" for the real mother, and so on. Nor is this usage a mere rule of politeness: the "classificatory" terms are applied according to strict rules, to a number of people, whose relationship is traceable by pedigree or by membership in a clan or class. Behind the linguistic usage there is always a set of mutual obligations between an individual and all those whom he calls "fathers," "mothers," "brothers," etc. The "fathers" or "brothers" act as a group on certain occasions and they are therefore a well-defined social class and not merely a name.

VI. **Clans, Moieties and Classes of Relatives.**—Thus the classificatory use of kinship terms is not alone in grouping people into classes of kindred. The majority of native tribes are actually divided not only into families, but into bigger groups, which yet possess to a certain extent a kinship character. Thus in certain areas, the tribe falls into two halves or moieties. Each of these has its name, its collective sense of unity, usually a special myth defining its character and its relation to the other moiety. The

division of certain Australian tribes into the moieties of Eagle-hawk and Crow and the bi-partition of the eastern North American Indians are classical examples of this division. Usually this halving of the tribe is associated with strict prohibitions of marriage within the same moiety, so that a man of the first must marry a woman of the second and vice versa. (*See* DUAL ORGANIZATION.) In other tribes there are four clans or classes, in others again eight, these sections regulating marriage and playing a conspicuous part in ceremonial and economic life. (*See* MARRIAGE: *Exogamy*.) Among the majority of peoples, however, there is an odd number of clans which cannot be brought under the dual or any other numeric principle.

What makes it difficult to understand these modes of grouping is precisely their kinship character. The members of a clan regard themselves as kindred, trace their descent from a common ancestor, conceive of their exogamous prohibitions as of a variety or extension of incest, and, under certain conditions behave to each other like kinsmen.

Thus there exist tribes where an individual really seems to acknowledge many "fathers," many "mothers," "sisters," "wives," and so on. And yet in every such case, the man also possesses one real or own relative, a father, a few own brothers and own sisters and certainly an individual mother.

VII. **The Hypotheses of Group Marriage and Group Kinship.**—As to the fathers, a plausible hypothesis suggests that their plurality might be perhaps due to uncertainty of fatherhood under a system of primitive group marriage. Was not marriage originally promiscuous, communal, between two groups rather than between two individuals? Was not therefore Kinship, derived from such group-marriage, originally group-kinship? Is not the classificatory use of kinship terms partly the expression of such group-family relations as they still persist, partly the survival of a more definitely communistic kinship of primeval times? And we see how a plausible reasoning has led many an anthropologist—from Morgan to Rivers, from McLennan to Frazer, from Bachofen to Sydney Hartland—to the theory of a primitive group-marriage and group-family, and to the assumption that primitive kinship was a class kinship, between groups and not between individuals. On the other hand this position has been vehemently disputed by the other school, who cannot reconcile it with the supreme importance of the family, with the apparently primeval nature of marriage between single pairs and with the individuality of Motherhood. By Darwin as well as by Westermarck, by Andrew Lang and by Crawley almost every assumption of the group-kinship school has been disputed, while recently Lowie and Malinowski have tried to show by the analysis of actual facts that the family is after all the foundation of all social order.

VIII. **Individual and Collective Kinship.**—The problem has been undoubtedly vitiated by the uncompromising championship of the clan versus the family, primitive monogamy versus group-marriage, individual relations versus clanship. *The question is not whether Kinship is individual or communal—it evidently is both—but what is the relation between its two aspects?* It is an undeniable fact that the family is universal and sociologically more important than the clan which, in the evolution of humanity, it preceded and outlasted. But the clan is in certain communities extremely vital and effective. What is the relation between them? Individual legal prerogatives and self-interest are always predominant, but corporate feeling, co-operation, joint ownership and joint responsibility are important elements in primitive justice and legal organisation. All these bonds and relations, individual as well as communal, are founded on kinship and the sense of kinship. The real task of the enlightened anthropologist is not to join either "school" in denying or belittling one side of kinship or the other, but to establish the relation between the two sides.

IX. **The Variety of Meanings in each Classificatory Term.**—The traditional approach to the problem, since Morgan, has been through language. The classificatory character of the terms made a great impression upon anthropologists (*cf.* above, V.)—but they failed to analyse it linguistically! Now in all human languages we find homonyms, that is, words with a variety of meanings, and in primitive languages such words abound and do not cause any confusion. Thus in technology we frequently find that the same word is used to designate the natural objects from which the material is taken, the material in its raw form, the various stages of manufacture, and finally the finished object. In Melanesia, for instance, the same term *waga* describes a tree as it stands in the forest, its felled and lopped trunk, the dug-out in its various stages, and the finished canoe. Similarly such words as "magical power" (*mana, wakan, orenda,* etc.), "prohibition" (*tabu*), and what not, cover a great variety of meanings.

The first thing to ask then about kinship terms is, whether they really "confuse," "merge" or "lump" the various relatives designated by the same term, or whether on the contrary each time they are used, they receive a distinct meaning, that is, refer to one individual only? As a matter of fact, in actual use kinship terms have always a distinct and concrete meaning and there never is any doubt in the mind of the speaker or hearers as to who is designated in each case. The emotional tone in the first place usually indicates whether a word such as Mother, Father, Son, Daughter, Brother, Sister, is used towards or about "own" relatives, or merely "classificatory" ones. And emotional intonation is an important part of phonetic equipment.

In the second place, there is always an additional apparatus of adjectives, suffixes and other circumlocutions which make it possible to specify whether the actual mother is meant or her sister, or yet another of those whom the classificatory term "mother" embraces. Recently, in Spencer and Gillen's new book (*The Arunta,* 1928) we are given a very rich auxiliary terminology of this kind, which proves that even in that stronghold of classificatory kinship, Central Australia, there exist highly developed linguistic means for differentiating individuals within each class.

Finally we have the context of situation and narrative, the most powerful index of semantic discrimination of meaning in primitive languages. Thus in reality each so called classificatory term is a class label for a number of distinct words, every one of which has its own specific individual meaning. These individual words are in actual use differentiated from each other phonetically, by the index of emotional tone; lexicographically by the index of circumlocution; contextually by the index of situation. The individual meanings are moreover not built up in a haphazard manner; they are related to each other; they start with a main or primary reference; which then through successive extensions engenders a series of derived meanings.

X. **The Initial Situation of Kinship.**—What is throughout humanity the initial situation of kinship in which the primary meanings of the terms are formed; and above all is that initial situation individual or collective? Does the child form its kinship meaning on one set of parents, one Mother and one Father, or is it surrounded—at the time when its first sociological categories are being shaped—by a group-family, by classes of Mothers and Fathers? This as we know (*cf.* above, III.) is the point at issue, and apparently the answer seems to frame itself according as we approach facts from the side of maternity or paternity (*cf.* above, VII.).

A deeper sociological analysis shows however that the problem of Maternity and that of Paternity are not so different.

XI. **Biological and Sociological Parentage.**—Biological factors, though important, are not, however, in human societies the omnipotent, exclusively determining element, which they apparently are in animal ones (*cf.* I.). Legal rules, social institutions, moral and religious doctrines and practices deeply modify the ideas, sentiments and the behaviour of man. Kinship which in its final form, is a product of the institutions and doctrines of a society is always shaped by laws and normative ideas. Indeed there is no reason why the transformation should not go so far that the sentimental and legal bond between a child and its mother should not become collective instead of individual. Indeed a brilliant anthropologist (Rivers) has recently propounded the hypothesis of a sociological "group motherhood" as a correlate to "group marriage" and "group fatherhood" and this hypothesis has been made one of the foundation stones in a new matriarchal theory of primitive culture. (*The Mothers* by Briffault, 1927.)

Thus both maternity and paternity are partly based on bio-

logical arrangements of the human organism and innate mental tendencies, and both are deeply modified by social institutions and norms. In both, the facts must be examined carefully; neither a mere zoological induction, nor plausibly brilliant hypotheses about the omnipotence of society can yield a satisfactory answer.

XII. **Sex and the Uncertainty of Fatherhood.**—It will be best in fact to discuss maternity and paternity together. The two sides of parenthood are linked by sexual life. The laxity of savages has been given a great and undue prominence in discussions on kinship. Wherever sexual relations occur between two groups, as in the Pirrauru custom of Central Australia and sporadically in Siberia and Melanesia; or are merely allowed as between marriage classes and clans, some anthropologists are inclined to speak of "a still existing group-marriage" forgetting that marriage implies far more than the right of sexual intercourse. Again, in various customs of religions and ceremonial nature (temple prostitution, *jus primae noctis,* ritual defloration, bridal night relaxations, sex hospitality and exchange of partners) survivals of a primitive sex communism have been discerned. This, combined with the testimony of classificatory terms, has led to the hypothesis of primitive promiscuity and group family.

In reality, however, *sexual freedom* is an entirely different matter from the *liberty of parenthood,* and between the two there enter some interesting institutions and legal rules.

XIII. **The Principle of Legitimacy.**—In fact the tolerance of free intercourse wherever this exists is not extended to the liberty of conception. The rule in most savage tribes which allow pre-nuptial relations is that unmarried boys and girls may enjoy themselves as much as they like, provided that there be no issue. At times, as among the Areoi (*q.v.*), the untrammelled artistic fraternities of Polynesia, heavy penalties are inflicted on the unmarried mother, and illegitimate children are killed or aborted (*see* INFANTICIDE). At times the putative father is penalised unless he marries the girl, or again important economic and social pressure make it advantageous for him to marry her. Almost universally the child born before wedlock has a different status from the legitimate offspring, usually very much to his disadvantage. Very interesting are the cases where, as among the Todas, one of the physiologically possible fathers of a polyandrous household has to perform a special rite in order to assume the legal position of fatherhood. A child deprived of such a legal father is disgraced for life, even though born in wedlock.

And this brings us to the important point. Physiological paternity, the begetting of a child, is not, as a rule, sufficient and may even be irrelevant in determining social fatherhood. In fact native peoples have naturally but an imperfect idea of the mechanism of procreation. Some (Central Australians, certain Melanesians, a few African tribes) attribute the child to the agency of spiritual beings; others again (Ba-Ila, Rossel Islanders, some Australian tribes) over-emphasize the man's share. But in all cases, where the subject has been competently investigated, we find that the mechanism of procreation is conceived in a manner in which some biological knowledge is arbitrarily mixed up with animistic beliefs. This doctrine stands in a definite relation to the kinship ideas and legal principles of a community. Invariably also the bond of kinship, believed to be established by the act of procreation, bodily or spiritual, is of an individual nature and fatherhood has at times to be reaffirmed by a special legal ceremony, also individual.

XIV. **Natural and Sociological Maternity.**—Maternity is obviously as much involved in native doctrines of conception as is fatherhood. Indeed, the ban on prenuptial children hits the mother harder than the father, and it penalises always an individual, not a group. An individual woman suffers the disadvantages of an illegitimate child, unless there is a man legally united to her who individually shares her responsibility.

Wherever there is an attempt to cause or prevent conception by religious and magical rites, these refer always to an individual mother and child. The mother becomes usually subject to tabus during gestation which she keeps individually and of which her husband often takes a share. The welfare of the child concerns its own mother and father even before it is born. At birth again various social, magical and moral rules separate the mother from her husband and isolate her with her child. The few female relatives who often assist her are her nearest individual kinswomen. There is no transformation of an individual birth into a group birth—by legal fiction or ritual—but on the contrary there is a social imposition of individual burdens, responsibilities and sentiments upon the real mother. The father, though very much in the shadow, participates through customs of the *couvade* (*q.v.*) type, vigils and tabus in his wife's confinement, and this he also does individually.

XV. **No Group Parenthood.**—The ideas and institutions which control conception, pregnancy and birth, show that these cannot be regarded by the anthropologist as mere physiological facts, but as facts deeply modified by culture and social organization. Conception is not left to the chance of free intercourse, even where this is allowed, but its necessary condition is marriage. Parenthood, to be normal, must be made legitimate, that is, based on a socially approved, but individual marriage contract. Society decrees that the initial setting of kinship be the individual family based on individual marriage. And this social decree backs up the natural tenderness and affection which seem to be innate in the human, as well as in the animal, parent. The child again responds with a unique, life-long attachment to the one woman and one man who constitute its first social horizon—that is to its mother and father.

XVI. **The Extensions of Kinship.**—The relation of parents and children is individual, and so is that between brothers and sisters, who are to each other the natural playmates and helpmates of childhood, and remain the legal partners and moral allies in later life.

The household is thus the workshop where kinship ties are forged, and the constitution of the individual family supplies the pattern upon which they are built. We return thus to the simple view so long prevalent in tradition and pre-scientific thought (*cf.* II.), but now we have established it by a survey and analysis of facts, made it precise—and at the same time qualified it considerably. For the individual household provides only the initial situation of kinship; and the individual parents, brothers and sisters supply only the primary meaning of kinship terms. This fact is of the greatest importance, but to appreciate it fully it is necessary to follow the further development of kinship bonds.

As the child grows beyond the earliest stages of infancy, it is brought into contact with other households—those of the grandparents and those of the brothers and sisters of either parent. Perhaps the most important among these persons is the mother's sister.

XVII. **The Substitute Mother.**—The mother is the physiologically and morally indispensable parent in all societies. Yet there is always the danger of her failing, temporarily or permanently. The substitution of one person for another—in case of death, illness or incapacity—is one of the fundamental elements of primitive organization, and this substitution always takes place on the basis of kinship. In a matrilineal society, the natural substitute for a mother is her sister, usually the one nearest in age. In matrilocal communities, she is on the spot, in patrilocal ones she has to be summoned if it is necessary; even when not needed she will come on long visits. Thus the child, as a rule, becomes familiar early in life with its mother's sister. She again—having perhaps performed important duties during pregnancy and at childbirth—is especially devoted to her potential ward. She often assists the mother, in case of illness replaces her, occasionally may take the child to her own home for a time. She and the mother both know that, under circumstances, she may have to act as a mother to the child. Later on in life the child comes also to realize this and to regard her as *substitute or secondary mother.*

The substitute mother is, in certain respects, equivalent to the real one: the child sees her in the intimacy of the household, side by side with the real mother, receives the same services from her, realizes that at times she replaces the real parent, acting thus as a secondary or substitute mother. The child equally well realizes, however, that this is a very different "Mother" from the real one. A new relationship is thus built up for which the first one

is certainly the pattern, but the process is never a simple repetition.

Linguistically, the extension of the same term *Mother* to the mother's sister is obviously no more a complete assimilation than is its sociological equivalent. The child forms a new meaning for the old word—in fact, it acquires a new word with the same form, but a different referent and usually a different phonetic character in its emotional tone. When he calls his mother's sister "Mother," he neither fuses the two ideas nor confuses the two people. He merely emphasizes the similarity while he ignores the differences. This one-sided emphasis corresponds to the fact that similarity is here the basis of legal obligation. The mother's sister is beholden to the child in virtue of her equivalence to the mother. It is this which has to be expressed and the child is taught to call her "Mother" since in doing so it puts her under an obligation. The difference is obvious, irrelevant—in a way to be obliterated or glossed over. The verbal magic, which is the first form by which legal obligations are established, has to create a fictitious identity between Mother's Sister and Mother.

What has been said about the mother's sister applies also to the father's brother who, under father-right, is often regarded as a substitute father. His wife would then act as a substitute mother, especially in case of adoption. Under mother-right again, the mother's sister's husband would be the substitute father.

XVIII. **The Special Relations of Mother-right and Father-right.**—Among the people closely related to the parents there are, however, some to whom no extension of an already existing kinship attitude is possible. The grandparents obviously belong here, and also the father's sister and the mother's brother. Under mother-right and exogamy, the father's sister is never of the mother's kin and cannot be assimilated to the mother while, though of the father's kin, she is not of his sex and, therefore, cannot be assimilated to him. Under unilateral father-right, she again is the chief kinswoman of the child. The mother's brother occupies the same singular position both under mother-right and father-right. New attitudes have to be built towards these relatives and, as a rule, we find also special terms for them.

The children of the mother's sister and of the father's brother, or "parallel cousins" as they are called in Anthropology, are usually regarded by a savage child as his "secondary" brothers and sisters and addressed by these terms. To them the primary family attitude is also partially extended, as it is to their parents.

The children of the mother's brother and father's sister—the "cross-cousins" as they are technically called—usually require the creation of a new type of bond. The terminologies of the cross-cousins often present strange verbal assimilations. Thus, in matrilineal societies, the paternal cross-cousin is often called "Father"; and under father-right mother's brother's daughter is labelled "Mother." If we consider, however, that under mother-right, the paternal cross-cousin (father's sister's son) is not Ego's real kinsman—that he is related to Ego only as the father's nearest kinsman—then the verbal identification is less strange. The appellation then really means: "that man who is to me only in so far related as he is my father's nearest in blood." And a similar psychological attitude underlies the strange use of Mother to a cross-cousin and other anomalous terms of this type.

XIX. **The Elimination of Sex from Workaday Life.**—The unilateral principle which declares that kinship is counted through mother or father only (compare above, IV.) means, in fact, looked at concretely as it enters the life of an individual, that the family bonds are extended on one side only. An important aspect of this one-sided extension is the development of rules of exogamy out of rules of incest. These rules eliminate sex out of the household and the clan respectively. Incomprehensible in their biological function, since biologists agree that occasional inbreeding is innocuous, they can be accounted for by the incompatibility of sexual interest with practical co-operation in everyday life. The emotional tension which accompanies erotic play, the jealousies and dissensions which it arouses as well as its obsessive and distractive influence, make it difficult to mingle sex with serious pursuits. Hence war and hunting, agriculture and trading enterprises, religious and public ceremonial, are often hedged round with sexual tabus.

Domestic life and all those relations which start in the family, that is parent and child, brother and sister, are permanently protected from the upsetting influence of sex by the tabu of incest. Later on, when the savage child, sexually ripe at an early age, enters the wider group of his village community and tribe, an important division is established in all his associations by the unilateral principle. Some people, male and female, become his natural associates in work, legal interests and spiritual concerns. These are his wider kindred, his clansmen and clanswomen, to whom he extends the modified and diluted family attitude, comprising among others, the rules of incest which here become the much wider and weaker tabus of exogamy. The other group consists of women with whom he may amuse himself and pursue his amorous inclinations, and of men with whom he enters into relations of more or less friendly rivalry or reciprocity.

The unilateral principle is thus instrumental in securing for the clan the same condition of sexually undisturbed co-operation as is secured for the family by the prohibition of incest.

Unilateral descent is also intimately bound up with the nature of filiation, that is, with the handing over of status, power, office and possessions, from one generation to the other. Order and simplicity in the rules of filiation are of the greatest importance for social cohesion. Indeed, we find that most political quarrels and tribal dissensions are due, apart from sex, to questions of inheritance and succession,—from lowest savagery right up to modern civilization. Rivalries during lifetime, fights and rifts after the death of a man, especially if he be powerful, are of universal occurrence. For, as we know, mother-right and father-right are never absolute and the rules are always elastic and sometimes ambiguous. The generalization may, therefore, be laid down that the simpler and stricter the laws of filiation, the more stringently enforced either mother-right or father-right at the expense of the other, the greater will be the order and cohesion in a community, the smoother will be the transmission of authority, tradition and wealth from one generation to the other.

XX. **The Further Extensions of Kinship.**—So far mainly the principles of extension have been analysed—its driving forces, so to speak: such as the need of substitute parents; the value of eliminating sex from household and clan; the importance of establishing order in filiation. The process itself consists, as in the case of mother substitution, in a series of successive extensions, each of which brings about a partial loosening and modification of the old ties, and the formation of new ones upon the old model.

In the earler stages, the infant is mainly passive—as when it forms the first bonds by accepting the parental cares; as when it is weaned from the mother; taught to name its parents; to accept a substitute mother and father and to extend to them the parental appellations. Later on when the baby assumes the status of a child, often by donning the first dress, when he begins to follow the parents and takes some part in their pursuits, his interest in new associations and in the formation of new bonds becomes more active too.

Then there comes, in some tribes at least, again a stage of abrupt, passively received training. The rites of tribal initiation as a rule, entail a dramatic break with the old life and the creation of new bonds. The novice is made to forget his associations with the family, especially with its female members, above all with the mother. In the course of the moral and mythological training which he receives, he is taught in a systematic way what kinship means, he is instructed in the principles of unilateral descent, the rules of exogamy, the duties and responsibilities towards his kindred and relatives. In other tribes, where there are no initiation rites, the same moral and legal education is given gradually, spread over a longer period—but it always has to be received, and it is always given with reference to kinship.

The boy and girl now enter the active life of the tribe. Often the individual has to change his residence, the girl on marrying into another village, the boy on assuming his full unilateral kinship status. In matriarchal and patrilocal communities, for instance, he leaves his father's place and joins his mother's brother. With this a new recrystallization of kinship bonds takes place—always, however, on the same principle: with the old pattern

carried over, but adjusted to the individual's new status and to his new conditions of life.

Marriage opens a new phase and constitutes another transition (see *s.v.*). Here a new set of relatives is acquired, besides the individual mate, and the terminology is enriched by another set of expressions, as a rule some taken over from the old vocabulary of kinship, and some new ones added. Incidentally a new household is founded, with which the whole kinship story starts afresh.

Later on, with old age, with the marriage of children and the arrival of grandchildren, the kinship horizon changes once more, as a rule by the growth and multiplication of the younger generation, lineal and collateral, and by their gradual taking of duties, responsibilities and privileges out of Ego's hands.

XXI. **The Nature of the Extensions.**—Thus each successive transformation of kinship bonds is, as a rule, associated with a biological stage in human life; each corresponds to a different type of social setting; each is conditioned by different functions performed by the group. Kinship invariably begins in the family —mother, father and child, the latter depending for nourishment, comfort and safety upon its parents. From the individual household and the mainly biological functions of the family, the child passes into the social horizon of a few associated households, which by the first extension of kinship, furnish him with his "substitute" parents, brothers and sisters, and by the formation of new relationships, supply his grandparents, his maternal uncle, paternal aunt and his cross-cousins. At, and after, puberty, he learns, in a more explicit and systematic manner, the principles of his tribal kinship and law. This is done through initiation or training within the horizon of the local community. Entering afterwards the stage of active life, as a member of his clan he takes part in most tribal concerns—economic, ceremonial, legal, warlike or religious. Soon, also, he makes a choice of his matrimonial mate, according to the kinship rules regulating marriage in his tribe.

One side of the whole process consists in the gradual assimilation of the new ties to the old ones; the other side, in the creation of new interests, adoption of new functions and formation of new ties. Even when the old ties are purposely destroyed, as in initiation, the new ones are built on their pattern. Throughout the process each extension leads to the formation of new ties and thus to the weakening of the old ones, but never to their complete obliteration, nor to the confusion of the two sets. The new relationships receive some elements of the old ones, which become incorporated in them, but invariably they contain new elements also.

At the end, the individual finds himself not with one confused or amalgamated mass of kindred, but rather, surrounded by a number of gradually widening circles: the family, the collateral relatives, the local kinsmen and relatives, the clansmen, and the relatives within the tribe; and, cutting athwart this concentric system, his own new household and his relatives-in-law.

XXII. **Persistence of Family Ties.**—Why does the family pattern persist throughout these extensions, not only in terminology, but in legal fiction, in totemic tradition and in the character of the various rules? It must never be forgotten, of course, that kinship at the tribal end is by no means identical with kinship at the family end. As the ties widen, their original family character becomes more and more attenuated and diluted by other ingredients. Tribal kinship bears only a remote, at times mainly figurative, resemblance to the family ties, but that it is built under their influence and as an extension of them is beyond doubt.

The main force which brings about this extension is the extreme strength of family ties. The power of the earliest family experiences to influence all subsequent social relations is a universal fact which was not sufficiently appreciated until recently. In spite of their exaggerated claims and fantastic distortions, psychoanalytic writers have helped to show how all-pervading the family sentiments are in society, and how the reminiscences of paternal authority and of maternal tenderness enter into most relations of later life.

In the small communities of savages, where all social relations are direct and personal, where all co-operation is by actual contact, where solidarity and substitution operate within groups of people constantly in touch with each other, the family pattern can be adapted to all wider formations much more concretely and liberally. In all the extensions the new bonds and obligations are formed on account of the old ones; therefore, to an extent, in their image. The unilateral principle deflecting the spread of the family pattern to one side only, makes its sway within the clan only the more concentrated, while it frees from its constraint a whole sphere of relations—those between clans.

The final product of the process of kinship extensions: the clan system, with its twofold relationships within the kinship group and across the groups, is thus the natural product of the influences which drive family kinship into wider spheres of action and of the unilateral principle.

XXIII. **The Clan and the Family.**—Nothing is as important and difficult in the study of primitive sociology as the correct understanding of the nature of the clan and its relation to the family. The primary and fundamental elements of parent to child kinship—the bonds of procreation, the physiological services, the innate emotional response—which make up the family bonds, vanish completely from the relationship within the clan. Totemic identity, the mythological fiction of common totemic descent, magical, religious and legal functions, are new elements which have entered into it, and which constitute the greatly modified kinship of the clan.

But though the clan is essentially non-reproductive, non-sexual and non-parental, though it never is the primary basis and source of kinship, its connection with the family is real and genetic. The clan grows out of family kinship round one of the parents by the affirmation of the exclusive procreative relevance of this one parent, by the injunction of legal solidarity with one side of kindred, accompanied often by legal fiction and linguistic metaphor.

The clan differs from the family, however, not only in the nature of its bonds but also in structure. It is the result of the widest possible extension of kinship ties, but on one side only. While the family contains essentially the two principles, male and female, present in procreation, in the physiological division of functions and in sociological protection, the clan is based upon the elimination of either the paternal or the maternal element from relevant kinship. It is rather the clan of the relevant parent, *plus* the clan of the irrelevant parent, *plus* the other clans related to Ego by marriage or other forms of affinity, which together embrace the classificatory body of relatives. In fact the classificatory nomenclature always refers to the tribe or the community or a wider portion of it, and never to one clan only. It is the tribe, therefore, as a correlated system of clans, or such portion of it as is embraced by the classificatory nomenclature, which corresponds to the widest circle of kinship extensions.

It is an easy but dangerous mistake to maintain that "the classificatory system and our own are the outcome of the social institutions of the clan and the family respectively," and to say that as "among ourselves this (the essential) social unit is the family" so "amongst most peoples of rude culture the clan or other exogamous group is the essential unit of social organization" (Rivers, *Kinship and Social Organization,* pp. 74, 75). This view carries on Morgan's mistaken opinion that the clan is a domestic institution, made *ad hoc* for purposes of group-marriage, a mistake which has recently been reaffirmed in the phrase that "the clan, like the family, is a reproductive group" (Briffault, 1927). All this is a continuous source of error in that it construes the clan into an independent, self-sufficient kinship unit, whereas the clan is essentially a group correlated to other groups of a similar nature, and dependent upon their existence. In its simplest form the correlated system is reduced to two clans, but never to one. It is this compound system which corresponds to the family, which itself is a self-sufficient independent kinship unit. The clan in fact never bears the imprint of extended full family kinship, but only of one side of it.

It is a curious mistake to take savage fiction and linguistic simile at their face value, and to regard, with Morgan, the clan as a "domestic institution," made *ad hoc* for purposes of group-marriage; or, with Rivers, to imagine that the clan has been the

foundation of classificatory nomenclature in the same sense as the family is the basis of our own terminology; or to affirm that "the clan, like the family, is a reproductive group."

The function of the clan system is neither generative nor domestic; exogamy is not primarily an injunction to marry a woman of another clan, but the prohibition of sexual intercourse within the clan. Again the relations between the older and younger generation within the clan, or between age-grades, are neither an equivalent nor a copy of the parent to child relations—above all, not as regards reproductive functions!

The relation of the members of a clan is a modified and extended kinship solidarity; it implies co-operation in most communal undertakings and the exclusion of sexual interests. Thus some elements of the later parent to child and brother to sister relationship are carried over into clanship, but two elements never enter it: the matrimonial relation and early parent to child relation. The first of these is extended, in a modified form, into the relationship between different clans, members of which may pursue amusements and sexual interests in common, as between males and females; and between individuals of the same sex, render each other reciprocal services from group to group, and join in enterprises on a tribal scale.

XXIV. **Summary and Conclusions.**—We can now define kinship, in the first place, as the personal bonds based upon procreation, socially interpreted; and, in the second place, as the wider bonds derived from the primary ones by the process of gradual extensions which occur in all communities during the life-history of the individual. On the level of savagery and lower barbarism, the powerful persistence of family bonds is given freer play, hence the extensions are more numerous and more definitely systematized; they are backed up by legal fictions of totemic descent; by ideas of one-sided procreation or mystic identity; and they lead to the formation of wider groups such as the clan, moiety or exogamous division.

Kinship is thus a class of social relations, which must be subdivided into several varieties: primary kinship always founded on marriage and family; and the derived forms, correlated with the group of cognate households, the village-community and the clan. The terms of kinship, which are but linguistic expressions of all these relationships, have obviously also a manifold meaning, which corresponds to the social reality. Thus is explained the existence, side by side of individual and classificatory terms, of the family and the clan, of the individual and communal aspects of kinship. The enigmatic and apparently anomalous character of primitive kinship vanishes with a closer scrutiny of the facts.

To explain kinship there is no need of an appeal to a fanciful history of mankind, beginning with Promiscuity or Hetairism, passing through Group-Marriage, Marital Gerontocracy and Anomalous Marriages, and only ending, after many errors and efforts, in monogamous marriage. Where empirical facts yield a sufficient explanation hypotheses are superfluous—they are a disease of method. Especially erroneous in these speculations is the neglect of domesticity and the influences of everyday life in early childhood, combined, as this neglect often is, with an over-emphasis on sex. Sex, far from being the principal clue to kinship, plays only a subordinate part in its formation, separated as it is from parenthood by the rule of legitimacy. It is the elimination of sex and not indulgence in it which, through the rules of incest and exogamy, really influences kinship and clanship.

The study of kinship, far from demonstrating the small importance of the family, proves the tenacity of its bonds and their persistence through life as a standard for all wider social relations. The age-long experience of mankind, which Anthropology alone can unravel, teaches us that the institutions of marriage and family have never been absent in human history, that they form the indispensable foundation for the structure of human society, and that, however they might become modified in the future, they will never be destroyed nor their influence seriously impaired.

(B. MA.)

See also AVUNCULATE; CLAN; DUAL ORGANIZATION; ENDOGAMY; EXOGAMY; FAMILY; GROUP MARRIAGE; MARRIAGE; MATRIARCHY; RELATIONSHIP TERMS; SORORATE.

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KINSTON, a city of North Carolina, U.S.A., on the Neuse river, 78 mi. S.E. of Raleigh; the county seat of Lenoir county. It is on federal highways 70 and 258 and state highways 11 and 12, and is served by the Atlantic Coast Line and the Atlantic East Carolina railroads. Pop. was 9,771 in 1920 (41% Negroes) and was 15,388 in 1940 by the federal census. It is a shipping point for tobacco, cotton, livestock, poultry and garden produce, and has various manufacturing industries, with an annual output valued at about $1,500,000. The city was founded about 1750, establishment authorized in 1762 and incorporated in 1849.

KIOWA. This American Indian tribe of the Western Plains is generally considered a separate linguistic stock, but may prove related to the Tanoan Pueblo. They were nonagricultural, unsettled, warlike, predatory, and with the Comanche raided Mexicans, Texans, Americans and Indians. Their culture is of southern Plains type. About 1,600 survive in Oklahoma. (*See* J. Mooney, *Bur. Am. Ethn. Report,* xvi., 1898.) (A. L. K.)

KIPCHAK, Mongol designation of the khanates generally known as the Golden Horde (Western Kipchak) and the White Horde (Eastern Kipchak), both ruled by successors of Genghis Khan. The Golden Horde (*q.v.*) was, at the height of its expansion, of huge extent, reaching from the Dnieper far into Central Asia. During a temporary decline in its power in the second half of the 14th century, the White Horde became dominant, but its importance was short-lived. By the beginning of the 16th century the Golden Horde had also disintegrated. (*See* MONGOLS.)

KIPLING, RUDYARD (1865–1936), British author, was born in Bombay on Dec. 30, 1865. His father, John Lockwood Kipling (1837–1911), an artist of considerable ability, was from 1875 to 1893 curator of the Lahore museum in India. His mother was Miss Alice Macdonald of Birmingham, two of whose sisters were married respectively to Sir E. Burne-Jones and Sir Edward Poynter. He was educated at the United Services College, Westward Ho, North Devon, which is the scene of his story *Stalky and Co.* On his return to India he became at the age of 17 sub-editor of the Lahore *Civil and Military Gazette.* In 1886, in his 21st year, he published *Departmental Ditties,* a volume of light verse chiefly satirical, only in two or three poems giving promise of his authentic poetical note. In 1887 he published *Plain Tales from the Hills,* a collection mainly of the stories contributed to his own journal. During the next two years he brought out, in six slim paper-covered volumes of Wheeler's Railway Library (Allahabad), *Soldiers Three, The Story of the Gadsbys, In Black and White, Under the Deodars, the Phantom 'Rickshaw* and *Wee Willie Winkie,* at a rupee apiece. These were in form and substance a

continuation of the *Plain Tales.* This series of tales, all written before the author was 24, revealed a new master of fiction. They were unequal, as his books continued to be throughout; the sketches of Anglo-Indian social life being generally inferior to the rest. The style was to some extent disfigured by jerkiness and mannered tricks. But Kipling possessed the supreme spell of the story-teller to entrance and transport. The freshness of the invention, the variety of character, the vigour of narrative, the raciness of dialogue, the magic of atmosphere, were alike remarkable. The soldier-stories, especially the exuberant vitality of the cycle which contains the immortal Mulvaney, established the author's fame throughout the world.

The new author's talent was quickly recognized in India, but it was not till the books reached England that his true rank was appreciated and proclaimed. Between 1887 and 1889 he travelled through India, China, Japan and America, finally arriving in England to find himself already famous. His travel sketches, contributed to *The Civil and Military Gazette* and *The Pioneer,* were afterwards collected (the author's hand having been forced by unauthorized publication) in the two volumes *From Sea to Sea* (1889). A further set of Indian tales, equal to the best, appeared in *Macmillan's Magazine* and were republished with others in *Life's Handicap* (1891). In *The Light that Failed* (1891, after appearing with a different ending in *Lippincott's Magazine*) Kipling essayed his first long story (dramatized 1905), but with comparative unsuccess. In his subsequent work his delight in the display of descriptive and verbal technicalities grew on him. His polemic against "the sheltered life" and "little Englandism" became more didactic. His terseness sometimes degenerated into abruptness and obscurity.

But in the meanwhile his genius became prominent in verse. Readers of the *Plain Tales* had been impressed by the snatches of poetry prefixed to them for mottoes, certain of them being subscribed "Barrack Room Ballad." Kipling now contributed to the *National Observer,* then edited by W. E. Henley, a series of *Barrack Room Ballads.* These vigorous verses in soldier slang, when published in a book in 1892, together with the fine ballad of "East and West" and other poems, won for their author a second fame, wider than he had attained as a story-teller. In this volume the Ballads of the "Bolivar" and of the "Clampherdown," introducing Kipling's poetry of the ocean and the engine-room, and "The Flag of England," finding a voice for the Imperial sentiment, which—largely under the influence of Kipling's own writings—had been rapidly gaining force in England, gave the key-note of much of his later verse. In 1898 Kipling paid the first of several visits to South Africa and became imbued with a type of Imperialism that reacted on his literature, not altogether to its advantage. Before finally settling in England Kipling lived some years in America and married in 1892 Miss Caroline Starr Balestier, sister of the Wolcott Balestier to whom he dedicated *Barrack Room Ballads,* and with whom in collaboration he wrote the *Naulahka* (1891), one of his less successful books.

The next collection of stories, *Many Inventions* (1893), contained the splendid Mulvaney extravaganza, "My Lord the Elephant"; a vividly realized tale of metempsychosis, "The Finest Story in the World"; and in that fascinating tale "In the Rukh," the prelude to the next new exhibition of the author's genius. This came in 1894 with *The Jungle Book,* followed in 1895 by *The Second Jungle Book.* With these inspired beast-stories Kipling conquered a new world and a new audience, and produced what many critics regard as his most flawless work. His chief subsequent publications were *The Seven Seas* (poems), 1896; *Captains Courageous* (a yarn of deep-sea fishery), 1897; *The Day's Work* (collected stories), 1898; *A Fleet in Being* (an account of a cruise in a man-of-war), 1898; *Stalky and Co.* (mentioned above), 1899; *From Sea to Sea* (mentioned above), 1899; *Kim,* 1901; *Just So Stories* (for children), 1902; *The Five Nations* (poems, concluding with what proved Mr. Kipling's most universally known and popular poem, "Recessional," originally published in *The Times* on July 17, 1897, on the occasion of Queen Victoria's second jubilee), 1903; *Traffics and Discoveries* (collected stories), 1904; *Puck of Pook's Hill* (stories), 1906; *Actions and Reactions* (stories), 1909; *Rewards and Fairies* (1910, a companion volume to *Puck of Pook's Hill*); 24 poems contributed to a *History of England* (1911) for young people, in which he joined C. R. L. Fletcher; *The Irish Guards in the Great War* (1925), the most notable of his war books; *Debits and Credits* (1926); and *A Book of Words* (1928), a collection of speeches and addresses delivered between 1906 and 1927. Of Kipling's longer narratives *Kim* is the most successful; picaresque in design it gives a series of delightful pictures of Indian life, and is a classic in its kind. In *Puck of Pook's Hill* and *Rewards and Fairies* Kipling sought to create for children a semi-historical mythology of the English country-side; this patriotism was to be rooted in the sense of the history of the land beneath their feet, in the "instinct of inherited continuity," to use a phrase from one of his addresses. But everything he wrote, even to a farcical extravaganza inspired by his enthusiasm for the motor-car, breathed the meteoric energy that was the nature of the man. A vigorous and unconventional poet, a pioneer in the modern phase of literary Imperialism, and one of the rare masters in English prose of the art of the short story, Kipling had already by the opening of the 20th century won a conspicuous place which was recognized by the award of the Nobel prize for literature in 1907. He died in London, Jan. 18, 1936.

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KIPPER, properly the name by which the male salmon is known at the approach of the breeding season, when he develops a sharp cartilaginous beak, known as the "kip" from which "kipper" is said to be derived. From the practice of rendering the breeding (*i.e.,* "kipper") salmon fit for food by splitting, salting, and smoke-drying them, the term "kipper" is also used of other fish, particularly herrings, cured in the same way. A "bloater" as distinct from a "kipper" is a herring cured whole without being split open.

KIPPIS, ANDREW (1725–1795), English Nonconformist divine and biographer, son of Robert Kippis, a silk-hosier, was born at Nottingham on March 28, 1725. He was educated at Sleaford, and at Dr. Doddridge's academy at Northampton. He was pastor successively of churches at Boston, Dorking and at Westminster, where he died on Oct. 8, 1795. He was classical and philological tutor in training colleges for the Presbyterian ministry at Hoxton and at Hackney. In 1778 he was elected a fellow of the Antiquarian society, and a fellow of the Royal Society in 1779.

Kippis contributed to *The Gentleman's Magazine, The Monthly Review* and *The Library;* and he had a good deal to do with the establishment and conduct of *The New Annual Register.* He published also sermons, pamphlets and biographies. His chief work is his edition of the *Biographia Britannica,* of which, however, he only lived to publish 5 vols. (folio, 1778–93).

KIRBY, WILLIAM (1759–1850), English entomologist, was born at Witnesham, Suffolk on Sept. 19, 1759. He was educated at Caius College, Cambridge, and after taking orders in 1782, spent his entire life at Barham in Suffolk. His *Monographia Apum Angliae* (2 vols., 1802), the first scientific treatise on its subject, brought him to the notice of the leading entomologists of his own and foreign countries, and his *Introduction to Entomology* (4 vols., 1815–26; 7th ed., 1856), written in collaboration with W. Spence, was equally successful. Kirby died on July 4, 1850.

Besides the books already mentioned he published *The History, Habits and Instincts of Animals* (2 vols., 1835), several papers in the *Transactions of the Linnean Society,* the *Zoological Journal* and other periodicals, and some devotional works. *See* the *Life* by J. Freeman (1852).

KIRCHER, ATHANASIUS (1601–1680), German scholar and mathematician, was born on May 2, 1601, at Geisa near Fulda. He was educated at the Jesuit college of Fulda, and became a novice of the order at Mainz in 1618. He taught philo-

sophy, mathematics and Oriental languages at Würzburg, whence he was driven (1631) by the troubles of the Thirty Years' War to Avignon. In 1635 he settled in Rome, where he taught mathematics in the Collegio Romano, but resigned in 1643 to study archaeology. He died on Nov. 28, 1680.

His works include *Prodromus Coptus* (1636); *Lingua Aegyptiaca restituta* (1643); *Obeliscus Pamphilius* (1650); and *Oedipus Aegyptiacus*—(1652–55)—works which may claim the merit of having first called attention to Egyptian hieroglyphics. The valuable collection of antiquities which he bequeathed to the Collegio Romano has been described by Buonanni (*Musaeum Kircherianum*, 1709; republished by Battara in 1773).

See Brischar, *Anastasius Kircher, ein Lebensbild* (1877). His autobiography in Latin was translated into German (1901) by N. Seng.

KIRCHHEIM-UNTER-TECK, a town in the *Land* of Württemberg, Germany, on the Lauter, at the northwest foot of the Rauhe Alb, 15 mi. S.E. of Stuttgart by rail. Pop. (1939) 13,144. The town has a former royal castle built in 1538. The manufactures include hosiery, soap, pianofortes, machinery, furniture, chemicals and cement. It also has wool-spinning establishments, breweries, and a corn exchange, and trades in wool, timber and pigs. In the vicinity are the ruins of the castle of Teck, the hereditary stronghold of the dukes of that name. Kirchheim has belonged to Württemberg since 1381.

KIRCHHOFF, GUSTAV ROBERT (1824–87), German physicist, was born at Königsberg (Prussia) on March 12, 1824, and was educated at the university of his native town. After acting as *Privatdozent* at Berlin for some time, he became extraordinary professor of physics at Breslau in 1850. Four years later he was appointed professor of physics at Heidelberg, and in 1875 he was transferred to Berlin, where he died on Oct. 17, 1887. Kirchhoff's contributions to experimental and mathematical physics were numerous and important. In his work in electricity Kirchhoff was greatly influenced by Weber. He modified the resistance bridge as designed by Wheatstone, and developed a theorem which gives the distribution of currents in a network. Kirchhoff extended Ohm's theory for a linear conductor to the case of conductors in three dimensions, and so generalised the equations dealing with the flow of electricity in conductors. He also tried to establish a connection between electrostatic and electrodynamic conceptions of electricity. Another important piece of work was the demonstration that an electric disturbance is propagated along a wire with the same velocity as light is propagated in free space. In other papers, various miscellaneous topics were treated—the thermal conductivity of iron, crystalline reflection and refraction, certain propositions in the thermodynamics of solution, vaporization and chemical reaction. An important part of his work was contained in his *Vorlesungen über mathematische Physik* (1876), in which the principles of dynamics, as well as various special problems, were treated in a somewhat novel and original manner.

His name is best known for the researches, in conjunction with R. W. von Bunsen on the development of spectrum analysis. He can scarcely be called an inventor, for not only had many investigators already used the prism as an instrument of chemical inquiry, but considerable progress had been made towards the explanation of the principles upon which spectrum analysis rests. But to him belongs the merit of having, most probably without knowing what had already been done, enunciated a complete account of its theory and established the method on a solid basis. Kirchhoff gave the explanation of the Fraunhofer lines and thus opened up to investigation a new field in spectrum analysis applied to the composition of celestial bodies.

Kirchhoff's work is collected in *Gesammelte Abhandlungen* (Leipzig, 1882). *See* W. Voigt, *Zum Gedächtniss von G. Kirchhoff* (Göttingen, 1888).

KIRCHHOFF, JOHANN WILHELM ADOLF (1826–1908), German classical scholar and epigraphist, was born in Berlin. His works include *Die Homerische Odyssee* (1859), putting forward a new theory as to the composition of the *Odyssey;* editions of Plotinus (1856), Euripides (1855 and 1877–78), Aeschylus (1880), Hesiod (*Works and Days,* 1889), Xenophon, *On the Athenian Constitution* (3rd ed., 1889); *Über die Entstehungszeit des Herodotischen Geschichtswerkes* (2nd ed., 1878); *Thukydides und sein Urkundenmaterial* (1895).

The following works are the result of his epigraphical and palaeographical studies: *Die Umbrischen Sprachdenkmäler* (1851); *Das Stadtrecht von Bantia* (1853), on the tablet discovered in 1790 at Oppido near Banzi, containing a plebiscite relating to the municipal affairs of the ancient Bantia; *Das Gotische Runenalphabet* (1852); *Die Fränkischen Runen* (1855); *Studien zur Geschichte des Griechischen Alphabets* (4th ed., 1887). The second part of vol. iv. of the *Corpus Inscriptionum Graecarum* (1859, containing the Christian inscriptions) and vol. i. of the *C. I. Atticarum* (1873, containing the inscriptions before 403), with supplements thereto (vol. iv. pts. 1–3, 1877–91), are edited by him.

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KARA-KIRGHIZ, OR NATIVE OF THE RUSSIAN PAMIRS, WITH MATCH-LOCK RIFLE

KIRGHIS. The term Kirghis or Kirghiz is very loosely used. The Russians usually include under this term a variety of peoples, including the Kaizak (*q.v.*). The term should probably be limited to those Turkic tribes whose original home was the upper Yenisei, but most of whom now live south of Yarkand, and to the north of Kashgar and Aksu. Although some are agriculturists and hunters, the culture of the majority differs in few respects from the horse-breeding nomadism of the Mongols whose customs, in spite of Czaplicka's statement, are also very similar to those of the Kirghis. They are exogamous in relation to the blood clan, but enjoy a good deal of antenuptial freedom within the clan. (*See* also KIRGHIZ REPUBLIC.) (L. H. D. B.)

KIRGHIZ REPUBLIC, a former A.S.S.R., since Dec. 5, 1936, a state member of the U.S.S.R., lying to the south-east of Kazakstan, which forms its northern boundary. It lies between 43° 24′ N. and 39° 17′ N. and 70° E. and 80° E. Chinese Turkistan lies on the east, the autonomous Badakshan area and the Tajik S.S.R. on the south, while on the west are the Uzbek S.S.R. and Kazakstan. It is a mountain region, lying within the western extension of the Tian Shan range which branches off from the Khan-tengri mountain knot (23,600 ft.) in 80° 11′ E. and 42° 13′ N., on the western border of Chinese Turkistan. The Kunghei Ala-tau skirts the north of Lake Issyk-Kul; its southern slopes lie in the Kirghiz S.S.R., and its northern in Kazakstan.

Most of the Alexander range, a western continuation of the Kunghei-Ala-tau, lies within the Kirghiz republic, as does the valley to the north, where the Chu river is the frontier between Kazakstan and the Kirghiz S.S.R. as far west as the village of Kamyshanka. The Alexander range bifurcates into two branches, the southern or Talas-tau lying within the Kirghiz S.S.R. The Terskei Ala-tau skirts the south of Lake Issyk-Kul, separating the lake, which appears to be a hollow of tectonic origin, from the high valley of the Naryn river. Striking south-westwards from Khan-tengri is the Kok-shal tau, whose crest forms the boundary between Russia and Chinese Turkistan. This range terminates in the Terek-tau, from which the Ferghana mountains branch north-west and form a knot with the Talas-tau. The Naryn river enters the Ferghana valley through a deep cleft in the Ferghana range, the northern portion of which is sometimes called the Uzun-tau. From the knot, the Ala-tau branch to the north-west and the Chatkal-tau to the south-west. The Naryn river rises in two streams, the little and the great Naryn and between them, and parallel with them, lies the Dzhitym-tau range; south of the Naryn, below the town of Narynsk, lies the Kalkagar range, with the Dongus-tau to the north. Lake Son-Kul lies between this range and the Dzhungal-tau. Stretching from the Talas-tau to the Dongus-tau is the Susamyr-tau. From Lake Chatyr-Kul to

the north-east, the great Ak-Sai plateau extends with the Ak-Sai river flowing along to Chinese Turkestan. The topography of the region has been profoundly influenced by its geological history. The closely folded Palaeozoic limestones and slates, which form the Tien Shan system, were once a peneplain, in which warping and tilting took place, and in the basins thus formed late Mesozoic and Tertiary sandstones and shales were deposited, and the whole surface was once more worn down. But in late Tertiary times folding took place and the region was pushed to a great height, so that the plateau south of Lake Issyk-Kul is at an average elevation of 12,000 ft. Lake Issyk-Kul itself is 5,000 ft. above sea level. The main mass of the plateau is about 150 mi. in width and consists of broad shallow basins (altitude *c.* 10,000 ft.) running in an east-west direction, separated by the broad ridges mentioned previously which slope gently to altitudes of 13,000 to 16,000 ft., their flat tops reminiscent of the ancient peneplain. The Kokshal-tau range (16,000 ft.) has a more typical young fold mountain appearance, with sharp-edged peaks. The republic is a glacial region, the numerous small glaciers varying from one to five miles in length and occurring usually at altitudes of 12,000 ft. Broad U-shaped glacial valleys are the prevailing type, though V-shaped river gorges alternate picturesquely with them. Terraces occur in the river valleys, sometimes half a dozen, one above the other. Ellsworth Huntington concluded from his examination of the region that there had been at least five decreasingly severe glacial advances, with interglacial periods of warm climate.

The climate varies with altitude and exposure; slopes exposed to the west or north receive winds bearing more moisture and have less insolation and are therefore more favourable to vegetation. Rainfall increases steadily with altitude up to 10,000 ft., after which precipitation takes the form of snow, even in the height of summer, and hard frosts occur at night. The prevailing vegetation, in dependence on this abundant precipitation and on the altitude, is alpine and sub-alpine meadow, with luscious grass and abundance of gaily coloured flowers. Forests are rare, except in the valley bottoms and along some of the northern slopes; they are coniferous in type, with some birch and poplar. According to P. P. Semenov, the northern slopes may be roughly divided into a steppe region 1,575 ft. in altitude, a zone of cultivation to 4,300 ft., then coniferous trees to 8,100 ft., sub-alpine, and alpine pasture to 11,900 ft., with perpetual snow above. Apple, plum and apricot grow wild in a few valleys up to 7,000 ft., but fruits and berries are rare. The abundance of flowers, especially east of Lake Issyk-Kul makes bee-keeping profitable. Wild animal life is scarce, though birds are numerous in the lower slopes, especially round the lakes. The mouflon, antelope and argalleh are found, and also rabbits. Between 9,000 and 12,000 ft., where the grass is richest, the marmot is found in great numbers. The chief wealth of the region, in dependence on the fact that 90% of the useful land is occupied by meadow and pasture, is in its flocks and herds. The fat-tailed sheep is the most numerous, furnishing milk, meat, wool and leather. Cows and yaks are also bred mainly as milch and draught cattle, the latter to be exported to the agricultural areas of the other central Asiatic republics. Horses of a small, shaggy, stocky breed come next in numbers, and are valued mainly for riding, not as pack animals. The two-humped Bactrian camel is bred, both for sale in the lowlands and as a beast of burden; its milk and hair are also useful. Goats, often used to lead the flocks of sheep, are kept, and in a few valleys pigs are bred. Watch dogs guard every encampment.

The ancient nomad method of relying entirely on pasture both winter and summer is fast dying out. Today the largest group of inhabitants depends on herding plus some cultivation, often the growing of lucerne. Many Kirghiz are in the semi-nomadic stage of relying on some particular valley for wintering their flocks. This means that hay must be grown and dried for winter use, and grain, especially wheat and barley, is often grown as well. The houses in these winter "auls" are built of mud, with flat roofs, on which are stored the haystacks for winter use; the grain fields are roughly divided by mud and stone walls. In many places the crops are dependent on primitive irrigation channels. The milk, meat and "kumiss" or fermented mare's milk, diet, is increasingly supplemented by grain, tea and sugar. The tents and their furniture are much the same as those in Kazakstan (*q.v.*). In the fertile loess belt extending from Frunze to the northeast of Lake Issyk-Kul, there are colonies of Russian settlers, and here and in the loess region round Dzhalyal-Abad and Osh, where the eastern end of the Ferghana valley penetrates into the republic, irrigation-cultivation of an intensive type is carried on; cotton in 1939 yielded 95,000 tons, and grain and fruits, vine, apricot, peach and melon were raised in quantity. Rice and opium poppy are grown near Dzhalyal-Abad, and the silkworm is bred, about 128,000 tons of cocoons per annum being produced. A little coal and rock salt are mined, but lack of transport facilities prevents the working of the coal, naphtha, ozokerite, iron, copper, lead, silver, zinc, gold and asbestos known to exist. Homespun woollen, cotton and silk goods are made; felt and rugs for the tents, ornamented leather goods and small metal utensils, but they are essentially peasant industries to meet local needs.

Factory industry is almost nonexistent, except for a few distilleries and oil-pressing works, but three or four cotton-cleaning factories have been successfully established in the Dzhalyal-Abad-Osh district. Means of communication in this remote and difficult region are scarce. A branch of the Chkalov-Tashkent railway passes through Frunze and has been extended to Tokmak, and a branch of the Kokand-Andizhan railway reaches Dzhalyal-Abad, but these two regions are on the fringes of the republic. A new railroad is under construction (1944) which will provide Frunze province with mineral, fuel, lumber and many raw materials from the Issyk-Kul valley. Steamers ply on Lake Issyk-Kul. Education and medical help are available only in a few settlements; the vast majority of the Kirghiz are beyond their reach. Of the 9% of the population able to read and write, most are Russians. Population in 1939 was 1,188,714 (urban 270,587, rural 918,127), of whom 66.6% were Kara-Kirghiz, 11.1% Uzbeks, 11.7% Russians and 6.4% Ukrainians. The administrative centre is Frunze (92,659), mainly a Russian town; Naryn, in the centre of the high plateau, population 1,547, is the only settlement of town type where the Kirghiz predominate. The Kara-Kirghiz are a branch of the same Turkish (Mongol-Tatar) race as the Kazak-Kirghiz and resemble them in physical type and language (*see* KAZAKSTAN). The name Kirghiz originally applied to them alone and they trace it from a legendary chief named Kirghiz. Kara (black) was prefixed because of the colour of their felt tents or "kibitkas." Russian writers refer to them as *Cherniye* (Black) or *Dikokammeniye* (Wild Stone or Rocky) Kirghiz, and a few English writers have called them Black Kirghiz.

The name Kirghiz first occurs in an account of an embassy sent to them by the East Roman emperor, Justin II, in 569. Chinese chroniclers (1280–1367) refer to them as Ki-li-ki-tz' and place their territory northwest of Pekin, about the headstreams of the Yenisei, while the earlier records of the T'ang dynasty (618–907) refer to them as Kha-kia-tz' (pronounced Khaka, and sometimes transliterated Haka). These records also afford evidence of their Mongol-Tatar origin. They have been settled in these mountain fastnesses at least since the 13th century and probably earlier. At one time the upper Yenisei and Baikal regions were occupied by the Kara-Kirghiz and they were referred to by the Mongols as Burut, ut being the Mongolian plural ending modified to Buriat (*see* BURIAT MONGOL REPUBLIC). However, in the 17th century the Russians and Kazak-Kirghiz exterminated those east of the Irtish, and drove the remainder west and southwest. Most of them sought refuge with their nomad Kara-Kirghiz kinsmen in the highlands of the Tien Shan and Pamir region. The Kara-Kirghiz are grouped into the On (right or east) section occupying the Issyk-Kul, Chu, Tekes and Naryn valleys and the Sol (left or west) section, occupying the region between the Talass and Oxus headstreams. Nomad groups often visit the Pamir plateau in summer, and Kara-Kirghiz are to be found in Chinese Turkistan. Their region was annexed to Russia in 1864, and under the tsarist government formed part of the Turkistan province. For a time after 1917 there was a Turkistan republic, which included the Kara-Kirghiz region. In 1924 it ceased to exist and the Kara-Kirghiz autonomous area, reorganized in 1926 as an autonomous republic, was created.

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KIRIN: *see* MANCHURIA.

KIRK, SIR JOHN (1832–1922), British naturalist and administrator, son of the Rev. John Kirk, was born at Barry, near Arbroath, on Dec. 19, 1832, and died on Jan. 15, 1922. He was educated at Edinburgh for the medical profession, and after serving on the civil medical staff in the Dardanelles throughout the Crimean War, was appointed in Feb. 1858 physician and naturalist to David Livingstone's second expedition to central Africa. He was by Livingstone's side in most of his journeyings during the next five years, and was one of the first four white men to behold Lake Nyassa (Sept. 16, 1859). He was finally invalided home on May 9, 1863. The reputation he gained during this expedition led to his appointment in Jan. 1866 as acting surgeon to the political agency at Zanzibar. In 1867 he was made vice-consul of Zanzibar, and in 1868 became assistant political agent, being raised to the rank of consul-general and agent in 1873. He retired in 1887. The 21 years spent by Kirk in Zanzibar covered the most critical period of the history of European intervention in east Africa; and during the greater part of that time he was the virtual ruler (*see* ZANZIBAR). Kirk resigned his post (July 1887), retiring from the consular service. In 1889–90 he was a plenipotentiary at the slave trade conference in Brussels, and was one of the delegates who fixed the tariff duties to be imposed in the Congo basin. As a naturalist Kirk took high rank, and many species of the flora and fauna of central Africa were made known by him, and several bear his name, *e.g.*, the *Otogale kirkii*

(a lemuroid), the *Madoqua kirkii* (a diminutive antelope), the *Landolphia kirkii* and the *Clematis kirkii.*

KIRKCALDY, a royal, large and parliamentary burgh and seaport of Fifeshire, Scotland. Pop. (est. 1938) 45,421. Area, 6.8 sq.mi. It lies on the Firth of Forth, 26 mi. N. of Edinburgh by the L.N.E.R., via the Forth bridge. Although Columba is said to have planted a church there, the authoritative history of the town does not begin for several centuries after the era of the saint. In 1240 the church was bestowed by David, bishop of St. Andrews, on Dunfermline abbey, and in 1334 the town with its harbour was granted by David II to the same abbey, by which it was conveyed to the bailies and council in 1450, when Kirkcaldy was created a royal burgh. In the course of another century it had become an important commercial centre, the salt trade of the district being then the largest in Scotland. In 1644 it was made a free port, and six years later it was assessed as the sixth town in the kingdom. After the union its shipping fell off, Jacobite troubles and the American War of Independence accelerating the decline. But its linen manufactures, begun early in the 18th century, restored prosperity. It is called the "lang toun," because after it absorbed Linktown and Abbotshall on the west, and Pathhead, Sinclairtown and Gallatown on the east, it reached a length of nearly 4 mi. The area was extended in 1930 by the absorption of Dysart (*see* below) and again in 1939 by the addition of about 2.7 sq.mi. of county land. The parish church was mainly rebuilt in 1809, but has a Norman tower. The high school (1894) succeeded the burgh school (1582). Thomas Carlyle was its master 1816–18. Kirkcaldy was the birthplace of Adam Smith.

To the west lies Beveridge park of 110 acres, including a large sheet of water, and to the north Ravenscraig park, both of which were presented to the town, which was also given the house and grounds of Forth park, whose former owner, John Nairn, presented a museum and art gallery as part of a World War I memorial. The harbour has an inner and outer division, with wet dock and wharves. Besides the manufacture of sheeting, towelling, ticks, dowlas and sailcloth, the principal industries include flax tow and jute spinning, net and rope making, bleaching, dyeing, brass and iron founding, and there are potteries, machine works and fisheries. In 1847 Michael Nairn invented the method of making oilcloth and the town is now the centre of the oilcloth and linoleum manufacture of the kingdom. Kirkcaldy combines with Buckhaven and Methil, Burntisland and Kinghorn to return one member to parliament.

Dysart.—This formerly separate royal burgh, merged with Kirkcaldy, May 16, 1930, was a seat of the salt industry in the 15th and 16th centuries. During the time of the alliance between Scotland and Holland, which was closer in Fifeshire than in other counties, Dysart became known as Little Holland. The town is mentioned as early as 874 in connection with a Danish invasion. Its name is said to be a corruption of the Latin *desertum,* "a desert," which was applied to a cave on the seashore occupied by St. Serf. From James V the town received the rights of a royal burgh. In 1559 it was the headquarters of the lords of the congregation, and in 1607 the scene of the meetings of the synod of Fife known as the Three Synods of Dysart. Ravenscraig castle, on the shore to the west of the town, is the Ravensheugh of Sir Walter Scott's ballad of "Rosabelle."

KIRKCALDY OF GRANGE, SIR WILLIAM (*c.* 1520–1573), Scottish politician, was the eldest son of Sir James Kirkcaldy of Grange (d. 1556). Sir James was lord high treasurer of Scotland from 1537 to 1543 and was a determined opponent of Cardinal Beaton, in whose murder (1546) he was assisted by William Kirkcaldy. In July 1547 he was captured by the French and sent as a prisoner to Normandy, whence he escaped in 1550. He was employed in France as a secret agent by Edward VI, being known as *Corax;* and later he served in the French army. The sentence passed on Kirkcaldy for his share in Beaton's murder was removed in 1556, and he returned to Scotland in 1557. He was one of the leaders of the lords of the congregation in their struggle with the regent, Mary of Lorraine. He opposed Queen Mary's marriage with Darnley, and was forced to seek refuge in England (1566). Returning to Scotland, he was accessory to the murder of Rizzio, but he had no share in that of Darnley; and he was one of the lords who banded themselves together to rescue Mary after her marriage with Bothwell. After the fight at Carberry Hill the queen surrendered to Kirkcaldy, and he was mainly responsible for her defeat at Langside. After the murder of Murray, Kirkcaldy ranged himself definitely among the friends of the imprisoned queen. Defying the regent Lennox, he began to strengthen the fortifications of Edinburgh castle, of which he was governor, and which he held for Mary, and early in 1573 he refused to come to an agreement with the regent Morton because the terms of peace did not include a section of his friends. After this some English troops arrived to help the Scots, and in May 1573 the castle surrendered. Strenuous efforts were made to save Kirkcaldy from the vengeance of his foes, but they were unavailing; he was hanged on Aug. 3, 1573.

See Sir James Melville, *Memoirs,* ed. T. Thomson (Edinburgh, 1827); J. Grant, *Memoirs and Adventures of Sir W. Kirkcaldy* (Edinburgh, 1849); L. A. Barbé, *Kirkcaldy of Grange* (1897); and A. Lang, *History of Scotland,* vol. ii (1902).

KIRKCUDBRIGHT (Kur-kōō′brĭ), royal and small burgh, and county town, Kirkcudbrightshire, Scotland. Pop. (est. 1938) 2,332. It is at the mouth of the Dee, crossed here by a bridge, 6 mi. from the sea and 30 mi. S.W. of Dumfries by the L.M.S. railway, being the terminus of a branch line. The old form of the name of the town was Kilcudbrit, from the Gaelic *Cil Cudbert,* "the chapel of Cuthbert," the saint's body having lain here for a short time during the seven years that lapsed between its exhumation at Lindisfarne and the re-interment at Chester-le-Street. The estuary of the Dee is divided at its head by the peninsula of St. Mary's isle, but though the harbour is good, the distance to which the tide retreats impairs its usefulness. The market cross stands in front of the old courthouse, now a factory.

The ivy-clad ruins of Bomby castle, founded in 1582 by Sir Thomas Maclellan, ancestor of the barons of Kirkcudbright, stand at the end of the chief street. The town, which witnessed much of the international strife and Border lawlessness, was taken by Edward I in 1300. It received its royal charter in 1455. After the battle of Towton, Henry VI crossed the Solway and landed at Kirkcudbright to join Queen Margaret at Linlithgow. It withstood the English siege in 1547 under Sir Thomas Carleton, but after the country had been overrun was compelled to surrender. Lord Maxwell, earl of Morton, as a Roman Catholic, mustered his tenants here to act in concert with the Armada; but on the approach of King James VI to Dumfries he took ship at Kirkcudbright and was captured. On St. Mary's isle was situated the seat of the earl of Selkirk, at whose house Robert Burns gave the famous Selkirk grace.

Some ha'e meat, and canna eat,
And some wad eat that want it;
But we ha'e meat, and we can eat,
And sae the Lord be thankit.

DUNDRENNAN ABBEY, 4½ mi. S.E., was the greatest achievement of Fergus, Lord of Galloway, a celebrated church builder of the 12th century. It was a Cistercian house, colonized from Rievaulx, and was built in 1140. There now remain only the transept and choir, a unique example of the Early Pointed style.

KIRKCUDBRIGHTSHIRE (also known as the STEWARTRY OF KIRKCUDBRIGHT and EAST GALLOWAY), county, Scotland, bounded north and northwest by Ayrshire, west and southwest by Wigtownshire, south and southeast by the Irish sea and Solway firth, and east and northeast by Dumfriesshire. Land area, 898.7 sq.mi. It includes the small islands of Hestan and Little Ross, used as lighthouse stations. In the northwestern part of the shire, rugged and desolate, the chief mountains are Merrick (2,764 ft.), the highest in south Scotland, and the group of the Rinns of Kells. Towards the southwest the chief hills are Lamachan, Larg and the bold mass of Cairnsmore of Fleet. In the southeast Criffel stands almost isolated. In the north rises the fine hill of Cairnsmuir of Carsphairn, and close to the Ayrshire border is the Windy Standard. The south of the shire is mostly level or undulating, but picturesque: glacial deposits there cover much of the surface. Large stretches of sand are exposed in the Solway at low water. The number of "burns" and "waters" is re-

markable, but their length seldom exceeds 7 or 8 mi. Among the longer rivers are the Cree, which rises in Loch Moan and reaches the sea near Creetown after a course of about 30 mi. during which it forms the boundary, at first of Ayrshire and then of Wigtownshire; the Dee or Black Water of Dee (so named from the peat by which it is coloured), which rises in Loch Dee and after a course mainly southeast and finally south, enters the sea at St. Mary's isle below Kirkcudbright, its length being nearly 36 mi.; the Urr, rising in Loch Urr on the Dumfriesshire border, falls into the sea a few miles south of Dalbeattie 27 mi. from its source; the Ken, rising on the confines of Ayrshire, flows mainly southerly and joins the Dee at the southern end of Loch Ken after a course of 24 mi.; and the Deugh which, rising on the northern flank of the Windy Standard, pursues a winding course of 20 mi. before reaching the Ken. The Nith, during the last few miles of its flow, forms the boundary with Dumfriesshire, to which county it almost wholly belongs. Lochs and mountain tarns are many; but except Loch Ken, which is about 6 mi. long by ½ mi. wide, none is large. There are several passes in the hill regions, but the only well-known glen is Glen Trool, not far from the district of Carrick in Ayrshire, and famous for its wild scenery and its associations with Robert Bruce.

Agriculture.—The major part of the land is either waste or poor pasture, but considerable tracts have been reclaimed. More than half the 1,596 holdings in 1938 exceeded 50 ac. and the average size was 111.3 ac. Oats, with 18,280 ac. in 1938, is the predominant grain crop, the acreage of barley and wheat being insignificant. Turnips and swedes are grown in fair quantity, occupying 7,370 ac. in 1938, and there were 1,325 ac. of potatoes. Sheep and cattle breeding are followed with success and numbered 400,545 and 65,673 respectively. Ayrshires are gradually ousting the black Galloway breed. Horses are raised, the small Galloway horses having given place to larger breeds. Pig-rearing is important. The honey of the shire is in good repute.

Industries.—The granite quarries near Dalbeattie and Creetown occupy a large number of hands. Sandstone also is quarried. The manufactures, mostly of woollen goods, are unimportant; tanning, corn milling and papermaking are carried on, and salmon are caught, Dee fish being notable.

The only railway communication is by the L.M.S. railway, running from Dumfries to Castle-Douglas, from which there is a branch to Kirkcudbright, and the line beginning at Castle-Douglas and leaving the county at Newton Stewart.

The population was estimated in 1938 at 30,359. In 1931 Gaelic and English were spoken by 82 persons. Kirkcudbright (est. 1938, pop. 2,332) and New Galloway (314) are royal and small burghs, the others being Castle-Douglas (3,192), Dalbeattie (3,160) and Gatehouse (867). There are six county districts. The shire returns 1 member to parliament.

KIRKINTILLOCH, a small burgh of Dumbartonshire, Scotland. Population (est. 1938) 12,845. It is situated 8 mi. N.E. of Glasgow by the L.N.E. railway. It lies on the Forth and Clyde canal, and the Kelvin—from which Lord Kelvin, the distinguished scientist, took the title of his barony—flows past the town, where it receives from the north the Glazert and from the south the Luggie, commemorated by David Gray. The Wall of Antoninus ran through the site of the town, the Gaelic name of which (*Caer*, a fort, not *Kirk*, a church) means "the fort at the end of the ridge." The town became a burgh of barony under the Comyns in 1170. The cruciform parish church (1644), with crow-stepped gables, is used as a children's church, a new parish church having been built; the Broomhill home for incurables is largely due to Miss Beatrice Clugston, to whom a memorial was erected in 1891. In 1898 the burgh acquired as a private park the Peel, containing traces of the Roman wall, a fort, and the foundation of Comyn's castle. The leading industries are chemical manufactures, iron-founding, muslin weaving, coal and iron mining and nickelworks. Lenzie, a suburb, a mile to the south of the old town with a junction station, contains the towered building, in the Elizabethan style, of the Glasgow dental hospital, and the Glasgow convalescent home.

KIRK-KILISSE or **SARANDEKLISIE** (modern Kirklareli), a town of European Turkey, in the vilayet of Kirklareli, 35 mi. E. of Edirne. Population about 16,000, chiefly Bulgarians, Turks and Jews. The Greeks have now left. Kirk-Kilisse is built near the headwaters of several small tributaries of the river Ergene, and on the western slope of the Istranja Dagh. It owes its chief importance to its position at the southern outlet of the Fakhi defile over these mountains, through which passes the shortest road from Shumla to Constantinople. The name Kirk-Kilisse signifies "forty churches," and the town possesses many mosques and Greek churches. It has an important trade with Istanbul in butter and cheese, and also exports wine, brandy, cereals and tobacco. The Turkish army was defeated there in 1912. From 1920 to 1922 the town was in Greek territory.

KIRKLAND LAKE, a town of 17,350 (1941) inhabitants, in the district of Temiskaming in northern Ontario, Canada, 60 mi. N. of Cobalt, on the Nipissing Central railway. It is the centre of the Kirkland Lake gold camp, one of the richest concentrations of gold values in the world, and the most important gold producing locality in Canada outside Porcupine. Among the chief producing mines are Kirkland Lake, Teck-Hughes, Lake Shore, Wright Hargreaves, Sylvanite, Macassa, Toburn and Gold Lake, and further search for new mines is being carried on constantly both to the west and east.

The first gold discovery in the vicinity was made in 1911, through the opening up of the country by the Temiskaming and Northern railway. Since then production has steadily increased.

KIRKSVILLE, a city of northeastern Missouri, U.S.A., on the rolling prairie, at an altitude of 846 ft.; the county seat of Adair county. It is on federal highway 63, and is served by the Quincy, Omaha and Kansas City and the Wabash railways; also motorbus lines. Pop. (1940) 10,080. It is the commercial centre for a large agricultural and coal-mining region, and has shoe factories and other manufacturing industries. It is the seat of the Northeast Missouri State Teachers college, founded by Joseph Baldwin in 1867 and adopted by the state in 1870; and of the Kirksville College of Osteopathy and Surgery (opened 1892), founded by the originator of osteopathic treatment, Dr. Andrew Taylor Still, who settled there in 1875. Kirksville was laid out in 1842, incorporated as a town in 1857, and chartered as a city in 1892. It was named after Jesse Kirk. In April 1899, a cyclone caused serious damage.

KIRKUK, an important foothill town in eastern 'Iraq, 35° 30′ N., 45° 30′ E. The modern city is built on a "tepa" in which are buried the remnants of older settlements going back at least as far as the end of the third millennium B.C. The so-called Kirkuk tablets have been found and excavated in Yorgan-Tepa (*c.* 8 mi. from Kirkuk); they were written in the second half of the second millennium by a hybrid (Semito-Hurrian) population which subsequently was conquered by the Assyrians. It lies on the railroad from Baghdad to be extended to Mosul, and is one of the chief market centres of Kurdistan, in the centre of a corn and fruit district. There is also a considerable sheep industry. The population consists mostly of Kurds and is estimated as high as 30,000. The town exports agricultural products and wood. The output up to World War II of the Kirkuk oil field was about 84,000 bbl. per day. The oil revenues amounted to about £2,000,000 a year. The pipeline starting from Kirkuk divides into two branches, one leading to Tripoli in Syria, the other to Haifa in Palestine.

KIRKWALL, a royal and small burgh, seaport and capital of the county of Orkney, Scotland. Pop. (est. 1938) 3,673. Area, .7 sq.mi. It is at the head of a bay of the same name on the east of the island of Pomona, or Mainland, 247 mi. N. of Leith and 64 mi. N. of Wick by steamer. Much of the town is old-fashioned, its main street (nearly 1 mi. long) being in parts so narrow that two vehicles cannot pass each other. Kirkwall has very few manufactures, the linen, kelp and straw-plaiting industries being extinct, but distilling and boatbuilding are carried on. The town is important for its shipping and the deep-sea fishery, and as a distributing centre for the islands and the seat of the superior law courts. The port has two piers. Kirkwall received its first charter from James III in 1486, but as it was disregarded by the

earls of Orkney and others, parliament passed an act in 1670 confirming the charter granted by Charles II in 1661. The cathedral of St. Magnus was founded by Jarl Rognvald (Earl Ronald) in 1137 in memory of his uncle Jarl Magnus who was assassinated in the island of Egilshay in 1115, and afterwards canonized and adopted as the patron saint of the Orkneys. The remains of Rognvald and St. Magnus were found in the cathedral in 1926. Saving that the upper half of the original spire was struck by lightning in 1671, and not rebuilt, the cathedral is complete, but it underwent extensive repairs in the 19th century. The disproportionate height and narrowness of the building lend it a certain distinction, but the sandstone has not resisted the effects of weather, and much of the external decorative work has perished. The choir is used as the parish church. The church of St. Olaf, from which the town took its name, was burned down by the English in 1502; and of the church erected on its site by Bishop Reid—the greatest building the Orkneys ever had—only a fragment survives. Nothing remains of the old castle, founded by Sir Henry Sinclair (d. 1400), earl and prince of Orkney and 1st earl of Caithness, and the earthwork to the east of the town thrown up by the Cromwellians has been converted into a battery of the Orkney artillery volunteers. Adjoining the cathedral are the ruins of the bishop's palace, in which King Haco died after his defeat at Largs in 1263. There is daily communication with Stromness, and with Scrabster pier (Thurso), via Scapa pier, about 1½ mi. to the S. of Kirkwall; and steamers sail regularly from the harbour to Lerwick, Aberdeen, Leith, and other islands in the Orkneys. Good roads place the capital in touch with most places in the island.

KIRKWOOD, a city of St. Louis county, Missouri, U.S.A., 14 mi. W. of the city hall of St. Louis; served by Frisco and Missouri Pacific rys. Residential suburb; pop. (1940) 12,132.

KIROV (formerly VYATKA), a region of the Russian S.F.S.R., surrounded by the Komi, Udmurt, Tatar and Mari Autonomous Soviet Socialist Republics, and by the Archangel, Sverdlovsk and Gorky regions. Area 40,734 sq.mi. Pop. (1939), 2,226,109 (rural 1,897,460, urban 328,649). It is smaller than the pre-1914 province of Vyatka. It has on its northern boundary the flat water-parting which separates the basins of the Northern Dwina and the Volga, and its surface is an undulating plateau, 800–1,000 ft. high, deeply grooved by rivers and assuming a hilly aspect on their banks. A tongue of higher land causes the Vyatka to make its great bend to the west. The Kama flows northward along the east of the region and the Vyatka and its tributaries, the Chepsa and Molota, drain the remainder of the region. The soils are mainly unproductive clayey and sandy forest soils, with wide expanses of lake and marsh, the remains of the glacial epoch. The boundary between the coniferous forest and the deciduous passes through the centre of the region, and much of the north and east consists of continuous stretches of pine, fir, larch and Siberian cedar, while there are oak and ash forests in the south.

The chief mineral wealth of the region is the iron ore of the northeast and the phosphorite of the upper Vyatka, the latter of which is only just beginning to be exploited. The timber industry is not developed on a large scale, but the peasants make every variety of wooden articles, from spoons to sledges and carts, and sell them at the Gorky fair. Paper manufacture is being introduced, and the match industry is flourishing, especially in the town of Kirov. The climate is extreme, with a short hot summer and a long cold winter, during which the snow covering is often deep. The average January temperature at Kirov is 8.2° F., July 67° F.; the rainfall is variable, ample in some years, but deficient in others. Agriculture is insufficient to support the people, who supplement their income by peasant industries, especially woodwork, small metal wares and weaving of homespun, while those in the northeast work at the mines and smelting works, and there is some hunting, especially of squirrels, in the forest. The chief crops are winter rye, oats and flax; and potatoes, barley and buckwheat are grown in lesser quantities. There is some stock raising, especially of sheep, and pig breeding is increasing. The population is mainly Great Russian, much mixed with the Finnish tribes.

KIROV, chief town of Kirov region, is in 58° 36′ N., 49° 40′ E., on the Vyatka river. Pop. (1939) 143,181. It is the ancient trading centre, then Khlynov, established by merchants from Novgorod in 1181. It was plundered by the Tatars in 1391 and 1477 and annexed by Moscow in 1489. Its name was changed to Vyatka in 1780 and after the revolution to Kirov. Besides the old trade, the town has a growing industrial importance. It is the chief railway repair shop for the Molotov-Kirov railway, and has a line going north to Kotlas. Its manufactures include matches, textiles, metal wares, agricultural implements.

KIROVO or KIROVOGRAD (formerly Zinovievsk), a town of the Ukrainian S.S.R., in 48° 32′ N., 32° 18′ E., on the Ingul river. Pop. (1939) 100,331. Its industries include smelting, distilling, brewing, soapmaking, brickmaking, sawmilling and manufacture of makhorka tobacco. The town is on the railway and is a collecting centre for a grain growing and sheep raising district. It was founded in 1754 and named Elisavetgrad after the Empress Elizabeth. After the 1917 revolution it was renamed for the bolshevik leader, Zinoviev. Later it was named Kirovo.

KIRRIEMUIR, a small burgh of Angus (Forfarshire), Scotland. Pop. (est. 1938), 3,432. Area, .6 sq.mi. It is on a height above the glen through which the Gairie flows, 6¼ mi. N.W. of Forfar by a branch line of the L.M.S.R. of which it is the terminus. The staple industry is linen-weaving. Sir J. M. Barrie (1860–1937) was born and buried there, and made the town famous under the name of "Thrums." The original Secession church—the kirk of the Auld Lichts—was founded in 1806 and rebuilt in 1893.

KIRSANOV, a town of the Russian S.F.S.R. in the region of Tambov, in 52° 39′ N., 42° 42′ E., on a small tributary of the Vorona river, and on the railway. Pop. (1935) 23,483. It has grown rapidly since 1900, and has smelting works, steam flour mills and a grain elevator. It was founded in the 18th century.

KIRSCH or **KIRSCHWASSER,** a potable spirit distilled from cherries. Kirsch is manufactured chiefly in the Black forest in Germany, and in the Vosges and Jura districts in France. Generally the raw material consists of the wild cherry known as *Cerasus avium*. The cherries are subjected to natural fermentation and subsequent distillation. Occasionally a certain quantity of sugar and water is added to the cherries after crushing, and the mass so obtained is filtered or pressed prior to fermentation. The spirit is usually "run" at a strength of about 50% of absolute alcohol. Compared with brandy or whisky the characteristic features of kirsch are (*a*) that it contains relatively large quantities of higher alcohols and compound ethers and (*b*) the presence in this spirit of small quantities of hydrocyanic acid, partly as such and partly in combination as benzaldehydecyanhydrine, to which the distinctive flavour of kirsch is largely due.

KIR-SHEHER (KIRŞEHIR), the chief town of a vilayet in Turkey, on a tributary of the Kizil Irmak (*Halys*), on the Angora-Kaisarieh road. The town gives its name to the excellent carpets made in the vicinity. On the outskirts there is a hot chalybeate spring. Pop. (1940) 13,336. Kir-sheher represents the ancient *Mocissus*, a small town which became important in the Byzantine period; it was enlarged by the emperor Justinian, who renamed it *Justinianopolis*, and made it the capital of a large division of Cappadocia.

KIRUNA, mining town of northern Sweden, 880 mi. N. of Stockholm by rail. Pop. 10,285. The town lies between two great mountains of iron ore: Kiirunavaara and Luossavaara. Here lie some 750,000,000 tons of iron ore, yielding about 5,000,000 tons per year. It assays from 58% to 70% pure iron. Normally shipments go out to England and Germany via Narvik on the Norwegian coast. (*See* GELLIVARA.)

KIRWAN, RICHARD (1733–1812), Irish scientist, was born at Cloughballymore, Co. Galway, in 1733. In 1766 he was called to the Irish bar, but in 1768 abandoned practice in favour of scientific pursuits. During the next 19 years he resided chiefly in London, enjoying the society of the scientific men living there. His experiments on the specific gravities and attractive powers of various saline substances formed a substantial contribution to the methods of analytical chemistry, and in 1782 gained him the Copley medal from the Royal society, of which he was elected a fellow in 1780; and in 1784 he was engaged in

a controversy with Cavendish in regard to the latter's experiments on air. In 1787 he removed to Dublin, where four years later he became president of the Royal Irish Academy. He was one of the last supporters in England of the phlogistic hypothesis, for which he contended in his *Essay on Phlogiston and the Constitution of Acids* (1787), identifying phlogiston with hydrogen. This work, translated by Madame Lavoisier, was published in French with critical notes by Lavoisier and some of his associates; Kirwan attempted to refute their arguments, but they proved too strong for him, and he acknowledged himself a convert in 1791. His other books included *Elements of Mineralogy* (1784), which was the first systematic work on that subject in the English language, and which long remained standard; *An Estimate of the Temperature of Different Latitudes* (1787); *Essay of the Analysis of Mineral Waters* (1799), and *Geological Essays* (1799). He died in Dublin in June 1812.

KI-SEKI (rare or strange stones): *see* BON-SEKI.

KISFALUDY, KÁROLY [CHARLES] (1788–1830), Hungarian author, was born at Téte, near Raab, on Feb. 6, 1788. His birth cost his mother her life and himself his father's undying hatred. He entered the army as a cadet in 1804; saw active service in Italy, Serbia and Bavaria (1805–1809), distinguishing himself at the battle of Leoben (May 25, 1809). During the war he composed his first poems, *e.g.*, the tragedy *Gyilkos* ("The Murder," 1808), and numerous martial songs. He fell hopelessly in love with the beautiful Katalin Heppler, the daughter of a wealthy tobacco merchant. Kisfaludy, contrary to his father's wishes, now threw up his commission and went to live with a married sister at Vörröck. In 1812 he studied painting at Vienna, till the theatre attracted him. In 1812 he wrote the tragedy *Klára Zách,* and in 1815 went to Italy to study art more thoroughly. But he was back again within six months, and for the next three years lived a wandering life. The elder Kisfaludy refused any reconciliation. But the son became immediately famous with the production (1819) of his drama *Ilka,* written for the Fehérvár dramatic society. Subsequent plays, *The Voivode Stiber* and *The Petitioners* (the first original Magyar dramas), were equally successful. Kisfaludy may be said to have created the Hungarian drama. In May 1820 he wrote three new plays which still further increased his reputation. From 1820 onwards, under the influence of the critic Kazinczy, he learnt to polish and refine his style, while his friend and adviser György Gaal (who translated some of his dramas for the Vienna stage) introduced him to the works of Shakespeare and Goethe.

By this time Kisfaludy had evolved a literary theory of his own which inclined towards romanticism; and in collaboration with his elder brother Alexander (*see* below) he founded the periodical *Aurora* (1822), which attracted many young authors (including Vörösmarty, Bajza and Czuczor) and became the organ of romanticists. Kisfaludy contributed to *Aurora* ballads, epigrams, short epic pieces, and, best of all, his comic stories. His comic types amuse and delight to this day. When the folk-tale became popular in Europe, Kisfaludy set to work upon folk-tales also, and produced (1828) some of the masterpieces of that genre. He died on Nov. 21, 1830. Six years later the great literary society of Hungary, the *Kisfaludy Társaság,* was founded to commemorate his genius. Kisfaludy revived and nationalized the Magyar literature, giving it a range and scope undreamed of before his time.

The first edition of Kisfaludy's works, in 10 volumes, appeared at Buda in 1831, shortly after his death, but the 7th edition (Budapest, 1893) is the best and fullest. *See* Ferenc Toldy, *Lives of the Magyar Poets* (Hung.) (Budapest, 1870); Zsolt Beöthy, *The Father of Hungarian Comedy* (Budapest, 1882); Tamás Szana, *The Two Kisfaludys* (Hung.) (Budapest, 1876). Kisfaludy's struggles and adventures are also most vividly described in Jókai's novel, *Éppur si muove* (Hung.).

KISFALUDY, SÁNDOR [ALEXANDER] (1772–1844), Hungarian poet, elder brother of the preceding, was born at Zala on the 27th of September 1772, educated at Raab, and graduated in philosophy and jurisprudence at Pressburg. He entered the Life Guards (1793) and plunged into the gay life of Vienna. In 1796 he was transferred to the army in Italy for being concerned with other officers in certain irregularities. When Milan was captured by Napoleon Kisfaludy was sent a prisoner of war to Vaucluse, where he studied Petrarch with enthusiasm and fell violently in love with Caroline D'Esclapon, a kindred spirit to whom he addressed his melancholy *Himfy Lays.* He left the army in September 1799, and married his old love Rózá Szegedy at the beginning of 1800. The first five happy years of their life were passed at Kám in Vás county, but in 1805 they removed to Sümeg where Kisfaludy gave himself up entirely to literature.

He had published a volume of erotic poetry which made him famous, and his reputation was still further increased by his *Regék* or Tales. In 1820 the Marczebánya Institute crowned his *Tales.* In 1822 he started the *Aurora* with his younger brother Károly (*see* above). He died on Oct. 28, 1844. Alexander Kisfaludy's art was self-taught, solitary and absolutely independent. If he imitated any one it was Petrarch; indeed his famous *Himfy szerelmei* ("The Loves of Himfy"), as his collected sonnets are called, have won for him the title of "The Hungarian Petrarch." Of his plays *Hunyádi János* (1816) need alone be mentioned.

The best critical edition of Sándor Kisfaludy's works is the fourth complete edition, by David Angyal, in eight volumes (Budapest, 1893). *See* Tamás Szana, *The Two Kisfaludys* (Hung.) (Budapest, 1876); Imre Sándor, *The Influence of the Italian on the Hungarian Literature* (Hung.) (Budapest, 1878); Kálmán Sümegi, *Kisfaludy and his Tales* (Hung.) (Budapest, 1877). (R. N. B.)

KISH, an island in the Persian gulf. (*See* QAIS.)

KISH (modern Tal al-Uhaimer), one of the most ancient and important cities of Sumer and Akkad, lies in a direct line about 8 miles from Babil, and 10 from Hillaa, in 32° 30′ N. 45° E. The site is a very extensive one and was the scene of excavation by a joint expedition of the University of Oxford (Weld) and the Field Museum of Chicago. The city lies on either side of the old bed of the Euphrates, and for descriptive purposes may be divided into eastern and western Kish, in relation to the river. There was also a great canal running through the eastern city. The ruins are extremely extensive. The western flank of the city is guarded by two mounds, probably the fortress of the city, the later mound to the south being known to-day as Tal Khuzna, "the hill of treasure." The fortress consists of a large buttressed rampart, containing large chambers; some pottery of the Hammurabi period has been found here. The two hills stand up about forty feet above the plain, and from them (near the south-west corner of extensive city ruins) runs a massive wall and moat terminating in a low mound, no doubt a fort on the western bank of the old river channel. The city ruins which cover a wide area east of the twin western forts consist of a series of low mounds, which on their northern aspect extend as far as the ziggurat. These mounds have been extensively pillaged by illicit diggers and are probably the site from which many contracts have come. They terminate to the north-east in the great stage which rises 90 ft. above the plain and has received its modern name of Tal al-Uhaimer, the "little red mound," from the great mass of baked bricks of the period of Samsu-iluna which stands out very prominently across the plain and has protected the rest of the tower from erosion. East of the ziggurat is a series of low mounds, identified by Langdon as the ruins of Emete-ursag. These ruins cover a wide area and Langdon believes that they are the remains of one of the most extensive temples of Sumer and Akkad. South of the ziggurat and between it and the southern wall there is a wide space which seems originally to have been a city park. In addition to these extensive ruins in western Kish there are also chains of mounds which lead to the new bed of the Euphrates. These can with certainty be identified with the outer defences which Nebuchadrezzar claims to have made. Their great extent is probably responsible for the large dimensions attributed by Herodotus and other ancient authorities to the walls of Babylon (*see* BABYLON). Western Kish must therefore have formed in later times, long after the river changed its course, if not an important city, at least an important element in the outer defences of its successor, the town of Babylon.

Eastern Kish lying about a mile from the ziggurat is much

more extensive and impressive. It consists of two parts, divided by an old canal. Between this and the river bed there are first a series of three mounds, which were probably forts. The most southerly lies on the other side of the river from the fort which guards the end of the wall of western Kish. Between these forts and the canal there lies a mound about three quarters of a mile long and about 25 ft. high, which contained a large number of tablets and some late graves. The canal which lay east of this mound is marked to-day by a long series of narrow mounds, which stand out and are most impressive, especially when half concealed by the mists at dawn. The canal appears to have been reconstructed at various times, and may even have been in use as late as the Abbasid period. If this was so the water must have been brought, as is the case with the modern canal a little distance away, from the new bed of the river near Hillaa. Immediately east of the canal are a series of sites. To the north lies a large flat area, not a mound, covered with plano-convex bricks. It appears that this must have formed an important part of Kish in early Sumerian times, and included the palace of the kings. It was entirely abandoned about 3000 B.C. Further down the canal and south-east of this area lies the great horse shaped Tal Bandar, "the harbour mound," a very descriptive name. This mound which is about 60 ft. high and 280 ft. in its greatest dimension from east to west, probably dates from the first Babylonian dynasty. It does not seem to have been a temple, but at present its purpose is quite undetermined. Immediately south of the "harbour mound" is a further mound, about 40 ft. above the plain and about $2\frac{1}{2}$ acres in extent. A short distance south of this, and immediately opposite the city ruins on the west bank of the canal, lie the most impressive ruins of eastern Kish. They consist of two great stage towers and a huge temple area, adjoining which there are extensive city ruins. The central mounds, known to-day as *Inghara,* a word of uncertain meaning, include two ziggurats joined together by a mass of ruins, and a mass of temple débris on the slopes of the mounds. The tower is 75 ft. high and the spur to the north is 3 ac. in extent and almost as high as the tower. All around is a large area covered with temples in ancient times. To the east of the old temple area there are extensive city ruins which are protected to the east by two forts. The residential quarter covers nearly $\frac{1}{4}$ sq.m. and is in most places about 30 ft. high. The upper strata at least are Neo-Babylonian.

It seems probable that the eastern forts mark the limits of the ancient city of Kish. Two miles, however, to the east, in a region of sand and desolation, lie the great mounds called by the Arabs Abu Sudaira, "the father of the Christ's Thorn," so-called from the single evidence of vegetation, a single shrub of *Ziziphus Spina Christi* which grows on the top. The mounds are irregular in shape and the lower summit is crowned with the remains of a Parthian tower. The whole surface is strewn with pottery of various dates, including some as late as Arab glazed pottery. There are Nebuchadrezzar bricks, and extensive traces of a cemetery, probably of no great antiquity. The mounds still await excavation. Farther east there is a further series of mounds; indeed the whole region between the Tigris and Kish contains abundant traces of intensive habitation. Some miles away, in 1925, Langdon excavated an early site at Jemdet-Nazr, "the hill of the Saviour." This mound, at present far from water, is probably on the site of some old stream bed, as the vegetation suggests traces of underground water. Langdon found here the remains of an ancient city whose pottery consisted entirely of painted ware. Its name and history are unknown. It certainly is of great antiquity from the pictographic tablet and the pottery, but nothing more is known. From the enormous numbers of pottery sickles lying on the surface it must once have been the centre of an agricultural district.

The history of Kish is especially interesting from its geographical aspect. In early Sumerian times, though the details have yet to be filled in, the whole region was the centre of a great wheat growing district. It was watered by the Euphrates and the water from the river was conducted in all probability across the present desert regions towards the Tigris, although this area has not as yet been fully explored archaeologically. This agricultural prosperity dates from as early in Sumerian times as it is possible at present to identify with any certainty. The city of Kish itself formed the dominating fortified city of the region, just as to-day so many walled cities in China dominate an agricultural area. Sargon, himself a native of Kish, abandoned the city after making war on it and during the dark period which followed little is known of the city, which may have been one of the very earliest sites of Sumerian civilization in Mesopotamia. In spite of attempts to do so, Kish never again regained her supremacy, which passed to Babylon (no doubt owing to the change in the bed of the Euphrates, although we have at present no information when this change took place). Towards the end of the third millennium B.C. Hammurabi and his successor did much work on the rebuilding of the temples, and Kish remained an important city as one of the most revered religious shrines of Akkad. In Neo-Babylonian times it again entered into a period of prosperity, forming almost an outer suburb of Babylon. The last actual reference to Kish occurs in the Nabonidos Chronicle, 539 B.C. A Greek tomb was found in the place in eastern Kish, but probably western Kish was abandoned in the Persian period. It is curious that in Kish itself apart from this one tomb nothing later than Nabonidos has been found, whereas all the mounds along the Shatt al Nil, to the east of Kish, are strewn with later pottery. Two different processes have been at work: one, political, that which led to the fall of Kish from its predominance, and the other the reduction of so much of the area to entire desolation.

A study of the canals shows that they gradually silted themselves up, but the more easterly, the Shatt al Nil, still remained as a possible supplier of water. Owing however to the lie of the land this canal runs to the east of Kish, and it is clear that the site has been progressively abandoned from the west, although it is probable that in early Sumerian times, when the river still ran past the city, eastern Kish was the earlier site. In spite of the possibility that the canal in the centre of the city was finally repaired in Abbasid times, it is more probable that the true site of Kish was entirely abandoned in ancient times and the city moved about two miles east, where there are abundant traces of later habitation, but where there was already a city at least as early as Nebuchadrezzar. Finally this site was abandoned also. Langdon is inclined to suggest that this final abandonment of the whole site was due to desiccation. The breaking down of the canal system under the Mongols would equally suffice to produce this result. The modern canal, based no doubt on water levels, runs east of Kish quite close to the sites of Abu Sudaira, and is playing an important part in rapidly converting that desolate region into irrigated land.

In conclusion, it may be said that the city of Kish depended on the river itself and that, except for ancient prestige and religious sanctity, it ceased to be important when the river deserted it. When the town was reduced to a supply of water from the new bed of the river, that canal was dug more to the east and so produced the Kish of Parthian, Persian and Arab times. When the canal system failed then those sites too melted into the desert. Meanwhile Babylon on the river usurped the place of Kish, and the site continued to be occupied, even though other later towns for various reasons succeeded to Babylon.

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(L. H. D. B.)

KISHENGARH, an Indian state in the Rajputana agency. Area, 837 sq.mi.; pop. (1941) 104,127. The state was founded in the reign of the emperor Akbar, by a younger son of the raja of Jodhpur. In 1818 Kishengarh first came into direct relations with the British government, by entering into a treaty, together with the other Rajput states, for the suppression of the Pindari marauders by whom the country was at that time overrun. The chief, whose title is maharaja, is a Rajput of the Rathor clan, and enjoys a salute of 15 guns. Irrigation from tanks and wells has been extended; factories for ginning and pressing cotton have been started; and the social reform movement, for discouraging

excessive expenditure on marriages, has been very successful. The town of KISHENGARH is 18 mi. northwest of Ajmere by rail. Pop. (1941) 14,459. It is the residence of many Jain merchants.

KISHINEV (Rumanian, *Chisinau*), a town of Bessarabia. Pop. (1930), 117,016; (est. 1939) 112,500, a mixture of Jews (nearly 50%), Rumanians, Russians, Tatars, Germans, Bulgarians and gypsies. Kishinev lies on the river Byk, on the railway between Odessa and Jassy and on a direct line to Galati and Bucharest. Kishinev is seat of the bishop of Bessarabia, and contains a cathedral, an ecclesiastical seminary, a faculty of theology, a college, a museum, a public library, a botanic garden and a sanatorium with sulphur springs. The suburbs are remarkable for their gardens, which produce fruits (especially plums, which are dried and exported), mulberry leaves, tobacco and wine. There is a depot of the Government tobacco monopoly in the town, and a school of viticulture. Trade is active, and there are local industries. Kishinev was founded in 1436, but had only 7,000 inhabitants in 1812, when acquired by Russia from Moldavia. The old town is on the banks of the Byk, the new on high crags, 450 ft. above the river. A notable pogrom was committed here in 1903.

Rumania ceded Kishinev, with the rest of Bessarabia, to the U.S.S.R. in June 1940, but regained it in 1941 after the axis attack on the soviet union.

KISHM, an island in the Persian gulf. (*See* QISHM.)

KISKUNFÉLEGYHÁZA, a Hungarian town, 80 m. S.S.E. of Budapest. Lying at the edge of the drift-sand region it is surrounded by vineyards, orchards, tobacco and rye fields but is chiefly noted for its great cattle-market. Local finds point to a long history of settlement but the modern town dates from 1743 when the district was recolonized after the Turkish devastation of the 17th century. Pop. (1930), 38,206.

KISLOVODSK, a town and health-resort in the North Caucasian Area of the Russian S.F.S.R. in lat. 43° 57′ N., long. 42° 45′ E., situated at an altitude of 2,690 ft., in a deep cauldron-shaped valley on the north side of the Caucasus. The town is the terminus of a branch line from Georgievsk through Piatigorsk. Pop. (about 4,000 in 1897) was 51,289 in 1939. There is a civic electricity and water supply. The limestone hills which surround the town rise by successive steps or terraces, and contain numerous caves. The mineral waters are strongly impregnated with carbonic acid gas and have a temperature of 51° F. The principal spring is known as Narsan, and its water is called by the Circassians the "drink of heroes."

KISMET, fate, destiny, a term used by Muslims to express all the incidents and details of man's lot in life. The word is the Turkish form of the Arabic *qismat,* from *qasama,* to divide.

KISS, the act of pressing or touching with the lips, the cheek, hand, or lips of another, as an expression of love, affection, reverence or greeting. Skeat (*Etym. Dict.,* 1898) connects the Teut. base *kussa* with Lat. *gustus,* taste.

For the liturgical *osculum pacis,* or "kiss of peace," *see* PAX. *See,* further, C. Nyrop, *The Kiss and its History,* trans. by W. F. Harvey (1902); J. J. Claudius, *Dissertatio de salutationibus veterum* (Utrecht, 1702); and "Baisers d'étiquette" (1689) in *Archives curieuses de l'histoire de France* (1834–90, series ii., tom. 12).

KISSAR or **GYTARAH BARBARYEH,** the ancient Nubian lyre, still in use in Egypt and Abyssinia, and having instead of the traditional tortoise-shell back a shallow, round bowl of wood, covered with a sound-board of sheepskin.

KISSI, a long-headed, dark-skinned, short-statured and slender-limbed patrilineal folk inhabiting a district lying on the frontiers of Sierra Leone and Liberia and extending into southern French Guinea between the upper Meli and Moa (Makona) rivers, who speak a language related to Bulom and Kim. They live in confederated villages under a paramount chief. Free choice of a wife is allowed. Inheritance passes to the surviving brother, whom failing, to the nephew. The people are engaged in cultivation, arboriculture and hunting, and are animists.

See Arcin, *La Guinée Française* (1907).

KISSINGEN, a town and watering-place of Germany, in the *Land* of Bavaria, situated on the Franconian Saale, 656 ft. above sea-level, 62 m. E. of Frankfort-on-Main, and 43 N.N.E. of Würzburg by rail. Pop. (1939) 13,022. The salt springs were known in the 9th century, and their medicinal properties were recognized in the 16th, but it was only during the 19th century that Kissingen became a popular resort. The town belonged to the counts of Henneberg until 1394, when it was sold to the bishop of Würzburg. With this bishopric it passed later to Bavaria. The three principal springs are the Rákóczy, the Pandur and the Maxbrunnen, of which the first two, strongly impregnated with iron and salt, have a temperature of 51·26° F; the last (50·72°) is like Selters or Seltzer water. At short distances from the town are the intermittent artesian spring Solensprudel, the Schönbornsprudel and the Theresienquelle; and in the same valley as Kissingen are the minor spas of Bocklet and Brückenau. They are all highly charged with salt, and productive government salt-works were at one time stationed near Kissingen.

KISTNA (or KRISHNA), a district of British India, in the N.E. of the Madras Presidency. Masulipatam is the district headquarters. Area, 3,469 sq.mi. The district is generally a flat country, but the interior is broken by a few low hills, the highest being 1,857 ft. above sea-level. The principal rivers are the Kistna, which cuts the district into two portions, and the Munyeru, Paleru and Naguleru (tributaries of the Gundlakamma and the Kistna). The Kolar lake, which covers an area of 21 by 14 mi., and the Romparu swamp receive the drainage on the north and south sides of the Kistna respectively.

The population (1,444,294 in 1941) is increasing owing to the growing area of irrigated land. The Kistna delta system of irrigation canals, which are available also for navigation, connect with the Godavari system. The principal crops are rice, millets, pulse, oil-seeds, cotton, tobacco and a little sugar-cane. There are several factories for ginning and pressing cotton and a sugar factory; lace and embroidery are made, and a number of rice milling and cleaning works have recently been established. The manufacture of chintzes at Masulipatam has decayed, but cotton is woven for domestic use. Salt is evaporated, under government supervision, along the coast. Bezwada, at the head of the delta, is a place of growing importance, as the central junction of the East Coast railway system, which crosses the inland portion of the district in three directions. Some sea-borne trade, chiefly coasting, is carried on at the open roadsteads of Masulipatam and Nizampatam, both in the delta.

KISTNA or **KRISHNA,** a river of southern India. It rises near Mahabaleshwar in the Western Ghats, only about 40 m. from the Arabian sea, and flows across almost the entire peninsula from west to east for a distance of 800 m. before discharging into the Bay of Bengal. Its source is held sacred, and is frequented by pilgrims. From Mahabaleshwar the Kistna runs southward in a rapid course into the nizam's dominions, then turns to the east, and falls into the sea by two principal mouths, carrying with it the waters of the Bhima from the north and the Tungabadhra from the south-west. Along this part of the coast runs an extensive strip of land which has been entirely formed by the detritus washed down by the Kistna and Godavari. The river channel is throughout too rocky and the stream too rapid to allow navigation even by small native craft. In utility for irrigation the Kistna is also inferior to its two sister streams, the Godavari and Cauvery. By far the greatest of its irrigation works is the anicut at Bezwada, where the river bursts through the Eastern Ghats and spreads over the alluvial plain. The channel there is 1,300 yd. wide. During the dry season the depth of water is barely 6 ft., but sometimes it rises to as much as 36 ft. Of the two main canals connected with the dam, that on the left bank breaks into two branches, the one running 39 m. to Ellore, the other 49 m. to Masulipatam. The canal on the right bank proceeds nearly parallel to the river, and also sends off two principal branches, to Nizampatam and Comamur. The total length of the main channels is 349 m. and the total area irrigated in 1919–20 was 716,500 acres. A project for the building of a further dam was under consideration in 1928. The river is crossed by a fine railway bridge near Wadi junction.

KITASATO, SHIBASABURO (1856–1931), Japanese doctor of medicine, was born at Kumamoto and studied in Ger-

many under Koch from 1885 to 1891. In 1892 he became director of the Imperial Japanese Institute for Study of Infectious Diseases. He worked with Behring on the tetanus and diphtheria bacilli, and discovered (1894) the bubonic plague bacillus, and (1898) that of dysentery. In 1900 he discovered a second plague bacillus and prepared a new serum for that disease. At various times he investigated outbreaks of plague at Kobé, Osaka and in Manchuria and issued reports on his observations. He also studied the mode of infection in tuberculosis and read a paper on this subject at the International Congress of Medicine at Budapest in 1909. Kitasato was elected an Honorary Fellow of the Royal Society in 1908. In 1915 he resigned his directorship and founded a private institute where he was joined by his former colleagues. Kitasato was created a baron by the emperor of Japan in 1924 and in the following year obtained the Harben gold medal of the Royal Institute of Public Health.

KITCHEN, the room or place in a house set apart for cooking, in which the culinary and other domestic utensils are kept. Archaeologists have used the term "kitchen-midden," *i.e.*, kitchen rubbish heap, for the rubbish heaps of prehistoric man, containing bones, remains of edible shell-fish, implements, etc. (*see* SHELL-MOUNDS).

KITCHEN CABINET, a kitchen fitting in the shape of an enclosed dresser, fitted with doors, drawers and special containers, designed to economize space and to save labour by giving order and handiness to many materials and supplies. The kitchen is the workshop of the home, and any appliance which will make it more efficient is essential equipment. Although American in origin, the early American kitchen cabinet was an adaptation of the German kitchen cupboard, but included a kitchen table. The first American kitchen cabinets were brought out about the beginning of the twentieth century in the Middle West.

Most kitchen cabinets are made of wood, either oak, ash, birch or chestnut, but some of the higher priced cabinets are made of steel. Most kitchen cabinets have containers for flour, sugar, bread and cakes. The upper section is designed for food packets, groceries, crockery, etc. An extending porcelain top table is usually fitted, and in the lower sections are drawers for towels, cutlery, bread and cakes, and a cupboard for pots and pans. Kitchen cabinets are sometimes designed to incorporate additional units or sections, further to centralize the equipment of the kitchen. These units are placed on either side of the cabinets to hold such appliances as cooking pans, china and oven ware.

KITCHEN EQUIPMENT: *see* HOUSEHOLD APPLIANCES.

KITCHENER, HORATIO HERBERT KITCHENER, EARL (1850–1916), British field marshal and statesman, was the son of Lieut.-Colonel H. H. Kitchener and was born at Bally Longford, Co. Kerry, on June 24, 1850. He entered the Royal Military Academy, Woolwich, in 1868, and was commissioned second lieutenant, Royal Engineers, in 1871. In 1870 his parents were living at Dinan, and Kitchener volunteered for service in the army of the Loire. He was soon invalided out, but the love of France which impelled him remained. As a subaltern he was employed in survey work in Cyprus and Palestine, and on promotion to captain in 1883 was attached to the Egyptian army, then in course of re-organization under British officers. In the following year he served on the staff of the British expeditionary force on the Nile, and was promoted successively major and lieutenant-colonel by brevet for his services. From 1886 to 1888 he was governor-general of the Eastern Sudan, with headquarters at Suakin. In 1889 he commanded the cavalry in action against the dervishes at Gamaizieh and Toski. From 1889 to 1892 he served as adjutant-general of the army. He had become brevet-colonel in the British army in 1888, and he received the C.B. in 1889 after the action of Toski.

In 1892 Kitchener succeeded Francis Grenfell as sirdar of the Egyptian army, and three years later, when he had completed his predecessor's work of re-organizing the forces of the khedive, he began the formation of an expeditionary force on the vexed military frontier of Wady Halfa. The advance into the Sudan was prepared by thorough administrative work on his part which gained universal admiration. For the events of the River War *see* EGYPT: *Egypt and Sudan Campaigns* (*1882–1900*). The power of the Mahdists was utterly destroyed by the victory of Omdurman (Sept. 2, 1898), for which Kitchener was raised to the peerage as Baron Kitchener of Khartum, received the G.C.B., the thanks of parliament and a grant of £30,000. Before Kitchener left the Sudan he went with an escort up the White Nile to Fashoda, and explained to Colonel Marchand that the French flag could not be hoisted in the Khedive's dominions. After Omdurman was taken by the Anglo-Egyptian forces under General Kitchener, the seat of government was again transferred to Khartum. It speedily arose from its ruins, being rebuilt on a much finer scale than the original city. In 1899 the railway from Wadi Halfa was completed to Khartum, and in 1906 through communication by rail was established with the Red Sea.

Little more than a year afterwards, while still sirdar of the Egyptian army, he was promoted lieutenant-general and appointed chief-of-staff to Roberts in the South African War. (*See* TRANSVAAL: *History.*) In this capacity he served in the campaign of Paardeberg, the advance on Bloemfontein and the subsequent northward advance to Pretoria, and on Roberts's return to England in November 1900 succeeded him as commander-in-chief, receiving at the same time the local rank of general. In June 1902 the long and harassing war came to its close, and Kitchener was made a viscount, received a grant of £50,000 and the Order of Merit. His method of wearing down the guerrilla resistance of the Boers was severely criticised then and afterwards. But when the Boers submitted Kitchener's influence was felt in the moderation of the peace terms.

Immediately after the peace he went to India as commander-in-chief in the East Indies, and in this position, which he held for seven years, he carried out not only many far-reaching administrative reforms but a complete re-organization and strategical redistribution of the British and native forces. In India he came into severe conflict with the viceroy, Lord Curzon, and he ultimately induced the secretary of state to give the commander-in-chief fuller powers over army expenditure. On leaving India in 1909 he was promoted field marshal, and succeeded the duke of Connaught as commander-in-chief and high commissioner in the Mediterranean. This post, not of great importance in itself, was regarded as a virtual command of the colonial as distinct from the home and the Indian forces, and on his appointment Kitchener (after a visit to Japan) undertook a tour of inspection of the forces of the empire, and went to Australia and New Zealand in order to assist in drawing up local schemes of defence. In this mission he was highly successful, and earned golden opinions. But soon after his return to England in April 1910 he declined to take up his Mediterranean appointment, owing to his dislike of its inadequate scope, and he was succeeded in June by Ian Hamilton. In the late summer of 1911 he became British agent and consul-general in Egypt.

Egypt.—On the day he landed at Alexandria, Italy was presenting an ultimatum to Turkey, and there is no doubt that Kitchener's presence and his prestige were mainly responsible for the safe passage of Egypt through the critical period of the Tripoli and Balkan wars, and that no one but himself would have been able to prevent collisions between the Greek and Italian colonists and the natives. His idea was to keep the country busy with the contemplation of its own affairs, and he initiated a policy of economic reform the effects of which were to be enduring. His programme comprised village savings banks, the five feddan law, the opening of cotton markets all over the country, cantonal courts, the promotion of the Department for Agriculture to a ministry, school buildings, sanitation and press supervision, and the heightening of the Aswan dam—all of absorbing interest to him, all receiving his assiduous care.

At the War Office.—Earl Kitchener (he had just received an earldom for his services in Egypt) came home on leave in June 1914, intending to return in September. But on July 31 all heads of missions were ordered to repair to their posts, and on Aug. 3 Kitchener was actually on board the Channel boat when a message arrived from the prime minister requiring him to stay in England. Three days later he took over the seals of the War

Office, and instantly laid his plans for an army of 70 divisions, coolly calculating that its maximum strength would be reached during the third year of the War, just when the enemy would be undergoing a sensible diminution of his resources in man-power. His scheme, of course, ran clean contrary to all accepted ideas: it had always been held that in time of war, though armies could be expanded, they could not be created, and to imagine otherwise seemed as surprising to England's friends as to her enemies. In the early days of 1916 Kitchener could tell the Cabinet that 67 divisions were afoot and three in the mould; he was met by a representation that England must choose between a diminution of her forces and a reduction of her monetary advances to her Allies. He declined the dilemma. He did not think that England could present either of these conclusions to her Allies without proof positive that expenditure could not be reduced nor national income increased, that her administration was free from extravagance, that her taxable capacity was fully exploited and that all parts of the Empire were pulling their weight. The conflict of opinion was sharp and short, with the upshot that the 70 infantry divisions were assured of their existence, and the way was prepared for the Kitchener armies to take their part in the battle of the Somme which he knew was planned for the coming summer. "I have no fear," he said, "about winning the War; I fear very much we may not make a good peace." If he did not live to take his place at Versailles, at least as regards the creation and placing in the field of the great force which was to hold high England's honour he could review a finished work, for his last division to go overseas took ship the very day on which he himself set out on the journey from which he was not to return.

Kitchener's vision or intuition served him to protest, though vainly, against the concentration of the original B.E.F. so far forward as Maubeuge; his rapid and accurate grasp of a situation caused him to hurry to France after the retreat from Mons to insist, in the name of the Government, on the British Army remaining in the Allied line; and enabled him in 1915 to pronounce that the evacuation of the Gallipoli peninsula could be effected with infinitely less loss than had been gloomily predicted. Apart from these occasions he did little to interfere with the actual conduct of operations in the field. He knew and sympathised with the commanders, gave full consideration to their views, and gave them his entire trust and his unswerving support.

His recruiting work was wonderful. His stirring appeals to the nation received immediate answer. The first call was for 100,000 and was followed by analogous appeals at short intervals. He has been criticized for not making greater use of the existing Territorial Army organizations in the early days—the numbers at the Front might conceivably have, within narrow limits, been increased more rapidly had he done so. He had resolved to transform Great Britain into a great military Power while the struggle was actually in progress and success eventually crowned his efforts. If clothing and equipping the swarms of new armies presented obstacles at first, the skilfully tapped textile wealth of the country overcame them within a short space of time.

He had no easy task at the War Office, coming there as he did for the first time. There was no precedent for a great soldier occupying the position at a moment of great emergency. He was not familiar with the various ramifications of the existing military organizations. But, on the other hand his countrymen trusted him and were roused to enthusiasm by the magic of his name and his strength of character.

Of the great difficulties which beset the Secretary for War, perhaps the greatest and the most discussed was that of providing guns and ammunition for a constantly and rapidly increasing army. For the history of the provision of munitions for the army and the details arising out of it *see* MUNITIONS, MINISTRY OF. Before the end of the War, Kitchener's work was challenged in some quarters on this point; the answer furnished by the dossier of the master-general of ordnance presented a defence of the War Office, whence, as a matter of fact, came the first proposal of high explosive for use in France. To be precise, the Ministry of Munitions was set up during the first week of June 1915. It was not until the end of Oct. 1915 that a single component of ammunition worth speaking of was delivered from the Ministry of Munitions factories or orders, and not until April 1916 that the first complete round, made and filled under the orders and arrangements of the Ministry, was delivered to the army authorities. In other words, the army, for a period of more than 18 months, was furnished with continually increasing supplies under the former arrangements.

If Kitchener did not travel quite easily on political lines, his close personal touch with England's Allies was not the least of his contributions to the War, and his early and constant friendship with France gave him, so to speak, a flying start in gaining the best relationships with her public servants. Russia's rôle was to him a matter of vital importance if the War was to be brought even within his own three years' limit; but in the autumn of 1915 he said to Joffre at Chantilly, "You are calculating on Russia remaining till the end of the War; I am making my calculations on her being out within six months." He had not been afraid to commit himself to serious responsibilities as to arming and equipping the almost weaponless Russian hosts, but even so it is difficult to account for his great influence throughout Russia. He was thus able to criticise Russian methods with a freedom and to press his advice—more especially at the critical moment when Italy was hanging back—with an insistence that would have been tolerated at the hands of no other foreigner.

Proposed Visit to Russia.—Early in May 1916 the Tsar urged that Kitchener should visit Russia, promising that his counsel would be taken to the full even if that counsel included certain transfers of control into British hands. Kitchener was to start from Scapa Flow on June 5 for Archangel. He was asked to examine thoroughly the whole Russian situation: he was given a free hand to make arrangements and conditions which he thought advisable; he was to use all the influence which he had already acquired with the Tsar and the Russian military authorities to set the Russian military house in order, and he was asked to come back to England with all speed.

On the afternoon of the appointed day, Kitchener, having paid a visit to Lord Jellicoe on his flagship, embarked on the "Hampshire," which was directed to proceed on what, with the prevailing wind—as reported—would be the lee side of the Orkneys and Shetlands. The arrangements made for the voyage of the cruiser have been, and perhaps always will be, open to question. It is at least certain that an unswept channel was chosen for her passage and that, under stress of weather, the destroyers who formed her titular escort turned about, leaving the vessel, with her priceless freight, to steam to her doom. The "Hampshire" struck a mine, and went down with nearly all hands. The loss of Kitchener was felt to be a national calamity. The Queen-Mother at once placed herself at the head of a movement to secure a permanent and practical memorial, and in answer to her appeal there poured in from every point of the Empire—from men, women and children of all colours, classes and creeds—a stream of money, gathering in volume until it reached the astonishing sum of over £700,000. On Dec. 10, 1925 a memorial chapter in St. Paul's Cathedral was dedicated to Earl Kitchener and all who fell in 1914–8.

See Sir George Arthur, *Life of Lord Kitchener* (1920); also Churchill, *The River War* (1899), and the official records of the War in South Africa and the World War. An official narrative of the circumstances of his death, *The Loss of H.M.S. Hampshire* appeared in 1926.

KITCHENER, a city and port of Ontario, Canada, and the capital of Waterloo county, 58 m. W. of Toronto, on the Grand Trunk railway. It is the centre of a prosperous farming and manufacturing district, inhabited chiefly by German immigrants and their descendants, and was formerly called Berlin, the name being changed during the World War. The city contains a beet sugar refinery, automobile, leather, furniture, shirt and collar, felt, glove, button and rubber factories. Pop. (1941), 35,657.

KITCHENETTE, a small space, usually an alcove or closet, with a compact equipment for simple cooking for those who take most of their meals in restaurants. The specially designed miniature fittings may include an electric or gas stove, a cabinet for dishes and food, a sink with running water and a refrigerating

box. The kitchenette is now an integral part of the most luxurious suites in residential hotels and service apartments.

KITE, the name given to several birds of prey, including the common European species (*Milvus ictinus*), recognizable by its forked tail. Formerly extremely common in Britain, where it acted as a scavenger even in London, the kite is now restricted to a few localities in Wales and elsewhere, where it maintains a precarious foothold. On the European Continent, the kite is a summer visitor from Africa. Some 25–27in. long, the bird is pale reddish-brown, barred with black; the head is greyish-white. The nest is built of sticks, rags, etc., in the crotch of a large tree and contains three or four white eggs, spotted with brown and lilac.

INDIAN KITE

The smaller *M. ater* also inhabits Europe. *M. govinda* is the pariah kite of India, and other species of the genus occur in various parts of the Old World. The wide-ranging American swallow-tailed kite (*Elanoides forficatus*) is notable for the length of its wings and tail and its power of flight; the South European black-winged kite (*E. caeruleus*), a beautiful little bird, is its ally and others occur elsewhere. The Mississippi kite (*Ictinia mississippiensis*) belongs to an American genus. Other genera occur in South America.

KITE-FLYING, the art of sending up into the air, by means of the wind, light frames of varying shapes covered with paper or cloth (called kites, after the bird—in German *Drache,* dragon), which are attached to long cords or wires held in the hand or wound on a drum. When made in the common diamond form, or triangular with a semi-circular head, kites usually have a pendulous tail appended for balancing purposes. The tradition is that kites were invented by Archytas of Tarentum four centuries before the Christian era, but they have been in use among Asiatic peoples and savage tribes like the Maoris of New Zealand from time immemorial. Kite-flying has always been a national pastime of the Koreans, Chinese, Japanese, Tonkingese, Annamese, Malays and East Indians. It is less popular among the peoples of Europe. The origin of the sport, although obscure, is usually ascribed to religion. With the Maoris it still retains a distinctly religious character, and the ascent of the kite is accompanied by a chant called the kite-song. The Koreans attribute its origin to a general, who, hundreds of years ago, inspirited his troops by sending up a kite with a lantern attached, which was mistaken by his army for a new star and a token of divine succour. Another Korean general is said to have been the first to put the kite to mechanical uses by employing one to span a stream with a cord, which was then fastened to a cable and formed the nucleus of a bridge. In Korea, Japan and China, and indeed throughout Eastern Asia, even the tradespeople may be seen indulging in kite-flying while waiting for customers. Chinese and Japanese kites are of many shapes, such as birds, dragons, beasts and fishes. They vary in size, but are often as much as 7ft. in height or breadth, and are constructed of bamboo strips covered with rice paper or very thin silk. In China the 9th day of the 9th month is "Kites' Day," when men and boys of all classes betake themselves to neighbouring eminences and fly their kites. Kite-flying is a highly popular pastime in Eastern Asia. The cord near the kite is usually stiffened with a mixture of glue and crushed glass or porcelain. The kite-flyer manoeuvres to get his kite to windward of that of his adversary, then allows his cord to drift against his enemy's, and by a sudden jerk to cut it through and bring the kite to grief. The Malays possess a large variety of kites, mostly without tails. The Sultan of Johore sent to the Columbian Exposition at Chicago in 1893 a collection of 15 different kinds. Asiatic musical kites bear one or more perforated reeds or bamboos which emit a plaintive sound that can be heard for great distances. The ignorant, believing that these kites frighten away evil spirits, often keep them flying all night over their houses.

There are various metaphorical uses of the term "kite-flying," such as in commercial slang, when "flying a kite" means raising money on credit (*cf.* "raising the wind"), or in political slang for seeing "how the wind blows." And "flying-kites," in nautical language, are the topmost sails.

Kite-flying for scientific purposes began in the middle of the 18th century. In 1752 Benjamin Franklin made his memorable kite experiment, by which he attracted electricity from the air and demonstrated the electrical nature of lightning. A more systematic use of kites for scientific purposes may, however, be said to date from the experiments made in the last quarter of the 19th century. (E. Br.)

Meteorological Use.—Many American and European meteorological services employed kites regularly to obtain information of the pressure, temperature, humidity, velocity and direction of movement of the air above. In the years beginning about 1925, this method was gradually superseded by observations taken from an airplane, and since about 1937 by the automatic radio-balloon method. While kite flying is no longer used, it still retains the advantages of more leisurely and therefore more rigorous exploration of the lowermost layers of the air. The kites used are the so-called box kites, invented by Lawrence Hargrave, or modifications thereof. The most common type is shaped like an ordinary box, and is made by stretching cloth over a light framework of wooden sticks. The two ends and middle of the four sides are left open. Stability, compatible with efficient lift, depends on many details of construction that are learned by experience. The usual sizes have from 30 to 100 sq.ft. of sail area, the largest size being used in the lightest wind. Most days are suitable for kite flights, and heights of one to two mi. are commonly reached; but flights to greater heights become increasingly difficult. On May 5, 1910 at Mt. Weather, Virginia, the uppermost of a train of 10 kites reached a height of 4½ mi.; the total lifting surface was 683 sq.ft., and the length of line 9 mi. The principal hindrance to obtaining great heights is the weight of the line and the wind pressure upon it. Steel piano wire for the line best meets the requirements for greatest possible strength for given thickness, since such a wire 1/32 in. in diameter, will weigh about 16 lb. to the mile and stand a strain of from 250 to 280 lb. Sometimes a single wire of the same gauge throughout is used; but the preferred method is to start with a thin wire, and join on thicker and thicker wire as more kites are added. The first kite is started with the self-recording instrument secured in it, or suspended from the line just below, and the wire is paid out from a reel at a speed roughly proportional to the speed of the wind. The quantity of wire that one kite will take depends on the wind and size of kite, but on the average each 10 sq.ft. of lifting surface will carry about 1,000 ft. of 1/32 in. wire. When as much wire as can be carried without excessive sagging has been paid out, another kite is attached to the line, more wire paid out, then a third kite added, and so on. Each kite increases the strain upon the wire and brings the kites above it into more uncertain winds. Also, the longer the train of kites, the longer the kite flight lasts, and therefore the greater risk of the wind becoming stronger in the meantime and straining the line to the breaking point. The risk is largely guarded against by using a number of small kites, as just described, instead of a single large one since, when the wind comes up, it never does so throughout a great vertical height. Nevertheless, most flights of value can be attained only by straining the wire nearly to its breaking point. However, the wind often has different directions at different heights, and then the kites pull against each other and no portion of the line carries the combined strain of all the kites. Great heights can be attained only by taking advantage of this turning of the wind with height. Flights are impossible when the wind velocity is less than about 12 mi. per hour; and when it is stormy or the wind is very strong, only low heights can be reached. Flights are most successful in the interior of the continents; thus, in the central U.S., fairly good heights can be attained on an average of about three days out of four. (For meteorological results, etc., *see* Meteorology.) (V. E. J.)

Military Use.—A kite forms so extremely simple a method of lifting anything to a height in the air that it has naturally been suggested as being suitable for various military purposes, such as

signalling to a long distance, carrying up flags, or lamps, or semaphores. Kites have been used both in the army and in the navy for floating torpedoes on hostile positions. As much as two miles of line have been paid out. For purposes of photography a small kite carrying a camera to a considerable height may be caused to float over a fort or other place of which a bird's-eye view is required, the shutter being operated by electric wire, or slow match, or clockwork. Many successful photographs have been thus obtained in England and America.

The problem of lifting a man by means of kites instead of by a captive balloon is a still more important one. The chief military advantages to be gained are: (1) less transport is required; (2) they can be used in a strong wind; (3) they are not so liable to damage, either from the enemy's fire or from trees, etc., and are easier to mend; (4) they can be brought into use more quickly; (5) they are very much cheaper, both in construction and in maintenance, not requiring any costly gas.

Captain B. F. S. Baden-Powell, of the Scots Guards, in June 1894, constructed, at Pirbright Camp, a huge kite 36ft. high, with which he successfully lifted a man on different occasions. He afterwards improved the contrivance, using five or six smaller kites attached together in preference to one large one. With this arrangement he frequently ascended as high as 100ft. The kites were hexagonal, being 12ft. high and 12ft. across. The apparatus, which could be packed in a few minutes into a simple roll, weighed in all about 1 cwt. This appliance was proved to be capable of raising a man even during a dead calm, the retaining line being fixed to a wagon and towed along. Lieut. H. D. Wise made some trials in America in 1897 with some large kites of the Hargrave pattern (Hargrave having previously himself ascended in Australia), and succeeded in lifting a man 40ft. above the ground. In the Russian army a military kite apparatus has also been tried, and was in evidence at the manoeuvres in 1898. Experiments have also been carried out by most of the European powers, the German kite balloon invented by Parseval being very efficient.

(B. F. S. B.-P.)

KIT-FOX, small foxes (*Vulpes velox* or *V. macrotus*) natives of western North America, measuring less than a yard in length, inclusive of nearly a foot of tail. There is a good deal of variation in the colour of the fur, the prevailing tint being gray.

KITING CHEQUES, a method of obtaining credit for funds at a bank, or of keeping up a fictitious balance by means of the deposit of a cheque backed by no funds or by insufficient funds. For example, A and B, having accounts in different banks, may exchange cheques to any amount, and each deposit the other's cheque in his own bank, trusting that neither will be presented for payment at the bank upon which it is drawn until the next day, or, if in distant cities, until several days have elapsed, before which time each person expects to make a deposit at his own bank to cover the cheque. The same thing is sometimes accomplished by a single person who, having accounts in two banks, deposits in one bank a cheque drawn against the other, in which there are not sufficient funds to cover the cheque, expecting to make good before the cheque is presented for collection. Many banks prevent this practice by declining to credit any cheque deposit until the collection has been made. (J. H. B.)

KITTANNING, a borough of western Pennsylvania, U.S.A., on the east bank of the Allegheny river, at 850 ft. elevation, 50 mi. N.E. of Pittsburgh; the county seat of Armstrong county. It is on Federal highway 422, and is served by the Pennsylvania and the Pittsburg and Shawmut railways. In 1920 the population was 7,153 (94% native white); in 1930, 7,808; in 1940, 7,550 by the federal census of that year. River and wooded hills provide a beautiful setting. The region is rich in coal, gas, limestone, sandstone and clay, and an ample supply of electric power is available. The borough has important manufactures of pottery, brick, tile, oil and gas-well supplies and machinery. The assessed valuation of property in 1941 was $6,367,380. Kittanning took its name from the Kittanning Indian path across the State from east to west. A trading post was established here at an early date, and settlement began in 1795.

KITTIWAKE, the name on both sides of the Atlantic for the sea gull *Rissa tridactyla,* in which the hind toe is reduced to a knob. It inhabits the North Atlantic. A subspecies *R. t. pollicaris* inhabits the N. Pacific south to Lower California. A second species, *R. brevirostris,* the red-legged kittiwake, is found in the Bering sea. Kittiwakes are white, with pearl-gray mantle and black-tipped wings; the feet are yellowish and the bill black in *R. tridactyla;* the bill and feet are red in *R. brevirostris.* (*See* GULL.)

KITTO, JOHN (1804–1854), English biblical scholar, was the son of a mason at Plymouth, where he was born on Dec. 4, 1804. An accident brought on deafness, and in Nov. 1819 he was sent to the workhouse, where he was employed in making list shoes. He received assistance to obtain schooling, and was then employed by the Church Missionary Society. He spent some time as a missionary in Baghdad. After his return he published various popular works, of which the most important was the *Cyclopaedia of Biblical Literature* (2 vols., 1843–45) edited under his superintendence. In 1850 he received an annuity of £100 from the civil list. He died at Cannstatt on the Neckar, on Nov. 25, 1854.

KITZINGEN, a town of Germany, in the *Land* of Bavaria on the Main, 95 mi. S.E. of Frankfort-on-Main on the railway to Regensburg. Pop. (1939) 14,460. Kitzingen possessed a Benedictine abbey in the 8th century, and later belonged to the bishopric of Würzburg. It is still surrounded by its old walls and towers, and has two old convents. Its chief industries are brewing, cask-making, the spinning of horsehair and the manufacture of cement and colours. Considerable trade in wine, fruit, grain and timber is carried on by boats on the Main.

KIUKIANG, a treaty port of China on the Yangtze midway in its course between the central (Hupeh) basin and the delta. Lying, just above the debouchure into the Yangtze of the Poyang lake, which receives the drainage of Kiangsi, the port gathered up much but not all of the Yangtze trade of the province. It is also linked by rail directly with Nan-chang, its commercial focus and capital.

Behind the port there rise the ranges of the Kiu-kung-shan, the chief tea-growing district of Kiangsi, for whose teas Kiukiang was the collecting centre. These are green teas and were gathered up by Hankow for export to Russia. While tea was the main item in the port's export trade, porcelain, paper and grass-cloth, the more important manufactured products of Kiangsi, also passed through Kiukiang. Kiukiang itself had a couple of factories of modern type. The city fell to the Japanese in 1938. Kuling, the important mountain resort on the top of Lu-shan 15 mi. south of Kiukiang, had almost become the Chinese summer capital before the Japanese occupation.

KIUSTENDIL: *see* KYUSTENDIL.

KIVU, a large lake of central Africa, lying in the western rift valley and mid-way between Lakes Edward and Tanganyika; it discharges into the latter by the river Russisi. It is 55 m. long and 30 m. wide at its widest point. It is about 4,830 ft. above sea-level and is roughly triangular in outline, the longest side lying to the west. The coast-line is much broken, especially on the south-east, where the indentations have a fjord-like character. The rift valley has dropped down Archaean gneisses and schists but both north and south of the lake are volcanic centres (the lavas are phonolites, etc.) some of which are still active. The lake, is deep, and the shores are everywhere high, rising in places in bold precipitous cliffs of volcanic rock. A large island, Kwijwi runs in the direction of the major axis of the lake, south-west of the centre, and there are many smaller islands. The lake has many fish, but no crocodiles or hippopotami. South of Kivu the rift valley is blocked by huge ridges, through which the Russisi now breaks its way to descend 2,000 ft. to the lacustrine plain at the head of Tanganyika. The lake fauna is fresh-water, presenting no affinities with the so-called marine fauna of Tanganyika, but is similar to that shown to have existed in the more northern parts of the rift valley. The former outlet or extension in this direction seems to have been blocked in recent geological times by the elevation of the volcanic peaks. This volcanic region is of great interest and has various names, that most used being Mfumbiro (*q.v.*). Kivu and Mfumbiro were first heard of by J. H. Speke

in 1861, and first visited by a European, Count von Götzen, in 1894. The lake now lies entirely in the Belgian Congo.

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KIWANIS, an international organization of business and professional men interested in "promoting the adoption and application of higher social, business, and professional standards," and in the development of "intelligent, aggressive and serviceable citizenship." Practically every city, town and village in the United States has a Kiwanis club; the activities of these clubs are recorded in the Kiwanis magazine.

KIWI, the name of the New Zealand flightless birds of the genus *Apteryx*, forming the order Apterygiformes among the ostrich-like birds. The wings are almost entirely aborted; the nostrils are at the tip of the maxilla; the feathers have no aftershaft; and a back toe is present. They are brown birds, about the size of a domestic fowl, with a long beak, and feed largely on earthworms. Their eyesight is said to be poor, their senses of hearing and smell acute. They are nocturnal in habit and can run swiftly. When brought to bay, they use the sharp claws on the feet as weapons. They are now rare. The egg is, relative to the size of the bird, the largest laid by any living species; it measures more than 5 by 3 in., and weighs about 1 lb. The commoner *A. australis* has three races, on North, South and Stewart Islands; the grayer *A. owenii* and slightly larger *A. haastii* are two other species found on South Island.

THE KIWI, THE NOCTURNAL FLIGHTLESS BIRD OF NEW ZEALAND

KIZILBASHES, a nickname meaning "Redheads" given by the Orthodox Turks to the Shiitic Turkish immigrants from Persia, who are found chiefly in the plains from Kara-Hissar along Tokat and Amasia to Angora. There are also many Kizilbashes in Afghanistan. The name seems to have been first used in Persia for the Shiites in allusion to their red caps. Their immigration dates from 1737. They are an industrious honest folk.

KIZIL IRMAK, *i.e.*, "Red River" (anc. *Halys*), the longest river in Asia Minor, rising in the Kizil Dagh at an altitude of 6,500 ft., and running southwest past Zara to Sivas and on to Kaisarie. In this section of its course it follows roughly the old east to west drainage of the Anatolian plateau. From the neighbourhood of the Tuz Geul it turns north-north-eastward to the Black sea. This section of its course represents the newer drainage scheme of the plateau occasioned by the gradual subsidence of the southern section of the Black sea. In the neighbourhood of Osmanjik and Vezir Keupri further sections of older lines of weakness are visible in its course. The Kizil Irmak discharges into the Black sea between Sinope and Samsun, where it forms a large delta. The only important tributaries are the Delije Irmak, showing a similar structural pattern in its course flowing in on the right, and the Geuk Irmak on the left bank. The total length of the Kizil Irmak is about 600 miles.

KIZIL-KUM, a desert in Asiatic Russia, in the Kazakstan A.S.S.R., stretching southeast of the Aral sea between the river Syr-darya on the northeast and the river Amu-darya on the southwest. It measures some 370 by 220 mi., and is in part covered with drift-sand or dunes, many of which are advancing slowly but steadily toward the southwest. In character they resemble those of the neighbouring desert of Kara-kum (*q.v.*). On the whole the Kizil-kum slopes southwest toward the Aral sea, where its altitude is only about 160 ft. as compared with 2,000 in the southeast. In the vicinity of that lake the surface is covered with Aralo-Caspian deposits; but in the southeast, as it ascends toward the foothills of the Tian-shan system, it is braided with deep accumulations of fertile loess.

KIZLYAR (Kisliar or Kizlar) is a town in the Daghestan A.S.S.R., in the low-lying delta of the Terek river, left of the main stream, between two of the larger secondary branches. The bed of the river is above the level of the town and floods are frequent. The town is 35 mi. inland from the Caspian, in lat. 43° 51′ N. long. 46° 40′ E. The population (1935) 14,881 is mainly supported by gardens and vineyards irrigated by canals from the river. Kizlyar wine is famous and finds a ready market at Gorki fair. A government vineyard and school of viticulture are situated 3½ mi. from the town. The town proper, which spreads out round the citadel, has Tatar, Georgian and Armenian quarters. The public buildings include the Greek Cathedral, dating from 1786; a Greek nunnery, founded by the Georgian chief Daniel in 1736; the Armenian church of SS. Peter and Paul, remarkable for its size and wealth. Kizlyar is mentioned as early as 1616, but the most notable accession of inhabitants (Armenians, Georgians and Persians) took place in 1715. Its importance as a fortress dates from 1736, but the fortress is no longer kept in repair. The district between the Terek and the Kuma is known as the Kizlyar steppe; in the north it provides grazing specially suitable for sheep, while in the south, where there is a good irrigation system, maize, wheat, fruits and vine are grown. It was planned to settle 10,000 hill people from the poverty-stricken regions of southern Daghestan in the Kizlyar steppe.

KJERULF, THEODOR (1825–1888), Norwegian geologist, was born at Oslo on March 30, 1825, and died there on Oct. 25, 1888. He worked under Bunsen at Heidelberg, and in 1858 became professor of geology at Oslo.

The results of his study of Norwegian geology, especially in southern Norway, are embodied in his *Udsigt over det sydlige Norges Geologi* (1879).

KLABUND, pseudonym of ALFRED HENSCHKE (1891–1928), German poet, who was born at Krossen (Oder) on Nov. 4, 1891, and died on Aug. 14, 1928, at Davos, of tuberculosis. In his short life he made a great name in contemporary German literature. His works include volumes of verse, *Morgenrot* (1913), *Klabunds Karussel* (1914), *Die Himmelsleiter* (1916), and others, from which a selection, *Gedichte,* appeared in 1926. Klabund also wrote novels, mainly on historical subjects, ranging from *Mohammed* (1917) to *Pjotr* (Peter the Great, 1923). Among his plays may be mentioned especially the *Kirschblütenfest,* the Japanese play produced originally at Hamburg with an exquisite setting, and the Chinese play *Kreidekreis,* produced at Meissen in 1924. Among his latest dramas was *Cromwell* (1926).

KLACZKO, JULIAN (1825–1906), was born at Wilno in 1825. He studied at Heidelberg university, and early proved his literary and linguistic ability by articles written in German, mainly on the Russo-Polish question, and by his brochure *Die Deutschen Hegemonen* (1849). In 1849 he went to Paris, where he made his fame by his brilliant contributions on literature, politics and art to the Polish and French press, notably to the *Revue des Deux Mondes* in which most of his subsequently published books first appeared. His article "La Poésie Polonaise au Dix-Neuvième Siècle et le Poète Anonyme" (*Revue des Deux Mondes,* Jan. 1, 1862) remains one of the finest existing criticisms on the poet Krasinski. From that date Klaczko wrote almost exclusively in French. At the same time he took an active part in the national and literary life of the Polish exiles in Paris, frequently employing his pen in behalf of the Polish cause, especially during the Rising of 1863. His national sympathies led him to a close study of contemporary politics, the chief fruits of which were: *Études de Diplomatie Contemporaine* (Paris, 1866), an exposure of Bismarck's policy which created a considerable impression at the time, and *Deux Chanceliers* (1876). From 1869 to 1870 he was attached to the Austrian foreign ministry. After the Austro-Prussian and Franco-Prussian wars, Klaczko, despairing of support for Poland from either France or Austria, abandoned his political studies, and devoted himself to Italian literature and art. He wrote two very popular books on these subjects: *Causeries Florentines* (1880), crowned by the Académie Française, and

Rome et la Renaissance (1898). He died in Cracow in 1906. His works are characterized by their piercing insight and mordant wit, and by the fascination of his style.

KLADNO, mining town of Bohemia, 18 mi. W.N.W. of Prague. Its growth was due to the coal deposits of the Kladno-Rakovnik field. Prior to 1842 it was a village of no importance. It has now large iron and steel foundries. Pop. (1930) 20,671. Kladno was occupied by Germany in March 1939.

KLAFSKY, KATHARINA (1855–1896), Hungarian operatic vocalist, was born at Szt János, Wieselburg, of humble parents, and began life as a nurserymaid, but became none the less one of the first Wagnerian singers of her generation. In 1892 she appeared in London, and had great success as Brünnhilde and Isolde. She sang in America in 1895 as a member of Damrosch's company and took New York by storm.

A *Life,* by L. Ordemann, was published in 1903 (Leipzig).

KLAGENFURT, the capital of the province of Carinthia, Austria, in a fertile basin on the Glan, annexed to Germany, 1938. It is a well-planned town with broad, regular streets and large squares and as the centre of a rich agricultural and mining region is important both for its market and its manufactures. The latter include iron and machine foundries and white lead factories. Communication with the Wörther-see is maintained by the Lend canal, 2½ mi. long, railway and tramway. Much of the modern aspect of this old town is due to the rebuilding necessitated through destructive fires in 1535, 1636, 1723 and 1796, but it has preserved some of its early buildings, notably the 14th century *Landhaus* or house of assembly, which contains a museum of natural history and antiquities and an art gallery. There are, too, a number of churches, the oldest being the parish church of St. Aegidius (1709) with a fine tower 298 ft. in height. Among the most beautiful of its open spaces is the Botanical gardens. During the middle ages Klagenfurt became the property of the crown, but in 1518 was conceded to the Carinthian estates. Pop. (1934) 30,654; (1939) 61,956.

KLAJ (Latinized CLAJUS), **JOHANN** (1616–1656), German poet, was born at Meissen, Saxony, studied at Wittenberg, and went to Nuremberg as a "candidate for holy orders." There, in conjunction with Georg Philipp Harsdörffer, he founded in 1644 the literary society known as the Pegnitz order. In 1647 he received an appointment as master in the Sebaldus school in Nuremberg, and in 1650 became preacher at Kitzingen, where he died in 1656. Klaj's poems consist of mystery plays among which are *Höllen- und Himmelfahrt Christi* (Nuremberg, 1644), and *Herodes, der Kindermörder* (Nuremberg, 1645); and a poem, written jointly with Harsdörffer, *Pegnesische Schäfergedicht* (1644), which gives in allegorical form the story of his settlement in Nuremberg.

See J. Tittmann, *Die Nürnberger Dichterschule* (Göttingen, 1847).

KLAMATH FALLS, a city of Oregon, U.S.A., 20 mi. from the southern boundary of the state; county seat of Klamath county. It is on federal highway 97 and is served by the Southern Pacific and the Great Northern railways. The population was 447 in 1900; 4,801 in 1920 (90% native white); and had grown to 16,497 in 1940 (federal census). It is beautifully situated, 4,100 ft. above sea level, on the Upper Klamath lake (37 mi. long and 4–5 mi. wide). Mt. Shasta is visible in the distance. It is the distributing point for the agricultural and lumbering industries of the county, which have 140,000 ac. under irrigation and a stand of pine timber estimated at 30,000,000,000 ft. The city has large saw-mills and manufactures great quantities of box boards. Crater lake is 62 m. N.; the Klamath Indian reservation, 40 m. N.; and the Modoc lava beds, in California, to the south-east. The city was founded about 1878.

KLAPKA, GEORG (1820–1892), Hungarian soldier, was born at Temişoara (Temesvár) on April 7, 1820, and entered the Austrian army in 1838. Immediately on the formation of the National Hungarian army in 1848, he offered his services, and was at first employed on staff duties; then early in 1849, given command of a corps, he took a conspicuous share in the victories of Kapólna, Isaszeg, Waitzen, Nagy Sarlo and Komárom. Later, after a short period as minister of war, Klapka took command at Komárom, from which fortress he conducted many successful expeditions until the capitulation of Világos in August put an end to the war in the open field. He then brilliantly defended Komárom for two months, and finally surrendered on honourable terms. Klapka left the country at once, and lived thenceforward for many years in exile, at first in England and afterwards chiefly in Switzerland. He continued to work for Hungarian independence, especially at moments of European war, such as 1854, 1859 and 1866, when an appeal to arms seemed possible. After the war of 1866 (in which as a Prussian major-general he organized a Hungarian corps in Silesia) Klapka was permitted to return to Hungary, and in 1867 was elected to the Hungarian Chamber of Deputies, as a supporter of Deák. In 1877 he attempted to reorganize the Turkish army in view of the war with Russia. He died at Budapest, May 17, 1892.

He wrote *Memoiren* (Leipzig, 1850); *Der Nationalkrieg in Ungarn,* etc. (Leipzig, 1851); a history of the Crimean War, *Der Krieg im Orient . . . bis Ende Juli 1855* (Geneva, 1855); and *Aus meinen Erinnerungen* (translated from the Hungarian, Zürich, 1887).

KLAPPENHORN, a horn resembling a bugle, that is, fitted with keys to govern the length of tube used, and thus make the different notes sounded. (*See* BUGLE.)

KLAPROTH, HEINRICH JULIUS (1783–1835), German Orientalist and traveller, was born in Berlin on Oct. 11, 1783, the son of the chemist Martin Heinrich Klaproth (*q.v.*). He received an appointment in the St. Petersburg Academy, and in 1805 accompanied Count Golovkin on an embassy to China. On his return he was despatched by the academy to the Caucasus on an ethnographical and linguistic exploration (1807–1808), and was afterwards employed for several years in connection with the academy's Oriental publications. In 1812 he moved to Berlin; but in 1815 he settled in Paris, and in 1816 Humboldt procured him from the king of Prussia the title and salary of professor of Asiatic languages and literature, with permission to remain in Paris as long as was requisite for the publication of his works. He died in that city on the 28th of August 1835.

Klaproth's great work *Asia polyglotta* (Paris, 1823 and 1831, with *Sprachatlas*), though now superseded, was a *résumé* of all that was known on the subject, and formed a new departure for the classification of the Eastern languages, more especially those of the Russian Empire.

Klaproth's other works include: *Reise in den Kaukasus und Georgien in den Jahren 1807 und 1808* (Halle, 1812–14; French translation, Paris, 1823); *Geographisch-historische Beschreibung des östlichen Kaukasus* (Weimar, 1814); *Tableaux historiques de l'Asie* (Paris, 1826); *Mémoires relatifs à l'Asie* (Paris, 1824–28); *Tableau historique, geographique, ethnographique et politique de Caucase* (Paris, 1827); and *Vocabulaire et grammaire de la langue géorgienne* (Paris, 1827). The *Itinerary of a Chinese Traveller* (1821) is spurious.

KLAPROTH, MARTIN HEINRICH (1743–1817), German chemist, was born at Wernigerode on Dec. 1, 1743. During a large portion of his life he followed the profession of an apothecary, and from 1782 he was pharmaceutical assessor of the Ober-Collegium Medicum in Berlin. In 1787 he was appointed lecturer in chemistry to the Royal Artillery, and when the university was founded in 1810 he was selected to be the professor of chemistry. He died in Berlin on Jan. 1, 1817. Klaproth was the leading chemist of his time in Germany. He was an exact and conscientious worker and did much to improve and systematize the processes of analytical chemistry and mineralogy; his appreciation of the value of quantitative methods led him to become one of the earliest adherents of the Lavoisierian doctrines outside France. He was the first to discover uranium, zirconium, cerium and titanium, and to characterize them as distinct elements, though he did not obtain any of them in the pure metallic state. He elucidated the composition of numerous substances till then imperfectly known, including compounds of the then newly recognized elements: tellurium, strontium, beryllium and chromium.

His papers, over 200 in number, were collected by himself in *Beiträge zur chemischen Kenntniss der Mineralkörper* (1795–1810) and *Chemische Abhandlungen gemischten Inhalts* (1815). He also published a *Chemisches Wörterbuch* (1807–1810), and edited a revised edition of F. A. C. Gren's *Handbuch der Chemie* (1806).

KLAUSTHAL, a town of Germany, in the Prussian province of Hanover, lying on a bleak plateau, 1,860 ft. above sea-level, W.S.W. of Halberstadt. Pop. (1939) 12,118. Klausthal was founded in the 12th century around a Benedictine monastery (closed in 1431), remains of which still exist in Zellerfeld. At the beginning of the 16th century the dukes of Brunswick made a new settlement here, and under their directions the mining, which had been begun by the monks, was carried on more energetically. The first church was built in 1570. In 1864 the control of the mines passed into the hands of the state. Klausthal is the chief mining town of the Upper Harz Mountains, and practically forms one town with Zellerfeld, which is separated from it by a small stream, the Zellbach. It has a mining college and a disused mint. Its chief mines are silver and lead, but it also smelts other ores.

KLÉBER, JEAN BAPTISTE (1753–1800), French general, the son of a builder, was born on March 9, 1753, at Strasbourg. He was trained as an architect, but obtained a nomination to the military school of Munich. Thence he obtained a commission in the Austrian army, but resigned it in 1783. Returning to France he was appointed inspector of public buildings at Belfort, where he studied military science. In 1792 he enlisted in the Haut-Rhin volunteers, and soon became lieutenant-colonel. At the defence of Mainz he so distinguished himself that though imprisoned with the rest of the garrison, he was promptly reinstated, and in Aug. 1793 promoted general of brigade. He was made general of division for his services in La Vendée, where his intimacy with Marceau began, but was later recalled for advocating lenient measures towards the Vendéans. In 1794 he was reinstated and sent to the army of the Sambre-et-Meuse, distinguishing himself particularly at Fleurus and in the siege of Mainz (1794–95). In the offensive campaign of 1796 he was Jourdan's most active and successful lieutenant. After the retreat to the Rhine (*see* FRENCH REVOLUTIONARY WARS) Kléber declined the chief command and retired early in 1798. He accepted a division in the expedition to Egypt under Bonaparte, but, owing to a head wound which he received at Alexandria, was afterwards appointed governor of Alexandria, as he was unable to take any further part in the campaign.

In the Syrian campaign of 1799 he won the great victory of Mount Tabor on April 15, 1799. When Napoleon returned to France towards the end of 1799 he left Kléber in command of the French forces, when he was forced to make the convention of El-Arish. But when Lord Keith, the British admiral, refused to ratify the terms, he defeated the Turks at Heliopolis, with but 10,000 men against 60,000, on March 20, 1800. He then retook Cairo, which had revolted from the French. He was assassinated at Cairo by a fanatic on June 14, 1800. Kléber was undoubtedly one of the greatest generals of the French revolutionary epoch, though he distrusted his powers and declined the responsibility of supreme command. His conduct of affairs in Egypt at a time when the treasury was empty and the troops were discontented for want of pay, shows that his powers as an administrator were little —if at all—inferior to those he possessed as a general.

Ernouf, the grandson of Jourdan's chief of staff, published in 1867 a valuable biography of Kléber. *See* also Reynaud, *Life of Merlin de Thionville;* Ney, *Memoirs;* Dumas, *Souvenirs;* Las Casas, *Memorial de Ste Hélène;* J. Charavaray, *Les Généraux morts pour la patrie;* General Pajol, *Kléber;* lives of Marceau and Desaix; M. F. Rousseau, *Kléber et Menou en Egypte* (1900).

KLEBS, EDWIN (1834–1913), German physician, was born at Königsberg on Feb. 6, 1834. He became assistant to Virchow at the Pathological institute, Berlin (1861–66), and subsequently professor of pathological anatomy at Berne (1866), Würzburg (1871), Prague (1873) and Zurich (1882). He died at Berne on Oct. 23, 1913. Garrison (*Hist. of Med.*) calls him "with Pasteur perhaps the most important precursor in the bacterial theory of infection." Klebs discovered with Löffler the diphtheria bacillus, investigated traumatic infections, malarial fever and the bacteriology of gunshot wounds, and was the first to produce tuberculous lesions in animals.

His chief works are two text-books on pathology (1869 and 1887).

KLEIN, FELIX (1849–1925), German mathematician, was born at Dusseldorf on April 25, 1849, and after studying at the universities of Bonn, Göttingen and Berlin was appointed professor of mathematics at the University of Erlangen (1872–75). He later took up similar professorships at the Munich technical college (1875–80), and at the universities of Leipzig (1880–86) and Göttingen (1886–1913), and finally became Professor Emeritus at the latter university. He died at Göttingen on June 22, 1925.

Klein wanted to specialize in the application of mathematics and mechanics to physics, but was obliged to modify his plans owing to the breakdown of his health on two occasions. He limited himself to lectures and to the large number of books which he published. Most of these books were notes of lectures taken by Klein's students, revised and supervised by him. To further his idea of linking up mathematics with physics he founded the *Encyklopädie* for mathematics in 1895, he formed a committee from the German academies to accept responsibility for it and obtained contributors from many countries. Klein was the editor of the *Mathematische Annalen* from 1872. Klein's researches in mathematics were chiefly on geometry and the theory of functions, he supervised the collection and publication of his papers in three volumes (1921–23) and added an account of his mathematical development with many personal references. His well-known treatise on the teaching of mathematics in Germany appeared in 1909. Klein was a member of many learned societies and was awarded the Copley Medal of the Royal Society in 1912. He travelled a good deal and lectured both in England and in America.

Among Klein's other works should be mentioned *Vorlesungen über das Ikosaeder und die Auflösungen der Gleichungen vom fünften Grad* (1884), *Vortäge über ausgewählte Fragen der Elementargeometrie* (1895), *Theorie der elliptischen Modulfunctionen* with Fricke (2 vols. 1890 and 1892); *Vorlesungen über die Theorie der automorphen Functionen* with Fricke (2 vols. 1897 and 1902), *Erlangen Programm* (1872) and a monumental treatise on the theory of the top, with Sommerfeld (1897–1910), His *Vorlesungen über die Entwicklung der Mathematik in 19 Jahrhundert* was published posthumously (2 vols., 1926 and 1927).

KLEIST, BERND HEINRICH WILHELM VON (1777–1811), German poet, dramatist and novelist, was born at Frankfort-on-Oder on Oct. 18, 1777. After a scanty education, he entered the Prussian army in 1792, served in the Rhine campaign of 1796, and retired from the service in 1799 with the rank of lieutenant. He next studied law and philosophy in his native city, and in 1800 entered the Ministry of Finance at Berlin. Next year his roving, restless spirit got the better of him, and taking leave of absence he visited Paris and other places with his sister, and then settled in Switzerland, on Lake Thun, with the intention of developing his talent in quiet communion with nature. The decision cost him the love of Wilhelmina von Zenge, to whom he had been betrothed. In Switzerland he found friends in Heinrich Zschokke and August Wieland (1777–1819), son of the poet; and to them he read the draft of his first drama, a gloomy tragedy of the *Sturm und Drang* type, in which his genius was already apparent, *Die Familie Schroffenstein* (1803), originally entitled *Die Familie Ghonorez.*

In the autumn of 1802 Kleist returned to Germany; he visited Goethe, Schiller and Wieland in Weimar. At Weimar he began to work on his play *Robert Guiscard,* but was so discouraged that he began to doubt his own powers. He then wandered to Leipzig, Dresden and Paris. In Paris in an attack of nerves bordering on madness he burnt the MS. of his play, of which only the first act was saved. On returning to Berlin in 1804 he was transferred to the *Domänenkammer* (department for the administration of crown lands) at Königsberg. There he found Wilhelmina von Zenge married to Professor Krug. At Königsberg he wrote the comedy *Der zerbrochene Krug,* a classic in German comedy. On a journey to Dresden in 1807 Kleist was arrested by the French as a spy, and being sent to France was kept for six months a close prisoner at Châlons-sur-Marne. He was released in July, and in August returned to Dresden, where, with Heinrich Müller (1779–1829), he published in 1808 the journal *Phöbus,* in which many of his poems and the tragedy *Penthesilea* appeared.

In 1809 he went to Prague, and ultimately settled in Berlin, where he edited (1810–11) the *Berliner Abendblätter,* which combatted the policy of Hardenberg. Meanwhile he had written the romantic drama *Das Käthchen von Heilbronn* (1808), and some admirable short tales, among them *Michael Kohlhaas,* a story of the days of Luther, which is a landmark in German fiction. The great works of his Berlin period only appeared (*Kleists hinterlassene schriften,* ed. Tieck, 1821) after his death; they were the patriotic drama *Die Hermannschlacht* (1809), in which Varus and the Romans are but names for Napoleon and the French, and *Prinz Friedrich von Homburg,* the scene of which is laid in the time of the great elector. The full history of the tragic close of Kleist's life is not clear. He was embittered by the cool reception given to some of his work, and the closing down of the *Abendblätter* reduced him to poverty. He had a fatal passion for Henriette Vogel, and shot first the lady and then himself on the shore of the Wannsee near Potsdam, on Nov. 21, 1811.

His *Gesammelte Schriften* were published by Ludwig Tieck (3 vols., 1826) and in many other editions, including a critical edition by E. Schmidt (5 vols., 1904–05). His *Ausgewählte Dramen* were published by K. Siegen (Leipzig, 1877); and his letters by E. von Bülow, *Heinrich von Kleists Leben und Briefe* (1848).

See further A. Wilbrandt, *Heinrich von Kleist* (1863); R. Bonafous, *Henri de Kleist, sa vie et ses oeuvres* (1894); H. Conrad, *Heinrich von Kleist als Mensch und Dichter* (1896); R. Steig, *Heinrich von Kleists Berliner Kämpfe* (1901); F. Servaes, *Heinrich von Kleist* (1902); S. Wukadinowic, *Kleist-Studien* (1904); C. Gassen, *Die Chronologie der Novellen H. von Kleist* (Weimar, 1920); R. Unger, *Herder, Novalis und Kleist, Studien über die Entwicklung des Todes-problems* (Frankfurt, 1922); P. Witkop, *H. von Kleist* (Leipzig, 1922); W. Silz, *H. von Kleist's conception of the tragic* (Göttingen, 1923).

KLEIST, EWALD CHRISTIAN VON (1715–1759), German poet, was born at Zeblin, near Köslin in Pomerania, on March 7, 1715. After attending the Jesuit school in Deutschkrona and the gymnasium in Danzig, he proceeded in 1731 to the university of Königsberg, where he studied law and mathematics. On the completion of his studies, he entered the Danish army, in which he became an officer in 1736. He served in the Prussian army from 1740 onwards. In the course of his garrison duties he met J. W. L. Gleim (*q.v.*) at Potsdam and Lessing at Leipzig. He was mortally wounded at Kunersdorf (Aug. 12, 1759), and died at Frankfort-on-Oder on the 24th. Kleist's chief work is a poem in hexameters, *Der Frühling* (1749), for which Thomson's *Seasons* largely supplied ideas. In his description of the beauties of nature Kleist shows real poetical genius, an almost modern sentiment and fine taste. He also wrote some charming odes, idylls and elegies, and a small epic poem *Cissides und Paches* (1759), the subject being two Thessalian friends who die an heroic death for their country in a battle against the Athenians.

Kleist published in 1756 the first collection of his *Gedichte,* which was followed by a second in 1758. After his death his friend K. W. Ramler published an edition of *Kleists sämtliche Werke* in 2 vols. (1760). A critical edition, which includes his correspondence, was published by A. Sauer, in 3 vols. (1880–1882). *Cf.* further, A. Chuquet, *De Ewaldi Kleistii vita et scriptis* (Paris, 1887), and H. Pröhle, *Friedrich der Grosse und die deutsche Literatur* (1872).

KLEMANTANS. The word Klemantan is the name by which no tribe or set of tribes is called, but is a convenient generic term devised, at the suggestion of the writer, by the Cambridge university expedition of 1898 to comprise a large group possessing certain common characteristics. It is derived from the term Pulo Klemantan (Mango island) the name given to Borneo by the Malays. Klemantans number, perhaps, as many as 1,500,000, or more than a third of the pagan population of the island, most of them being found in Dutch Borneo, but both there and elsewhere chiefly on the lower reaches of the rivers. Their numbers and variations have made anything more than a general classification impossible, their chief characteristic being (as might be expected in so large a group), mediocrity, or an absence of any specially typical features.

Generally speaking, the Klemantan gives the impression of belonging to a highly civilized community; he is, usually, of medium stature, well proportioned, and graceful, with well-shaped and well-balanced features, a good mouth, eyes, and skin, and a pleasing expression. In manner he is somewhat gentle and quiet, seldom boisterous or pushing, and rarely emphatic in speech, for he commonly thinks before he speaks or acts. He is careful, intelligent, and sociable, and the keynote of his character is imitativeness and receptiveness. For this reason any culture that he has, has been acquired. He very often becomes, by conversion to Islam, a Malay, and in some cases adopts the customs of Mohammedans before actually becoming one; having embraced Islam, he easily settles down as a respectable citizen. His affinities lie most with the Kenyahs, a Kenyah-Klemantan mixture being common in the northern part of the island.

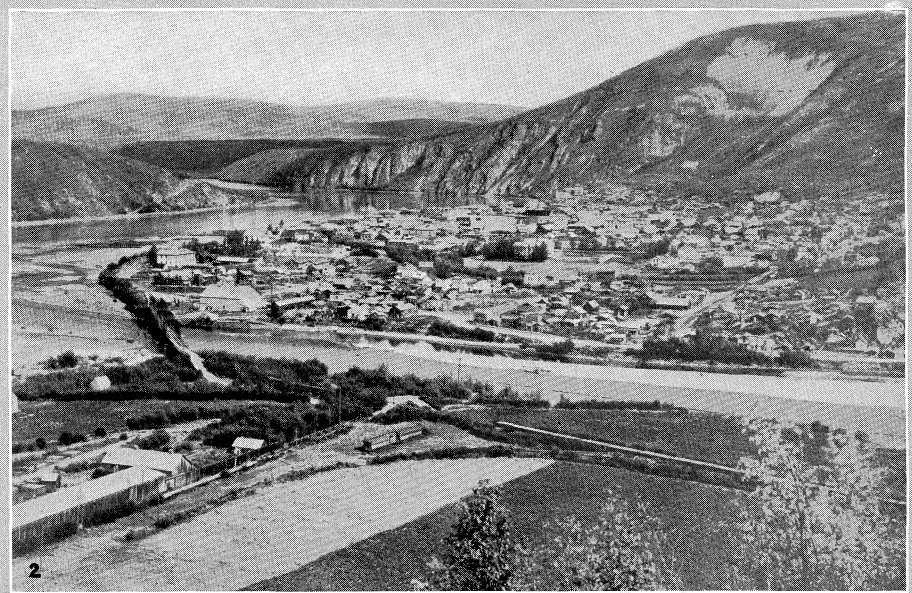
The Klemantan is usually a poor farmer, not depending altogether upon his own crops for his needs. In the minor arts, such as carving, bead-work, and the plaiting and lashing of rattans for various purposes, he excels. As a maker of swords, spears, and boats he is inferior to both the Kayan and the Kenyah. He may be said to have adopted, with modifications, a number of the arts, crafts, and various activities of the other tribes, without improving upon them; being indolent by nature, he looks for labour-saving devices rather than efficiency or excellence; and what he lacks in energy and thoroughness, he makes up for in versatility. *See* BORNEO; also C. Hose and W. McDougall, *The Pagan Tribes of Borneo* (1912). (C. H.)

KLERK, M. DE (1884–1923), Dutch artist, born Nov. 24, 1884, leader of a group of architects in Amsterdam, interested mainly in apartment houses. Disregarding Cuipers's watchword—rational building—he desired only to give form to his poetic vision. His work is the expression of feeling, intuitively controlled, and imitation of it, always tempting, has been the more dangerous for this absence of intellectualism. He collaborated with Kramer and van der Mey in the Shipping house in Amsterdam in 1913; since then his greatest works have been numerous housing-blocks in that city, completed respectively in 1913, 1914, 1917, 1920 and 1922, of which that of 1917 is perhaps the most individual and that of 1920 the most acceptable. De Klerk went very far in construction, and it is important to consider the swing and rhythm of his buildings as a whole without allowing the sometimes excrescent detail to become a distraction. It has been said by Mieras that de Klerk and W. M. Dudok, municipal architect of Hilversum, where he has erected some notable public buildings, represent the two extremes of the contemporary Dutch movement. But Dudok, who works in unbroken masses of concrete with a masterly use of variation in the height of the grouped masses, however different his means of expression, undoubtedly resembles de Klerk in working from poetic inspiration. The colder and more intellectual work of the Rotterdam architects is in greater essential contrast. Among the Amsterdam group somewhat influenced by de Klerk's manner are P. L. Kramer (*q.v.*); C. J. Rutgers (housing-block 1921); J. F. Staal (housing-block 1922) and H. Th. Wydeveld (housing-block 1924).

See J. P. Mieras and F. R. Yerbury, ed. *Dutch Architecture of the 20th Century* (1926); J. G. Wattjes, *Modern Dutch Architecture* (1928).

KLERKSDORP, a town of S. Africa, 117 mi. by rail S.W. of Johannesburg; alt. 4,347 ft. White pop. (1931), 3,600; in 1936 the population included 4,561 Europeans, 3,839 natives, 188 Asiatics and 355 mixed and other races; total 8,943. The town, built on the banks of the Schoonspruit, 10 mi. above its junction with the Vaal, has several fine public buildings. The old village on the right bank was founded in 1838, and was the first Boer settlement in the Transvaal. The modern town, on the opposite bank, dates from 1888. Gold and diamonds occur in the vicinity.

KLESL, MELCHIOR (1552–1630), Austrian statesman and ecclesiastic, was the son of a Protestant baker. He became bishop of Vienna in 1598. Klesl was the chief and most trusted adviser of the archduke Matthias, whose election to the imperial throne he helped to procure in 1612. His advice that the question of the imperial succession should be postponed until agreement with the Protestant princes could be reached, caused the archduke Ferdinand (afterwards Emperor Ferdinand) to believe that Klesl was hostile to his candidature. In June 1618, a few months before the death of Matthias, he was seized by order of the archdukes and imprisoned at Ambras in Tirol. In 1622 Klesl, who had been



PHOTOGRAPHS, (1) THE WHITE PASS AND YUKON ROUTE, (2) THE CANADIAN PACIFIC RAILWAY, (3, 4) EWING GALLOWAY

VIEWS OF DAWSON AND THE KLONDIKE REGION

1. Dawson, capital of the Yukon territory, Canada, situated on the Yukon river
2. Another view of Dawson, made important by the Klondike gold rush of 1898
3. The Old Gold trail along Lake Bennett, used by the prospectors of 1898
4. Operating sluices for washing gold-bearing gravel near Dawson

a cardinal since 1615, was transferred to Rome by order of Pope Gregory XV., and released from imprisonment. In 1627 Ferdinand II. allowed him to return to his episcopal duties in Vienna, where he died on Sept. 18, 1630.

See J. Freiherr von Hammer-Purgstall, *Khlesls Leben* (Vienna, 1847–51); A. Kerschbaumer, *Kardinal Klesl* (Vienna, 1865); and *Klesls Briefe an Rudolfs II. Obersthofmeister A. Freiherr von Dietrichstein*, edited by V. Bibl. (Vienna, 1900).

KLING or **TLING,** a term used in the Malay peninsula for people of Indian origin, derived from the term Kalinga or Telinga, of which Telugu is probably another form. (*See* ASIA: *Anthropology and Ethnology.*) The Telingas are a people of Dravidian race, speaking a highly developed agglutinative language. They amalgamate readily with the Malay, and the hybrids (called *Jawi Pĕkan*) form a large, clever and industrious community. Muslims of the Madras coast trading to the Malay straits are known as "Kling Islam."

See Winstedt, *Malaya* (1923). (J. H. H.)

KLINGER, FRIEDRICH MAXIMILIAN VON (1752–1831), German dramatist and novelist, was born of humble parentage at Frankfurt-on-Main, on Feb. 17, 1752, and had a hard childhood, as he was early left an orphan. He was befriended by Goethe who knew him from childhood. In 1775 Klinger gained with his tragedy *Die Zwillinge* a prize offered by the Hamburg theatre, and in 1776 was appointed *Theaterdichter* to the "Seylersche Schauspiel-Gesellschaft." In 1778 he entered the Austrian military service and took part in the Bavarian war of succession. In 1780 he went to St. Petersburg, and became an officer in the Russian army. He married a natural daughter of the empress Catherine, and was made praeses of the Academy of Knights in 1799. From 1803 to 1817 he was curator of the university of Dorpat. He then gradually gave up his official posts. He died at Dorpat on Feb. 25, 1831.

The bitter experiences and deprivations of Klinger's youth are largely reflected in his dramas. It was one of his earliest works, *Sturm und Drang* (1776), which gave its name to this literary epoch. In addition to this tragedy and *Die Zwillinge* (1776), the chief plays of his early period of passionate fervour and restless "storm and stress" are *Die neue Arria* (1776), *Simsone Grisaldo* (1776) and *Stilpo und seine Kinder* (1780). To a later period belongs the fine double tragedy of *Medea in Korinth* and *Medea auf dem Kaukasos* (1791). In Russia he devoted himself mainly to the writing of philosophical romances, of which the best known are *Fausts Leben, Taten und Höllenfahrt* (1791), *Geschichte Giafars des Barmeciden* (1792), *Geschichte Raphaels de Aquillas* (1793), and *Der Weltmann und der Dichter* (1798), the finest of them all. In 1803 he summed up his human and literary experiences in *Betrachtungen und Gedanken über verschiedene Gegenstände der Welt und der Literatur.* In this work Klinger gives calm and dignified expression to the leading ideas which the period of *Sturm und Drang* had bequeathed to German classical literature.

Klinger's works were published in twelve volumes (1809–15). A selection will be found in A. Sauer, *Stürmer und Dränger,* vol. i. (1883). *See* E. Schmidt, *Lenz und Klinger* (1878); M. Rieger, *Klinger in der Sturm- und Drangperiode* (1880); and *Klinger in seiner Reife* (1896).

KLINGER, MAX (1857–1920), German painter, etcher and sculptor, was born at Leipzig on Feb. 18, 1857. He attended the classes at the Carlsruhe art school in 1874, and went in the following year to Berlin, where in 1878 he created a sensation at the Academy exhibition with two series of pen-and-ink drawings—the "Series upon the Theme of Christ" and "Fantasies upon the Finding of a Glove." The daring originality of these imaginative and eccentric works caused an outburst of indignation, and the artist was voted insane; nevertheless the "Glove" series was bought by the Berlin National Gallery. From 1883 to 1886 he studied in Paris and then visited Italy. In 1893 he settled at Leipzig. His painting of "The Judgment of Paris" caused another storm of indignant protest in 1887, owing to its rejection of all conventional attributes and the naïve directness of the conception. His vivid and somewhat morbid imagination, with its leaning towards the gruesome and disagreeable, and the Goyaesque turn of his mind, found their best expression in his "cycles" of etchings: "Deliverances of Sacrificial Victims told in Ovid," "A Brahms Phantasy," "Eve and the Future," "A Life," and "Of Death"; but in his use of the needle he does not aim at the technical excellence of the great masters; it supplies him merely with means of expressing his ideas. After 1886 Klinger devoted himself more exclusively to painting and sculpture. In his painting he aims neither at classic beauty nor modern truth, but at grim impressiveness not without a touch of mysticism. His "Pietà" at the Dresden gallery, the frescoes at the Leipzig university, and the "Christ in Olympus," at the Modern gallery in Vienna, are characteristic examples of his art. The Leipzig museum contains his sculptured "Salome" and "Cassandra." In sculpture he favours the use of varicoloured materials in the manner of the Greek chryselephantine sculpture. His "Beethoven" (1902) is a notable instance of his work in this direction. His last enterprise was a colossal monument to Richard Wagner, which remained unfinished at his death at Leipzig on July 5, 1920. The Leipzig museum has a representative collection of his work which is exhibited in a hall designed by the artist himself.

See Max Schmid and Vogel, *Max Klinger* (Bielefeld and Leipzig 1926).

KLINT, KAARE (1888–), a Danish architect, who was born at Copenhagen on the 15th of December, 1888. Like the main body of Danish architects, Klint is not yet taking part in the international movement towards industrialized building which, it has been argued, began in Denmark in the 19th century with Bindesvölt and Herholdt, but meeting with little favour, never developed; he believes nevertheless that we must acknowledge the present and not falsely endeavour to re-create the past. His work, however, owes something to Danish Gothic and is more traditional than might at first sight be suspected. In common with Danish colleagues Klint believes that the first requirement of a building is to take its place with graceful suitability in the surrounding countryside, and that the style adopted by him best fulfils that condition of architectural beauty in Denmark. He completed a church and a Y.M.C.A. building at Odense in 1921 and 1923 respectively, while the magnificent Grundtvig Memorial church in Copenhagen was completed in 1926.

See Kay Fisker and F. R. Yerbury, *Modern Danish Architecture* (1927).

KLIPSPRINGER, a small African mountain-antelope (*Oreotragus saltator*), ranging from the Cape through East Africa to Somaliland and Abyssinia, characterized by its rounded hoofs, thick hair and gold-spangled colouring. It represents a genus by itself. The activity of these antelopes is marvellous.

KLONDIKE, a district in Yukon territory, northwestern Canada, approximately in 64° N. and 140° W. The limits are rather indefinite, but the district includes the country to the south of the Klondike river, which comes into the Yukon from the east and has several tributaries, as well as Indian river, a second branch of the Yukon, flowing into it some distance above the Klondike. The richer gold-bearing gravels are found along the creeks tributary to these two rivers within an area of about 800 sq.mi. Rich gravel was discovered on Bonanza Creek in 1896, and a wild rush to this almost inaccessible region followed, a population of 30,000 coming in within the next three or four years with a rapidly increasing output of gold, reaching in 1900 the climax of $22,000,000. Since then the production has steadily declined, until in 1906 it fell to $5,600,000, and in 1925 to $988,465. The richest gravels were worked out before 1910, and most of the population had left the Klondike for Alaska and other regions; so that Dawson, which for a time was a bustling city of more than 10,000, dwindled to 1,043 in the year 1941. As the ground was almost all frozen, the mines were worked by a thawing process, first by setting fires, afterwards by using steam, new methods being introduced to meet the unusual conditions. Later dredges and hydraulic mining were resorted to with success. In recent years the silver-lead ores of Veno and Galena hills, in the Mayo district, have assumed some importance.

KLOPSTOCK, FRIEDRICH GOTTLIEB (1724–1803), German poet, was born at Quedlinburg, on July 2, 1724, the eldest son of a lawyer, a man of sterling character and of a deeply

religious mind. Both in his birthplace and on the estate of Friedeberg on the Saale, which his father later rented, young Klopstock passed a happy childhood; and more attention having been given to his physical than to his mental development he grew up a strong healthy boy and was an excellent horseman and skater. In his thirteenth year Klopstock returned to Quedlinburg where he attended the gymnasium, and in 1739 proceeded to the famous classical school of Schulpforta. Here he soon became an adept in Greek and Latin versification, and wrote some meritorious idylls and odes in German. His original intention of making the emperor Henry I. ("The Fowler") the hero of an epic, was, under the influence of Milton's *Paradise Lost,* with which he became acquainted through Bodmer's translation, abandoned in favour of the religious epic. While yet at school, he had already drafted the plan of *Der Messias.* On Sept. 21, 1745, he delivered on quitting school a remarkable "leaving oration" on epic poetry—*Abschiedsrede über die epische Poesie, kultur- und literargeschichtlich erläutert*—and next proceeded to Jena as a student of theology, where he elaborated the first three cantos of the *Messias* in prose.

Klopstock removed in 1746 to Leipzig, and here joined the circle of young contributors to the *Bremer Beiträge.* In this periodical the first three cantos of the *Messias* in hexameters were anonymously published in 1748. In Leipzig he also wrote a number of odes, the best known of which is *An meine Freunde* (1747), afterwards recast as *Wingolf* (1767). He left the university in 1748 and became a private tutor in the family of a relative at Langensalza. Here unrequited love for a cousin (the "Fanny" of his odes) disturbed his peace of mind. He accepted in 1750 an invitation from Jakob Bodmer (*q.v.*), the translator of *Paradise Lost,* to visit him in Zurich. Here Klopstock was at first treated with every kindness and respect and rapidly recovered his spirits. Bodmer, however, was disappointed to find in the young poet of the *Messias* a man of strong worldly interests, and a coolness sprang up between the two friends.

At this juncture Klopstock was invited by Frederick V. of Denmark, on the recommendation of his minister Bernstorff, to settle at Copenhagen, with an annuity of 400 talers, with a view to the completion of the *Messias.* On his way to the Danish capital Klopstock met at Hamburg Margareta (Meta) Moller, (the "Cidli" of his odes), an enthusiastic admirer of his poetry, who became his wife in 1754. His happiness was short; she died in 1758, leaving him almost broken-hearted. His grief at her loss finds pathetic expression in the 15th canto of the *Messias.* The poet subsequently published his wife's writings, *Hinterlassene Werke von Margareta Klopstock* (1759), which give evidence of a tender, sensitive and deeply religious spirit. Klopstock now relapsed into melancholy; new ideas failed him, and his poetry became more and more vague and unintelligible. He turned his attention to northern mythology, which he conceived should replace classical subjects in a new school of German poetry. In 1770, on the dismissal of Bernstorff from office, he retired with him to Hamburg, but retained his pension together with the rank of councillor of legation. Here, in 1773, he issued the last five cantos of the *Messias.* In the following year he published his scheme for the regeneration of German letters, *Die Gelehrtenrepublik* (1774).

In 1775 Klopstock travelled south, and making the acquaintance of Goethe on the way, spent a year at the court of the margrave of Baden at Karlsruhe. Thence, in 1776, with the title of *Hofrat* and a pension from the margrave, which he retained together with that from the king of Denmark, he returned to Hamburg where he spent the remainder of his life. His latter years he passed in retirement. The French Republic sent him the diploma of honorary citizenship; but, horrified at the terrible scenes the Revolution had enacted in the place of liberty, he returned it. When 67 years of age he contracted a second marriage with Johanna Elisabeth von Winthem, a widow and a niece of his late wife, who for many years had been one of his most intimate friends. He died at Hamburg on March 14, 1803, mourned by all Germany, and was buried by the side of his first wife in the churchyard of the village of Ottensen.

Klopstock's nature was best attuned to lyrical poetry, and in it his deep, noble character found its truest expression. He was less suited for epic and dramatic representation; for, wrapt up in himself, a stranger to the outer world, without historical culture, and without even any interest in the events of his time, he was lacking in the art of plastic representation such as a great epic requires. Thus the *Messias,* despite the magnificent passages which especially the earlier cantos contain, cannot satisfy the demands such a theme must necessarily make. The poem was translated into seventeen languages and led to numerous imitations. In his odes Klopstock had more scope for his peculiar talent. Among the best are *An Fanny; Der Zürchersee; Die todte Clarissa; An Cidli; Die beiden Musen; Der Rheinwein; Die frühen Gräber; Mein Vaterland.* His religious odes mostly take the form of hymns, of which the most beautiful is *Die Frühlingsfeier.* His dramas, in some of which, notably *Hermanns Schlacht* (1769) and *Hermann und die Fürsten* (1784), he celebrated the deeds of the ancient German hero Arminius, and in others, *Der Tod Adams* (1757) and *Salomo* (1764), took his materials from the Old Testament, are essentially lyrical in character and deficient in action. In addition to *Die Gelehrtenrepublik,* he was also the author of *Fragmente über Sprache und Dichtkunst* (1779) and *Grammatische Gespräche* (1794), works in which he made important contributions to philology and to the history of German poetry.

Klopstock's *Werke* first appeared in seven quarto volumes (1798–1809). At the same time a more complete edition in twelve octavo volumes was published (1798–1817), to which six additional volumes were added in 1830. More recent editions were published in 1844–45, 1854–55, 1879 (ed. by R. Roxberger, 1884 ed. by R. Hamel) and 1893 (a selection edited by F. Muncker). A critical edition of the *Odes* was published by F. Muncker and J. Pawel in 1889; a commentary on these by H. Düntzer (1860; 2nd ed., 1878). For Klopstock's correspondence *see* K. Schmidt, *Klopstock und seine Freunde* (1810); C. A. H. Clodius, *Klopstocks Nachlass* (1821); J. M. Lappenberg, *Briefe von und an Klopstock* (1867). *Cf.* further K. F. Cramer, *Klopstock, er und über ihn* (1780–92); J. G. Gruber, *Klopstocks Leben* (1832); R. Hamel, *Klopstock-Studien* (1879–80); F. Muncker, *F. G. Klopstock,* the most authoritative biography (1888); F. G. Klopstock, *Klopstock, 2. Juli, 1724. Zur Feier seines zweihundertjährigen Geburtstages* (Berlin, 1926); E. Bailly, *Étude sur la vie et les oeuvres de Klopstock* (Paris, 1888).

KLOSTERNEUBURG, a town in Lower Austria, on the right bank of the Danube, annexed with the rest of Austria to Germany in 1938. Population 14,100. The chief occupation of its inhabitants is the preparation of wine from the many vineyards that line the slopes behind the town, which reflects its dominant activity in its possession of a school and experimental station of wine and fruit cultivation; there is also a large cement factory near the town. Klosterneuburg is famous for the magnificent buildings of the Augustine canonry, founded in 1106 by Margrave Leopold the Holy. This foundation, one of the oldest and richest in Austria, has numerous interesting features, notably the 12th century altar of Verdun, the 14th century chapel containing Leopold's tomb, the picture gallery, the treasury and the library containing 30,000 volumes and many MSS.

KLUCK, ALEXANDER VON (1846–1934), Prussian general, was born May 20, 1846 at Münster, Westphalia. He took part in the Austro-Prussian War of 1866 and the Franco-Prussian War of 1870, and was twice wounded at the battle of Colombey-Neuilly. In 1906 he was promoted to the rank of general of infantry, and at the outbreak of the World War was inspector-general of the VIII. Army Inspection. He was placed in chief command of I. Army of the West, which he led in the battles of Maubeuge and St. Quentin and the advance upon the Marne. (*See* FRONTIERS, BATTLES OF THE.) At the battle of the Marne, the faulty disposition of the German forces in the line of battle and the success of the Allied offensive compelled Von Kluck to withdraw his army to the Aisne positions. (*See* MARNE, FIRST BATTLE OF THE.) In March 1915 he was wounded while visiting the front trenches, and was placed on the retired list in Oct. 1916. He gave his account of the earlier operations in *Der Marsch auf Paris und die Marne-Schlacht* (1920). He died Oct. 19, 1934.

KNARESBOROUGH, an urban district of the West Riding of Yorkshire, England, 16½ m. W. by N. of York by the L.N.E.

railway and 3½ mi. N.E. of Harrogate. Pop. (1938) 7,020. Area, 3.9 sq.mi. Its situation is picturesque, on the steep left bank of the river Nidd, which here follows a well-wooded valley, hemmed in by limestone cliffs.

Knaresborough (*Canardesburg, Cnarreburc, Cknareburg*), Crown property before the Conquest, formed part of William the Conqueror's grant to his follower, Serlo de Burgh, who probably founded Knaresborough castle. In the reign of Stephen, Knaresborough was forfeited by Eustace Fitzjohn, nephew of de Burgh, and was granted to Robert de Stuteville. From his descendants it passed, through marriage, to Hugh de Morville, one of the murderers of Thomas Becket, who, with his accomplices, is said to have remained in hiding in the castle for a whole year. During the 13th and 14th centuries, the castle and lordship changed hands very frequently; they were granted successively to Hubert de Burgh, whose son forfeited them, after the battle of Evesham, to Richard, earl of Cornwall, whose son Edmund died without issue; to Piers Gaveston; and finally to John of Gaunt, duke of Lancaster, and so to the Crown as parcel of the duchy of Lancaster. In 1317, John de Lilleburn, who was holding the castle for Thomas, duke of Lancaster, against the king, surrendered, under conditions, to William de Ros of Hamlake, but, before leaving the castle, managed to destroy all the records of the liberties and privileges of the town, which were kept in the castle. An inquisition was taken, in 1368, to ascertain these privileges, and the jurors found that the burgesses held "all the soil of their borough yielding 7s. 4d. yearly and doing suit at the king's court." In the reign of Henry VIII. Knaresborough is said by Leland to be "no great thing and meanely builded but the market there is quik." The castle was probably founded in 1070, but its remains, which include a massive keep rising finely from a cliff above the Nidd, are mainly of the 14th century. During the Civil Wars the Royalists were obliged to surrender it to Fairfax after Marston Moor, and it was dismantled in 1646. A charter granted by Charles II., confirming earlier charters, allows a market on Wednesday, which is held in the open market square, and a fortnightly fair on the same day from the Feast of St. Mark to that of St. Andrew.

The Knaresborough free grammar school was founded in 1616. The church of St. John the Baptist is Early English, but has numerous Decorated and Perpendicular additions; it is a cruciform building containing several interesting monuments. Linen and leather are manufactured, and the limestone quarries employ a number of people, but the population is largely agricultural. Lead ore was found and worked on Knaresborough common in the 16th century.

From 1555 to 1867 the town returned two members to parliament, but in the latter year the number was reduced to one, and in 1885 the representation was merged in that of a district constituency. A town planning scheme is in operation.

KNAUS, LUDWIG (1829–1910), noted German genre painter, was born at Wiesbaden on Oct. 5, 1829, the son of an optician. From 1845–48 he studied at the Düsseldorf academy, forming his style on the great masters of the Dutch school (Ostade, Brouwer). He was one of the founders of the famous artists' club, *Malkasten,* at Düsseldorf. But his realistic rendering of nature was not understood by the classicist, W. Schadow, who was then director of the Academy. In 1852 Knaus went to Paris, where his picture, "Morning after Kirmes," exhibited at the Salon of 1853, was awarded the gold medal. "A Walk in the Tuileries Gardens" was acquired for the Luxembourg gallery and is now in the Louvre. After a period of travel, he settled at Berlin in 1874; he there taught at the Academy till 1882. His art had a great vogue in Germany; and his success was mainly due to the choice of his subjects—his rustic scenes telling an anecdote. In this work he was helped by his sympathetic and keen observation of the psychology in human situations. Moreover, his feeling for colour, his harmonious gold tone, and his broad and loose technique had a salutary influence on the development of German art. He is represented in most German and United States galleries. Among his best pictures are "The Children's Treat," "His Highness upon his Travels," "The Card Players," and "The Golden Wedding." He also painted portraits of distinguished men, including Mommsen and Helmholtz. His drawings are very able and sympathetic studies of character.

See L. Pietsch, *Knaus* (Bielefeld and Leipzig, 1896).

KNAVE, originally a male child, a boy (*cf.* Ger. *Knabe,* boy); early used as a name for any lad employed as a servant, and so of male servants in general. The current meaning, a rogue, was, however, an early usage. In playing-cards the lowest court card of each suit, representing a mediaeval servant, is called the "knave."

KNEBEL, KARL LUDWIG VON (1744–1834), German poet and translator, was born at the castle of Wallerstein in Franconia on Nov. 30, 1744. After serving for ten years in the Prussian army he became tutor to one of the Weimar princes, and introduced Goethe to the hereditary prince, Charles Augustus. This was the beginning of Goethe's intimate connection with the Weimar court. In 1798 he married the singer Luise von Rudorf, and retired to Ilmenau; but in 1805 he removed to Jena, where he lived until his death on Feb. 23, 1834. Knebel's *Sammlung kleiner Gedichte* (1815), issued anonymously, and *Distichen* (1827) contain many graceful sonnets, but it is as a translator that he is best known. His translations of the elegies of Propertius, *Elegien des Properz* (1798), and of Lucretius' *De rerum natura* (2 vols., 1831) are deservedly praised.

Knebel's *Literarischer Nachlass und Briefwechsel* was edited by K. A. Varnhagen von Ense and T. Mundt in 3 vols. (1835; 2nd ed., 1840). *See* Hugo von Knebel-Döberitz, *Karl Ludwig von Knebel* (1890).

KNEE, in human anatomy, the articulation of the upper and lower parts of the leg, the joint between the femur and the tibia. (*See* JOINTS AND LIGAMENTS.) The word is also used of articulation resembling the knee-joint in shape or position in other animals; it thus is applied to the carpal articulation of the foreleg of a horse, answering to the ankle in man, or to the tarsal articulation or heel of a bird's foot.

KNEISEL, FRANZ (1865–1926), violinist and founder of the Kneisel quartet, was born at Bucharest on Jan. 26, 1865. At the age of 14 he went to the Vienna conservatoire to study under Grün and Hellmesberger, and was only 16 when he became Koncertmeister of the Hofburg theatre, Vienna, a position which was followed in 1884 by a similar appointment in connection with the Bilse orchestra, Berlin. In 1885, through the good offices of Col. Henry L. Higginson, patron of the Boston symphony orchestra, he settled in the United States, as leader of that orchestra and in the same year established in Boston the famous quartet with which his name is associated. It soon took rank with the leading bodies of its kind, and in virtue of the superior quality of its performance set a standard for chamber-music playing in America which had never been approached before. The other original members of the quartet were E. Fiedler (2nd violin), Louis Svecenski (viola), and Fritz Giese ('cello), and it remained in existence, with various changes of personnel, no fewer than 32 years, giving its last concert on April 3, 1917. Subsequently, Kneisel devoted himself mainly to his work as chief violin professor at the Institute of Musical Art, New York. He died in New York on March 26, 1926.

KNELLER, SIR GODFREY (1648–1723), English portrait painter of German extraction, was born in Lübeck of an ancient family, on Aug. 8, 1648. He studied in the school of Rembrandt, and under Ferdinand Bol in Amsterdam. In 1672 he removed to Italy. In Rome, and more especially in Venice, Kneller earned considerable reputation by historical paintings as well as portraits. In 1674 he came to England at the invitation of the duke of Monmouth and was introduced to Charles II., of whom he made many portraits. Charles sent him to Paris, to take the portrait of Louis XIV., and appointed him court painter; and he continued to hold the same post into the days of George I. Under William III. (1692) he was made a knight, under George I. (1715) a baronet, and by order of the emperor Leopold I. a knight of the Roman Empire. His studio had at first been in Covent Garden, but in his closing years he lived in Kneller Hall, Twickenham. He died on Nov. 7, 1723. He was buried in Twickenham church, and has a monument in Westminster Abbey.

An elder brother, John Zachary Kneller, an ornamental painter, had accompanied Godfrey to England, and had died in 1702. The style of Sir Godfrey Kneller as a portrait painter represented the decline of that art as practised by Vandyck. His works have much freedom, and are well drawn and coloured; but they are mostly slight in manner, and to a great extent monotonous. The colouring may be called brilliant rather than true. Among Kneller's principal paintings are the "Forty-three Celebrities of the Kit-Cat Club," and the "Ten Beauties of the Court of William III.," now at Hampton Court. He executed altogether the likenesses of ten sovereigns, and a number of his works appear in the National Portrait Gallery, London.

KNICKERBOCKER, HARMEN JANSEN (*c.* 1650–*c.* 1716), Dutch colonist of New Amsterdam (New York) and founder of the Knickerbocker family in America, came from Holland about 1674 and in 1682 purchased land near Albany, N.Y. There he lived until 1704, when he bought land near Red Hook in Dutchess county and moved down the Hudson river to his new seat. The oldest son, Johannes Harmenson, remained in Albany county and settled for the remainder of his life at Schaghticoke on land which remained for over 200 years in the Knickerbocker name. His son Johannes (1723–1803), a colonel in the revolutionary army, and his grandson Harmen (1779–1855), a Federalist representative in Congress 1809–11, were well known to Washington Irving, who borrowed their name for use in his *Knickerbocker's History of New York* (1809). Largely owing to this book the name "Knickerbockers" has passed into current use as a designation of the early Dutch settlers in New York and their descendants.

KNIFE, a small cutting instrument, with the blade either fixed to the handle or fastened with a hinge so as to clasp into the handle (*see* CUTLERY). For the knives chipped from flint by prehistoric man *see* ARCHAEOLOGY and FLINTS.

KNIGGE, ADOLF FRANZ FRIEDRICH, FREIHERR VON (1752–1796), German author, was born on the family estate of Bredenbeck near Hanover on Oct. 16, 1752. He was attached successively to the courts of Hesse-Cassel and Weimar until 1777, and had no official appointment until 1791 when he became *Oberhauptmann* in Bremen, where he died on May 6, 1796. Knigge, under the name "Philo," was one of the most active members of the *Illuminati*, a society founded by Adam Weishaupt, and later affiliated to the Freemasons. After the *Illuminati* had been suppressed in Bavaria they were dispersed throughout Germany. Knigge denounced the institutions of royalty and nobility with revolutionary fervour. Knigge wrote several novels, but his most famous work was *Über den Umgang mit Menschen* (1788), in which he lays down rules to be observed for a happy life.

Knigge's *Schriften* were published in 12 volumes (1804–06). *See* K. Goedeke, *Adolf, Freiherr von Knigge* (1844); and H. Klencke, *Aus einer alten Kiste (Briefe, Handschriften und Dokumente aus dem Nachlasse Knigges)* (1853).

KNIGHT, CHARLES (1791–1873), English publisher and author, the son of a bookseller and printer at Windsor, was born on March 15, 1791. He published (1820–21) *The Etonian*, and (1823–24) *Knight's Quarterly Magazine*, to which W. M. Praed, Derwent Coleridge and Macaulay contributed. In 1827 Knight became the superintendent of the publications of the Society for the Diffusion of Useful Knowledge, for which he projected and edited *The British Almanack and Companion*, begun in 1828. In 1829 he resumed business on his own account with the publication of *The Library of Entertaining Knowledge*, writing several volumes of the series himself. In 1832 and 1833 he started *The Penny Magazine* and *The Penny Cyclopaedia* (completed, 1844) both of which had a large circulation. Besides many illustrated editions of standard works, including in 1842 *The Pictorial Shakespeare*, which had appeared in parts (1838–41), Knight published many popular illustrated works, including his *Popular History of England* (8 vols., 1856–62). In 1864 he retired from business, but he continued to write nearly to the close of his long life, publishing *The Shadows of the Old Booksellers* (1865) and an autobiography under the title *Passages of a Working Life during Half a Century* (3 vols., 1864–65). He died at Addlestone, Surrey, Mar. 9, 1873.

See A. A. Clowes, *Knight, a Sketch* (1892).

KNIGHT, DANIEL RIDGWAY (1845–1924), American artist, was born at Philadelphia (Pa.), in 1845. He was a pupil at the École des Beaux-Arts, Paris, under Gleyre, and later worked in the private studio of Meissonier. After 1872 he lived in France, having a house and studio at Poissy on the Seine. He painted peasant women out of doors with great popular success. He was awarded the silver medal and cross of the Legion of Honour, Exposition Universelle, Paris, 1889, and was made a knight of the Royal Order of St. Michael of Bavaria, Munich, 1893, receiving the gold medal of honour from the Pennsylvania Academy of Fine Arts, Philadelphia, 1893. His "Hailing the Ferry" is in the Pennsylvania Academy, Philadelphia, and "The Shepherdess" in the Brooklyn Institute Museum. He died in Paris on March 9, 1924.

KNIGHTHOOD and **CHIVALRY.** These two words, nearly but not quite synonymous, designate a single subject of inquiry, which presents itself under three aspects. It may be regarded in the first place as a mode of feudal tenure, in the second place as a personal attribute or dignity, and in the third place as a scheme of manners. The first aspect is discussed under the headings FEUDALISM and KNIGHT-SERVICE: we are concerned here only with the second and third. For the more important religious orders of knighthood the reader is referred to the headings ST. JOHN OF JERUSALEM, KNIGHTS OF; TEUTONIC ORDER; and TEMPLARS.

"The growth of knighthood" (writes Stubbs) "is a subject on which the greatest obscurity prevails": and, though J. H. Round has done much to explain the introduction of the system into England, its origin in Europe is still obscure in many details.

The words *knight* and *knighthood* are the modern forms of the Old English *cniht* and *cnihthád*. Of these the primary signification of the first was a boy or youth, and of the second the period of life between childhood and manhood. But before the middle of the 12th century they had the meaning of the French *chevalier* and *chevalerie*. In a secondary sense *cniht* meant a servant answering to the German *Knecht*, and in the Anglo-Saxon Gospels a disciple is a *leorning cniht*. In a tertiary sense the word was occasionally employed as equivalent to the Latin *miles*—usually translated by *thegn*—which in the earlier middle ages was used for the domestic as well as the martial officers or retainers of princes or great personages. Thegn itself, used as the description of an attendant of the king, appears to have meant more especially a military attendant. Besides the king, the ealdormen, bishops and king's thegns themselves had their thegns, and to these it is more than probable that the name of *cniht* was applied.

Around the Anglo-Saxon magnates were a crowd of retainers among whom were some called *cnihtas* who were not always the humblest of their number. In the reign of Edward the Confessor was a large class of landholders who had commended themselves to some lord; their condition in many respects similar to that of a vast number of unquestionably feudal tenants who appear after the Norman Conquest. If consequently the former were called *cnihtas*, it seems probable that the appellation should have been continued to the latter, practically their successors. And if the designation of knights was first applied to the military tenants of the earls, bishops and barons—who although they held their lands of mesne lords owed their services to the king—its extension to the whole body of military tenants need not have been a very violent or prolonged process. Assuming, however, that *knight* was originally used for the military tenant of a noble person, as *cniht* had sometimes been used to describe the thegn of a noble person, it would, to begin with, have defined rather his social status than the nature of his services. But those whom the English called *knights* the Normans called *chevaliers*, by which term the nature of their services was defined, while their social status was left out of consideration. And at first *chevalier* in its general and honorary signification seems to have been rendered not by *knight* but by *rider*, as may be inferred from the Anglo-Saxon Chronicle, wherein it is recorded under the year 1085 that William the Conqueror "dubbade his sunu Henric to ridere." But, as E. A. Freeman says, "no such title is heard of in the earlier

days of England. The thegn, the ealdorman, the king himself, fought on foot; the horse might bear him to the field, but when the fighting itself came he stood on his native earth to receive the onslaught of her enemies." In this perhaps we may behold one of the most ancient of British insular prejudices, for on the Continent the importance of cavalry was already understood. From the word *caballarius*, which occurs in the reign of Charlemagne, came the words for knight in all the Romance languages. In Germany the chevalier was called *Ritter*, but neither *rider* nor *chevalier* prevailed against *knight* in England. And it was long after *knighthood* had acquired its present meaning with us that *chivalry* was incorporated into our language. It may be remarked too that in official Latin, in England and in all Europe, the word *miles* held its own against both *eques* and *caballarius*.

Origin of Mediaeval Knighthood.—Concerning the origin of knighthood or chivalry as it existed in the middle ages—implying as it did a formal assumption of and initiation into the profession of arms—nothing beyond conjecture is possible. But some of the rudiments of chivalry may be detected in early Teutonic customs, and they may have made some advance among the Franks of Gaul. We know from Tacitus that the German tribes in his day were wont to admit the young man into the ranks of their warriors with much ceremony. The people of his district were called together; his qualifications were inquired into; and, if he were deemed worthy, his chief, his father, or one of his near kinsmen presented him with a shield and a lance. Again, among the Franks we find Charlemagne girding his son Louis the Pious, and Louis the Pious girding his son Charles the Bald with the sword, when they arrived at manhood. It seems certain here that some ceremony was observed which was a thing of recognized importance. It does not follow that a similar ceremony extended to personages less exalted than the sons of kings and emperors. But if it did we must suppose that it applied first to the mounted warriors of the Franks. It was among the Franks indeed that cavalry first acquired the place which it long maintained in Europe. In early society, where the army is the armed nation, the cavalry must consist of the noble and wealthy, and cavalry and chivalry, as Freeman observes, will be the same. Since then we discover in the *Capitularies* of Charlemagne mention of "caballarii" as a class of warriors; it may be concluded that formal investiture with arms applied to the "caballarii" if it was a usage extending beyond the sovereign and his heir-apparent.

In spite of the silence of our records, Stubbs thinks that such kings as Ethelred, Canute and Edward the Confessor could hardly have failed to introduce into England the institution of chivalry then springing up in every country of Europe; it is nowhere mentioned as a Norman innovation. Yet the fact that Harold received knighthood from William of Normandy makes it clear either that Harold was not yet a knight, which in the case of so tried a warrior would imply that "dubbing to knighthood" was not yet known in England, or, as Freeman thinks, that in the middle of the 11th century the custom had grown in Normandy into "something of a more special meaning" than it bore in England.

As a military organization, the feudal system of tenures was better adapted to the purposes of defensive than of offensive warfare. When kings and kingdoms were in conflict, and distant and prolonged expeditions became necessary, it was discovered that the resources of feudalism were inadequate. Then there grew up all over Europe a system of fining the knights who failed to respond to the sovereign's call or to stay their full time in the field; and in England this fine developed, from the reign of Henry II. to that of Edward II., into a war-tax called *escuage* or *scutage* (*q.v.*). In this way funds for war were at the disposal of sovereigns, and the conditions under which feudatories served were altogether changed. Their military service was now far more the result of special agreement. In the reign of Edward I., whose warlike enterprises after he was king were within the four seas, this alteration does not seem to have gone very far. But the armies of Edward III., Henry V. and Henry VI. during the century of warfare between England and France were recruited and sustained to a very great extent on the principle of contract. On the Continent the employment of mercenaries was both an early and a common practice.

Besides the convenience of sovereigns and their feudatories, there were other causes which contributed towards bringing about those changes in the military system of Europe which were finally accomplished in the 13th and 14th centuries. During the crusades vast armies were set on foot in which feudal rights had no place. It was thus established that pay, the love of enterprise and the prospect of plunder were as useful for enlisting troops and keeping them together as the tenure of land and the solemnities of homage and fealty. Moreover, the crusaders who survived an expedition to Palestine were seasoned and experienced although frequently impoverished and landless soldiers, ready to hire themselves to the highest bidder, and well worth their wages.

Knighthood Independent of Feudalism.—To distinguished soldiers of the cross the honours and benefits of knighthood could hardly be refused on the ground that they did not possess a sufficient property qualification—of which perhaps they had denuded themselves in order to get equipment for the Holy War. And thus the conception of knighthood as of something distinct from feudalism arose and gained ground. It was then that the analogy was first detected between the order of knighthood and the order of priesthood, and that a union of monachism and chivalry was effected in the religious orders of which the Knights Templars and the Knights Hospitallers were the most eminent examples. Somewhat later is marked the existence of a large and noble class who either from the subdivision of fiefs or from the effects of the custom of primogeniture were very insufficiently provided for. To them only two callings were generally open, that of the churchman and that of the soldier, and the latter as a rule offered greater attractions. Hence men of birth, although not of fortune, would attach themselves to some prince or magnate in whose military service they were sure of maintenance, and might hope for reward in the shape of booty or of ransom. It is probably to this period and these circumstances that we must look for, at all events, the rudimentary beginnings of the military as well as the religious orders of chivalry. It seems likely enough therefore that there should grow up bodies of knights banded together by engagements of fidelity, although free from monastic obligations; wearing a uniform or livery, and naming themselves after some special symbol or some patron saint of their adoption. And such bodies placed under the command of a sovereign or grand master, regulated by statutes and enriched by endowments would have been precisely what in after times such orders as the Garter in England, the Golden Fleece in Burgundy, the Annunziata in Savoy and the St. Michael and Holy Ghost in France actually were.

Grades of Knighthood.—During the 14th and 15th centuries, as well as somewhat earlier and later, the arrangements of a European army were always and everywhere pretty much the same. Under the sovereign the constable and the marshal or marshals held the chief commands, their authority being partly joint and partly several. Attendant on them were the heralds, who were the officers of their military court wherein offences committed in the camp and field were tried and adjudged, and among whose duties it was to carry orders and messages, to deliver challenges and call truces, and to identify and number the wounded and the slain. The main divisions of the army were distributed under the royal and other principal standards, smaller divisions under the banners of some of the greater nobility or of knights banneret, and smaller divisions still under the pennons of knights or, as in distinction from knights banneret they came to be called, knights bachelors. All knights whether bachelors or bannerets were escorted by their squires. But the banner of the banneret always implied a more or less extensive command, while every knight was entitled to bear a pennon and every squire a pencel. All three flags were of such a size as to be conveniently attached to and carried on a lance, and were emblazoned with the arms or some portion of the bearings of their owners. But while the banner was square the pennon was either pointed or forked at its extremity, and the pencel had a single tail or streamer.

If indeed we look at the scale of chivalric subordination from

another point of view, it seems to be more properly divisible into four than into three stages, of which two may be called provisional and two final. The bachelor and the banneret were both equally knights, only the one was of greater distinction and authority than the other. In like manner the squire and the page were both in training for knighthood, but the first had advanced farther than the second. It is true that the squire was a combatant while the page was not, and that many squires voluntarily served as squires all their lives owing to the insufficiency of their fortunes to support the costs of knighthood. But in the ordinary course of a chivalrous education the conditions of page and squire were passed through in boyhood and youth, and the condition of knighthood was reached in early manhood. Every feudal court and castle was a school of chivalry, and although princes and great personages were rarely actually pages or squires, the discipline through which they passed was not different from that to which less exalted candidates for knighthood were subjected. In many castles, and perhaps in most, the discipline followed simply a natural and unwritten code of "fagging" and seniority, as in public schools or on board men-of-war some 100 years or so ago.

Modes of Conferring Knighthood.—Two modes of conferring knighthood appear to have prevailed from a very early period. In the one the accolade constituted the whole or nearly the whole of the ceremony, in the other it was surrounded with many additional observances. The former and simpler of these modes was naturally that used in war: the candidate knelt before "the chief of the army or some valiant knight," who struck him thrice with the flat of a sword, pronouncing a brief formula of creation and of exhortation which varied at the creator's will.

In this form a number of knights were made before and after almost every battle between the 11th and the 16th centuries, and its advantages gradually led to its general adoption both in time of peace and time of war. On extraordinary occasions indeed the more elaborate ritual continued to be observed. But in England about the beginning of the 15th century it came to be appropriated to a special taking of knighthood. When Segar, garter king of arms, wrote in the reign of Queen Elizabeth, he does not even mention that there were two ways of creating knights bachelors. "He that is to be made a knight," he says, "is stricken by the prince with a sword drawn upon his back or shoulder, the prince saying, 'Soys Chevalier,' and in times past was added 'Saint George.' And when the knight rises the prince sayeth 'Avencez.'" In our days when a knight is personally made he kneels before the sovereign, who lays a sword drawn, ordinarily the sword of State, on either of his shoulders and says, "Rise," calling him by his Christian name with the addition of "Sir" before it.

Very different were the solemnities which attended the creation of a knight when the complete procedure was observed. "The ceremonies and circumstances at the giving this dignity," says Selden, "in the elder time were of two kinds especially, which we may call courtly and sacred. The courtly were the feasts held at the creation, giving of robes, arms, spurs and the like. The sacred were the holy devotions and what else was used in the church at or before the receiving of the dignity."

But the full solemnities for conferring knighthood seem to have been so largely and so early superseded by the practice of dubbing or giving the accolade alone that in England it became at last restricted to such knights as were made at coronations and some other occasions of State. And to them the particular name of Knights of the Bath was assigned. It is usually supposed that the first creation of Knights of the Bath under that designation was at the coronation of Henry IV.; and before the order of the Bath as a companionship or capitular body was instituted the last creation was at the coronation of Charles II. But all knights were also knights of the spur or "equites aurati," because their spurs were golden or gilt—the spurs of squires being of silver or white metal; the spurs together with the sword were always employed as the leading ensigns of knighthood.

With regard to knights banneret, various opinions have been entertained as to both the nature of their dignity and the qualifications they were required to possess for receiving it at different periods and in different countries. Du Cange divides the mediaeval nobility of France and Spain into three classes: first, barons or ricos hombres; secondly, chevaliers or caballeros; and thirdly, écuyers or infanzons; and to the first, the greater nobility of either country, he limits the designation of banneret and the right of leading their followers to war under a banner or square flag. At any rate to commence with, it seems probable that bannerets were in every country merely the more important class of feudatories, the "ricos hombres" in contrast to the knights bachelors, who in France in the time of St. Louis were known as "pauvres hommes." In England all the barons or greater nobility were entitled to bear banners, but it is clear that from a comparatively early period bannerets whose claims were founded on personal distinction rather than on feudal tenure gradually came to the front, and much the same process of substitution appears to have gone on in their case as that which we have marked in the case of simple knights.

The knight bachelor whose services and landed possessions entitled him to promotion would apply formally to the commander in the field for the title of banneret. If this were granted, the heralds were called to cut publicly the tails from his pennon: or the commander, as a special honour, might cut them off with his own hands.

What the exact contingent was which bannerets were expected to supply to the royal host is doubtful. But in the reign of Edward III. and afterwards bannerets appear as the commanders of a military force raised by themselves and marshalled under their banners: their status and their relations both to the Crown and to their followers were mainly the consequences of voluntary contract not of feudal tenure. It is from the reigns of Edward III. and Richard II. also that the two best descriptions we possess of the actual creation of a banneret have been transmitted to us. Sir Thomas Smith, writing towards the end of the 16th century, says, after noticing the conditions to be observed in the creation of bannerets, "but this order is almost grown out of use in England"; and, during the controversy which arose between the new order of baronets and the Crown early in the 17th century respecting their precedence, it was alleged without contradiction before the privy council that "there are not bannerets now in being, peradventure never shall be." Sir Ralph Fane, Sir Francis Bryan and Sir Ralph Sadler were created bannerets by the Lord Protector Somerset after the battle of Pinkie in 1547, and the better opinion is that this was the last occasion on which the dignity was conferred.

Existing Orders of Knighthood.—On the continent of Europe the degree of knight bachelor disappeared with the military system which had given rise to it. It is now therefore peculiar to the British empire, where, although very frequently conferred by letters patent, it is yet the only dignity which is still even occasionally created—as every dignity was formerly created—by means of a ceremony in which the sovereign and the subject personally take part. Everywhere else dubbing or the accolade seems to have become obsolete, and no other species of knighthood, if knighthood it can be called, is known except that which is dependent on admission to some particular order. It is a common error to suppose that baronets are hereditary knights. Baronets are not knights unless they are knighted like anybody else; and, so far from being knights because they are baronets, one of the privileges granted to them shortly after the institution of their dignity was that they, not being knights, and their successors and their eldest sons and heirs-apparent should, when they attained their majority, be entitled if they desired to receive knighthood. It is a maxim of the law indeed that, as Coke says, "the knight is by creation and not by descent," and, although we hear of such designations as the "knight of Kerry" or the "knight of Glin," they are no more than traditional nicknames, and do not by any means imply that the persons to whom they are applied are knights in a legitimate sense. Notwithstanding, however, that simple knighthood has gone out of use abroad, there are innumerable grand crosses, commanders and companions of a formidable assortment of orders in almost every part of the world. (*See* the section on "Orders of Knighthood" on p. 434.)

Great Britain has nine orders of knighthood—the Garter, the Thistle, St. Patrick, the Bath, the Star of India, St. Michael and St. George, the Indian Empire, the Royal Victorian Order and the Order of the British Empire; and, while the first is undoubtedly the oldest as well as the most illustrious anywhere existing, a fictitious antiquity has been claimed for the second and fourth.

Order of the Garter.—It is, however, certain that the "most noble" Order of the Garter at least was instituted in the middle of the 14th century, although in what particular year this event occurred is and has been the subject of much difference of opinion, since the original records of the order until after 1416 have perished. The dates which have been selected vary from 1344 (given by Froissart, but almost certainly mistaken) to 1351. It is indisputable that in the wardrobe account from Sept. 1347 to Jan. 1349, the issue of certain habits with garters and the motto embroidered on them is marked for St. George's day; that the letters patent relating to the preparation of the royal chapel of Windsor are dated in Aug. 1348; and that in the treasury accounts of the prince of Wales there is an entry in Nov. 1348 of the gift by him of "24 garters to the knights of the Society of the Garter." But the order was not in existence before the summer of 1346. Nobody who was not a knight could under its statutes have been admitted to it, and neither the prince of Wales nor several others of the original companions were knighted until the middle of that year.

Sir Harris Nicolas contends that the order had no loftier immediate origin than a joust or tournament. It consisted of the king and the Black Prince, and 24 knights divided into two bands of 12 like the tilters in a hastilude—at the head of the one being the first, and of the other the second; and to the companions belonging to each, when the order had superseded the Round Table and had become a permanent institution, were assigned stalls either on the sovereign's or the prince's side of St. George's chapel. No change was made in the numbers until 1786, when the sons of George III. and his successors were made eligible notwithstanding that the chapter might be complete. In 1805 another alteration was effected by the provision that the lineal descendants of George II. should be eligible in the same manner, except the Prince of Wales for the time being, who was declared to be "a constituent part of the original institution"; and again in 1831 it was further ordained that the privilege accorded to the descendants of George II. should extend to those of George I. The records during the 14th and 15th centuries show that ladies were received into the order leaves no doubt that they were regularly received into it. The queen consort, the wives and daughters of knights, and some other women of exalted position, were designated "Dames de la Fraternité de St. George," and entries of the delivery of robes and garters to them are found at intervals in the Wardrobe Accounts from 1376 to 1495. The effigies of Margaret Byron, wife of Sir Robert Harcourt, K.G., at Stanton Harcourt, and of Alice Chaucer, wife of William de la Pole, duke of Suffolk, K.G., at Ewelme, which date from the reigns of Henry VI. and Edward IV., have garters on their left arms.

Persons Empowered to Confer Knighthood.—It has been the general opinion, as expressed by Sainte Palaye and Mills, that formerly all knights were qualified to confer knighthood. But it may be questioned whether the privilege was thus indiscriminately enjoyed even in the earlier days of chivalry; the sounder conclusion appears to be that the right was always restricted to sovereign princes, to those acting under their authority or sanction, and to a few other personages of exalted rank and station. In several of the writs for distraint of knighthood from Henry III. to Edward III. a distinction is drawn between those who are to be knighted by the king himself or by the sheriffs of counties respectively, and bishops and abbots could make knights in the 11th and 12th centuries. At all periods the commanders of the royal armies had the power of conferring knighthood; under James I. an ordinance of 1622, confirmed by a proclamation of 1623, for the registration of knights in the college of arms, is rendered applicable to all who should receive knighthood from either the king or any of his lieutenants. But when in 1543 Henry VIII. appointed Sir John Wallop to be captain of Guisnes, it was considered necessary that he should be authorized in express terms to confer knighthood, which was also done by Edward VI. in his own case when he received knighthood from the duke of Somerset. In the middle ages it was a common practice for sovereigns and princes to dub each other knights much as they were afterwards, and are now, in the habit of exchanging the stars and ribbons of their orders. Long after the military importance of knighthood had practically disappeared, a knight's title was recognized in all European countries, and not only in that country in which he had received it. In modern times, however, by certain regulations, made in 1823, and repeated and enlarged in 1855, not only is it provided that the sovereign's permission by royal warrant shall be necessary for the reception by a British subject of any foreign order of knighthood, but further that such permission shall not authorize "the assumption of any style, appellation, rank, precedence, or privilege appertaining to a knight bachelor of the United Kingdom."

Degradation.—The cases in which a knight has been formally degraded in England are exceedingly few; Dallaway says that only three were on record in the College of Arms when he wrote in 1793. The case of Sir Francis Michell in 1621, whose spurs were hacked from his heels, his sword belt cut, and his sword broken over his head by the heralds in Westminster Hall, was the last until that of Roger Casement (*q.v.*) in 1916.

Roughly speaking, the age of chivalry properly so called may be said to have extended from the beginning of the crusades to the battle of Bosworth. Even in the way of pageantry and martial exercise it did not long survive the middle ages. In England tilts and tourneys were even occasionally held until after the death of Henry, prince of Wales. But on the Continent they were discredited by the fatal accident which befell Henry II. of France in 1599. The golden age of chivalry has been variously located. Most writers would place it in the early 13th century, but Gautier would remove it two or three generations further back. It may be true that, in the comparative scarcity of historical evidence, 12th-century romancers present a more favourable picture of chivalry at that earlier time; but even such historical evidence as we possess, when carefully scrutinized, is enough to dispel the illusion that there was any period of the middle ages in which the unselfish championship of "God and the ladies" was anything but a rare exception.

The Spirit of Chivalry.—It is difficult to describe the true spirit and moral influence of knighthood, if only because the ages in which it flourished differed so widely from our own. At its very best, it was always hampered by the limitations of mediaeval society. Moreover, many of the noblest precepts of the knightly code were a legacy from earlier ages, and have survived the decay of knighthood just as they will survive all transitory human institutions, forming part of the eternal heritage of the race. Indeed, the most important of these precepts did not even attain to their highest development in the middle ages. As a conscious effort to bring religion into daily life, chivalry was less successful than later puritanism; while the educated classes of our own day far surpass the average mediaeval knight in discipline, self-control and outward or inward refinement. In its own age, chivalry rested practically, like the highest civilization of ancient Greece and Rome, on slave labour; and if many of its most brilliant outward attractions have now faded for ever, this is only because modern civilization tends so strongly to remove social barriers. The knightly ages will always enjoy the glory of having formulated a code of honour which aimed at rendering the upper classes worthy of their exceptional privileges; yet we must judge chivalry not only by its formal code but also by its practical fruits.

Abuses in Practice.—Far too much has been made of the extent to which the knightly code, and the reverence paid to the Virgin Mary, raised the position of women. As Gautier himself admits, the feudal system made it difficult to separate the woman's person from her fief: lands and women were handed over together, as a business bargain, by parents or guardians. In theory, the knight was the defender of widows and orphans; but in practice wardships and marriages were bought and sold as a matter of everyday routine like stocks and shares in the modern market.

Thomas, lord of Berkeley (1245–1321), counted on this as a regular and considerable source of income. Late in the 15th century, in spite of the somewhat greater liberty of that age, we find Stephen Scrope writing nakedly to a familiar correspondent "for very need [of poverty], I was fain to sell a little daughter I have for much less than I should have done by possibility," *i.e.*, than the fair market price. Startling as such words are, it is perhaps still more startling to find how frequently and naturally, in the highest society, ladies were degraded by personal violence. The proofs of this from the *Chansons de Geste* might be multiplied indefinitely. The Knight of La Tour-Landry (1372) relates, by way of warning to his daughters, a tale of a lady who so irritated her husband by scolding him in company, that he struck her to the earth with his fist and kicked her in the face, breaking her nose. Upon this the good knight moralizes: "And this she had for her euelle and gret langage, that she was wont to saie to her husbonde." This was a natural consequence not only of the want of self-control which we see everywhere in the middle ages, but also of the custom of contracting child-marriages for unsentimental considerations. Between 1288 and 1500 five marriages are recorded in the direct line of the Berkeley family in which the ten contracting parties averaged less than 11 years of age: the marriage contract of another Lord Berkeley was drawn up before he was six years old. Moreover, the same business considerations which dictated those early marriages clashed equally with the strict theory of knighthood. In the same Berkeley family, the lord Maurice IV. was knighted in 1338 at the age of seven to avoid the possible evils of wardship, and Thomas V. for the same reason in 1476 at the age of five. Smyth's record of this great family shows that, from the middle of the 13th century onwards, the lords were not only statesmen and warriors, but gentlemen-farmers on a great scale, even selling fruit from the castle gardens, while their ladies would go round on tours of inspection from dairy to dairy. Indeed, economic causes contributed much to the decay of romantic chivalry. It is not surprising, therefore, to find that at least as early as the middle of the 13th century the commercial side of knighthood became very prominent. Although by the code of chivalry no candidate could be knighted before the age of 21, we have seen how great nobles like the Berkeleys obtained that honour for their infant heirs in order to avoid possible pecuniary loss; and French writers of the 14th century complained of this knighting of infants as a common abuse. Moreover, after the knight's liability to personal service in war had been modified by the scutage system, it became necessary in the first quarter of the 13th century to compel landowners to take up the knighthood which in theory they should have coveted as an honour—a compulsion which was soon systematically enforced (*Distraint of Knighthood*, 1278), and became a recognized source of royal income. An indirect effect of this system was to break down another rule of the chivalrous code—that none could be dubbed who was not of gentle birth. This rule, however, had often been broken before; even the romances of chivalry speak not infrequently of the knighting of serfs or *jongleurs*. While knighthood was avoided by poor nobles, it was coveted by rich citizens. It is recorded in 1298 as "an immemorial custom" in Provence that rich burghers enjoyed the honour of knighthood; and less than a century later we find Sacchetti complaining that the dignity is open to any rich upstart, however disreputable his antecedents. Similar causes contributed to the decay of knightly ideas in warfare. Even in the 12th century, when war was still rather the pastime of kings and knights than a national effort, the strict code of chivalry was more honoured in the breach than in the observance. Already about 1160 Peter of Blois had written, "The so-called order of knighthood is nowadays mere disorder"; half a century earlier still, Guibert of Nogent gives an equally unflattering picture of contemporary chivalry in his *De vita sua*. But when the Hundred Years' War brought a real national conflict between England and France, when archery became of supreme importance, and a large proportion even of the cavalry were mercenary soldiers, then the exigencies of serious warfare swept away much of that outward display and those class-conventions on which chivalry had always rested. Several of the best English commanders (*e.g.*, Sir Robert Knolles and Sir Thomas Dagworth) were of obscure birth, while on the French side even Du Guesclin had to wait long for his knighthood because he belonged only to the lesser nobility. The tournament again, which for two centuries had been under the ban of the church, was often almost as definitely discouraged by Edward III. as it was encouraged by John of France; and while John's father opened the Crécy campaign by sending Edward a challenge in due form of chivalry, Edward took advantage of this formal delay to amuse the French king with negotiations while he withdrew his army by a rapid march from an almost hopeless position. A quotation from Froissart will illustrate the extent to which war had now become a mere business. At the battle of Aljubarrota, as also at Agincourt, the handful of victors were obliged by a sudden panic to slay their prisoners. "Lo, behold the great evil adventure that fell that Saturday. For they slew as many good prisoners as would well have been worth, one with another, 400,000 franks."

BIBLIOGRAPHY.—Froissart is perhaps the source from which we may gather most of chivalry in its double aspect, good and bad. The brilliant side comes out most clearly in Joinville, the *Chronique de Du Guesclin*, and the *Histoire de Bayart;* the darker side appears in the earlier chronicles of the crusades, and is especially emphasized by preachers and moralists like Jacques de Vitry, Etienne de Bourbon, Nicole Bozon and John Gower. John Smyth's *Lives of the Berkeleys* (Bristol and Gloucs. Archaeol. Soc., 2 vols.) and the *Book of the Knight of La Tour-Landry* (ed. A. de Montaiglon, or in the old English trans. published by the Early English Text Soc.) throw a very vivid light on the inner life of noble families. Of modern books, *see* A. Schultz, *Höfisches Leben z. Zeit der Minnesänger* (Leipzig, 1879); S. Luce, *Hist. de Du Guesclin et de son Epoque* (2nd ed., 1882); Léon Gautier, *La Chevalerie* (1883); F. W. Cornish, *Chivalry* (1901).

(G. G. C.)

ORDERS OF KNIGHTHOOD

When orders ceased to be fraternities and became more and more marks of favour and a means of recognizing meritorious services to the Crown and country, the term "orders," became loosely applied to the insignia and decorations themselves. Thus "orders," irrespective of the title or other specific designation they confer, fall in Great Britain generally into three main categories, according as the recipients are made "knights grand cross," "knights commander" or "companions." In some orders the classes are more numerous, as in the Royal Victorian, for instance, which has five, numerous foreign orders a like number, some six, while the Chinese "Dragon" boasted no less than 11 degrees. Generally speaking, the insignia of the "knights grand cross" consist of a star worn on the left breast and a badge, usually some form of the cross-paty, worn suspended from a ribbon over the shoulder or, in certain cases, on days of high ceremonial from a collar. The "commanders" wear the badge from a ribbon round the neck, and the star on the breast; the "companions" have no star and wear the badge from a narrow ribbon at the button-hole.

Orders may, again, be grouped according as they are (1) PRIME ORDERS OF CHRISTENDOM, conferred upon an exclusive class only. Here belong, or belonged, the well-known orders of the *Garter* (England), *Golden Fleece* (Austria and Spain), *Annunziata* (Italy), *Black Eagle* (Prussia), *St. Andrew* (Russia), *Elephant* (Denmark) and *Seraphim* (Sweden). Of these the first three only, which are usually held to rank *inter se* in the order given, are historically identified with chivalry. (2) FAMILY ORDERS, bestowed upon members of the royal or princely class, or upon humbler individuals according to classes, in respect of "personal" services rendered to the family. In this category are such orders as the Royal Victorian and the Hohenzollern (Prussia). (3) ORDERS OF MERIT, whether military, civil or joint orders. Such have, as a rule, at least three, oftener five classes, and here belong such as the *Order of the Bath* (British) and the *Legion of Honour* (France). There are also certain orders, such as the recently instituted *Order of Merit* (British), which have but one class.

Of the great military and religious orders were the Teutonic Order and the Knights of St. John of Jerusalem (*Johanniter Orden, Malteser Orden*), for the history of which and the present state *see* TEUTONIC ORDER and ST. JOHN OF JERUSALEM, KNIGHTS OF THE ORDER OF.

Great Britain.—The history and constitution of the "most

noble" *Order of the Garter* has been treated above. The officers of the order are five—the prelate, chancellor, registrar, king of arms and usher—the first, third and fifth having been attached to it from the commencement, while the fourth was added by Henry V. and the second by Edward IV. The prelate has always been the bishop of Winchester; the chancellor was formerly the bishop of Salisbury, but is now the bishop of Oxford; the registrarship and the deanery of Windsor have been united since the reign of Charles I.; the king of arms, whose duties were in the beginning discharged by Windsor herald, is Garter Principal King of Arms; and the usher is the gentleman usher of the Black Rod. The chapel of the order is St. George's chapel, Windsor.

The "most ancient" *Order of the Thistle* was founded by James II. in 1687, and dedicated to St. Andrew. It consisted of the sovereign and eight knights companions, and fell into abeyance at the Revolution of 1688. In 1703 it was revived by Queen Anne, when it was ordained to consist of the sovereign and 12 knights companions, the number being increased to 16 by statute in 1827. The officers of the order are the dean, the secretary, Lyon King of Arms and the gentleman usher of the Green Rod. The chapel, in St. Giles's, Edinburgh, was begun in 1909. The collar is formed of thistles, alternating with sprigs of rue, and the motto is *Nemo me impune lacessit.*

The "most illustrious" *Order of St. Patrick* was instituted by George III. in 1788, to consist of the sovereign, the lord lieutenant of Ireland as grand master and 15 knights companions, enlarged to 22 in 1833. The king of arms is Ulster King of Arms; Black Rod the usher. The chapel is in St. Patrick's cathedral, Dublin. The collar is formed of alternate roses with red and white leaves, and gold harps linked by gold knots; the badge is suspended from a harp surmounted by an imperial jewelled crown. The motto is *Quis separabit?*

The "most honourable" *Order of the Bath* was established by George I. in 1725, to consist of the sovereign, a grand master and 36 knights companions. This was a pretended revival of an order supposed to have been created by Henry IV. at his coronation in 1399. But, as has been shown in the preceding section, no such order existed. Knights of the Bath, although they were allowed precedence before knights bachelors, were merely knights bachelors who were knighted with more elaborate ceremonies than others and on certain great occasions. In 1815 the order was instituted, in three classes, "to commemorate the auspicious termination of the long and arduous contest in which the empire has been engaged"; and in 1847 the civil knights commanders and companions were added. Exclusive of the sovereign, royal princes and distinguished foreigners, the order is limited to 55 military and 27 civil knights grand cross, 145 military and 108 civil knights commanders, and 705 military and 298 civil companions. The officers of the order are the dean (the dean of Westminster), Bath King of Arms, the registrar and the usher of the Scarlet Rod.

The "most distinguished" *Order of St. Michael and St. George* was founded by the prince regent, afterwards George IV., in 1818, in commemoration of the British protectorate of the Ionian islands, "for natives of the Ionian islands and of the island of Malta and its dependencies, and for such other subjects of his majesty as may hold high and confidential situations in the Mediterranean." By statute of 1832 the lord high commissioner of the Ionian islands was to be the grand master. After the repudiation of the British protectorate of the Ionian islands, the order was placed on a new basis, and by letters patent of 1868 and 1877 it was extended and provided for such of "the natural born subjects of the Crown of the United Kingdom as may have held or shall hold high and confidential offices within her majesty's colonial possessions, and in reward for services rendered to the crown in relation to the foreign affairs of the empire." The chapel of the order, in St. Paul's cathedral, was dedicated in 1906. The star of the knights grand cross is a seven-rayed star of silver with a small ray of gold between each, in the centre is a red St. George's cross bearing a medallion of St. Michael encountering Satan, surrounded by a blue fillet with the motto *Auspicium melioris aevi.*

The *Order of St. Michael and St. George ranks* between the "most exalted" *Order of the Star of India* and the "most eminent" *Order of the Indian Empire,* of both of which the viceroy of India for the time being is *ex officio* grand master. Of these the first was instituted in 1861 and enlarged in 1876, 1897 and 1903, in three classes, knights grand commanders, knights commanders and companions, and the second was established (for "companions" only) in 1878 and enlarged in 1887, 1892, 1897 and 1903, also in the same three classes, in commemoration of Queen Victoria's assumption of the style and title of empress of India. The collar of the *Star of India* is composed of alternate links of the lotus flower, red and white roses and palm branches enamelled on gold, with an imperial crown in the centre; that of the *Indian Empire* is composed of elephants, peacocks and Indian roses.

The *Royal Victorian Order* was instituted by Queen Victoria on April 25, 1896, for personal services rendered to her majesty and her successors. It consists of the sovereign, chancellor, secretary and five classes—knights grand commanders, knights commanders, commanders and members of the fourth and fifth classes.

To the class of orders without the titular appellation "knight" belongs the *Order of Merit,* founded by King Edward VII. on the occasion of his coronation. The order includes those who have gained distinction in the military and naval services of the empire, and such as have made themselves a great name in the fields of science, art and literature. The number of British members has been fixed at 24, with the addition of such foreign persons as the sovereign shall appoint. A lady, Miss Florence Nightingale, received the order in 1907. The badge is a cross of red and blue enamel surmounted by an imperial crown; the central blue medallion bears the inscription "For Merit" in gold, and is surrounded by a wreath of laurel. The badge of the military and naval members bears two crossed swords in the angles of the cross. The ribbon is garter blue and crimson and is worn round the neck.

The *Distinguished Service Order,* an order of military merit, was founded on Sept. 6, 1886, by Queen Victoria, to recognize the special services of officers in the army and navy. It consists of one class only, who take precedence immediately before the 4th class of the Royal Victorian Order. The badge is a white and gold cross with a red centre bearing the imperial crown surrounded by a laurel wreath. The ribbon is red, edged with blue. The *Imperial Service Order* was likewise instituted on June 26, 1902, and finally revised in 1908, as a recognition of services rendered to the British Crown by the members of the civil service in the empire, to consist of companions only. In precedence the order ranks after the Order of the British Empire, 4th class.

In addition to the above, there are two British orders confined to ladies. The *Royal Order of Victoria and Albert,* instituted in 1862, is a purely court distinction. The *Imperial Order of the Crown of India* is conferred for like purposes as the Order of the Indian Empire. Its object is to recognize the services of ladies connected with the court of India.

As was inevitable, the huge number of people engaged in the World War made it necessary that appointments to all the British Orders should be made on a greatly increased scale, while two additional Orders were instituted. A change in the method of wearing the badge of the Third Class (Companion) of some British Orders was made. Where it used to be worn medal-fashion on the left breast, it is now hung round the neck.

The *Order of the British Empire* was instituted in June 1917, to reward War services in all capacities, military and civil. In 1918 a Military Division of the Order was created. The essential features of the latest statute of the Order, published on Dec. 29, 1922, are as follows:—

There are five classes of the Order, which (like the Order of the Bath) is divided into military and civil divisions. Each class can be conferred upon men and women equally.

Highest Class—Knights Grand Cross and Dames Grand Cross (G.B.E.).

Second Class—Knights Commander and Dames Commander (K.B.E. and D.B.E.).

Third Class—Commanders (C.B.E.).

Fourth Class—Officers (O.B.E.).

Fifth Class—Members (M.B.E.).

The two highest classes of the Order wear a star, which is of

silver, of two designs. In the centre is a golden medallion showing a representation of Britannia seated, surrounded by a circlet of crimson enamel bearing the motto of the Order, "For God and the Empire."

The members of the first class wear the larger star on the left breast, and the badge of the Order (*see* below) is also worn on the sash, which, in the case of men, is $3\frac{3}{4}$ in. wide, in the case of women, $2\frac{1}{4}$ in. wide, and crosses the breast from the right shoulder to the left hip, the badge resting on the hip. A collar has been instituted for this class.

The members of the second class wear the smaller star on the left breast, with the badge suspended, in the case of men, by a ribbon $1\frac{3}{4}$ in. wide passing round the neck, and in the case of women, from a bow of ribbon of the same width, placed on the left side, above the star. The third class wear the badge, in the case of men, from a ribbon of the same width as the second class round the neck, and, in the case of women, from a bow on the left side. The fourth and fifth classes wear the badge on the left breast, from a ribbon $1\frac{1}{2}$ in. wide, medal-fashion in the case of men, from a bow in the case of women.

The badge is a cross paty, bearing in the centre the medallion and circlet as in the star. An imperial crown in gold surmounts the cross. For the first three classes the cross is enamelled in pearl grey, bordered with gold, while the circlet is of red enamel with the motto in gold. The commander's badge is smaller than that for the other two classes. The badge of the fourth class is entirely silver gilt, while that of the lowest class is entirely silver. The ribbon of the Order is purple for the civil division, and purple with a narrow red central stripe for the military division.

There are also two medals belonging to the Order: The gallantry medal, which is rare, and is only awarded for conspicuous bravery, where the recipient knew, when he performed the deed of gallantry, that his life was in danger, and the meritorious service medal, given for meritorious service.

The order of *Companions of Honour* was instituted in June 1917, at the same time as the Order of the British Empire. It may be conferred upon either men or women who have rendered conspicuous national service; it confers no title or precedence.

It consists of the Sovereign and 50 members, and there is only one class. This order ranks next after the first class of the Order of the British Empire.

The sovereign's permission by royal warrant is necessary before a British subject can receive a foreign order of knighthood. For other decorations, *see* under NUMISMATICS.

The Golden Fleece (La Toison d'Or) ranks historically and in distinction as one of the great knightly orders of Europe. It became divided into two branches, Austria and Spain. It was founded on Jan. 10, 1429–30, by Philip the Good, duke of Burgundy, on the day of his marriage with Isabella of Portugal at Bruges, in her honour and dedicated to the Virgin and St. Andrew. No certain origin can be given for the name. It seems to have been in dispute even in the early history of the order. At its constitution the number of the knights was limited to 24, exclusive of the grand master, the sovereign. The sovereign undertook to consult the knights before embarking on a war, all disputes between the knights were to be settled by the order, at each chapter the deeds of each knights were held in review, and punishments and admonitions were dealt out to offenders; to this the sovereign was expressly subject. Thus we find that the emperor Charles V. accepted humbly the criticism of the knights of the Fleece on his over-centralization of the government and the wasteful personal attention to details. The knights could claim as of right to be tried by their fellows on charges of rebellion, heresy and treason, and Charles V. conferred on the order exclusive jurisdiction over all crimes committed by the knights. It was in defiance of this right that Alva refused the claim of Counts Egmont and Horn to be tried by the knights of the Fleece in 1568. By the marriage of Mary, only daughter of Charles the Bold of Burgundy to Maximilian, archduke of Austria, 1477, the grand mastership of the order came to the house of Habsburg and, with the Netherlands provinces, to Spain in 1504 on the accession of Philip, Maximilian's son, to Castile. On the extinction of the Habsburg dynasty in Spain by the death of Charles II. in 1700 the grand-mastership, which had been filled by the kings of Spain after the loss of the Netherlands, was claimed by the emperor Charles VI., and he instituted the order in Vienna in 1713. Protests were made at various times by Philip V., but the question was never decided by treaty, and the Austrian and Spanish branches continued as independent orders as the principal order of knighthood in the respective States. While the Austrian branch excludes any other than Roman Catholics from the order, the Spanish Fleece may be granted to Protestants. The badges of the two branches vary slightly in detail, more particularly in the attachment of firestones and steels by which the fleece is attached to the ribbon of the collar. The collar is composed of alternate links of furisons and double steels interlaced to form the letter B for Burgundy.

Austria-Hungary.—The following were the principal orders other than that of the Golden Fleece. The *Order of St. Stephen of Hungary,* the royal Hungarian order, founded in 1764 by the empress Maria Theresa. The *Order of Leopold,* for civil and military service, was founded in 1808 by the emperor Francis I. in memory of his father Leopold II. The *Order of the Iron Crown, i.e.,* of Lombardy, was founded by Napoleon as king of Italy in 1809, and refounded as an Austrian order of civil and military merit in 1816 by the emperor Francis I. The *Order of Francis Joseph,* for personal merit of every kind, was founded in 1849 by the emperor Francis Joseph I. The *Order of Maria Theresa* was founded by the empress Maria Theresa in 1757. A purely military order, it was given to officers for personal distinguished conduct in the field. The *Order of Elizabeth Theresa,* also a military order for officers, was founded in 1750 by the will of Elizabeth Christina, widow of the emperor Charles VI. It was renovated in 1771 by her daughter, the empress Maria Theresa. The *Order of the Starry Cross,* for high-born ladies of the Roman Catholic faith who devoted themselves to good works, was founded in 1668 by the empress Eleanor, mother of Leopold I., to commemorate the recovery of a relic of the true cross from a fire in the palace at Vienna. The relic was supposed to have been peculiarly treasured by the emperor Maximilian I. and the emperor Frederick III. The *Order of Elizabeth,* also for ladies, was founded in 1898.

Belgium.—The *Order of Leopold,* for civil and military merit, was founded in 1832 by Leopold I., with four classes, a fifth being added in 1838. The badge is a white enamelled cross, with gold borders and balls, suspended from a royal crown and resting on a green laurel and oak wreath. In the centre a medallion, surrounded by a red fillet with the motto of the order, *L'union fait la force,* bears a golden Belgian lion on a black field. The ribbon is watered red. The *Order of the Iron Cross,* the badge of which is a black cross with gold borders, with a gold centre bearing a lion, was instituted by Leopold II. in 1867 as an order of civil merit. The military cross was instituted in 1885. There are also the following orders instituted by Leopold II. for service in the Congo State: the *Order of the African Star* (1888), the *Royal Order of the Lion* (1891) and the *Congo Star* (1889).

Bulgaria.—The *Order of SS. Cyril and Methodius* was instituted in 1909 by King Ferdinand to commemorate the elevation of the principality to the position of an independent kingdom. It now takes precedence of the *Order of St. Alexander,* which was founded by Prince Alexander in 1881, and reconstituted by Prince Ferdinand in 1888.

Denmark.—The *Order of the Elephant,* one of the chief European orders of knighthood, was, it is said, founded by Christian I. in 1462; a still earlier origin has been assigned to it, but its regular institution was that of Christian V. in 1693. The order, exclusive of the sovereign and his sons, is limited to 30 knights, who must be of the Protestant religion. The ribbon is light watered blue, the collar of alternate gold elephants with blue housings and towers, the star of silver with a purple medallion bearing a silver or brilliant cross surrounded by a silver laurel wreath. The motto is *Magnanime pretium.* The *Order of the Dannebrog* is, according to Danish tradition, of miraculous origin, and was founded by Valdemar II. in 1219 as a memorial of a victory over the Esthonians, won by the appearance in the sky

of a red banner bearing a white cross. Historically the order dates from the foundation in 1671 by Christian V. at the birth of his son Frederick. The badge of the order is, with variations for the different classes, a white enamelled Danish cross with red and gold borders, bearing in the centre the letter W (V) and on the four arms the inscription *Gud og Kongen* (For God and King). The ribbon is white with red edging.

Egypt.—Since the war, the king of Egypt has founded six new Orders. The chief of them is the *Order of Mohammed Ali* (1915), with three classes: the ribbon is of watered green silk with a white line near to each edge. In 1922 was founded the *Order of Ismail,* the second Egyptian Order; the ribbon dark blue with a stripe of red towards the edges. The *Order of the Nile* (1915) has a ribbon of watered blue silk with a golden-yellow stripe at each edge. For ladies is the *Order of Al Kamal* (1915). The other orders are those of *Agriculture* (1915) and of the *Military Star of King Fuad* (1919).

France.—*The Legion of Honour,* the only order of France, and one which in its higher grades ranks in estimation with the highest European orders, was instituted by Napoleon Bonaparte on May 19, 1802 (29 Floreal of the year X.), as a general military and civil order of merit. All soldiers on whom "swords of honour" had been already conferred were declared legionaries *ipso facto,* and all citizens after 25 years' service were declared eligible, whatever their birth, rank or religion. On admission all were to swear to co-operate so far as in them lay for the assertion of the principles of liberty and equality. The organization as laid down by Napoleon in 1804 was as follows: Napoleon was grand master; a grand council of seven grand officers administered the order; the order was divided into 15 "cohorts" of seven grand officers, 20 commanders, 30 officers and 350 legionaries, and at the headquarters of the cohorts, for which the territory of France was separated into 15 divisions, were maintained hospitals for the support of the sick and infirm legionaries. Salaries varying in each rank were attached to the order. In 1805 the rank of "Grand Eagle" (now Grand Cross or *Grand Cordon*) was instituted, taking precedence of the grand officers. At the Restoration many changes were made, the old military and religious orders were restored, and the *Legion of Honour,* now *Ordre Royale de la Légion d'Honneur,* took the lowest rank. The revolution of July 1830 restored the order to its unique place. The constitution of the order now rests on the decrees of March 16 and Nov. 24, 1852, the law of July 25, 1873, the decree of Dec. 29, 1892, and the laws of April 16, 1895, and Jan. 28, 1897, and a decree of June 26, 1900. The president of the republic is the grand master of the order; the administration is in the hands of a grand chancellor, who has a council of the order nominated by the grand master. The chancellery is housed in the *Palais de la Légion d'Honneur,* which, burnt during the Commune, was rebuilt in 1878. The order consists of the five classes of grand cross (limited to 80), grand officer (200), commander (1,000), officers (4,000), and chevalier or knight, in which the number is unlimited. These limitations in number do not affect the foreign recipients of the order. Salaries are attached to the military and naval recipients of the order when on the active list. The numbers of the recipients of the order *sans traitement* are limited through all classes. In ordinary circumstances 20 years of military, naval or civil service must have been performed before a candidate can be eligible for the rank of chevalier, and promotions can only be made after definite service in the lower rank. Extraordinary service in time of war and extraordinary services in civil life admit to any rank. Women have been decorated, notably Rosa Bonheur, Madame Curie and Madame Bartet. In the present order of the French republic the symbolical head of the republic appears in the centre, and a laurel wreath replaces the imperial crown; the inscription round the medallion is *République française.*

Among the orders swept away at the French Revolution, restored in part at the Restoration, and finally abolished at the revolution of July 1830 were the following: The *Order of St. Michael* was founded by Louis XI. in 1469 for a limited number of knights of noble birth. Later the numbers were so much increased under Charles IX. that it became known as *Le Collier à toutes bêtes.* In 1816 the order was granted for services in art and science. In view of the low esteem into which the *Order of St. Michael* had fallen, Henry III. founded in 1578 the *Order of the Holy Ghost* (*St. Esprit*). The badge of the order was a white Maltese cross decorated in gold, with the gold lilies of France at the angles, in the centre a white dove with wings outstretched, the ribbon was sky blue (*cordon bleu*). The *Order of St. Louis* was founded by Louis XIV. in 1693 for military merit, and the *Order of Military Merit* by Louis XV. in 1759, originally for Protestant officers.

Germany.—Officially, the old orders of the German empire have now ceased to exist, although the decorations are often worn.

i. *Anhalt.*—The *Order of Albert the Bear,* a family order or *Hausorden,* was founded in 1836 by the dukes Henry of Anhalt-Köthen, Leopold Frederick of Anhalt-Dessau and Alexander Charles of Anhalt-Bernburg.

ii. *Baden.*—The *Order of Fidelity or Loyalty* (*Hausorden der Treue*) was instituted by William, margrave of Baden-Durlach in 1715, and reconstituted in 1803 by the elector Charles Frederick. There was, in the end, only one class, for princes of the reigning house, foreign sovereigns and eminent men of the State. The military *Order of Charles Frederick* was founded in 1807. The order was conferred for long and meritorious military service. The *Order of the Zähringen Lion* was founded in 1812 in commemoration of the descent of the reigning house of Baden from the dukes of Zähringen. After 1896 the *Order of Berthold I.* was a distinct order; it was founded in 1877 as a higher class of the *Zähringen Lion.*

iii. *Bavaria.*—The *Order of St. Hubert,* one of the oldest and most distinguished knightly orders, was founded in 1444 by Duke Gerhard V. of Jülich-Berg in honour of a victory over Count Arnold of Egmont at Ravensberg on St. Hubert's day. The knights wore a collar of golden hunting horns, whence the order was also known as the *Order of the Horn;* the order fell into abeyance at the extinction of the dynasty in 1609. It was revived in 1708, and its constitution was altered at various times, its final form being given in 1808. The *Order of St. George,* said to have been founded in the 12th century as a crusading order and revived by the emperor Maximilian I. in 1494, dated historically from its institution in 1729 by the elector Charles Albert, afterwards the emperor Charles VII. It was confirmed by the elector Charles Theodore in 1778 and by the elector Maximilian Joseph IV. as the second Bavarian order. Besides the above Bavaria possessed the *Military Order of Maximilian Joseph,* 1806, and the *Civil Orders of Merit of St. Michael,* 1693, and of the *Bavarian Crown,* 1808. There were also the two illustrious orders for ladies, the *Order of Elizabeth,* founded in 1766, and the *Order of Theresa,* in 1827.

iv. *Brunswick.*—The *Order of Henry the Lion,* for military and civil merit, was founded by Duke William in 1834.

v. *Hanover.*—The *Order of St. George* was instituted by King Ernest Augustus I. in 1839 as the family order of the house of Hanover; the *Royal Guelphic Order* by George, prince regent, afterwards George IV. of Great Britain, in 1815; and the *Order of Ernest Augustus* by George V. of Hanover in 1865. These orders have not been conferred since 1866, when Hanover ceased to be a kingdom, and the *Royal Guelphic Order,* which from its institution was more British than Hanoverian, not since the death of William IV. in 1837. The last British grand cross was the late duke of Cambridge.

vi. *Hesse.*—Of the various orders founded by the houses of Hesse-Cassel and Hesse-Darmstadt the following survived in the grand duchy of Hesse. The *Order of Louis,* founded by the grand duke Louis I. of Hesse-Darmstadt in 1807; the *Order of Philip the Magnanimous,* founded by the grand duke Louis II. in 1840. The *Order of the Golden Lion* was founded in 1770 by the landgrave Frederick II. of Hesse-Cassel.

vii. *Mecklenburg.*—The grand duchies of Mecklenburg-Schwerin and Mecklenburg-Strelitz possessed jointly the *Order of the Wendish Crown,* founded in 1864 by the grand dukes Frederick Francis II. of Schwerin and Frederick William of Strelitz. The *Order of the Griffin,* founded in 1884 by Frederick Francis III.

of Schwerin, was made common to the duchies in 1904.

viii. *Oldenberg.*—The *Order of Duke Peter Frederick Louis,* a family order and order of merit, was founded by the grand duke Paul Frederick Augustus in 1838.

ix. *Prussia.*—The *Order of the Black Eagle* was founded in 1701 by the elector of Brandenburg, Frederick I., in memory of his coronation as king of Prussia. The order consisted of one class only and the original statutes limited the number, exclusive of the princes of the royal house and foreign members, to 30, but the number has been exceeded. It was only conferred on those of royal lineage and upon high officers of State. Only those who had received the *Order of the Red Eagle* were eligible. The *Order of the Red Eagle,* the second of the Prussian orders, was founded originally as the *Order of Sincerity* in 1705 by George William, hereditary prince of Brandenburg-Bayreuth. The original constitution and insignia were afterwards changed, with the exception of the red eagle which formed the centre of the cross of the badge. The order had almost fallen into oblivion when it was revived in 1734 by the margrave George Frederick Charles as the *Order of the Brandenburg Red Eagle.* On the cession of the principality to Prussia in 1791 the order was transferred and King Frederick William raised it to its high place in Prussian orders.

The *Order for Merit* (*Ordre pour le Mérite*), one of the most highly prized of European orders of merit, had two divisions, military and for science and art. It was originally founded by the electoral prince Frederick, afterwards Frederick I. of Prussia, in 1667 as the *Order of Generosity;* it was given its later name and granted for civil and military distinction by Frederick the Great, 1740. In 1810 the order was made one for military merit against the enemy in the field exclusively. In 1840 the class for distinction for science and art, or peace class, was founded by Frederick William IV. The number was limited to 30 German and 30 foreign members. The *Academy of Sciences and Arts* on a vacancy nominated three candidates, from which one was selected by the king. It is interesting to note that this was the only distinction which Thomas Carlyle would accept. The *Order of the Crown,* founded by William I. in 1861, ranked with the Red Eagle. Other Prussian orders were the *Order of William,* instituted by William II. in 1896; a Prussian branch of the knights of St. John of Jerusalem, *Johanniter Orden,* in its later form dating from 1893; and the family *Order of the House of Hohenzollern,* founded in 1851 by Frederick William IV. There was also for ladies the *Order of Service,* founded in 1814 by Frederick William III., in one class, but enlarged in 1850 and in 1865. The decoration of merit for ladies (*Verdienst-kreuz*) founded in 1870, was raised to an order in 1907. For the famous military decoration, the *Iron Cross, see* NUMISMATICS.

x. *Saxony.*—The *Order of the Crown of Rue* was founded as a family order by Frederick Augustus I. in 1807. It was of one class only, and the sons and nephews of the sovereign were born knights of the order. It was granted to foreign ruling princes and subjects of high rank. Other Saxon orders were the military *Order of St. Henry;* the *Order of Albert,* for civil and military merit; the *Order of Civil Merit,* 1815. For ladies there were the *Order of Sidonia,* 1870, in memory of the wife of Albert the Bold, the mother of the Albertine line; and the *Maria Anna Order,* 1906.

xi. The duchies of *Saxe Altenburg, Saxe Coburg Gotha* and *Saxe Meiningen* had in common the family *Order of Ernest,* founded in 1833 in memory of Duke Ernest the Pious of Saxe Gotha and as a revival of the *Order of German Integrity* founded in 1690. Saxe Coburg Gotha and Saxe Meiningen had also separate crosses of merit in science and art.

xii. *Saxe Weimar.*—The *Order of the White Falcon* or *of Vigilance* was founded in 1732 and renewed in 1815.

xiii. *Württemberg.*—The *Order of the Crown of Württemberg* was founded in 1818, uniting the former *Order of the Golden Eagle* and an order of civil merit. Besides the military *Order of Merit* founded in 1759, and the silver cross of merit, 1900, Württemberg had also the *Order of Frederick,* 1830, and the *Order of Olga,* 1871, which was granted to ladies as well as men.

Greece.—The *Order of the Redeemer* was founded as such in 1833 by King Otto, being a conversion of a decoration of honour instituted in 1829 by the National Assembly at Argos. There were five classes, the numbers being regulated for each. In 1912 was instituted the *Order of George I.*

Holland.—The *Order of William,* for military merit, was founded in 1815 by William I.; there are four classes; the badge is a white cross resting on a green laurel Burgundian cross, in the centre the Burgundian flint-steel, as in the order of the Golden Fleece. The motto *Voor Moed, Beleid, Trouw* (for Valour, Devotion, Loyalty), appears on the arms of the cross. The cross is surmounted by a jewelled crown; the ribbon is orange with dark blue edging. The *Order of the Netherlands Lion,* for civil merit, was founded in 1818. The family *Order of the Golden Lion of Nassau* passed in 1890 to the grand duchy of Luxembourg (*see* under *Luxemburg*). In 1892 Queen Wilhelmina instituted the *Order of Orange-Nassau.* The *Teutonic Order* (*q.v.*), surviving in the Ballarde (Bailiwick) of Utrecht, was officially established in the Netherlands by the States General in 1580. It was abolished by Napoleon in 1811 and was restored in 1815.

Italy.—The *Order of the Annunziata,* the highest order of knighthood of the Italian kingdom, was instituted in 1362 by Amadeus VI., count of Savoy, as the Order of the Collare or Collar, from the silver collar made up of love-knots and roses, which was its badge, in honour of the 15 joys of the Virgin; hence the number of the knights was restricted to 15, the 15 chaplains recited 15 masses each day, and the clauses of the original statute of the order were 15 (Amadeus VIII. added five others in 1434). Charles III. decreed that the order should be called the Annunziata, and made some other alterations in 1518. His son and successor, Emmanuel Philibert, made further modifications in the statute and the costume. The knights of the Annunziata have the title of "cousins of the king," and enjoy precedence over all the other officials of the State. The costume of the order is of white satin embroidered in silk, with a purple velvet cloak adorned with roses and gold embroidery, but it is now never worn; in the collar the motto *Fert* is inserted, on the meaning of which there is great uncertainty, and from it hangs a pendant enclosing a medallion representing the Annunciation. The motto has been taken as the Latin word meaning "he bears" or as representing the initials of the legend *Fortitudo Ejus Rhodum Tenuit,* with an allusion to a defence of the island of Rhodes by an ancient count of Savoy.

The *Order of St. Maurice and St. Lazarus* (SS. Maurizio e Lazzaro), is a combination of two ancient orders. The Order of St. Maurice was originally founded by Amadeus VIII., duke of Savoy, in 1434, when he retired to the hermitage of Ripaille, and consisted of a group of half-a-dozen councillors who were to advise him on such affairs of State as he continued to control. When he became pope as Felix V. the order practically ceased to exist. It was re-established at the instance of Emmanuel Philibert by Pope Pius V. in 1572 as a military and religious order, and the following year it was united to that of St. Lazarus by Gregory XIII. The latter order had been founded as a military and religious community at the time of the Latin kingdom of Jerusalem with the object of assisting lepers, many of whom were among its members. Popes, princes and nobles endowed it with estates and privileges, including that of administering and succeeding to the property of lepers, which eventually led to grave abuses. With the advance of the Saracens the knights of St. Lazarus, when driven from the Holy Land and Egypt, migrated to France (1291) and Naples (1311), where they founded leper hospitals. The order in Naples, which alone was afterwards recognized as the legitimate descendant of the Jerusalem community, was empowered to seize and confine anyone suspected of leprosy, a permission which led to the establishment of a regular inquisitorial system of blackmail. In the 15th and 16th centuries the order declined in credit and wealth, until finally the grand master resigned his position in favour of Emmanuel Philibert, duke of Savoy, in 1571. Two years later the orders of St. Lazarus and St. Maurice were incorporated into one community, the members of which were to devote themselves to the defence of the Holy See and to fight its enemies as well as to continue assisting lepers. The galleys of the order subsequently took part in

various expeditions against the Turks and the Barbary pirates. Leprosy, which had almost disappeared in the 17th century, broke out once more in the 18th, and in 1773 a hospital was established by the order at Aosta. The knighthood of St. Maurice and St. Lazarus is now a dignity conferred by the king of Italy (the grand master) on persons distinguished in the public service, science, art and letters, trade, and above all in charitable works, to which its income is devoted.

The military *Order of Savoy* was founded in 1815 by Victor Emmanuel of Sardinia; badge modified 1855 and 1857. The *Civil Order of Savoy,* founded in 1831 by Charles Albert of Sardinia, is of one class, and is limited to 60 members. The *Order of the Crown of Italy* was founded in 1868 by Victor Emmanuel II. in commemoration of the union of Italy into a kingdom.

Luxemburg.—The *Order of the Golden Lion* was founded as a family order of the house of Nassau by William III. of the Netherlands and Adolphus of Nassau jointly. On the death of William in 1890 it passed to the grand duke of Luxemburg. The *Order of Adolphus of Nassau,* for civil and military merit, was founded in 1858, and the *Order of the Oak Crown* as a general order of merit in 1841, modified 1858.

Monaco.—The *Order of St. Charles* was founded in 1858 by Prince Charles III. and remodelled in 1863. It is a general order of merit.

Montenegro.—The *Order of St. Peter,* founded in 1852, was a family order, in one class, and only given to members of the princely family; the *Order of Danilo,* or of the *Independence of Montenegro,* was a general order of merit also founded in 1852.

Norway.—The *Order of St. Olaf* was founded in 1847 by Oscar I. in honour of St. Olaf, the founder of Christianity in Norway, as a general order of merit, military and civil. The *Order of the Norwegian Lion,* founded in 1904 by Oscar II., has only one class; foreigners on whom the order is conferred must be sovereigns or heads of States or members of reigning houses.

Papal.—The arrangement and constitution of the papal orders was remodelled by a brief of Pius X. in 1905. The *Order of Christ,* the supreme pontifical order, is of one class only; for the history of this ancient order see *Portugal* (*infra*). The *Order of Pius* was founded in 1847 by Pius IX. The *Order of St. Gregory the Great,* founded in 1831, is in two divisions, civil and military. The *Order of St. Sylvester* was originally founded as the *Order of the Golden Spur* by Paul IV. in 1559 as a military body, though tradition assigns it to Constantine the Great and Pope Sylvester. It was reorganized as an order of merit by Gregory XVI. in 1841. In 1905 the order was divided into three classes, and a separate order, that of the *Golden Spur* or *Golden Legion* (*Militia Aurata*) was established, in one class, with the numbers limited to 100. The cross *Pro Ecclesia et Pontifice* instituted by Leo XIII. in 1888 is a decoration, not an order. There remains the venerable *Order of the Holy Sepulchre,* of which tradition assigns the foundation to Godfrey de Bouillon. It was, however, probably founded as a military order for the protection of the Holy Sepulchre by Alexander VI. in 1496. The right to nominate to the order was shared with the pope as grand master by the guardian of the *Patres Minores* in Jerusalem, later by the Franciscans, and then by the Latin patriarch in Jerusalem. In 1905 the latter was nominated grand master, but the pope reserves the joint right of nomination. The badge of the order is a red Jerusalem cross with red Latin crosses in the angles.

Poland.—Since the restoration of Polish freedom, the old *Order of the White Eagle* has been set up again. It is given only for exceptional service: the ribbon is light blue. The origin of the *Order of Polonia Restituta* needs no explanation. There are five classes; the badge is a white cross with the eagle of Poland on it; the ribbon consisting of the Polish national colours, red with white edges.

Portugal.—The *Order of Christ* was founded on the abolition of the Templars by Diniz of Portugal in 1318 in conjunction with Pope John XXII., both having the right to nominate to the order. The papal branch survives as a distinct order. In 1522 it was formed as a distinct Portuguese order and the grand mastership vested in the crown of Portugal. In 1789 its original religious aspect was abandoned, and with the exception that its members had to be of the Roman Catholic faith, it was entirely secularized. The *Order of the Tower and Sword* was founded in 1808 in Brazil by the regent, afterwards King John VI. of Portugal, as a revival of the old *Order of the Sword,* said to have been founded by Alfonso V. in 1459. It was remodelled in 1832 under its later name as a general order of military and civil merit. The *Order of St. Benedict of Aviz* (earlier of *Evora*), founded in 1162 as a religious military order, was secularized in 1789 as an order of military merit. The *Order of St. James of the Sword,* or James of Compostella, was a branch of the Spanish order of that name (*see* below under Spain). It also was secularized in 1789, and in 1862 was constituted an order of merit for science, literature and art. In 1789 these three orders were granted a common badge uniting the three separate crosses in a gold medallion; to the separate crosses was added a red sacred heart and small white cross. There were also the *Order of Our Lady of Villa Viçosa* (1819), for both sexes, and the *Order of St. Isabella,* 1801, for ladies.

Rumania.—The *Order of the Star of Rumania* was founded in 1877, and the *Order of the Crown of Rumania* in 1881, for civil and military merit; the ribbon of the first is red with blue borders, of the second light blue with two silver stripes.

Russia.—The *Order of St. Andrew* was founded in 1698 by Peter the Great. It was the chief order of the empire, and admission carried with it according to the statutes of 1720 the orders of *St. Anne, Alexander Nevsky,* and the *White Eagle;* there was only one class. The *Order of St. Catherine,* for ladies, ranked next to the St. Andrew. It was founded under the name of the *Order of Rescue* by Peter the Great in 1714 in honour of the empress Catherine and the part she had taken in rescuing him at the battle of the Pruth in 1711. The *Order of St. Alexander Nevsky* was founded in 1725 by the empress Catherine I. The *Order of the White Eagle* was founded in 1713 by Augustus II. of Poland and was adopted as a Russian order in 1831. The *Order of St. Anne* was founded by Charles Frederick, duke of Holstein-Gottorp in 1735 in honour of his wife, Anna Petrovna, daughter of Peter the Great. It was adopted as a Russian order in 1797 by their grandson, the emperor Paul. Other orders were those of *St. Vladimir,* founded by Catherine II., 1782, and of *St. Stanislaus,* founded originally as a Polish order by Stanislaus Augustus Poniatowski in 1765, and adopted as a Russian order in 1831. The military *Order of St. George* was founded by the empress Catherine II. in 1769 for military service on land and sea, with four classes; a fifth class for non-commissioned officers and men, the *St. George's Cross,* was added in 1807. [These orders were naturally ended by the Soviet revolution which has given rise to the *Order of the Red Flag,* for service to the international revolution, an order which perhaps does not come under this heading.]

Spain.—The branch of the *Order of the Golden Fleece* has been dealt with above. The three most ancient orders of Spain—of *St. James of Compostella,* or *St. James of the Sword,* of *Alcantara* and of *Calatrava*—still exist as orders of merit, the last two as orders of military merit. They were all originally founded as military religious orders, like the crusading Templars, and the Hospitallers, but to fight for the true faith against the Moors in Spain. The present badges of the orders represent the crosses that the knights wore on their mantles. That of St. James of Compostella is the red lily-hilted sword of St. James; the ribbon is also red. The other two orders wear the cross *fleury—Alcantara* red, *Calatrava* green, with corresponding ribbons. A short history of these orders may be here given. Tradition gives the foundation of the *Order of Knights of St. James of Compostella* to Ramiro II., king of Leon, in the 10th century, to commemorate a victory over the Moors, but, historically the order dates from the confirmation in 1175 by Pope Alexander III. It gained great reputation in the wars against the Moors and became very wealthy. In 1493 the grand-mastership was annexed by Ferdinand the Catholic, and was vested permanently in the crown of Spain by Pope Adrian VI. in 1522.

The *Order of Knights of Alcantara,* instituted about 1156 by

the brothers Don Suarez and Don Gomez de Barrientos for protection against the Moors. In 1177 they were confirmed as a religious order of knighthood under Benedictine rule by Pope Alexander III. Until about 1213 they were known as the Knights of San Julian del Pereyro; but when the defence of Alcantara, newly wrested from the Moors by Alphonso IX. of Castile, was entrusted to them they took their name from that city. For a considerable time they were in some degree subject to the grand master of the kindred order of Calatrava. Ultimately, however, they asserted their independence by electing a grand master of their own. During the rule of 37 successive grand masters, similarly chosen, the influence and wealth of the order gradually increased until the Knights of Alcantara were almost as powerful as the sovereign. In 1494–95 Juan de Zuñiga was prevailed upon to resign the grand-mastership to Ferdinand, who thereupon vested it in his own person as king; and this arrangement was ratified by a bull of Pope Alexander VI., and was declared permanent by Pope Adrian VI. in 1523. In 1540 Pope Paul III. released the knights from the strictness of Benedictine rule by giving them permission to marry, though second marriage was forbidden. The three vows were henceforth *obedientia, castitas conjugalis* and *conversio morum.* In modern times the history of the order has been somewhat chequered. When Joseph Bonaparte became king of Spain in 1808, he deprived the knights of their revenues, which were only partially recovered on the restoration of Ferdinand VII. in 1814. The order ceased to exist as a spiritual body in 1835.

The *Order of Knights of Calatrava* was founded in 1158 by Don Sancho III. of Castile, who presented the town of Calatrava, newly wrested from the Moors, to them to guard. In 1164 Pope Alexander III. granted confirmation as a religious military order under Cistercian rule. In 1197 Calatrava fell into the hands of the Moors and the order removed to the castle of Salvatierra, but recovered their town in 1212. In 1489 Ferdinand seized the grand-mastership, and it was finally vested in the crown of Spain in 1523. The order became a military order of merit in 1808 and was reorganized in 1874. The *Royal and Illustrious Order of Charles III.* was founded in 1771 by Charles III.; it was abolished by Joseph Bonaparte in 1809, together with all the Spanish orders except the Golden Fleece, and the *Royal Order of the Knights of Spain* was established. In 1814 Ferdinand VII. revived the order. The *Order of Isabella the Catholic* was founded in 1815 under the patronage of St. Isabella, wife of Diniz of Portugal; originally instituted to reward loyalty in defence of the Spanish possessions in America, it is now a general order of merit. Other Spanish orders are the *Maria Louisa,* 1792, for noble ladies; the military and naval orders of merit of *St. Ferdinand,* founded by the Cortes in 1811; of *St. Ermenegild* (*Hermenegildo*), 1814; of *Military Merit* and *Naval Merit,* 1866, and of *Maria Christina,* 1890; the *Order of Beneficencia* for civil merit, 1856; that of *Alfonso XII.* for merit in science, literature and art, 1902, and the *Civil Order of Alfonso XII.,* 1902.

Sweden.—The *Order of the Seraphim* (the "Blue Ribbon"). Tradition attributes the foundation of this most illustrious order of knighthood to Magnus I. in 1280; more certainty attaches to the fact that the order was in existence in 1336. In its modern form the order dates from its reconstitution in 1748 by Frederick I. Exclusive of the sovereign and the princes of the blood, the order is limited to 23 Swedish and eight foreign members. The native members must be already members of the *Order of the Sword* or the *Pole Star.* There is a prelate of the order which is administered by a chapter; the chapel of the knights is in the Riddar Holmskyrka at Stockholm. The collar is formed of alternate gold seraphim and blue enamelled patriarchal crosses. The motto is *Iesus Hominum Salvator.* The *Order of the Sword* (the "Yellow Ribbon"), the principal Swedish military order, was founded, it is said, by Gustavus I. Vasa in 1522, and was re-established by Frederick I., with the *Seraphim* and the *Pole Star* in 1748. The *Order of the Pole Star* (*Polar Star, North Star,* the "Black Ribbon"), was founded in 1748 for civil merit. The *Order of Vasa* (the "Green Ribbon"), was founded by Gustavus III. in 1772 as an order of merit for services rendered to the national industries and manufactures. The *Order of Charles XIII.,* founded in 1811, is granted to Freemasons of high degree. It is thus quite unique.

Turkey.—The *Nischan-i-Imtiaz,* or *Order of Privilege,* was founded by Abdul Hamid II. in 1879 as a general order of merit in one class; the *Nischan-el-Iftikhar,* or *Order of Glory,* also one class, founded 1831 by Mahmoud II.; the *Nischan-i-Mejidi,* the *Mejidieh,* was founded as a civil and military order of merit in 1852 by Abdul-Mejid. The *Nischan-i-Osmanie,* the *Osmanieh,* for civil and military merit, was founded by Abdul Aziz in 1862. The *Nischan-i-Schefakat of Compassion or Benevolence,* was instituted for ladies in 1878 by the sultan in honour of the work done for the non-combatant victims of the Russo-Turkish war of 1877. There was also the family order, for Turkish princes, the *Hanédani-Ali-Osman,* founded in 1893, and the *Ertogroul,* in 1903.

Yugoslavia.—The *Order of the White Eagle,* the principal order, was founded by Milan I. in 1882; the ribbon is blue and red; the *Order of St. Sava,* founded 1883, is an order of merit for science and art; the *Order of the Star of Karageorgevitch,* was founded by Peter I. in 1904. The orders of *Milosch the Great,* founded by Alexander I. in 1898 and of *Takovo,* founded originally by Michael Obrenovitch in 1863, reconstituted in 1883, are since the dynastic revolution of 1903 no longer bestowed. The *Order of St. Lazarus* is not a general order, the cross and collar being only worn by the king.

Estonia has established the *Liberty Cross; Finland* the *White Rose of Finland; Latvia* the *Order of the Three Stars.*

Non-European Orders.—Of the various States of Central and South America, Nicaragua has the *American Order of San Juan* or *Grey Town,* founded in 1857; and Venezuela that of the *Bust of Bolivar,* 1854. Mexico has abolished its former orders, the *Mexican Eagle,* 1865, and *Our Lady of Guadalupe,* 1853; as has Brazil those of the *Southern Cross,* 1822, *Dom Pedro I.,* 1826, *the Rose,* 1829, and the Brazilian branches of the Portuguese orders of *Christ, St. Benedict of Aviz* and *St. James.* The republican *Order of Columbus,* founded in 1890, was abolished in 1891.

China.—There were no orders for natives, and such distinctions as were conferred by the different coloured buttons of the mandarins, the grades indicated by the number of peacock's feathers, the gift of the yellow jacket and the like, were rather insignia of rank or personal marks of honour than orders in the European sense. For foreigners, however, the emperor in 1882 established the sole order, that of the *Imperial Double Dragon.* The recipients eligible for the various classes were graded, from the first grade of the first class for reigning sovereigns down to the fifth class for merchants and manufacturers.

Japan.—The Japanese orders were all instituted by the emperor Mutsu Hito. In design and workmanship the insignia of the orders are beautiful examples of the art of the native enamellers. The *Order of the Chrysanthemum* (*Kikkwa Daijasho*), founded in 1877, has only one class. It is but rarely conferred on others than members of the royal house or foreign rulers or princes. The *Order of the Paulownia Sun* (*Tokwa Daijasho*), founded in 1888, in one class, may be in a sense regarded as the highest class of the *Rising Sun* (*Kiokujitsasho*) founded in eight classes, in 1875. The badge of both orders is essentially the same, viz., the red sun with white and gold rays; in the former the lilac flowers of the Paulownia tree, the flower of the Tycoon's arms, take a prominent part. The last two classes of the *Rising Sun* wear a decoration formed of the Paulownia flower and leaves. The *Order of the Mirror* or *Happy Sacred Treasure* (*Zaihosho*) was founded in 1888. There is also an order for ladies, that of the *Crown,* founded in 1888. The military order of Japan is the *Order of the Golden Kite,* founded in 1890.

Persia.—The *Order of the Sun and Lion,* founded by Fath 'Ali Shāh in 1808, had five classes. It is understood that the creation by the present Shah of a new set of orders and decorations, is imminent.

Siam.—The *Sacred Order,* or the *Nine Precious Stones,* was founded in 1869, in one class only, for the Buddhist princes of the royal house. The *Order of the White Elephant,* founded in 1861, is the principal general order. The badge is a striking exam-

ple of oriental design adapted to a European conventional form. The circular plaque is formed of a triple circle of lotus leaves in gold, red and green, within a blue circlet with pearls a richly caparisoned white elephant on a gold ground, the whole surmounted by the jewelled gold pagoda crown of Siam; the collar is formed of alternate white elephants, red, blue and white royal monograms and gold pagoda crowns. Other orders are the *Siamese Crown* (*Mongkut Siam*), founded 1869; the family *Order of Chulah-Chon-Clao,* 1873; and the *Maha Charkrkri,* 1884, only for princes and princesses of the reigning family. (C. We.)

KNIGHT-SERVICE, the dominant and distinctive tenure of land under the feudal system. Its origin may be traced to the mailed horseman, armed with lance and sword, who became the most important factor in battle. This novel system was introduced after the Conquest by the Normans, who relied essentially on their mounted knights, while the English fought on foot. They were already familiar with the principle of knight-service, the knight's fee, as it came to be termed in England, being represented in Normandy by the *fief du haubert,* so termed from the hauberk or coat of mail (*lorica*) which was worn by the knight. The coronation charter of Henry I. (1100) speaks of those holding by knight-service as *milites qui per loricam terras suas deserviunt.*

The Conqueror divided the lay lands of England among his followers, to be held by the service of a fixed number of knights in his host, and imposed the same service on most of the great ecclesiastical bodies. No record evidence exists of this action on his part, and the quota of knight-service exacted was not determined by the area or value of the lands granted, but was based upon the *unit* of the feudal host, the *constabularia* of ten knights. Of the tenants-in-chief or barons (*i.e.,* those who held directly of the Crown), the chief ones were called on to find one or more of such units, while of the lesser ones some were called on for five knights, *i.e.,* half a *constabularia.* The same system was adopted in Ireland when that country was conquered under Henry II. The baron who had been enfeoffed by his sovereign on these terms could provide the knights required either by hiring them for pay or, more conveniently when wealth was mainly represented by land, by a process of subenfeoffment, analogous to that by which he himself had been enfeoffed.

The primary obligation incumbent on every knight was service in the field, when called upon, for 40 days a year, with specified armour and arms. There was, however, a standing dispute as to whether he could be called upon to perform this service outside the realm, nor was the question of his expenses free from difficulty. In addition to this primary duty he had, in numerous cases at least, to perform that of "castle ward" at his lord's chief castle for a fixed number of days in the year. On certain baronies also was incumbent the duty of providing knights for the guard of royal castles, such as Windsor, Rockingham and Dover. Under the feudal system the tenant by knight-service had also the same pecuniary obligations to his lord as had his lord to the king. These consisted of (1) "relief," which he paid on succeeding to his lands; (2) "wardship," *i.e.,* the profits from his lands during a minority; (3) "marriage," *i.e.,* the right of giving in marriage, unless bought off, his heiress, his heir (if a minor) and his widow; and also of the three "aids" (*q.v.*). The chief sources of information for the extent and development of knight-service are the returns (*cartae*) of the barons (*i.e.,* the tenants-in-chief) in 1166, informing the king, at his request, of the names of their tenants by knight-service with the number of fees they held, supplemented by the payments for "scutage" (*q.v.*) recorded on the pipe-rolls, by the later returns printed in the *Testa de Nevill,* and by the still later ones collected in *Feudal Aids.* In the returns made in 1166 some of the barons appear as having enfeoffed more and some less than the number of knights they had to find. In the latter case they described the balance as being chargeable on their "demesne," *i.e.,* on the portion of their fief which remained in their own hands. These returns further prove that lands had already been granted for the service of a fraction of a knight, such service being in practice already commuted for a proportionate money payment; and they show that the total number of knights with which land held by military service was charged was not, as was formerly supposed, 60,000, but probably somewhere between 5,000 and 6,000. Similar returns were made for Normandy, and are valuable for the light they throw on its system of knight-service.

The principle of commuting for money the obligation of military service struck at the root of the whole system, and so complete was the change of conception that "tenure by knight-service of a mesne lord becomes, first in fact and then in law, tenure by escuage (*i.e.,* scutage)." By the time of Henry III., as Bracton states, the test of tenure was scutage; liability, however small, to scutage payment made the tenure military.

The disintegration of the system was carried farther in the latter half of the 13th century as a consequence of changes in warfare, which were increasing the importance of foot soldiers and making the service of a knight for 40 days of less value to the king. The barons, instead of paying scutage, compounded for their service by the payment of lump sums, and, by a process which is still obscure, the nominal quotas of knight-service due from each had, by the time of Edward I., been largely reduced. The knight's fee, however, remained a knight's fee, and the pecuniary incidents of military tenure, especially wardship, marriage and fines on alienation, long continued to be a source of revenue to the Crown. But at the Restoration tenure by knight-service was abolished by 12 Car. II. *c.* 24, and these vexatious exactions disappeared.

Bibliography.—For the returns of 1166 *see* the *Liber Niger,* ed. by Hearne, and the *Liber Rubeus* or *Red Book of the Exchequer,* ed. by Hall. The later returns are in *Testa de Nevill* (Record Commission, 1807) and in the Record Office volumes of *Feudal Aids,* arranged under counties. For the financial side *see* the early pipe-rolls of the Record Commission and the Pipe Roll Society, and abstracts of later ones in *The Red Book of the Exchequer;* but the editor's view must be received with caution and checked by J. H. Round's *Studies on the Red Book of the Exchequer* (for private circulation). The *Baronia Anglica* of Madox may also be consulted. The existing theory on knight-service was enunciated by Mr. Round in *English Historical Review,* vi., vii., and reissued by him in his *Feudal England* (1895). It is accepted by Pollock and Maitland (*Hist. Eng. Law*), who discuss the question at length; by J. F. Baldwin in his *Scutage and Knight-service in England* (Univ. of Chicago Press, 1897), a valuable monograph with bibl.; and by Petit-Dutaillis, in his *Studies supplementary to Stubbs' Constitutional History* (Manchester Univ. Series, 1908). (J. H. R.)

KNIGHTS OF COLUMBUS, THE, the leading Catholic laymen's organization in the world, was founded by the Rev. M. J. McGivney in 1882 in New Haven, Conn. From an original membership of 11 it grew from city to city in Connecticut and then from state to state and beyond U.S. boundaries. Its membership in 1943 was 425,809. It operates in the United States and its possessions, in Canada, Newfoundland, Mexico and Cuba. The primary object of the Knights of Columbus is to associate Catholic men for religious and civic usefulness.

There are four degrees of membership, none having any secret or oath-bound stipulation. The Knights have maintained, since their inception, an insurance feature for members. Non-insurance members are associates. Previous to their emergence into general public notice as an agency of war welfare work the Knights had done educational and social work. In launching a new movement for boys in 1928, the Columbian Squires, the Knights undertook the task of organizing Catholic youth in the seven countries in which the order operates, where a demand for such organization was felt to justify it.

KNIGHTS OF THE GOLDEN CIRCLE, a semi-military secret society in the United States, in the Middle West, 1861–64, the purpose of which was to bring the Civil War to a close and restore the "Union as it was." After the outbreak of the Civil War many of the Democrats of the Middle West, who were opposed to the war policy of the Republicans, organized the Knights of the Golden Circle, pledging themselves to exert their influence to bring about peace. In 1863, owing to the disclosure of some of its secrets, the organization took the name of Order of American Knights, and in 1864 this became the Sons of Liberty. The total membership of this order probably reached 250,000 to 300,000, principally in Ohio, Indiana, Illinois, Iowa, Wisconsin, Kentucky and south-western Pennsylvania. Fernando Wood of New York seems to have been the chief officer and in 1864 Clement L. Vallandigham of Ohio was second in command. The

great importance of the Knights of the Golden Circle and its successors was due to their opposition to the war policy of the Republican administration. The plan was to overthrow the Lincoln government in the elections and give to the Democrats the control of the state and Federal governments, which would then make peace and invite the Southern States to come back into the Union on the old footing. The most effective work done by the order was in encouraging desertion from the Federal armies, preventing enlistments and resisting the draft. Wholesale arrests of leaders and numerous seizures of arms by the United States authorities resulted in a general collapse of the order late in 1864. Three of the leaders were sentenced to death by military commissions, but sentence was suspended until 1866, when they were released under a decision of the United States Supreme Court.

AUTHORITIES.—*An Authentic Exposition of the Knights of the Golden Circle* (Indianapolis, 1863); E. McPherson, *Political History of the Rebellion* (Washington, 1876); and W. D. Foulke, *Life of O. P. Morton* (2 vols., 1899); *Treason History of Sons of Liberty*, F. G. Stidger (Chicago, 1903); J. F. Rhodes, *History of the United States from the Compromise of 1850*, vol. v. (1905).

KNIPPERDOLLINCK or **KNIPPERDOLLING, BERNT** (BEREND or BERNHARDT) (*c.* 1490–1536), German divine, was a prosperous cloth-merchant at Münster when in 1524 he joined Melchior Rinck and Melchior Hofmann in a business journey to Stockholm, which developed into an abortive religious errand. Knipperdollinck, a man of fine presence and glib tongue, noted from his youth for eccentricity, had the ear of the Münster populace when in 1527 he helped to break the prison of Tonies Kruse, in the teeth of the bishop and the civic authorities. For this he made his peace with the latter; but, venturing on another business journey, he was arrested, imprisoned for a year, and released on payment of a high fine—in regard of which treatment he began an action before the Imperial Chamber. Though his aims were political rather than religious, he attached himself to the reforming movement of Bernhardt Rothmann, once (1529) chaplain of St. Mauritz, outside Münster, now (1532) pastor of the city church of St. Lamberti. A new bishop directed a mandate (April 17, 1532) against Rothmann, which had the effect of alienating the moderates in Münster from the democrats.

Knipperdollinck was a leader of the democrats in the surprise (Dec. 26, 1532) which made prisoners of the negotiating nobles at Telgte, in the territory of Münster. In the end, Münster was by charter from Philip of Hesse (Feb. 14, 1533) constituted an evangelical city. Knipperdollinck was made a burgomaster in Feb. 1534. Anabaptism had already (Sept. 8, 1533) been proclaimed at Münster by a journeyman smith; and, before this, Heinrich Roll, a refugee, had brought Rothmann (May 1533) to a rejection of infant baptism. From Jan. 1, 1534, Roll preached Anabaptist doctrines in a city pulpit; a few days later, two Dutch emissaries of Jan Matthysz, or Matthyssen, the master-baker and Anabaptist prophet of Haarlem, came on a mission to Münster. They were followed (Jan. 13) by Jan Beukelsz (or Bockelszoon, or Buchholdt), better known as John of Leyden. It was his second visit to Münster; he came now as an apostle of Matthysz. He was 25, with a winning personality, great gifts as an organizer, and plenty of ambition. Knipperdollinck, whose daughter Clara was ultimately enrolled among the wives of John of Leyden, came under his influence. Matthysz himself came to Münster (1534) and lived in Knipperdollinck's house, which became the centre of the new movement to substitute Münster for Strasbourg (Melchior Hofmann's choice) as the New Jerusalem. On the death of Matthysz, in a foolish raid (April 5, 1534), John became supreme.

Knipperdollinck, with one attempt at revolt, when he claimed the kingship for himself, was his subservient henchman, wheedling the Münster democracy into subjection to the fantastic rule of the "king of the earth." He was made second in command, and executioner of the refractory. He fell in with the polygamy innovation, the protest of his wife being visited with a penance. In the military measures for resisting the siege of Münster he took no leading part. On the fall of the city (June 25, 1535) he hid in a dwelling in the city wall, but was betrayed by his landlady. After six months' incarceration, his trial, along with his comrades, took place on Jan. 19, and his execution, with fearful tortures, on Jan. 22, 1536. Knipperdollinck attempted to strangle himself, but was forced to endure the worst. His body, like those of the others, was hung in a cage on the tower of St. Lamberti, where the cages are still to be seen. An alleged portrait, from an engraving of 1607, is reproduced in the appendix to A. Ross's *Pansebeia* (1655).

See L. Keller, *Geschichte der Wiedertäufer und ihres Reichs zu Münster* (1880); C. A. Cornelius, *Historische Arbeiten* (1899); E. Belfort Bax, *Rise and Fall of the Anabaptists* (1903). (A. Go.)

KNITTING. Fabrics consisting of joined loops are formed by knitting or crocheting. Both types of fabric are produced on or with needles by a manual manipulation. In knitting, the two or more needles used are usually made of stiff metal, bone, or ivory, pointed at one or both ends; although a single flexible needle has been evolved, pointed at each end, which can readily be bent into a circle, with which either tubular or selvaged fabrics can be formed, thereby eliminating needles that are loose from the fabric. If the new loops are all drawn through previous loops in one direction, plain fabric results; loops drawn through in the other direction are known as purled loops. If plain and purled loops alternate in the rows, the result is ribbed fabric. If rows or courses of loops are drawn alternately to the fabric face and back, links-and-links fabric will be produced and designs can be formed by so doing in part courses or with selected loops only. Other designs can be produced in knitted fabric by drawing a new loop through more than one loop at a time, thereby forming eyelet or lace fabric. By not drawing a new loop through an old loop for one or a number of courses, the loop, when it is cast off by having a new loop drawn through it and the float threads, forms a tuck stitch. In addition to ribbing, eyeleting, purling, and tucking, there are a great number of other types of loops, so that a great variety of patterns can be produced. Knitted fabrics can readily be widened by casting an additional loop or loops on the needle, or narrowed by bringing two loops together. Crocheted fabrics are also formed of joined loops, but the loops of such fabric are not retained on long needles or wires, the yarn being interlooped in the wale vertically, and not crosswise of the fabric which is the case in knitted fabrics, where chains of loops are formed with a hooked needle. The first wale of a new fabric is merely formed as a chain, with the second and subsequent wales similarly formed, but with the yarn drawn through an adjacent wale. A much greater variety of patterns can be produced by crocheting, than by knitting. (*See* also HOSIERY.) (M. C. Mi.)

KNOBKERRIE, a strong, short stick with a rounded knob or head used by the natives of South Africa in warfare and the chase (from the Taal or South African Dutch, *knopkirie,* derived from Du. *knop,* a knob or button, and *kerrie,* a Bushman or Hottentot word for stick). It is employed at close quarters, or as a missile, and in time of peace serves as a walking-stick. The name has been extended to similar weapons used by the natives of Australia, the Pacific islands, and other places.

KNOLLES, RICHARD (*c.* 1545–1610), English historian, a native of Northamptonshire, was educated at Lincoln college, Oxford. He became a fellow of his college, and was master of a school at Sandwich, Kent, where he died in 1610. In 1603 Knolles published his *Generall Historie of the Turkes,* of which several editions subsequently appeared, among them a good one edited by Sir Paul Rycaut (1700), who brought the history down to 1699. It was dedicated to King James I., and Knolles availed himself largely of Jean Jacques Boissard's *Vitae et Icones Sultanorum Turcicorum* (Frankfort, 1596).

See the *Athenaeum,* Aug. 6, 1881.

KNOLLES (or KNOLLYS), SIR ROBERT (*c.* 1325–1407), English soldier, belonged to a Cheshire family. In 1346 he served in Brittany, and he was one of the English survivors who were taken prisoners by the French after the famous "combat of the thirty" in March 1351. He was soon released and took advantage of the civil war in Brittany to win fame and wealth. In 1356 he transferred his operations to Normandy, when he served under the allied standards of England and of Charles II. of Navarre. He led the "great company" in their work of devastation along the valley of the Loire, winning a terrible reputation by his

ravages. After the treaty of Brétigny in 1360 Knolles returned to Brittany, and took part in the struggle for the possession of the duchy between John of Montfort (Duke John IV) and Charles of Blois, gaining great fame by his conduct in the fight at Auray (Sept. 1364). In 1367 he fought in Spain with the Black Prince and in 1369 in Aquitaine. In 1370 he headed an expedition which invaded France and marched on Paris, but a mutiny broke up the army, and he was forced to take refuge in his Breton castle of Derval. In 1363 Knolles again assisted John of Montfort in Brittany, where he acted as John's representative; later he led a force into Aquitaine, and was one of the leaders of the fleet sent against the Spaniards in 1377. In 1380 he served in France under Thomas of Woodstock, afterward duke of Gloucester, distinguishing himself at the siege of Nantes; and in 1381 he went with Richard II to meet Wat Tyler at Smithfield. He died at Sculthorpe in Norfolk on Aug. 15, 1407. Sir Robert built a college and an almshouse at Pontefract; he restored the churches of Sculthorpe and Harpley; and he helped to found an English hospital in Rome. Knolles won an immense reputation by his skill and valour in the field, and ranks as one of the foremost captains of his age. French writers call him Canolles, or Canole.

KNOLLYS (nōlz), name of an English family descended from Sir Thomas Knollys (d. 1435), lord mayor of London. The first distinguished member of the family was Sir Francis Knollys (*c.* 1514–96), English statesman, son of Robert Knollys, or Knolles (d. 1521), a courtier in the service and favour of Henry VII and Henry VIII. Robert's younger son, Henry, took part in public life during the reign of Elizabeth and died in 1583.

Sir Francis Knollys.—Francis Knollys, who entered the service of Henry VIII before 1540, became M.P. in 1542 and was knighted in 1547 while serving with the English army in Scotland. A strong supporter of the reformed doctrines, he retired to Germany after Mary's accession, returning to England to become a privy councillor, vice-chamberlain of the royal household and a member of parliament under Queen Elizabeth, whose cousin Catherine (d. 1569), daughter of William Carey and niece of Anne Boleyn, was his wife. Knollys was sent in 1566 to Ireland, his mission being to obtain for the queen confidential reports on the lord-deputy Sir Henry Sidney, of whose conduct of affairs he gave a good report. In 1568 he was sent to Carlisle to take charge of Mary Queen of Scots; he was afterward in charge of the queen at Bolton castle and then at Tutbury castle. He gave up the position of guardian just after his wife's death in Jan. 1569. He was treasurer of the royal household from 1572 until his death on July 19, 1596. His monument may still be seen in the church of Rotherfield Grays, Oxfordshire. Knollys was Elizabeth's commissioner on such important occasions as the trials of Mary Queen of Scots, of Philip Howard earl of Arundel, and of Anthony Babington. Sir Francis's eldest son Henry (d. 1583), and his sons Edward (d. *c.* 1580), Robert (d. 1625), Richard (d. 1596), Francis (d. *c.* 1648), and Thomas, were all courtiers and served the queen in parliament or in the field. His daughter Lettice (1540–1634) married Walter Devereux, earl of Essex, and then Robert Dudley, earl of Leicester; she was the mother of Elizabeth's favourite, the 2nd earl of Essex.

Some of Knollys's letters are in T. Wright's *Queen Elizabeth and her Times* (1838) and the *Burghley Papers*, ed. S. Haynes (1740); and a few of his manuscripts are still in existence. A speech which Knollys delivered in parliament against some claims made by the bishops was printed in 1608 and again in W. Stoughton's *Assertion for True and Christian Church Policie* (London, 1642).

Sir William Knollys.—Sir Francis Knollys's second son William (*c.* 1547–1632) served as a member of parliament and a soldier during the reign of Queen Elizabeth, being knighted in 1586. William became in 1596 a privy councillor and comptroller of the royal household; in 1602 he was made treasurer of the household. James I created him Baron Knollys in 1603 and Viscount Wallingford in 1616. Through his second wife Elizabeth (1586–1658), daughter of Thomas Howard, earl of Suffolk, Knollys was related to Frances, countess of Somerset, and when this lady was tried for the murder of Sir Thomas Overbury her relatives were regarded with suspicion. Wallingford had to resign his appointments, but he regained the royal favour, and was created earl of Banbury in 1626. He died in London on May 25, 1632.

Sir W. T. Knollys.—His descendant, Sir William Thomas Knollys (1797–1883), entered the army and served with the Guards during the Peninsular War. Remaining in the army after the conclusion of the peace of 1815 he rose high in his profession. From 1855 to 1860 he was in charge of the military camp at Aldershot, then in its infancy, and in 1861 he was made president of the council of military education. From 1862 to 1877 he was comptroller of the household of the prince of Wales, afterward King Edward VII. From 1877 until his death on June 23, 1883, he was gentleman usher of the black rod; he was also a privy councillor and colonel of the Scots Guards.

Viscount Knollys.—His son Francis (1837–1924), private secretary to Edward VII and George V, was created Baron Knollys in 1902 and received a viscounty in 1911. Another son, Sir Henry Knollys (1840–1930), was private secretary to King Edward's daughter Maud, queen of Norway until 1919.

KNORR, LUDWIG (1859–1921), German chemist, was born on Dec. 2, 1859, at Munich. He studied at Munich, Heidelberg and Erlangen. He was assistant in the chemical laboratories of the University of Munich (1880–82), at the University of Erlangen (1882–85), director of the analytical department of the chemical laboratories at the University of Würzburg (1885–88), "professor extraordinarius" of chemistry at Würzburg (1888–89), and finally professor at the University of Jena. He died at Jena on June 4, 1921. Knorr's researches were in organic chemistry; he isolated and synthesized a number of organic compounds, and did experimental and theoretical work on tautomerism. He isolated, synthesized and gave a proof of the structure of pyrazole; he also isolated the di-keto, keto-enol and di-enol forms of dibenzoylsuccinic esters and of diacetylsuccinic esters. He synthesized pyrazolone, antipyrine and quinoline. Knorr also did some work on the alkaloids, particularly the morphine alkaloids.

KNOSSOS: *see* CRETE: *Archaeology*.

KNOT, a limicoline bird, very abundant at certain seasons on the shores of Britain and of many northern countries. There are few of the Charadrii that present greater changes of plumage according to age or season. The knot (*Calidris canutus*) is rather larger than a snipe, but with a shorter bill and legs. In winter the plumage is ashy-gray above (save the rump, which is white) and white beneath. In summer the feathers of the back are black, broadly margined with light orange-red, mixed with white, those of the rump white, more or less tinged with red, and the lower parts are of a nearly uniform deep chestnut. The birds which winter in temperate climates seldom attain the brilliancy of colour exhibited by those that arrive from the south. Young birds are ashy-gray above, each feather banded with dull black and ochreous, while the breast is tinged with warm buff. There are four protectively coloured eggs. European birds (*C. c. canutus*), breeding on the Taimyr peninsula and Spitsbergen, winter in Africa; northern Asiatic knots (*C. c. rogersi*), breeding on New Siberian islands, migrate to the east coast of Asia and winter in Australia and New Zealand; the American knots (*C. c. rufus*), breeding north of the Arctic Circle from Melville peninsula and south-eastern Victoria Island north to northern Ellsmere Island and northwestern Greenland, winter in southern South America, south of Peru on the west coast, from Buenos Aires to Tierra del Fuego on the east coast. The name is also applied to an oriental species (*C. tenuirostris*), probably breeding in northeastern Siberia, wintering from India to Australia and the Malays. Knots are sometimes called robin sandpipers or robin snipe. (G. F. Ss.)

KNOT-GRASS, KNOT-WEED or SMARTWEED, the common names, particularly for *P. aviculare*, and in general for various plants of the genus *Polygonum* (family Polygonaceae). All members of the genus, which contains about 275 species, mostly in temperate regions, are herbaceous. Many of them have an acrid or peppery juice. The flowers, mostly with a five-lobed perianth and about eight stamens, are white, greenish or brightly coloured, and consequently visited by insects. In some species, however (e.g., *P. aviculare*), cleistogamous flowers are produced, while in *P. viviparum* many of the lower flowers are replaced by bulbils.

About 12 species, inclusive of the foregoing, occur in the British Isles. In North America upwards of 75 species are found, among which are several which have been introduced from the old world, but most of them are native in the western part.

The name knot-grass is sometimes used in the southern United States to denote the joint-grass, *Paspalum distichum,* which is a true grass (Gramineae) and a good fodder-plant.

KNOTS, an interlacement of the parts of one or more ropes, cords, threads, etc.; commonly used as a device for binding together various objects. The word is from the O.E. *cnotta,* from a Teutonic stem *knott; cf.* "knit" and Ger. *knoten.* A description of the more familiar knots is given below. The word is also applied to any hard mass resembling a knot drawn tight as, for example, to the one formed in the trunk of a tree at the intersection of a branch. "Knot" or "knob" is an architectural term for a bunch of flowers, leaves or other ornamentation carved on a corbel or on a boss. In heraldry, a "knot" is an ornamental figure formed by intertwining the parts of one or more cords. The word is used on shipboard to denote the distance marks on a log line, and hence as the equivalent of a nautical mile. It is applied figuratively to any intricate problem, hard to disentangle, a use stereotyped in the proverbial expression "cutting the Gordian knot." (*See* GORDIUM.)

KNOTS, BENDS, HITCHES, SPLICES AND SEIZINGS

These are all ways of fastening together the parts of one or more ropes, cords, etc., or of attaching a rope to some such object as a ring or spar. In the narrow sense, a "knot" is a knob on a rope, usually formed by untwisting the strands at an end and weaving them together (*cf.* "wall knot," fig. 2G), though sometimes by turning the rope on itself through a loop (*cf.* "overhand knot," fig. 1A). A "bend" and a "hitch" are ways of fastening ropes to one another or to spars, etc. A "splice" is made by untwisting two rope ends and weaving them together. A "seizing" is made by fastening together two spars, two ropes, or two parts of the same rope by means of another rope. The use of the various terms is, however, often arbitrary. Generally speaking, the knot and seizing are meant to be permanent and must be unwoven in order to be unfastened, while the bend and hitch can be undone, at once, by pulling the ropes in the reverse direction from that in which they are meant to hold. The governing principle in the design of these last is that the strain which pulls against them shall draw them together.

Many forms of fastening are employed on shipboard and in industry. Some of the more important ones are here described and pictured; for further details, the reader is referred to any book on seamanship. In the figures, the knots are in general drawn very slack and open, so that their structure may be more plainly exhibited.

Knots for Fastening.—*Overhand Knot* (fig. 1-A). Used to make a knob on a rope, or as the commencement of another knot.

Figure-of-Eight Knot (fig. 1-B). Turned in the end of a rope to prevent unreeving. It will not jam as an overhand does.

Square, or *Reef Knot* (fig. 1-C). Two overhand knots turned in opposite ways. Should be carefully distinguished from the *Granny* (fig. 1-D) which jams when it does not slip. A square knot is unsatisfactory for uniting ropes of different sizes, as the parts will slip unless stopped down. For fastenings of a temporary nature the second knot is sometimes turned over a bight in the end *a* of one of the ropes (fig. 1-E). By a pull on *a,* the knot can be slipped loose. A *Thief Knot* (fig. 1-F), though similar in appearance to a square knot, will slip under a strain applied to the two standing parts *b* and *b'*. To make a *Surgeon's Knot* (fig. 1-G), take an additional twist after turning the first overhand, and draw the partially completed knot taut. The parts will be held in place by the friction of the cord while the second overhand is being tied. Used in tying a ligature around a cut artery.

Half-Hitch (fig. 1-H). Pass the end of the rope round the standing part *b* and through the bight. *Half-Hitch over a Pin* (fig. 1-I). Should be made so as to continue the lay of the rope about the pin. *Midshipman's Hitch* (fig. 1-J).

Slippery-Hitch (fig. 1-K). Pass the end *a* under a belaying pin or cleat and tuck a bight under the standing part *b.* Can be slipped loose by a pull on *a.*

Bowline (fig. 1-L). Forms a loop that cannot slip. A very common and useful knot. Lay the end *a* over the standing part *b*; form with *b* a bight *c* over *a*; take *a* round behind *b* and through the bight *c. Running Bowline* (fig. 1-M) is a convenient temporary running noose. Formed by making a bowline over its own standing part. *Bowline on a Bight* (fig. 1-N) is a more comfortable sling for a man than a simple bowline. Double the rope on itself; start as if to make a bowline in the doubled rope, but finish by passing the loop *c* around the loop *b.*

Sheepshank (fig. 1-O). Used for temporarily shortening a rope. A half hitch is taken with the standing parts *a* round the bights *b.*

Blackwall Hitch (fig. 1-P). Form a bight at the end of the rope and put the hook of the tackle through the bight so that the end of the rope may be jammed between the standing part and the hook. This and the next two are used for hooking tackle on to the end of a rope.

Double Blackwall, or *Stunner Hitch* (fig. 1-Q). Pass the end *a* twice round the hook under the standing part *b* at the last cross.

Cat's Paw (fig. 1-R). Twist up two parts of a lanyard in opposite directions and hook the tackle through the two eyes thus formed.

Sheet or *Becket Bend,* also called a *Weaver's Knot* (fig. 1-S). Suitable for uniting ropes of different sizes. Pass the end of one rope through a bight of the other, around both parts of the other, and under its own standing part. An ordinary net is a series of sheet bends. Similar in principle is the *Double Sheet Bend* (fig. 1-T).

Carrick Bend (fig. 1-U). Lay the end of one rope over its own part so as to form a bight. Pass the end of the other rope through the bight, etc., as shown in the figure. *Double Carrick Bend* (fig. 1-V). Commonly used for bending hawsers together. If the two parts are of different sizes each part should be seized back on itself. May be tied in either of two ways shown.

Reeving Line Bend (fig. 1-W). Particularly useful when the lines are to be veered through a small pipe.

English or *Fisherman's Knot.* Used for fastening gut ends, etc. The ends are laid alongside pointing in opposite directions and an overhand is made in each around the end of the other.

Two ropes are sometimes united by means of a square knot (fig. 1-C) or by means of two interlinking bowlines, one on each rope.

Clove Hitch or *Builder's Knot* (fig. 1-X). Pass the end *a* round a spar and cross it over *b.* Pass it round the spar again and put the end *a* through the second bight. *Two Half Hitches:* the half hitch repeated; or a *Round Turn and Two Half Hitches* (fig. 1-Y).

Fisherman's Bend. Take two turns round a spar, then a half hitch round the standing part and between the spar and turns. An added half hitch round the standing part gives an *Anchor Bend* (fig. 2-A), used to bend a cable to an anchor; or if in place of the last half hitch the end *a* is tucked under one of the round turns we obtain a *Studding Sail Halyard Bend* (fig. 2-B). A *Magnus Hitch* has two round turns, then a third on the other side of the standing part, with the end through the bight. *Studding Sail Tack Bend* (fig. 2-C). Will not come adrift by the flapping of the sail.

Timber Hitch (fig. 2-D). Take the end of a rope round a spar, then round the standing part, then several times around its own part against the lay of the rope. *Timber and Half Hitch* (fig. 2-E). Used for towing or dragging a spar.

Rolling Hitch (fig. 2-F). Very handy when one rope is to be fastened to the standing part of another or to a spar, as the rope can be put on and taken off very rapidly. For hauling a spar, two round turns are taken round the spar in the direction in which it is to be hauled and a half hitch on the other side of the hauling part.

Knots Worked in the End of a Rope.—*Wall Knot* (fig. 2-G). Unlay the end of a rope and with the strand *a* form a bight; take the next strand *b* round the end of *a*; take the last strand *c* round the end of *b* and through the bight made by *a.* Haul the ends taut.

Wall and Crown (fig. 2-H). Form a wall knot and lay one of the ends *a* over the knot. Lay *b* over *a* and *c* over *b* and through

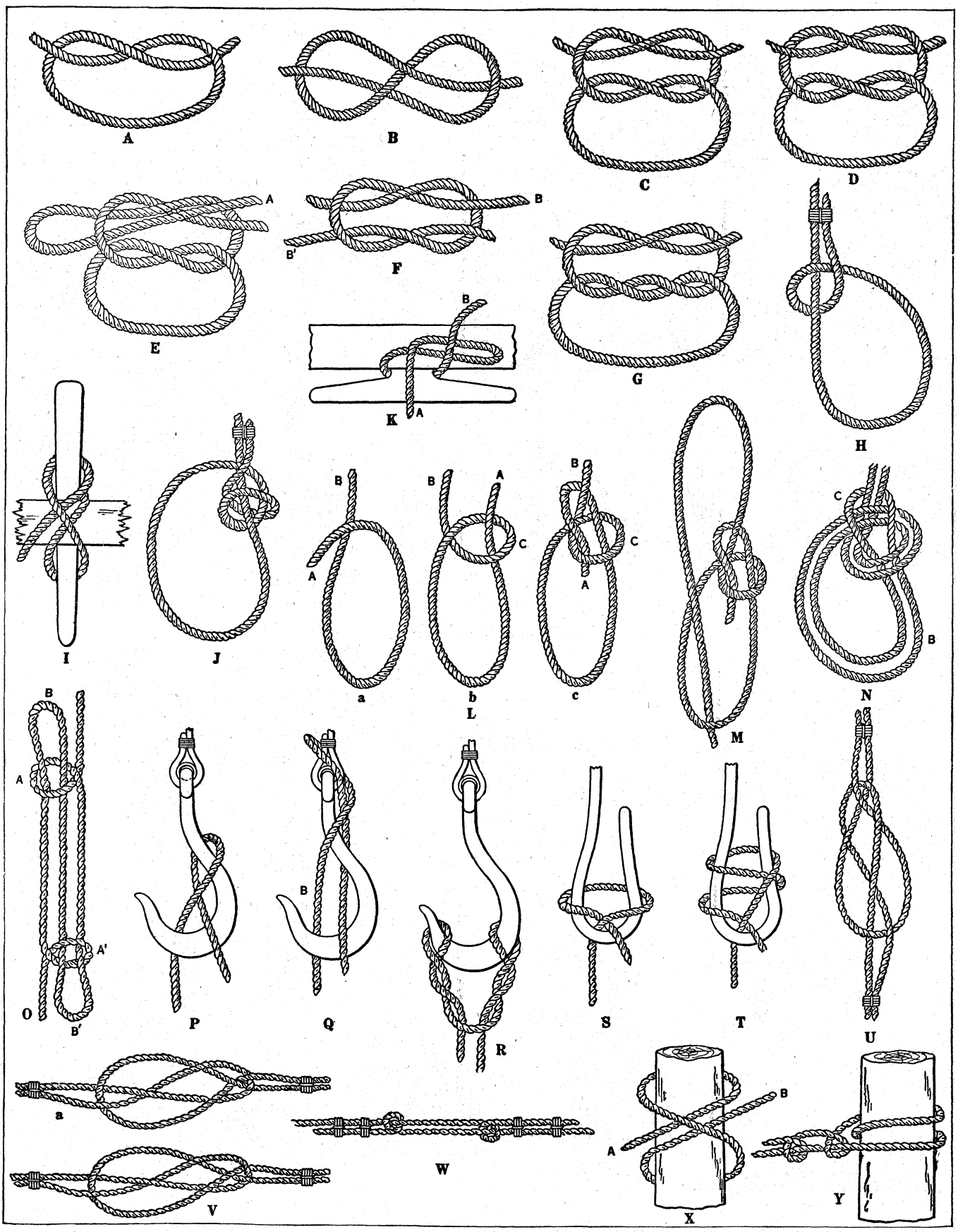


FIG. 1.—KNOTS: (A) OVERHAND, (B) FIGURE-OF-EIGHT, (C) SQUARE, OR REEF, (D) GRANNY, (E) TEMPORARY SQUARE, (F) THIEF, (G) SURGEONS, (H) HALF-HITCH, (I) HALF-HITCH OVER PIN, (J) MIDSHIPMAN'S HITCH, (K) SLIPPERY-HITCH, (L) BOWLINE, (M) RUNNING BOWLINE, (N) BOWLINE ON A BIGHT, (O) SHEEPSHANK (P) BLACKWALL HITCH, (Q) DOUBLE BLACKWALL OR STUNNER HITCH, (R) CATS PAWS, (S) SHEET OR BECKET BEND, (T) DOUBLE SHEET BEND, (U) CARRICK BEND, (V) DOUBLE CARRICK BEND, (W) REEVING LINE BEND, (X) CLOVE HITCH OR BUILDER'S HITCH, (Y) ROUND TURN AND TWO HALF-HITCHES

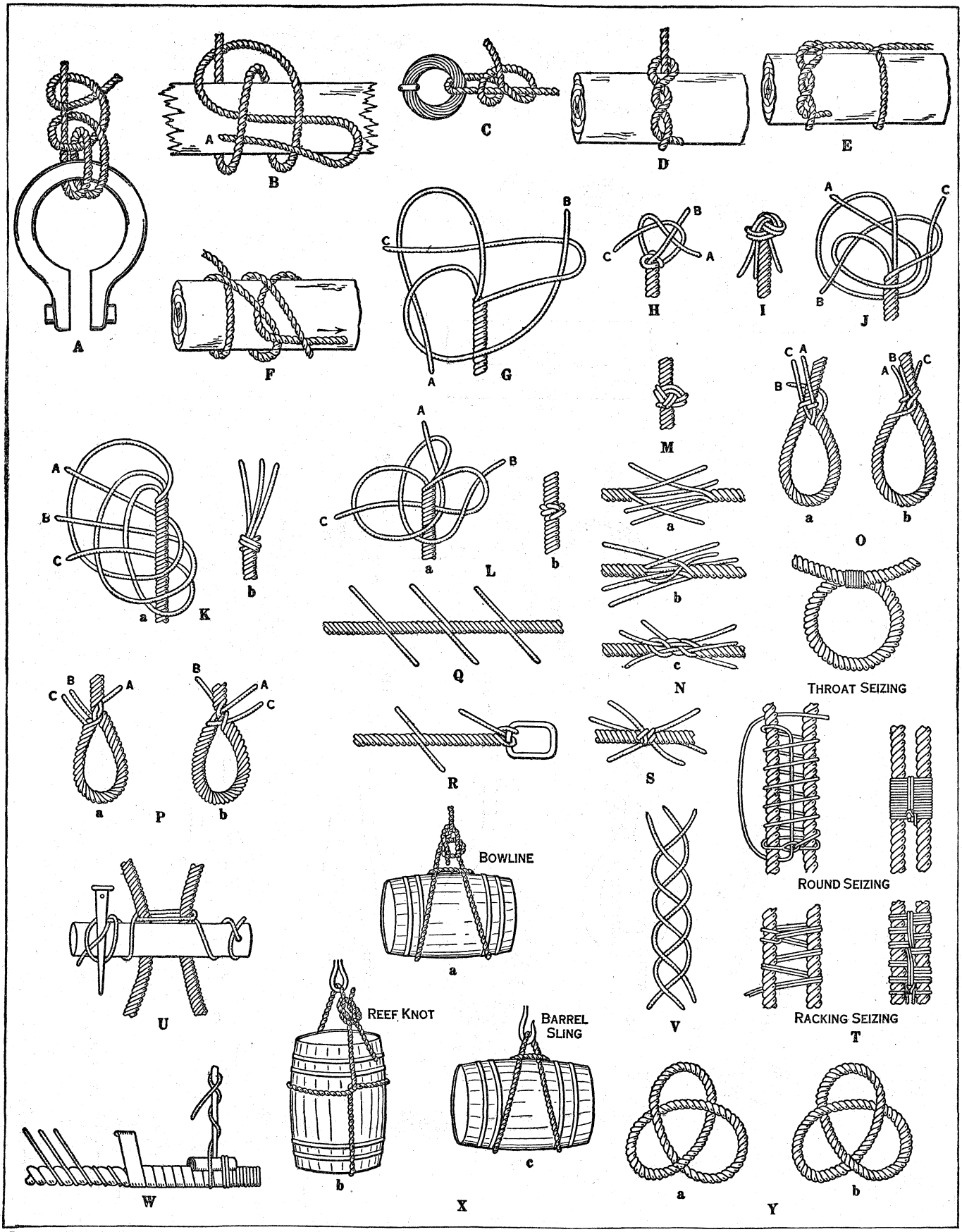


FIG. 2.—KNOTS: (A) ANCHOR BEND, (B) STUDDING SAIL HALYARD BEND, (C) STUDDING SAIL TACK BEND, (D) TIMBER HITCH, (E) TIMBER AND HALF-HITCH, (F) ROLLING HITCH, (G) WALL, (H) WALL AND CROWN, (I) CROWN OR MAN ROPE, (J) SINGLE MATTHEW WALKER, (K) DOUBLE MATTHEW WALKER, (L) SINGLE DIAMOND, (M) DIAMOND, (N) SHORT SPLICE, (O) EYE SPLICE, (P) SAILMAKER'S EYE SPLICE, (Q) LONG SPLICE, (R) CHAIN SPLICE, (S) SHROUD KNOT, (T) SEIZINGS, (U) SPANISH WINDLASS, (V) SENNIT, (W) WORMING A ROPE, (X) METHODS OF FASTENING TACKLE TO BARRELS, (Y) TREFOIL KNOTS

the bight of *a*. Haul the ends taut. *Double Wall and Double Crown,* or *Man Rope Knot* (fig. 2-I). Form a wall and crown and let the ends follow their own parts round until all the parts appear double. Put the ends down through the knot.

Single Matthew Walker (fig. 2-J). Unlay the end of a rope and with the strand *a* form a bight; take the next strand *b* round the end of *a* and through the bight made by *a*; take the last strand *c* round the ends of *a* and *b* and through the bight made by *b*. Haul the ends taut. *Double Matthew Walker* (fig. 2-K). Unlay the ends of a rope. Take the first strand round the rope and through its own bight; the second round the rope, through the bight of the first and through its own bight; the third through all three bights. Haul the ends taut.

Single Diamond Knot (fig. 2-L). Unlay the ends of a rope and with the strands form three bights down the sides. Pass strand *a* over *b* and through the bight of *c*; pass strand *b* over *c* and through the bight of *a*; pass strand *c* over *a* and through the bight of *b*. Haul the ends taut, and lay the rope up again. *Double Diamond Knot* (fig. 2-M). First make a single diamond. Make strands *a* and *b* follow the lead of the single knot through two single bights, so that they come up on top of the knot; make strand *c* pass through two double bights. Haul the ends taut and lay the rope up again.

Splices.—*Short Splice* (fig. 2-N). The strands at the end of each rope are unlaid, married and tucked through the lay of the other rope, over one strand and under the next, two or three times each way. To render the splice neater the strands should be trimmed down to two-thirds their original size before being tucked under for the second time, and to one-third their original size before the last tuck.

Eye Splice (fig. 2-O). The strands at the end of a rope are brought back on the body of the rope at such a distance as to give an eye of the size wanted. The unlaid strands are then tucked through the strands of the rope (which are opened out by a spike), in the manner shown in the figure. They are then trimmed and tucked again, trimmed and tucked a third time, passing over one strand and under the next, as in the case of a short splice. *Sailmaker's Eye Splice* (fig. 2-P). Used in the roping of sails. Continues the original lay of the rope around the eye.

Cut Splice and *Horseshoe Splice.* Similar to an eye splice but made out of two pieces of rope; therefore with two splices. In a horseshoe splice the part of one rope between the two splices is much shorter than the corresponding part of the other.

Long Splice (fig. 2-Q). The ropes are unlaid for a considerable distance and their ends brought together with strands interlacing. One strand of each rope is then unlaid for a further distance and the vacant space filled by the adjacent part of the other rope. The splice is thus practically divided into three parts; at each the two strands are halved, knotted and turned in twice. *Chain Splice* (fig. 2-R). For splicing a rope to a chain.

Shroud Knot (fig. 2-S). Used when shrouds or stays are broken. A stop is passed at such distance from each end of the broken shroud as to afford strands of sufficient length. The strands are then unlaid, the parts married as if to make a short splice, and a wall knot formed in each, as shown in the figure. After the knot has been well stretched the ends are tapered, laid smoothly between the strands of the shroud, and firmly served over.

Seizings.—These are used to lash together spars, ropes or parts of the same rope. Various types of seizings are illustrated in fig. 2-T. With heavy ropes, where power is necessary to heave the parts together, some such device as a *Spanish Windlass* (fig. 2-U), may be employed. The marlinspike, which may act as a lever, is attached to the rope of the windlass by a *Marlinspike Hitch,* as shown in the figure.

Miscellaneous.—There are various ways of securing blocks to ropes. One simple method is to splice an eye of suitable size at one end of the rope. The eye is passed over the end of the block and held in position by a round seizing clapped on close under the block. A *single strap* is made by joining the ends of a rope by a short splice. The strap is passed over the end of the block and secured by a seizing, as in the previous case. An iron thimble with a hook is frequently strapped to a block. When this is done the strap is reeved through the eye of the hook and over the groove of the thimble. A seizing is clapped on between the thimble and the block.

Grommet Strap. Made from a single strand of somewhat more than three times the length of the circumference of the strap. Lay one end of the strand over the standing part to form a ring, then with the long end follow the lay of the rope until the ring becomes three-stranded. Split the ends, knot two of the halves together so that the knot will fall in the lay of the rope, cut off the remaining halves, and tuck the knotted halves under the lay of the rope, as in finishing a long splice.

Selvagee Strap. This is a pliable strap used for clapping a tackle on gear, etc. It is made by winding rope yarns around two or more pegs placed at suitable distances from one another, until a strap of the desired stoutness has been obtained. The yarns are then secured together by half hitching with marline.

Sennit (fig. 2-V). Made by plaiting together three rope yarns. It makes a flat lashing, or gasket.

Worming a rope consists in winding spun yarn between the strands, following the lay of the rope (fig. 2-W). This helps to keep out the moisture and renders the surface of the rope smooth for parcelling. *Parcelling* consists in winding a strip of tarred canvas spirally around the rope, as a further protection from the wet. *Serving* consists in wrapping small stuff snugly over the parcelling. Ordinarily a serving mallet is used for hauling each turn taut. Various methods for fastening tackle to barrels, casks, etc., are illustrated in fig. 2-X.

THE MATHEMATICAL THEORY OF KNOTS

In the sense of analysis situs (*see* TOPOLOGY), a knot is any simple, closed curve in three dimensional space, a curve which never passes more than once through the same point of space and which may be thought of as starting at a point P and ultimately returning to P. Two knots are said to be of the same *class* if there exists a continuous deformation of space carrying one knot into the position initially occupied by the other. If a knot is of the same class as a circle it is said to be unknotted, for it is convenient to treat an unknotted curve as a special case of a knot, just as it is convenient to treat a straight line as a special case of a curve. No general method has, as yet, been found for telling when two arbitrarily given knots are of the same class, or even for telling whether or not a curve is unknotted.

The structure of a perfectly general mathematical curve can be so complicated that, in most discussions on knots, attention is confined to curves of a reasonable degree of regularity. These last may be thought of, without serious error, as physical threads, arbitrarily twisted and tangled, and closed by having their two ends sealed together. From this physical point of view, the problem of classifying knots reduces to the problem of telling under what conditions it is possible, by a process of bending, stretching and shrinking, to deform one of two arbitrarily given threads into a thread of the same shape as the other.

The knot problem seems to have been originally proposed and studied by J. B. Listing in one of the earliest works ever published on the subject of analysis situs. It was again attacked, independently, by P. G. Tait at a time when attempts were being made to interpret material atoms as vortex lines in the ether and to account for the differences in the various chemical elements by ascribing to the atoms of each a characteristic type of knottedness.

When we fix our eyes on a knotted thread we notice a certain number of *apparent crossing points* where, from our point of observation, one branch of the thread is seen to pass in front of another. This number of apparent crossing points may be varied either by deforming the knot or by shifting our point of observation, but if we start with any particular knot there is a certain minimal number k of crossing points which may be attained by suitably deforming the knot, but below which it is impossible to pass. The number k is a knot invariant, called the number of irreducible crossings of the knot. The simplest possible knot is one of zero crossings: that is to say, one which is unknotted. Next in order of simplicity come the two *trefoil knots*

(fig. 2-Y) with three crossings each. These knots are not of the same class. The problem of effectively determining the number of irreducible crossings of an arbitrarily given knot is still unsolved.

A classification of the more elementary knots according to the number of their irreducible crossings was begun by Tait and later extended by Kirkman, Little and others, so that tables now exist which exhibit all possible kinds of knots of 11 or less crossings. These tables are not altogether satisfactory, however, for they were arrived at by essentially empirical methods. It has never actually been proved, for instance, that no two knots listed in the tables as of distinct classes can be transformed into one another.

The first effectively calculable knot invariants were discovered by J. W. Alexander and, later, independently by K. Reidemeister. With the aid of these invariants, Alexander and Briggs have shown that all knots of eight or less crossings listed as distinct by Tait actually do belong to different classes. However, the new invariants appear to be insufficient to solve the knot problem completely, for they fail to distinguish between certain knots of nine crossings which give every indication of belonging to different classes. It is even doubtful whether they are sufficient to determine whether or not an arbitrary thread is unknotted. A neat classification of braids has been made by Artin.

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KNOT SIGNS. One of the commonest devices to recall to mind something to be done is to tie a knot in a handkerchief. It is probable that the untrained memory would fail to recall the meaning attached to more than a very limited number of knots (*see* QUIPUS). The simplest application of these knots is in keeping a record of a number of days, as is related by Herodotus (iv, 98) of Darius, who, on crossing the Ister in his Scythian expedition, left with the Greeks appointed to guard the bridge a thong with a number of knots equal to the number of days that their watch over the bridge was to be continued. One knot was to be undone each day, and if the king had not returned by the time that all the knots were undone, the Greeks were to break down the bridge and go away.

KNOUT, the whip used in Russia for flogging criminals and political offenders. It is said to have been introduced under Ivan III. (1462–1505). The knout had different forms. One was a lash of raw hide 16in. long, attached to a wooden handle, 9in. long. The lash ended in a metal ring, to which was attached a second lash as long, ending also in a ring, to which in turn was attached a few inches of hard leather ending in a beak-like hook. Another kind consisted of many thongs of skin plaited and interwoven with wire, ending in loose wired ends, like the cat-o'-nine-tails. The victim was tied to a post or on a triangle of wood and stripped, receiving the specified number of strokes on the back. A sentence of 100 or 120 lashes was equivalent to a death sentence, but few lived to receive so many. Peter the Great is traditionally accused of knouting his son Alexis to death. The emperor Nicholas I. abolished the earlier forms of knout and substituted the *pleti*, a three-thonged lash. (*See* FLOGGING.)

KNOWLEDGE, THEORY OF, that branch of philosophy which has for its province the investigation of the nature and structure of knowledge as such, with a view to determine the conditions of its possibility, and the significance, worth or validity of its contents as representing the nature and relations of the real.

1. THE CHARACTER AND SCOPE OF THE INVESTIGATION

It is only within a comparatively recent period that epistemology has come to be recognised as a distinct department of philosophical inquiry. Since the days of Kant, German thinkers have been in the habit of grouping under the head of *Erkenntnistheorie* a number of problems which belong together,—problems which have always, from the time of Plato, been included within the domain of philosophy. The term epistemology would appear to have been used for the first time in Ferrier's *Institutes of Metaphysics,* published in 1854. Philosophy according to Ferrier, consisted of two main divisions—epistemology, the doctrine or theory of knowing, and ontology, the science of that which truly is. Of these, the latter, he maintained, naturally comes *to us* first,—in the order of time, the proximate question of philosophy has been that of the nature of real or ultimate being. But in the logical order the former comes first; we cannot even get a footing in ontology unless we have at least attempted to *know* what is. And we are not in a position to know what is, until we have found an answer to the questions—What is the meaning of *to know?*

No sooner is the effort made to treat knowledge as itself the subject-matter of investigation than there comes to the front an antithesis that would seem to be of fundamental importance. There would seem, namely, to be implied in the very notion of knowledge a distinction and a relation between the inner or mental process of knowing and the outer world of fact, to which the act of knowing or cognising refers. To the former there has been assigned the technical name, the subjective, and to the latter the technical name, the objective. In all knowledge these two distinguishable aspects seem to be brought together into a certain unity. And we call the result which may be attained the acquisition of truth—a term again involving in another way the antithesis of subjective and objective. Thus, three great fields of human research are at once indicated,—(*a*) the structure of the subjective process called knowing; (*b*) the specific character of the objects of the external world; and (*c*) the nature of truth, as discriminated alike from the mind that recognises it and from the facts which it is "about." The first belongs to psychology, the second forms the domain of the natural sciences and the third constitutes the subject-matter of the theory of knowledge and logic.

Epistemology and Psychology.—The exact nature of the fundamental problem with which epistemology is concerned may be made manifest by considering the ways in which knowledge is dealt with by psychology and epistemology respectively.

The psychologist proposes to scrutinize the subjective aspect of knowledge,—the activity of knowing, as a condition of the individual mind, as so much matter of fact that can be inspected and analysed in the manner in which every other matter of fact can be, and with respect to which there may be discovered uniformities of structure and of succession, uniformities which may be designated natural laws. These "states of consciousness" are, for him, so many events which happen at a definite time and in a definite set of connections with other psychical states. Take, for example, such a psychical event as the perception of a sense-quality. The business of the psychologist is to determine its nature as a transient phase in the history of an individual mental life. If he deems it to be simple and irreducible, he needs to inquire how it stands related to those concomitant events which serve as occasions for calling forth its exercise. If he deems it to be complex, he needs to disengage the components of which it consists, and to find out how these are combined into the unity of the apparently simple act.

And in this investigation no special weight will be laid upon the question whether the sense-quality apprehended is a characteristic belonging to physical things or merely a way in which physical things appear to us to be characterised. Or, take what is called a belief. The aim of the psychologist will be to exhibit the antecedent mental conditions that led to its being entertained, how it is related to the emotional and volitional sides of the mental life in question, with what states of the bodily organism it is connected, and so on. But obviously there remains a characteristic set of problems which this psychological treatment of cognition leaves entirely untouched. The act of perception purports to give what is called knowledge of the external world. In

entertaining a belief, the conscious subject is persuaded of its truth, that is to say, that it corresponds to something that is real and independent of the act of believing.

This contrast between the existence in an individual mind of a state or act of knowing and the significance of what is contained therein—the contrast between knowing as a psychical occurrence and knowledge as representative of relations in the material known—presses upon us whatever portion of cognitive activity be selected, whether perceiving or imagining or thinking. How is it possible that in and through means of a subjective act there should be awareness of what is, *ex hypothesi,* distinct both from the act and from the mind of which the act is a transitory phase? Again, from the nature of a cognitive act, as the psychologist describes it, it is evidently possible that it may fail to accomplish its natural end, the attainment of truth; its content may not correspond to fact. We are, therefore, driven to ask, under what conditions and in what forms is such a correspondence to be obtained, when and where can we be reasonably assured that our representation of the real is true? Such questions are manifestly of a different order from those which have been designated psychological, and, without going to the extent of saying that in the attempt to answer them psychological considerations are altogether irrelevant, it may safely be asserted that they are insufficient. The worth or significance of knowledge can never be determined by tracing the stages of its history.

LOCKE AND KANT

The difference between the two points of view was indicated by Locke. In the Introduction to the *Essay,* Locke gives a preliminary statement of the subjects with which he proposes to deal in the second and fourth Books. "First," he writes, "I shall inquire into the original of those ideas, notions, or whatever else you please to call them, which a man observes, and is conscious to himself he has in his mind; and the ways whereby the understanding comes to be furnished with them." This is a psychological inquiry. He proposes to try to find out what the cognitive states of the individual mind are, which of them are complex and which simple, and to analyse the former into their constituents. Furthermore, he proposes to trace the genesis and development of cognition, and the way in which it gradually comes to be what we find it to be in ourselves. But he proceeds: "Secondly, I shall endeavour to show what knowledge the understanding hath by those ideas, and the certainty, evidence and extent of it." This is, in brief, the subject-matter of epistemology. He proposes here to try to find out how by means of our mental states we obtain information about the world in which we are, how far that information is reliable, and the degree to which we are justified in placing credence in it.

Unfortunately, however, although he had thus shown himself to be aware that these two lines of inquiry are different, Locke, in his subsequent procedure, is constantly confusing what he had carefully distinguished, and drawing upon considerations which properly belong to one of these sets of problems in dealing with the other. It was in Kant's *Critique of Pure Reason* that the methods and aims of epistemology were first definitely formulated, and in which it was exhibited as the mode of approach to the other problems of philosophy. More than once Kant lays emphasis upon the consideration that the first part of the *Critique* would be misconstrued if regarded as a treatise on the psychology of cognition. The question with respect to knowledge which it was concerned to answer was the question *quid juris* and not the question *quid facti,* the question as to the validity of knowledge and not the question as to the natural conditions under which knowledge grows up in the individual mind. Taking for granted that knowledge *is* possible, Kant seeks to show *how* it is possible, to inspect it in its character as apprehensive of fact and to determine the conditions implied in its nature. Empirical psychology seemed to him to stand related to this "critical" inquiry in much the same way as the natural sciences stood related to it. It involved in its methods of research presuppositions which it was the business of a theory of knowledge to examine, and it employed notions which it was the business of a theory of knowledge to criticise. Psychology begins by assuming that the world of experience can be broadly divided into two realms of facts,—those which it is customary to call outer and inner, objective and subjective,—and all its explanations are based upon the mutual interconnection of these.

But from the point of view of a critical theory of knowledge, the division between outer and inner, between objective and subjective, itself demanded investigation and defence. The meaning of such a distinction for the conscious subject within whose experience it presents itself called for consideration, and the conditions under which it is recognised by him required to be shown. Or, in other words, knowledge exhibits the two characteristic features—reference to a self that knows and reference to a reality other than self; and the former is no less a problem than the latter. It has to be confessed that Kant was not always successful in keeping his own treatment within the limits he had prescribed; but it was he who first fully realised the import of the problems that fall to a theory of knowledge.

2. TREATMENT OF KNOWLEDGE IN THE HISTORICAL SYSTEMS OF PHILOSOPHY

A. **In Greek Philosophy.**—The problems which are now grouped under epistemology are many of them nearly as old as philosophy itself. It is true that human reflection always looks outward before it looks inward; and that, consequently, cosmological inquiries into the nature of the physical world precede in the order of time inquiries into the way in which knowledge of the physical world is acquired. In Greek thought, these cosmological inquiries centred round the attempt to discover a "material principle" or "cause" of things. From the time of Thales (born about 625 B.C.) to that of Protagoras (born about 480 B.C.) there can be traced a tolerably well demarcated line of speculation the aim of which was to come upon some known permanent substratum of natural fact and to exhibit the ways in which that substratum is connected with the particular phenomena of concrete experience. Only by degrees did problems of knowledge come into prominence, and therefore, only gradually did there evince itself a deliberate trend of human reflection towards their solution. Probably Socrates (born about 470 B.C.) first set the current of Greek thought definitely in this direction. The view that Socrates was a mere moralist is ill-founded.

That Socrates did select practical conduct as matter worthy above all of rational consideration can scarcely be disputed. And to do this was in effect to accentuate the intimate relation of objective fact to human thought. It was as introducing this subjective element into Greek speculation that Socrates brought to the front issues of an epistemological character. Doubtless he was crystallizing much of the current opinion of his time—particularly that which prevailed among the Sophists and their followers,—but no sooner had the step been taken than we find Greek philosophy occupied with special and well-marked problems of the kind we should now call epistemological.

In the *Theaetetus* (completed about 368 B.C.), three theories of the nature of knowledge (ἐπιστήμη) are submitted to examination. In this dialogue Plato's aim is to show that these three theories break down under the weight of criticism that may be brought to bear upon them.

More than half the dialogue is occupied with a theory which was not only that propounded by certain well-known philosophic inquirers but an answer to the question likely to be given by anyone who has pondered over the matter,—namely, that knowledge is identical with sense-apprehension (αἴσθησις). This view is immediately connected with the doctrine of Protagoras that "man is the measure of all things," and interpreted as implying the relativist position that things *are* for me as they appear to me, and for you as they appear to you. A thing *is* to each man as it appears to him, and to say that it appears to him is equivalent to saying that he perceives it. Sensation, then, is of something that is, and is exempt from error; it is *certain* knowledge. As Taylor has pointed out, it is not a doctrine of "subjectivism" that is here attributed to Protagoras; it is not suggested that he meant to assert of "what appears" that it is a mental state of the percipient.

Rather the point is that, according to Protagoras, we are not entitled to assume a *common* real world apprehensible by any number of percipients; each individual percipient lives in a private world known only to himself, and, since no two of these private worlds have anything in common, each percipient can be said to be infallible in regard to what he perceives. Socrates is represented as attempting to work out the theory more elaborately before proceeding to judge its merits. It virtually depends, he argues, upon an ontological position, such as that which had been advocated by Heracleitus, that every thing real is in a condition of ceaseless flux, that what is called "being" is but change. So regarded the entities we speak of as "existents" are streams of events and movement is the ultimate reality.

Applying this doctrine to sense-apprehension, we should be entitled to say that, for example, a colour seen is neither "in" our eye nor "in" an external object, for, as a matter of fact what we call our eye and the external object are two sets of process, which when they come into contact give rise to the momentary appearance of the colour. Hence the colour will not appear the same to an animal as it appears to a man, nor even appear to a man twice the same. It is not likely that this elaboration of the theory was derived from the work of Protagoras; it is probably Plato's version of what he had learned from Cratylus, the Heracleitean, with whose doctrines Aristotle tells us he was in his youth familiar.

The second of the theories advanced is that knowledge is true belief or opinion (δόξα),—judgment, that is to say, based on the impressions obtained by the individual in and through the process of perception. We form, on the ground of perception, empirical notions of the things we encounter in nature, and in so far as these notions correctly represent the things in question, they may be said to constitute what is meant by knowledge. Who exactly the thinkers are that Plato had here in mind it is difficult to say; perhaps, indeed, none in particular. For the theory is more or less that of ordinary common-sense reflection, and may be regarded as having been that tacitly assumed by various contemporary philosophers.

Finally, a third theory of considerable interest in the history of the subject is examined,—namely, that knowledge is true belief accompanied by definition (μετὰ λόγου). According to this view, the simple elements out of which things are composed are undefinable and therefore unknowable. They can be apprehended by sense and they can be named, but nothing can be predicated of them, because to attribute a predicate to them would be to violate the hypothesis of their simplicity. The things compounded of them can, however, be defined, for if we give the names of their elements we obtain assertions (λόγοι) which make the things in question knowable. The doctrine is, in fact, a doctrine of extreme nominalism. Truth consisted of identical propositions of the form A is A, or of what amount to the same thing, analytical propositions of the form A is X, when A is compounded of X and Y and Z—a doctrine which plays a conspicuous part in subsequent philosophical thinking. It would seem highly probable that Plato had here in mind the teaching of Antisthenes, a contemporary of Socrates, and founder of the Cynic School. We are informed by Aristotle that Antisthenes maintained that nothing could be predicated of a thing except the expression peculiar to itself, one of one (οἰκεῖος λόγος, ἓν ἐφ' ἑνός), and this doctrine was afterwards elaborated by the Stoics, who inherited many of the tenets advocated by the Cynic thinkers.

Socrates' View of Knowledge.—It would appear to have been largely in opposition to the first of the theories discussed in the *Theaetetus* that Socrates developed his own view of the nature of knowledge. That knowledge is identical with sense-perception seemed to Socrates a position that was incapable of withstanding the slightest critical scrutiny. The contention that the contents of each man's knowledge are private to himself is not only inconsistent with the possibility of such general knowledge as is implied in being aware of sense-objects themselves, but is irreconcilable with the most obvious facts involved in the use of language as the expression of thought, and with the assumptions which every one admittedly makes that on some things he is wiser than others and on some things others are wiser than he. Indeed, we cannot even formulate in terms which do not contradict the premises the doctrine that to know consists simply in being acquainted with the changing, transitory, limited impressions of the individual percipient.

As contrasted, then, with this Protagorean thesis, Socrates advanced the view that in general notions is to be found the truth of things. The two logical processes of induction (ἐπακτικοὶ λόγοι) and definition (τὸ ὁρίζεσθαι καθόλου), the original employment of which Aristotle ascribes to Socrates, had for their aim the attainment of such general notions. By collecting, comparing and sifting a number of instances of things called by the same name, omitting what is peculiar to each and determining what is common to all, there would necessarily be reached the thought of the essence of the things in question. In two fundamental respects, the Socratic position presents, then, the sharpest contrast to that just mentioned. On the one hand, the process of reasoning by means of which concepts are reached was a process which, unlike that of sense-perception, did not vary from individual to individual but was, when rightly carried out, similar in character in every individual mind; and on the other hand, the concepts thus obtained were not the private property of any one thinking being but the common property of all thinking beings.

Thus, positively there is involved in the Socratic method the principle that knowledge, completeness of insight, is attainable only through means of concepts or notions that possess the characteristics of generality and stability, of which the vague, fluctuating presentations of sense are devoid. And negatively there is involved the further principle that in what is contrasted with the faculty of forming notions, the unreflective casual process of sense-apprehension, is to be found the ground of error or illusion.

In the Socratic teaching there must have lain from the outset the implicit thought of an ideal of human knowledge, from which the crude beliefs formed on the basis of individual perceptions widely diverge. What gives point to the Socratic confession of ignorance, what enables us to get to the real meaning of the maxim on which Socrates proceeded that self-knowledge is the only way to dispel apparent knowledge and to attain truth, is just the presence of this ideal of knowledge which animated his thought throughout. While in so far accepting the Sophistic dictum as it emphasised the intimate relation of the human mind to the world of truth and reality, Socrates brought into prominence the distinctive character of the human, as distinguished from the animal, mind on which that relation rested, and in virtue of which the human individual transcending his own individuality, participates in that which is common and abiding. Not as a sentient but as a thinking, rational being, man *is* the measure of all things.

PLATONIC THEORY OF IDEAS

The theory of Ideas is not to be conceived as an absolutely new philosophical standpoint introduced for the first time by Plato (427–347 B.C.). The form and elaboration which the theory received in the Platonic Dialogues were unquestionably of so original and unique a character as at once to give to it a position of quite exceptional significance in the history of Greek thought; but the root conceptions from which it emanated are readily discoverable in prior speculation, and the problems of which it was offered as the solution had already been formulated by earlier inquirers. To Plato the reality of Ideas doubtless seemed, as Zeller observes, to be the direct and inevitable outcome of the Socratic doctrine of concepts. So far as rival views of the nature of knowledge were concerned, that which identified it with αἴσθησις had been effectively handled by Socrates. It was through criticism of the other two definitions expounded in the *Theaetetus* that Plato proceeded to his own effort at construction. As regards the third of these, it was not difficult to show that it was exposed to objections of a formidable kind. If the complex which is asserted to be knowable is simply the sum of its parts, it is impossible to understand how it can be knowable while they are not; while if the "complex" is an indivisible unity which, though it sprang out of a conjunction of elements, is wholly different from them, it would be in the same predicament as they, and conse-

quently not an object of knowledge. Moreover, what precisely could be meant by the term λόγος in this context? The only intelligible meaning would be that it is a statement of that characteristic of a thing which distinguishes it from other things, its *differentia* (διαφορά, διαφορότης). If, however, we merely add to the true belief we already have a true belief about the *differentia* we get no further; while if we are supposed in some way to know the *differentia*, we shall be stranded with the circular definition that "knowledge is true belief together with knowledge of the *differentia*."

It was, then, the second definition, that knowledge is true belief or opinion, with which Plato had chiefly to reckon. Convinced by Socrates that there is such a thing as a body of knowable truth, which is valid for every thinking mind, he was confronted by the doctrine that the only knowledge we possess is that which is furnished by the ordinary, unsystematised experience of everyday life, for that is what was meant by the term δόξα, the union of perception and thought through which certainly a specific kind of information is obtainable.

The stress of the argument in the *Theaetetus* is directed to showing that, on the basis of this view, no satisfactory explanation can be given of the possibility of error. The obvious explanation that suggests itself is that false belief ensues when we combine elements together in thought after a manner which does not represent reality. But that presupposes that we have some independent mode of access to the real, which it is the express purpose of the theory to dispute. Again, if we say that a false belief is a belief to which no object corresponds, we should be assuming that the "unreal" or "what is not" (τὸ μὴ ὄν) can stand in a similar relation to our faculties of apprehension as the "real" or "what is,"—an assumption to which no intelligible meaning can be attached. Or, once more, it may be argued that false belief arises from confusing one thing with another thing (ἀλλοδοξία). Yet if both the things are known, how can one be mistaken for the other? Or if both are not known, how can either one that is known be mistaken for one that is not known, or one unknown thing be mistaken for another unknown thing? Furthermore, it is evident that a person may entertain a "true belief" without knowledge. If, for example, by skilful advocacy an accused individual be rightly convicted of dishonesty, the judges have no doubt a "true belief" about him, but they cannot be said to know that he is guilty of the crime, because for such knowledge they would need actually to have seen the act committed. Accordingly, knowledge and belief must be held to be radically distinct. The one can only be acquired by learning or being taught, the other may be engendered by mere persuasion. Knowledge implies that grounds or reasons can be given for what is asserted; belief, even when true, is but the convinced state of the individual believer, and its correspondence with the truth of things is accidental to its nature, a correspondence of which the thinker can only become aware on grounds external to the belief itself.

Ideas and Phenomena.—In the *Timaeus* (51 d and e) the existence of the "Ideas" (ἴδη) is represented as a necessary implication of the reality of the distinction just referred to. Were knowledge and true belief identical, there would need to be no objects other than those of the sensible world; if, however, they are different, there must be a corresponding difference between their respective objects. Granted that knowledge is of the nature Socrates had disclosed, then it involves the existence of entities that are permanent, invariable, self-subsistent,—entities that exist not merely for us or by reason of our cogitation, but in and for themselves. Although apprehended only by means of thought, they are in no sense to be conceived as products of thought. They are no mere generalisations from the so-called things of experience, even though the apprehension of them on our part may come about through the suggestions of experience. That experience should thus suggest is dependent on the fact that it is confronted by a soul which carries in itself the faculty (νοῦς) of apprehending the Ideas. The Ideas have, then, objective reality: they constitute, in their systematic interconnection and interdependence, the realm of absolute being.

Accordingly, there were for Plato two realms of objects, the real and the phenomenal and two modes of apprehension, thought or intellect, a pure unmixed activity of the soul, and belief or opinion, a combination of thought and perception. A large part of his philosophical work was directed to solving the problem as to the way in which these two are to be conceived as related. For he had never doubted that in some sense the world of generation or becoming *is*—that it was impossible to relegate it, after the manner of Parmenides, to the realm of non-being—although its existence could not be existence in the full significance of that term, seeing that it depended for its explanation upon what was other than itself, upon what possessed marks of which it was conspicuously destitute. Aristotle lays repeated emphasis upon the fact that the Ideas were for Plato χωριστά, transcendent, separate from the things or events of ordinary experience, and there is little or no reason to doubt the accuracy in this respect of Aristotle's account.

Nevertheless, the separation could not have been for Plato an absolute one. In the comparatively early dialogues—the *Phaedrus, Symposium, Republic* and *Phaedo*—the Ideas are definitely connected with the process of generalisation. Wherever particulars are grouped together in a class there we may recognise to be involved (a) an act of mind entirely distinct from sense-perception, and (b) an object which differs from the things perceived through means of the senses. It is true that the terms which are used to express the relation do not throw much light on its nature. Thus, it is said that a thing participates or shares in (μετέχει) the Idea; that things have communion with (κοινωνεῖ) the Idea, or that the Idea is present to (πάρεστι) them; or again that the things are "imitations" or "copies" (μιμήματα) of Ideas, that the Ideas are types or models (παραδείγματα) after which things are fashioned. What all these different metaphors seem intended to convey is, that when we predicate of any particular thing a characteristic, we are assigning to it a feature which in and for itself cannot be sensuously apprehended, that in so far as the thing in question can be said to be knowable it is in virtue of its possessing features which in and for themselves can only be grasped by the faculty of thought. Whenever we are justified in asserting the same predicate of a plurality of particulars, the predicate in every case names one and the same characteristic, and it is these characteristics which Plato called εἴδη. The εἴδη are, in fact, universals; yet they are existent realities *of* which we think, and are not to be supposed to be "thoughts (νοήματα) in our minds." And it is only in and through these existent realities that the particulars possess such existence as can be ascribed to them. The εἶδος is the essence of the particulars, the one in the many, though what is to be understood in this context by the word "in" was left obscure. Furthermore, an "Idea" can be "in" or "present to" a particular in varying degrees. A sensuous object may, for instance, be extremely beautiful, or imperfectly beautiful, while it may well be the case that no sensuous object is ever completely beautiful. From this point of view, the Idea presents itself as an Ideal towards which the things of experience can only approximate.

Intelligible Reality.—These incorporeal, changeless, self-identical essences were, then, regarded as together making up the sum total of intelligible reality. The world of Ideas must be conceived as presenting an orderly arrangement from the more general to the less general, and knowledge of it could not be considered as complete until proceeding from the highest (the Idea of Good) we were able to work our way downwards without breach of continuity to the lowest, and thus exhaust the realm of being.

Hence the importance which Plato assigned to the two formal processes of dialectic—συναγωγή, the synthetic or combining process of bringing the many under one notion, and διαίρεσις, division or classification. But in the end the procedure would appear to be frustrated, on the one hand, by the boundless sea of indeterminate particulars, and, on the other hand, by the thought of that which it is not, the thought of difference, as the inevitable shadow, so to speak, accompanying the thought of the ideal realm itself. It was the conjunction of these two features—indeterminate particularity and the opposite of being—that became increasingly prominent in Plato's later descriptions of the

phenomenal world; and in the *Sophist* we get perhaps the clearest indication of the line of reflection eventually pursued by him. In that dialogue emphasis is laid upon the consideration that there must be systematic relatedness among the Ideas, otherwise rational contemplation of them would be impossible; and, in the attempt to determine which Ideas are communicable with others and which are not, special stress is laid upon the important pair of Ideas, identity and difference (*ταὐτόν* and *θάτερον*). Each *εἶδος* is one with itself and shares in the nature of being and identity; it is likewise other than all the *εἴδη* besides itself, and shares, therefore, in the nature of non-being or difference.

It is probably to this notion of otherness (*ἕτερον*), that we must look for a means of understanding the non-being which Plato was wont to regard as characteristic of what is phenomenal. For by non-being, we do not denote the absolute opposite (*ἐναντίον*) of being, mere nothingness, but that which is the other of being, that which is different from it. The entire realm of Ideas is, in fact, interpenetrated by the form of otherness. Furthermore, in the *Timaeus* the necessity is insisted upon of recognising, besides Ideas and phenomena, a third entity which, while affording a place for all that comes into being, is itself eternal. This third element, described as the receptacle (*ὑποδοχή*) of all becoming, is identified with space; and space would seem to be contemplated as the very essence of otherness, or of difference. In itself, it is absolutely void and formless; it is not that *out of which* but that *in* which things become.

In short, in relation to the whole realm of Ideas, it is just the factor of non-being which according to the argument of the *Sophist,* is inherently involved in the notion of being. Along this line of reflection it was natural that Plato should have assigned the importance he did to the geometrical aspects of phenomena. As presented under the form of externality, an Idea is wont to appear as though it were differentiated into a multiplicity of shapes or images (*εἰσιόντα καὶ ἐξιόντα*); instead of its oneness, we get innumerable copies or likenesses (*μιμήματα*) of it. Not a material substratum but a figured portion of space was the basis of a physical thing, and that in which sense-qualities were situated.

Natural World.—Accordingly, when sensible things are said to be "copies" of the Ideas, what is really meant is that they exhibit, to a certain extent, conformity to law. Only the conformity is never complete; in the phenomenal world there is always a "surd," an irreducible factor, which eludes rational explanation; the uniformity actually verifiable in experience is only approximate. So far as the Ideas and mathematical entities are concerned exactitude is possible, because the intellect is there concerned with objects in which there is no change, and with reference to which time has not to be taken into account. But in regard to things that are incessantly undergoing variation, that are perpetually "turning out" to be more or less than we had supposed them to be, it is necessary to be constantly revising any results we may have reached. In cosmology or natural science, we cannot expect more than *εἰκότες λόγοι*, "likely stories," understanding thereby not indeed baseless fictions but accounts that are more or less probable.

Thus the natural world is the proper object of *δόξα* and any interpretation we can offer of its course of development must be largely pictorial or mythical in character. In a famous passage of the *Republic* (vi., 509 d. *sqq.*), Plato distinguishes four stages of cognition. There are two grades of *δόξα*,—the one described as *εἰκασία*, conjecture or guess-work, the mental condition of one who accepts every presentation, so long as it lasts, as equally true with any other, and has not learned to discriminate the shadow or reflection from that which casts it; the other described as *πίστις*, conviction or assurance, the state of mind in which we are aware of what we call the actual things of the world and distinguish them from their semblances or images. A higher stage is reached when we pass from *δόξα* to that grade of "knowledge" that is designated *διάνοια*, understanding or discursive thinking. Here the thinker is still occupied with sensible things, but he employs them as symbols of something which is not sensible. The mathematician uses diagrams and models, but what he is really thinking of is the triangle or circle as such, the "intelligible" triangle or circle of which the "visible" one is an image. Moreover, *διάνοια* proceeds from certain assumptions or postulates (*ὑποθέσεις*), which it takes as ultimate, although in truth they are in need of proof and confirmation. Hence we are led on to a culminating stage of intelligence *νόησις* or *ἐπιστήμη*, that which is aimed at by "dialectic," which has for its objects the *εἴδη* themselves, and contemplates them without the aid of sensuous representations.

Starting with the axioms and postulates of the previous stage, the dialectician will not treat these as ultimate, but as points of departure for advancing to a principle which is supreme and unconditional, an *ἀνυπόθετος ἀρχή*. The axioms and postulates of *διάνοια* will thus be seen to be necessary deductions from this self-evident principle. The ideal of knowledge will be attained only when reason ascends from one branch of truth to another until it reaches a truth beyond which it cannot go; and then from the cognition of it descends again to its consequences and traverses without break the whole realm of the knowable.

The Problem of False Belief.—It has been remarked that for Plato the real problem of the "theory of knowledge" is not knowledge but error, that for him the difficulty was to explain not why our judgments are sometimes true but why they are ever anything else. In Plato's time, the problem of "false belief" was, indeed, one of the main questions of controversy, forced to the front by the Sophists, who contended that there was no such thing, but that "belief" is always true,—true, that is to say, for the individual who entertains it. And it was in order to come to close quarters with the matter that the inquiry into the nature of non-being was undertaken in the *Sophist.* Having disposed of the paradoxical notion that non-being is mere nothingness, having shown that when we say that "S is not P" we do not mean that S is nothing at all, but only that it is something other than P, he was free to inquire whether this pervasive feature of otherness or difference does not in fact penetrate into language and belief, so as to render it possible for us to say and to think "what is not." It is shown that every significant assertion is compounded of a noun and a verb; also that it must be "of" or "about" something, have a subject, and be of a certain quality (*ποιός τις*). Thus, for example, the assertions that "Theaetetus is sitting down" and "Theaetetus is now flying" are both *about* Theaetetus, but the quality of the first is that of being true and the quality of the second that of being false.

Obviously, then, some combinations of nouns and verbs are false. Now, thinking is a silent dialogue of the mind with itself; and belief is the positive or negative determination of such thinking, which is sometimes accompanied by sensation, and then we call it "phantasy." Since, then, a false assertion is possible, it follows that false belief and false phantasy are equally possible. But a false belief is not a belief about nothing at all; it is a belief which assigns to something a characteristic *other than* that which does belong to it. As Taylor points out, this solution of the problem turns on distinguishing the use of "is" as the logical copula from the existential sense of "is"; and, in taking that step, Plato may fairly be said to have originated scientific logic.

The Aristotelian System.—In approaching the Aristotelian system from the point of view of Platonism, the first impression is that of its irreconcilable opposition. Aristotle (384–322 B.C.) unfolds his most characteristic views largely through hostile criticism of Platonic doctrine. Yet, notwithstanding numerous differences in matters of detail, there is substantial agreement in general spirit and in final result. For Aristotle, as for Plato, philosophical explanation of the world of nature consisted in connecting it with the world of absolute being. He fully recognised that the world of generation stands in need of a principle which lies beyond it, and that the necessity for such a principle becomes manifest when we follow out the general lines of connection within the world of generation. But his contention was that nothing is gained by first placing over against the world of generation a duplication of its main features which, as distinct *in kind,* can furnish no explanation of what is *in* the world of generation. In particular, the fact of change was altogether inexplicable by reference simply to immutable essences. To Aristotle, then, it appeared that the

Platonic εἶδος was merely a product of thought, a generality, not an existent entity *per se*. It indicated a common element or attribute of things, not a thing, since, in his judgment, no generality can be regarded as having substantive existence.

For Aristotle as for Plato true knowledge is knowledge of the universal and necessary; but for Aristotle, while the essence of knowledge is complete as lying in a sphere entirely its own, the essence of "things" must necessarily be in them and not in a region beyond them. Thus the Aristotelian conception of the world of reality is that of a connected and graduated scheme of being extending from the pure indeterminateness of what he called "first matter" (πρώτη ὕλη) up to the completed actuality, the deity. Each concrete individual thing in nature, each τόδε τι, is to be conceived as a σύνολον, a combination of matter (ὕλη) and form (εἶδος or μορφή). Matter is the substratum (ὑποκείμενον) of all becoming, that which is to be determined; form is that which determines, that which gives to matter qualities and properties, the intelligible essence of a thing, that which enables us to say *what* a thing is. We can distinguish these in thought, but in real existence they are never to be found in isolation. Or, using another pair of Aristotelian opposites, the whole realm of existence presents itself as a chain of occurrences in which each transition is from the potential to the actual, from δύναμις to ἐνέργεια. These two terms, as the other two, are to be understood as strictly relative to each other. The sculptor's shapen block is, for example, relatively to the finished statue a δύναμις but relatively to the rock from which it was hewn it is an ἐνέργεια.

Every stage, then, in the process of nature exhibits the actualisation of what potentially was prepared for it in the stage immediately beneath. All the stages are knit together as exhibiting the ways in which development takes place; and the real subjects of change are individual things, the concrete ways in which the actualisation of what is potential can alone come about.

Probably the one notion that most comprehensively expresses the Aristotelian view is that of τέλος, end. The nature of a thing is equivalent to its end, each thing is to be conceived as being, or as coming to be, in definite relations with its surroundings, and so ultimately with the whole to which it belongs. And, as member of the whole, it necessarily has some function to fulfill, and in fulfilling that function it necessarily has some structure which will enable it to accomplish its end. Hence the importance of a comprehensive knowledge of the particular circumstances which attend on the exercise of its functions by anything. An exhaustive knowledge of these particular circumstances would be essentially a knowledge of how the thing stood related to the whole of which it is a part; and even though this cannot be attained, yet knowledge of the particular circumstances is always of assistance in the attempt to discover a thing's essential nature.

Aristotle viewed the several forms of cognitive activity as falling into a kind of order or scale. The first, that which is the basis of the whole, is sense-perception (αἴσθησις) which has for its objects individual things (τὰ ὄντα). Sense-perception was regarded by him as the faculty of receiving the forms of things apart from their matter, just as the figure of a seal is taken on by the wax without the gold or other metal of which the seal is composed.

But sense-perception was not merely a passive receptivity; it was an act of the mind, a discriminative act. In the content of sense-perception Aristotle recognised (a) for each sense a special characteristic, as, for example, colour for the eye, sound for the ear (ἴδια αἰσθητά), (b) common properties which are apprehended by several of the senses, or by sense in an unspecialised way, as, for example, figure or movement (κοινὰ αἰσθητά) and (c) what he calls "incidental" properties (αἰσθητὰ κατὰ συμβεβηκός), as for example, that the white object seen is the son of Diares. Sense-perception proper is the awareness of a sensum (an αἰσθητόν) which is distinct from the act of sensing, and is a concomitant of an object (ὑποκείμενον). The sensum is indeed dependent upon the perceiver; it results from the meeting of a certain object and a certain percipient subject; and if either the object or the percipient's body undergoes change a different sensum will be produced. Yet the object, through the stimulation of which the act of perception arises, has a nature of its own independent of its being perceived.

The perceptive faculty operates, according to Aristotle, not only as specialised into the five senses, but in a common or unspecialised way; and the functions of the so-called *sensus communis* are (a) to apprehend the "common sensibles" and the "incidental sensibles," (b) to enable us to become aware that we perceive,—that is to say, to be aware of self in perceiving, and (c) to enable us to discriminate and compare the data afforded by the several senses. All creatures endowed with αἴσθησις have a certain power of knowing, but only those that in addition possess the power of memory (μνήμη), the power of preserving and reproducing presentations and of referring them to what has been perceived in the past, are able to advance to generalised knowledge. Memory is dependent upon imagination (φαντασία), the mechanically determined consequent of perception, which operates after the sensible object has gone, upon the relics or images (φαντάσματα) that remain in the sense-organs. Through the aid of memory there is generated in the mind that kind of knowledge to which Aristotle gave the name of experience (ἐμπειρία), the essence of which consists in the grouping of resembling particulars under general heads. Experience, or empirical knowledge, was distinguished from the higher forms of science and practical skill (ἐπιστήμη and τέχνη) by the fact of its going in no way beyond the resemblance of the particulars compared. When, on the other hand, generalisations are seen to rest on a reason, then scientific insight has been attained.

A truly scientific proposition must, therefore, necessarily be universal, and the universality has a two-fold aspect. The proposition is (a) κατὰ πάντος, it embraces a whole class in its scope; it is (b) καθ' αὐτό, it states the essence (εἶδος) which underlies the empirically discoverable resemblances in the several members of the class. The highest stage of all is furnished by the faculty of intellect or reason (νοῦς), which is receptive of "intelligible form," as sense is of "sensible form." It was certainly difficult for Aristotle to exhibit his doctrine of νοῦς in strict conformity with what he had said respecting sense-perception and scientific insight.

On the one hand, he describes it as the faculty which apprehends principles,—that is to say, truths which are not mediated by any discursive reasoning, which are immediate, and in regard to which it is not possible that there should be the alternative open to other propositions of being either true or false. First principles are directly or intuitively apprehended. On the other hand, νοῦς was not supposed by him to operate *in abstracto*. It apprehended principles in and through the matter furnished by the lower faculties of mind. Although a thought is not an image, we cannot think without images.

The perplexing distinction between "active" and "passive" reason has caused endless trouble to Aristotle's interpreters. In so far as it has relation to the other faculties of the soul, reason, so Aristotle would seem to say, must be contemplated from the point of view appropriate to all the world of generation as exhibiting the contrast between the potential and the actual. Obviously, indeed, reason is not constantly active in the human subject, and yet in its own nature it is nothing but activity. The limitation of its exercise in man must, therefore, be dependent on the fact that it is only realised under conditions connected with the life of the soul; in man, νοῦς exists potentially until called into exercise. What calls it into exercise, Aristotle affirms, is the presence of the intelligible (τὸ νοητόν) exhibited in sense and its concomitant faculties.

Hence the activity of νοῦς consists in the simple apprehension of the abstract essence; the νοητόν may present itself as existing in the particulars, but as grasped by νοῦς it is a simple essence, and holds the same relation to νοῦς as the sensible holds to sense. Accordingly, there is postulated at both ends of the scale a mode of cognition wholly distinct from discursive thinking. At the one end, there is a kind of apprehension which is free from the antithesis of true and false; the first principles must either be just apprehended or not at all. At the other end likewise, sense-perception as such does not admit of the antithesis true or false; the sense-particular must either be just apprehended or not at all.

Thus, the whole realm of demonstrable knowledge lay for Aris-

totle between the particulars (τὰ καθ' ἕκαστα) on the one hand, and the primary, undemonstrable principles (the πρῶτα καὶ ἄμεσα) on the other. The business of science was to connect these two extremes, for the great body of knowledge consists neither of the crudely apprehended data of sense nor of purely apprehended essences. Scientific demonstration, ἀπόδειξις, is reasoning which proceeds from true and necessary premises and yields a conclusion which is, therefore, at once true and necessary and determinate of the essence. Since any concrete thing or τόδε τί is what it is by reason of its general character, complete knowledge of it would be obtained if we were able to connect all its features with the primitive components of its essence. But Aristotle recognised with Plato that the particular has in it something which resists perfect reduction to scientific generality,—the factor, namely, which in the metaphysical analysis is described as matter (ὕλη). Apodictic was not, however, conceived by Aristotle in Platonic fashion as a method of deduction from one set of universally valid principles. It is characteristic of his view that, in addition to the common or general principles (κοιναὶ ἀρχαί), of which the most fundamental is the principle of contradiction, each distinct kind of fact, has its own special principles (ἴδιαι ἀρχαί), on which all demonstration respecting it must be based, or about which all demonstration turns.

It is equally characteristic of Aristotle that he should recognise the two-fold manner in which we approach the problem of obtaining scientific knowledge, whether by apprehending isolated facts and so by comparison, rejection and the like, attaining an insight into what is universal, or by deductive procedure from already established or assumed universals. The world may be regarded in respect to knowledge under two aspects, (a) as a multiplicity of particulars, and (b) as a system of general laws on which the particulars depend. To the individual knower the particulars stand relatively nearer than the universal laws; they are the more easily cognised from his point of view. They are πρὸς ἡμᾶς πρότερα, prior and better known relatively to us. In the nature of things, or in the order of truth, the universal principles are, however, prior to the particulars, and may even be said to be the better known, because it is by knowing them that we explain the particulars. They are φύσει πρότερα.

The great forms of reasoning which Aristotle was the first to analyse, induction and syllogism, correspond to this difference between prior relatively to us and prior in nature. For in induction (ἐπαγωγή), which is, in fact, syllogistic in form, we proceed from the particulars, and, by collection of instances, advance by means of a ground or reason to a conclusion, while in the syllogism we proceed to our conclusion from premises involving a middle term (μέσον), which is the reason for the connection arrived at in the conclusion. In the order of time, induction is a necessary step in the progress of intelligence to that stage in which it can grasp the universal as such, but it is only in and through the process of ἀπόδειξις that the essential character of the universal becomes known. The universal (τὸ καθόλου) is that which can be predicated of a whole class of things (κατὰ παντός) just because it can be predicated of every member of the class essentially (καθ' αὑτό,) and truly universal judgments, which it is the function of ἀπόδειξις to obtain, express this relation.

Evidently the process of ἀπόδειξις presupposes that things have a fixed nature, and that this fixed nature is apprehensible. Knowledge rests, therefore, upon the principle of contradiction ("the same essential characteristic cannot both belong and not belong to the same class of things"); and this principle cannot itself be proved, because it is the condition of all proof. It is, however, sufficiently established by showing that its denial would be tantamount to denying that the real has any permanent character and to asserting that knowledge of the real is consequently impossible.

Clearly Aristotle was assuming that the human mind is endowed from the start with capacities which enable it naturally to advance from crude sense intuition to the intuitive grasp of first principles. He was assuming that the innate discriminating power he calls perception naturally effects a certain abstraction from particularising circumstances (*Post. Anal.* ii. 19). Then, on the basis of these first generalities, and through the aid of imagination and memory, we collect by induction instances which agree and reach the stage of empirical knowledge, a stage in which grounds or reasons are, however, not as yet definitely contrasted with their consequences. And when this stage is reached, it becomes possible to take a further step, to pass from the mere contingency of fact to the necessity of reason, to apprehension of the grounds of what is offered in experience.

Lacunae in the Treatment.—There is much in this treatment that is of permanent value, but that it leaves many formidable difficulties unresolved is undeniable. Granting the discriminating activity of perception, the development up to the stage of empirical knowledge has been a natural one. But when the further step to reason is taken, there appears to ensue an absolute break, a difference of kind, shown in the content apprehended as that between the contingent and the necessary and in the faculty itself by its mode of procedure. The principles which reason grasps are necessary truths; they present themselves as isolated items of contemplation admitting of no question. And reason operates in a direct, intuitive manner, resembling in no way the discursive activity of the naturally developing intelligence. Reason, Aristotle has to admit, is not a part of the human soul but distinct therefrom; and he does not hesitate to say that νοῦς is introduced into the soul *ab extra* (θύραθεν), and to speak of it as the divine element in man.

But more. Let it be assumed that reason, aided by the preparatory work of induction, has seized the essential mark of some species or type of existence. In the first place, however, it has to be admitted that these essential marks are not all that enters into the concrete nature of this type of existence, that there are in addition accidental features concerning which we are told knowledge is impossible. In the second place, amongst the necessary characteristics themselves a distinction has to be made between the essential, those without which the type in question would not be what it is, and the derivative, those which can be proved to be necessary because dependent on the essential. Yet the nature of this dependence is left in obscurity. The essential attributes are called grounds of the derivative, but what the relation is that objectively corresponds to the relation of ground and consequent Aristotle has nowhere attempted to determine.

A further point calls for notice. Aristotle's theory both of knowledge and of real existence was dominated by the thought of the subject-predicate relation. A thing, an existent, was regarded as that about which predication may be made, the predication finding expression in one or other of the so-called "categories." The fundamental category, that of substance (οὐσία), is the concrete individual, not an atom, but the individual as a member of a natural kind, an *infima species;* while the other nine categories indicate the general differences among all the predicates whereby our knowledge of the individual is expressed. It is only the concrete individual that has the characteristic of never appearing as a predicate. In so defining the ultimate subject of predication Aristotle brings forward in all its difficulty his fundamental doctrine that the individuals are always members of a natural kind. For, defined from this point of view, the ultimate subject of predication would seem to be rather the *numerical individual* than the natural kind. But the numerical plurality of the members of a natural kind Aristotle persistently regarded as a final accident, so to speak, attaching to the real subjects of predication in consequence of their existence in the world of generation. And since knowledge is always knowledge of the universal, we seem to be landed in the predicament of saying that the numerical individual is beyond the range of knowledge.

B. **In Scholastic Philosophy.**—Here attention must be confined to one problem. The Scholastic thinkers gave to the doctrine of the real existence of universals the name of realism. They distinguished sharply, however, between the realism of Plato and the realism of Aristotle. The Platonic realism they summed up in the formula *universalia ante rem;* and they employed the formula *universalia in re* as descriptive of the Aristotelian realism. After the time of Abelard (1079–1142), Platonism, even in its Neo-Platonic guise, found few supporters, but

in the thirteenth century, the century of Aquinas (1225–1274) and of Duns Scotus (1274–1308), Aristotelianism was widely represented.

These thirteenth century thinkers maintained that the universal was real, or objective in character, one *in* many, as Aristotle had said, and that the particular, which was likewise real, had to be explained by reference to the universal and not the universal by reference to it. Largely on account of the difficulties it appeared to throw in the way of any doctrine of human freedom, a reaction against the realistic theory made itself felt, however, and, in the later period of Scholasticism, William of Ockham, at the beginning of the fourteenth century, insisted that, if the universal were not a substance, it could not be anything objectively and essentially real, but that it was an *"intentio mentis,"* a conceptual object, a thought *in mente*.

Thus, there was developed, in opposition to realism, the doctrine known as conceptualism, according to which the only existent realities are individual entities, while universals are mental constructs, concepts, "ideas" in our sense of the term, obtained by a process of abstraction from resembling individual objects. An extreme form of this doctrine found expression in the contention that, since thought or generalisation is impossible without the use of words, the universal is a mere name (a *nomen* or *flatus vocis*), a device of language for the purpose of human intercourse. Hence the designation nominalism came into vogue. It was applied originally to the extreme view just indicated, which, although not rightly ascribable to William of Ockham, was held by some Scholastics (as, for example, by Roscellin as early as the eleventh century) and in the seventeenth century by the philosopher Thomas Hobbes (1588–1679). It has since, however, become more or less customary to use the term nominalism in a wider significance, and to understand by it the general doctrine that the ultimate constituents of the world of existence are individual entities and not universals. The Scholastics summed up the principle both of conceptualism and of extreme nominalism in the formula *universalia post rem*.

C. **In Modern Philosophy.**—It will be convenient to group the main historical theories of knowledge of the modern period under the three heads of rationalistic, empirical and critical.

a. **The Rationalistic Theories.**—Modern philosophy, particularly as regards the treatment of knowledge, begins with Descartes (1596–1650). He, for the first time, definitely placed the problem of knowledge in the forefront of philosophical inquiry. The nature of the Cartesian doubt is only to be understood in the light of the contrast between the ideal of knowledge, as Descartes conceived it, and the accepted scientific doctrines of his time. His ideal of knowledge in so far resembled Plato's that it may be termed a generalisation of the mathematical ideal. In the three features exemplified in mathematical procedure (a) simplicity and certainty of data, (b) strict proof in the connection between data and conclusion, and (c) completeness of survey, he discerned the marks of systematic knowledge and his contention was that so far from being restricted to the sphere of mathematics these features should characterise knowledge as a whole.

The main processes of knowledge should be accordingly three. We should start with the *intuition* of simple data and axioms,—data which we can clearly and distinctly apprehend and therefore be sure of directly, propositions between the terms of which we can see immediately a necessary connection. We should proceed by *deduction* from these simple truths to the more complex notions that depend upon them, passing progressively from condition to conditioned, and at each step being certain that the connection is as clear and distinct as are the simple truths themselves. And, finally, by *induction* or *enumeration* we should pass in review all the elementary factors of any complex so as to make sure that the work of deduction has been completely accomplished. Viewed more generally, the two last processes might be named synthesis and analysis respectively.

Satisfied that the heterogeneous and disconnected principles on which the science of the time proceeded in no sense fulfilled these requirements, Descartes resolved to doubt provisionally all the beliefs and opinions with which he had grown up, until by a process of elimination he should reach at last a datum so clear and distinct that doubt with respect to it was no longer possible. Neither in the realm of sense-perception nor even in the realm of mathematical science could such a datum be found, for sense-experience is often illusory and we can never be sure that it is not, and so far as their relation to the mind is concerned mathematical principles may be deceptive. Ultimately, then, he was left with the bare fact of thinking or being conscious. *Cogito ergo sum;* the thinker could not doubt the fact of his own consciousness, for that was as necessarily manifest in his doubting as in his knowing. He exists through being conscious; and his being conscious assures him with indubitable certainty that he is at least part of the realm of existence. In the fact of self-consciousness, Descartes wants to say, truth and existence are identical.

Conscious Existence.—The dictum was serviceable mainly as affording a clue to a quite general rule or criterion of certitude: whatsoever is apprehended with the same degree of clearness and distinctness as the connectedness of consciousness and existence in the proposition *cogito ergo sum* is true. Or conversely, where we can disjoin our ideas, and clearly and distinctly apprehend them as separate, there we are bound to deny that the existents we take to correspond to them are necessarily conjoined or implied in one another. A rapid application of this rule led Descartes at once to certain fundamental positions in regard to the facts of experience. The notion of conscious existence does not imply that of extended body; and in like manner the notion of extended body does not imply that of consciousness. Mind and body are, therefore, not necessarily connected, but must be regarded as independent of one another; and if they be in any way conjoined, the conjunction must be contingent.

So, too, we can distinguish between the essential and the accidental attributes of each of these types of existents. Extendedness is obviously the essential attribute of the corporeal, but in the notion of extendedness there is not involved that of movement. Movement in the external world must, therefore, be regarded as a contingent addition. Similarly, in the inner world, Descartes was inclined to regard the understanding (*intellectus*) as the essential attribute, and the will (*voluntas*) as a contingent one. It is noteworthy that the opposition expressed by the terms extendedness and movement comes very near to the opposition discernible in the Platonic system. So far as the essence of the corporeal world is concerned, we might work out a complete geometrical explanation. Our propositions would, in that case, be all universal in significance; they would define the character of any change, *if* change occurred, but they would not determine the conditions under which any change might, or must, occur. Moreover, in regard to any actual change taking place in time, it is impossible to maintain that in the notion of what precedes there is implied the notion of what succeeds. For each content of each moment of time can be *conceived* separately. There is nothing in the fact that the real world has been so far kept in existence which renders it necessary that it should go on existing.

Epistemologically considered, then, the Cartesian doctrine of nature brings into prominence the opposition between two types of propositions. On the one hand, there are propositions which constrain assent so soon as their terms are understood, which are seen to be absolutely necessary; truths of reason, as we may call them. On the other hand, there are propositions the truth of which, if they can be said to be true, must be described as contingent; their validity is not guaranteed by the relation in which the ideas contained in them stand to one another. They may be called truths of fact.

It is in reference to the latter class of truths that the crucial difficulties of the Cartesian theory of knowledge come to the front. What precisely is the guarantee for the objective validity, or correspondence to fact, of (say) our judgments of perception? In the fact of perceiving there are, according to Descartes, two elements involved,—a certain amount of sensuous data and an idea of the object perceived. Neither of these can be legitimately thought of as produced by any external thing supposed to correspond to the process of perceiving and, in view of the general

principle just mentioned, there are no means within the mind itself of accounting for these occurrences.

No other expedient is, therefore, available than that of resorting to what is equally demanded by the very conception of the finite, namely, an Infinite. Briefly, Descartes' solution of the problem is that the divine power must be thought of as coordinating changes in the external world with perceptions of the finite mind,—a doctrine which when more fully elaborated by the later Cartesians came to bear the title Occasionalism. Stated generally, then, in Descartes' view, finite existents, whether minds or corporeal things, must be regarded as contingent, and any proposition relating to them can refer only to possible existence. There can be but one notion which by its own nature and in virtue of its own content indicates not only possible but necessary, and therefore actual, existence,—the notion, namely, of the Infinite.

Indeed, the finite in its very conception implies an Infinite and the distinction between minds and extended things implies the dependence of these upon an absolute ground or God. Ultimately, all certainty of knowledge rests on the necessity of accepting the existence of an absolute ground, and the very notion we have of such an absolute ground involves the notion of necessary existence. In this one case at least it is as legitimate as it is necessary to take thought as a perfectly adequate assurance of objective reality. And, since veracity must be one of the attributes of a perfect being, we have secured additional confirmation of our knowledge of finite facts. For it is through clear and distinct ideas that we apprehend truth, and these ideas the finite mind does not produce but accepts. The question, indeed, forces itself here to the front as to how that obscurity through which we fall into error arises at all, and Descartes attempted to answer it by drawing a radical distinction between understanding and will. The understanding is passive; in strictness the term is but a collective one for the several ideas which the mind possesses. The will, on the other hand, is active, and a more or less arbitrary power; and, in its function of judging, it is not constrained to operate in accordance with truth, and may bring about the result that we take for clear ideas what are in fact the reverse of clear as, for example, when we are led to suppose that the vague, confused sensations of colour, hardness and so on are objective characteristics of a material thing. These sensations are not ideas, and it is doubtful whether of them we have so much as images. If, then, by an arbitrary act of will we assume that what is thus indistinct and confused corresponds to reality, we are deceiving ourselves.

Failure of Cartesian Account.—In numerous respects it is manifest that the Cartesian account of knowledge fails to satisfy the conditions which Descartes had himself laid down. To assert, for instance, that the understanding is passive would seem at once to imperil the contention that it is the mind's essential attribute. For, if the ideas of which the understanding consists all flow from the activity of God, it is but a short step to the doctrine of Malebranche (1638–1715) that this complex of ideas constitutes the immanence of God in us, or the vision which we have of the divine nature. "All our clear ideas are," writes Malebranche, "so far as their intelligible reality is concerned, in God. It is only in Him that we see them." It is true that, like Descartes, he still inconsistently speaks of the understanding as the essential attribute of the finite mind, but, as a matter of fact, its contents are, according to him, devoid of any subjective colouring, they are objective in character. Even in sense-perception, the contents directly known by us are essences or "ideas" in God. What alone induces us to assert the existence of material entities corresponding to these "ideas" is the complex of confused imagery and corporeal feeling, produced by bodily stimulation. On the occasion of such stimulation, there occur "modalities," or modifications, of the mind—acts of "sensing"—and through these we become aware of the primary and essential qualities, the ideas, of things. The "ideas" are universal, each "modality" or operation of the mind is particular; the "ideas" are immutable, our modes of perceiving are all of them temporal in character.

In the awareness of a concrete thing, there are, then, involved (a) the "idea" or essence, more or less confusedly apprehended, of extendedness, and (b) the complex of sensations or feelings (*sentiments*), which we erroneously suppose to represent qualities of external things. Thus Malebranche was driven to the conclusion that we do not know but only infer the concrete existence of material things; and, indeed, although on theological grounds, he was assured of their existence, he made no attempt to explain how "intelligible extension" (the essence of extension in the divine mind), containing as it did no particularising features, can be determined to manifest itself in the form of concrete entities.

Obviously, strictly in accordance with the principles of the Cartesian system, the existence and nature of the external world ought to have been shown to be involved in the existence and nature of the infinite ground. To such a position both Descartes himself and Malebranche were always disinclined, although it alone would have made the system even apparently coherent. The step was taken by Spinoza (1632–1677). Spinoza follows Descartes in regarding what Locke called "secondary qualities," as being simply appearances, having nothing corresponding to them in corporeal nature except figures and motions. But the material universe or *res extensa* is, in his view, no creation of God; it is an Attribute of God's nature, a form of God's being.

Briefly, Spinoza's monistic philosophy is based upon the fundamental distinction between "substantial" or self-dependent being and "modal" or dependent being, between that which is "in itself" (*in se*) and conceived "through itself" (*per se*) and that which is "in another" (*in alio*) and is conceived through that other. Whereas for Aristotle finite individual entities were alone entitled to be called "substances," as the subjects of predicates, it is the contention of Spinoza that, when considered in the light of its antecedents, every finite individual entity will be found to have forfeited its supposed substantive character and will turn out to be itself predicable as a phase or modification of something else.

Consequently, there can be but one self-dependent Being or Substance, namely, Reality in its entirety and completeness. What we take to be independent, substantive entities, whether physical or mental, must ultimately evince themselves as derivative "modes" or states (*affectiones*) of the one absolute Being, ways in which that one absolute Being expresses or manifests itself, and which "follow from" it as consequents from ground. Using the Cartesian term "Attribute" to express "that which intellect apprehends of Substance as constituting its essence," Spinoza conceives that the concrete nature of God demands for its expression an infinite variety of Attributes, although to the human intellect He is manifested under two Attributes only, extension and thought or consciousness (*cogitatio*). There are not, however, two realms, a realm of extension and a realm of consciousness; it is one and the same reality that manifests both aspects. All *res particulares* are, regarded from one point of view, modes of extension, and regarded from another point of view, modes of consciousness.

Spinoza and Knowledge.—Knowledge would, then, according to Spinoza, attain its ideal were it able to present the whole content of that which is to be known as an orderly system of consequents following from the supreme ground. But between this ideal of knowledge to which rational reflexion leads and the knowledge of the world acquired in ordinary human experience there would seem to be a wide gulf, of which Spinoza was fully sensible. No distinction is more frequently emphasised by him than that between what he calls imagination (*imaginatio*) or belief (*opinio*), the equivalent of the Platonic term δόξα and reason (*ratio*). Under the former term he includes not only sense-perception but memory, as also the generic images and general concepts such as are hastily and confusedly attained through the vague experience (*experientia vaga*) of everyday life. Such knowledge is always "inadequate"—incomplete and partial. We know external objects, for example, only in so far as they affect our bodily organism, but not in the innumerable relations in which they stand to other things; we apprehend them as torn from their context, and in a fragmentary fashion.

The more, however, our knowledge advances, the less possible is it for us to rest content with this confused picturing of imagination. When the stage of *ratio* is reached, we have become pos-

sessed of common notions (*notiones communes*) and "adequate" ideas of the properties of things—ideas of what all things have in common and of what is alike in the part and in the whole. If there be any characteristic which is common to all things in so far as they are corporeal or in so far as they are conscious, then, when we have determined such a property, our knowledge will be, so far as it goes, adequate. Science starts with such common notions and endeavours to construct a coherent account of the universe by a process of deductive inference, the validity of which is guaranteed by the nature of intellect itself, for it is the essential mark of the intellect to perform the function of deduction accurately.

Yet even this is not the highest stage of intellectual apprehension. Science begins and remains throughout within the region of general laws or principles. It enables us to understand the universal and necessary interconnection on which the eternal order and coherence of the universe is based; it does not enable us to grasp the concrete individuality of things, nor their specific manner of connectedness in the whole. Finally, then, in what Spinoza called intuitive knowledge (*scientia intuitiva*), the concrete individualities of imaginative experience are restored, but at a higher level,—a level where individual things are no longer conceived fragmentarily and in isolation, but in their relationship to and in their dependence upon the infinite ground. Such knowledge is intuitive not in the sense of being prior to or independent of reasoning, but in the sense of being the culmination of inferential knowledge, when we are able at a glance to see the relation of the part to the whole.

In Spinoza's system what it has now become customary to call the coherence theory of truth obtains, for the first time, definite form and expression. The theory so named differs from the Cartesian conception of knowledge as a building made up of separate bits of truth and also from the conception of mere consistency, employed by formal logic. For it is the conception, on the one hand, of a system of truth, not of truths, and, on the other hand, of a significant whole which is manifested in all the concrete articulations of its structure. Knowledge, so regarded, implies systematic coherence,—such connection among the parts of that which is known as constitutes them to a large extent what they are. Each known fact is as known related to innumerable other facts; and complete knowledge of it would be the representation in thought of all the possible relations by which its place and function are determined.

Thus the fundamental idea involved in knowledge is not that of a collective sum of being, but the idea of the essence of reality, of that which manifests itself in the particulars, and which is likewise involved in all our thinking. Our knowledge is itself a part of the system of things, in and through it the essence of the system is consciously realised. There is, indeed, no contrast to be drawn between truth and reality; the true is the real and the real is the true. *Ordo et connexio idearum idem est ac ordo et connexio rerum.* There are, indeed, degrees of reality and of truth. Just as no finite thing can be completely real, although one finite thing may be more real than another, so the content of no single human judgment can be completely true, although one may be truer than another. If we take our ideas for no more than what they are, they do not deceive us. In their own context and order, even imaginative ideas are so far true.

Error arises through our misinterpretation of imaginative experience, through our tendency of conceiving the fragmentary things thus recognised as *res completae,* as complete in themselves. From the fact, for example, that external things affect our sensory nerves, we are aware of sensations of colour and sound etc. But since we are ignorant of the mechanism occasioning these effects, we ascribe the sense-qualities in question directly to the external things themselves, although these external things are at most only in part their causes. Most critics would, however, agree that this solution of the problem of error throws into relief one of the main difficulties of Spinoza's theory. Errors and illusions are, after all, not mere "negations"; there is a positive factor involved in them which must in some way be grounded in the nature of the real. And it is impossible to find that ground in Substance, as Spinoza conceived it.

RATIONALISM OF SPINOZA AND LEIBNIZ

At first sight the contrast between the rationalism of Spinoza and that of Leibniz (1646–1716) seems sufficiently sharp and decisive. Leibniz repudiates emphatically enough the monism of Spinoza, and substitutes a monadism, according to which the constituents of reality are strictly individual entities, psychical in nature, dependent, indeed upon an ultimate ground but not contained therein. He reverts in a way, to the Aristotelian definition of substance as that which can only be the subject of a proposition, and never a predicate; but this definition, he contends, is not sufficient, and is in itself merely verbal. Every true predication must have a basis in the nature of things, and even when the predicate is not explicitly contained in the subject, it is still necessary that it should be implicitly contained in it. The content, then, of the subject must always include that of the predicate in such a way that, if one understood perfectly the subject-concept, one would know that the predicate necessarily belongs to it.

The concept, therefore, of any individual substance involves everything which can happen to that substance; and, in contemplating this concept, a perfect intelligence would be able to discern whatsoever can be truly said about such individual, just as in the nature of a circle it would be able to discern all the properties which can be derived therefrom. Each monad is, in this respect, a substance, and in so far an entire world, or a mirror of the whole world. "The universe is in a manner multiplied as many times as there are substances."

Moreover, since each monad is thus all-inclusive, and therefore unaffected by any other, it was necessary to assume a concomitance (a "pre-established harmony") as subsisting in the universe, so that to each experience in one monad there would be a corresponding experience in every other. Again, since no two individuals can be absolutely alike and at the same time numerically different, each must mirror the universe from a different "point of view," so that the universe is in a manner multiplied as many times as there are substances. Once more, in the life of each monad there is continual development, or advance from one perception to another, due to conation, the advance being proportional to the clearness of apprehension on the part of the monad.

The basis of all knowledge is, according to Leibniz, perception, and of perception there are differences of degree but not of kind. The lower stage may be said to be that of unconscious or crude perception, in which there is union of a manifold in what is perceived but of neither is the subject clearly aware. A further stage is that of "apperception" in which the perceptions have reached a certain measure of clearness and distinctness, and the subject is aware of the multiplicity which is united in the content apprehended. And a higher stage, still, is that of reflection, or of self-conscious cognition, in which the subject marshals its perceptions or ideas in the light of the fundamental principles of contradiction and sufficient reason (i.e., *the principle of causality*).

These two principles are concerned each with a special kind of truths,—the one with truths of reason, of which the one criterion is self-consistency, and the other with truths of fact. Whereas the Cartesians and Spinoza had maintained that all real knowledge was of one kind and that no fact could be explained except by showing its dependence on the one supreme ground, Leibniz insists that to statements relating to matters of fact the test of self-consistency cannot be satisfactorily applied, that we can only point to a sufficient reason why we believe such statements to be true, without professing that we can fully explain why they are.

While, then, all necessary truths are expressible in analytical propositions, wherein the relation of predicate to subject can be clearly apprehended, contingent truths are not thus expressible, but only in propositions which Kant called later synthetical, wherein the relation of predicate to subject cannot be clearly apprehended. It is true that Leibniz often speaks of this distinction as though it were in the long run a distinction of degree, not of kind. Could we survey with perfect clearness the long series of grounds of any matter of fact, we should see that ultimately the consequences were capable of being analytically deduced, only the series of grounds required for such a purpose

would be infinite. Yet, although in consistency with his general theory Leibniz was bound to say this, it is evident that even on the score of the difference between infinite regress and finite mediation, the contention cannot be sustained.

All thought or perception is, according to Leibniz, thought or perception *of* something. But what is really outside the monad can only be the other monads and God, and, since there is no external influence exerted on the monad, it can only *ideally* represent what is taking place in its environment. It follows that what we describe as a material world, extended in space, must be phenomenal in character, a way in which ultimate reality is obscurely represented through means of sense-perception. Nevertheless, owing to the singleness of plan underlying the development of all the monads, it is not to be supposed that material nature has only that mode of being we assign to images of phantasy. It is a well-founded phenomenon (*bene fundatum*). So, too, that characteristic of the material world which the Cartesians had taken to be existent in the same sense that minds are existent, spatial extendedness, must likewise be phenomenal in character. Yet, there is a reality underlying what we perceive as spatial extendedness,—namely, the order of coexistence of the monads, no substance but a relation among substances.

The characteristics of space as apprehended are, then, in one sense subjective, in that they do not correspond to what is real, and in another sense objective in that they are common to the perceptions of all the monads at a certain stage of development. It is doubtful how far Leibniz would have been willing to follow out the line of reflection involved in the consideration that with increasing advance of knowledge the limitations of our spatial picture of things would be gradually removed. He certainly held that in the divine mind, the ideas forming the objects of the divine intellect are not contemplated as in spatial relations to one another.

It would, therefore, have been possible for Leibniz to maintain that the spatial form is incidental to that confused mode of apprehension which we call sense-perception. This is what Kant did take to be implied in his doctrine. It constitutes, indeed, one of Kant's main criticisms of the Leibnizian position that according to it the sensuous apprehension of things which clothes them with space-relations and the intellectual apprehension which leaves such space-relations out differ only in degree of clearness, that it is the same world of things confusedly apprehended by sense as a spatially extended realm which is intellectually apprehended as related only in the fashion of coexistences, whatever that phrase may mean. And, of course, similar considerations apply to Leibniz's contention that time, as we apprehend it in perception, is but the obscure and confused picture of the grounds which determine the order of succession, whatever the term "succession" may mean.

b. **Empirical Theories.**—The term "experience" is an excessively ambiguous term, and in one or another of the various ways in which it has been employed, well-nigh every theory of knowledge might be said to be empirical. We noted, however, the manner in which Aristotle distinguished what he called ἐμπειρία from ἐπιστήμη, and that distinction will afford a clue to the meaning of the term in the present context. For, according to the theories now to be considered, knowledge is ultimately based upon sense-apprehension, and the objects thereby apprehended are built up of particular, isolated elements—sensations or impressions—given to the mind from without, which in and through such apprehension are in some way welded together. So that the task of a theory of knowledge will largely consist in analysing the complex objects of perception into their simple constituents, and in tracing the threads of connection by which these are combined together in what is described as "experience."

Locke (1632–1704) may be taken as having given the first definite exposition of an empirical theory of knowledge in the *Essay concerning the Human Understanding*. In this work, he endeavours to conduct the inquiry into the origin, certainty and extent of human knowledge "in a simple historical way," that is, by showing whence and how we come to have "ideas," and by examining the processes of manipulation these undergo in the mature intelligence. Defining the term "idea" as that which serves best to stand for "whatsoever is the *object* of the understanding when a man thinks," his preliminary task is the negative one of disposing of the view that certain of our "ideas" are "innate" possessions of the mind itself.

Viewing, then, the mind as at the start like an "empty cabinet," void of all furniture, Locke finds that the several "ideas" which form the raw material of knowledge are supplied to it by the two avenues, sensation and reflection, or external and internal observation. By the former we obtain our ideas of sensible things, by the latter our ideas of the mind's own operations, such as perceiving, thinking, doubting, willing, etc. While so far agreeing with the Cartesian thinkers as to regard the real world as being made up of two kinds of entities, material and mental, he yet took for granted, despite the Cartesian criticism, that things and minds act causally upon one another. Things produce in us ideas of sensation by "impulse" or impression, although he was far from considering that such a metaphor explains what actually happens. Furnished, thus, with simple ideas, as its data, the mind can, in virtue of the powers or faculties with which it is endowed, manipulate that raw material in a variety of ways. It can retain the "ideas" it passively receives, combine them, put them in relation with one another, and exercise upon them the process of abstraction. Complex ideas are, in that way formed, and they bear obvious marks of the mind's operation.

Furthermore, among simple ideas of sensation, Locke made the distinction between ideas of primary and ideas of secondary qualities. The former are resemblances or copies of the actual properties of things; the ideas we have of the extension, figure, texture and motion of the parts of things accurately represent the nature of the things that give rise to them. The latter are not resemblances of any characteristics possessed by things themselves, but are effects produced, through the operation upon our senses, of powers which things possess by reason of their primary qualities.

Locke and "Ideas."—"Ideas" had for Locke, as they had for Descartes, a two-fold aspect. They had, on the one hand, an *immediate* aspect, inasmuch as they were themselves the direct objects of our apprehension; they had, on the other hand, a *representative* aspect, inasmuch as it was through them that we come to know real things, such "things" being distinct from "ideas." It is in reference to this latter aspect that the crucial difficulties of Locke's theory evince themselves. How far can we ever be assured that by sensation we have a knowledge of things? Seeing that any comparison of sense ideas with real things is precluded, we cannot have that intuitive certainty concerning the latter which Locke thinks we have of the existence of self, nor that demonstrative certainty which he thinks we have of the existence of God. And he has to admit that what we have here is only entitled to be called "assurance" rather than knowledge,—assurance which approaches knowledge in proportion as the "ideas" concerned are perfectly simple, as is the case with the ideas of simple sense qualities, more particularly of those called primary. The difficulty comes to a head in the account he has to give of the idea of "substance." Since this idea could not have been obtained by sensation or reflection, Locke was compelled to ascribe it to the workmanship of the mind, and he did so without considering apparently the consequences which would have ensued had he remained faithful to his dictum that whatsoever was thus added to the given ideas of sense or reflection was ideal only and to be allowed no share in determining the content of the real.

Berkeley.—The line of thought by which Berkeley (1685–1753) reached the fundamental principle of his own theory of knowledge took its rise from reflection upon the dubious function in the development of experience attributed in the *Essay* to material substances. In arguing that to call in the powers of matter as the originating causes of the occurrence of "ideas" was to have recourse to an occult mode of activity, Berkeley was reverting to a line of argument which the Cartesians had made familiar.

But in the light of Locke's investigation, he was convinced that

he could push his way further. Locke had maintained that the range of our knowledge did not extend beyond the range of our "ideas"; and had, at the same time, not only detected in knowledge a reference to "things" other than "ideas" but had introduced into his catalogue of ideas those called abstract, which were confessedly devoid of the characteristics of "ideas" as supplied by sense or reflection. Indeed, in both the ordinary and the scientific notion of external things, Berkeley discerned a striking illustration of the result of attempting to carry out the illusory process of abstraction. For these external things were supposed to have somehow a place in the world of perceived reality, and yet to be of such a nature as to preclude the possibility of their being perceived. There is first withdrawn from them every characteristic necessary to constitute them possible objects of experience, and then they are still spoken of as though they did form part of our experience. Locke would have repudiated the doctrine of *universalia ante rem,* but what he actually meant by such terms as "matter," "substance," and the like were just universals of this description, *i.e.,* hypostatised abstractions. Berkeley's polemic against "abstract ideas" was intended, therefore, to prepare the way for his own construction. Although discarding Locke's doctrine of abstraction, he recognises that generalisation is indispensable for knowledge and for communication of knowledge.

Locke had not ignored, but had certainly not done justice to, the function that accrues to an "idea" in virtue of its being representative of other "ideas"; and it is this function upon which Berkeley fastens in the present connection. "An idea which, considered in itself is particular, becomes general by being made to represent or stand for all other particular ideas of the same sort." It must be confessed, however, that important though the relation of sign and that which is signified is in the development of knowledge, it will not bear the weight that Berkeley here reposes upon it, for the "sort" or species must in some way have been already determined before any particular idea could "stand for" or "represent" it.

The new principle which Berkeley claimed to have discovered may be expressed as follows. A unit or moment of experience is always a mind or conscious subject apprehending an object. Berkeley certainly did not mean that the object and the act of apprehending are identical, but only that they are inseparably connected, and that if they be thought of as existing independently, experience is being treated abstractly. To indicate its dependence on mind, he called the object, in accordance with Locke's nomenclature, an "idea"; and the emphasis laid upon this dependence probably suggests that the existence of the object is secondary and derivative.

From a certain point of view, Berkeley no doubt would have said that in the synthesis of subject and object, the former is primary both in the order of thought and in that of fact. But he who is serious with the notion of the correlation of mind and object must regard the correlation as holding equally of each of the terms. If there can be no objects or ideas without a mind, neither can there be a mind without objects or ideas. And, as a matter of fact, such mutual dependence is explicitly admitted by Berkeley. In truth, then, using the phrase *"idea of"* is one great cause of mistake; ideas are not intermediaries between the mind and its objects, they *are* its objects. Yet nature, the course of external events, seems to have an externality and independence of its own, and these features have an immense significance in all our practical experience. They require, therefore, to find explanation in terms of a theory according to which mind and ideas are the sole components of experience.

In proceeding to face this problem, Berkeley points first of all to the distinction that must be drawn between ideas of imagination and memory which arise through our own productive agency, and ideas of perception which come to us with such qualities as cannot be ascribed by us to our own agency, and in an order independent of our will. Berkeley, then, assumes that these given ideas must have a cause. And since the notion of cause can find no expression at all in terms of objective experience, the causal agency must be mind. Since, further, no more than an excessively small proportion of our ideas can be ascribed to other finite minds, there remains no alternative but to have recourse to the hypothesis of an infinite mind.

On the one hand therefore, considered objectively, the world of perception is independent of finite minds, and has its own unity and identity, because it is constituted by the way in which one infinite mind consistently and systematically affects our finite minds, and indeed there is a permanent support for ideas in that infinite mind. On the other hand, subjectively considered, as regards our belief in the externality and independence of what we perceive, the explanation is to be found in the fact that owing to the regular order and combination in which sense-ideas are given to us, they tend to be associated, so that each becomes in our experience a sign which suggests the ideas habitually conjoined with it.

There are manifest, however, in Berkeley's procedure as in Locke's, two lines of thought which refuse to be brought together. On the one hand, he preserves a large portion of the empirical theory of knowledge; on the other hand there is involved in his speculation a conception of mind and of our ways of knowing mind that cannot even be stated in terms of the empirical theory. For he was compelled to admit that minds are not to be known through means of "ideas"; neither of our own mind nor of other minds have we "ideas" but only "notions," although how such "notions" differ from "ideas" and how the difference is compatible with his analysis of experience he nowhere attempts to determine. A similar difficulty comes to the front in his attempt to account for the generality of mathematical knowledge. Moreover, it can scarcely be doubted that the conception of a world of ideas in the mind of God is exposed to the very criticism which Berkeley directed upon the notion of material substances. In fact, there are numerous indications, especially in his later writings, that Berkeley's reflection was tending rather to the later Critical theory than to the more strenuous empirical doctrine of his immediate successor.

Hume.—The analysis of experience offered by Hume (1711–1776) may be said to be that offered by Berkeley with the exclusion of the factor of mind. He conceives the components of experience as being from the first of the kind we call mental, as, in his terminology, perceptions, which consist of the two classes "impressions" and "ideas," or sensations and their images. But he declines to admit that the term "mental" implies over and above perceptions a mind the function of which is to be aware of these as objects. "An object that exists when it is not perceived, a mind that is more than a series of perceptions, are things with reference to which we cannot ask how they exist, but only how they come to be supposed to exist." Perceptions as such carry no tidings of their mode of origin with them; they testify to their own reality, but they can guarantee no other. The problem which Hume had, therefore, before him may be said to be that of showing that there are no ideas which are not copies of former impressions, since otherwise a workmanship on the part of the mind, conceived as more than a series of perceptions, would require to be postulated.

Accordingly, he sought to transfer all those processes of combining, discriminating, judging, which Locke had spoken of as faculties of the mind, to the perceptions themselves, and to regard these so-called faculties as on the one hand modes of grouping among the ideas and on the other as particular ways of having ideas, the differences of which are due to variations of an indefinable element of feeling, giving rise to what he vaguely called "belief." All those references to external existents, which perceptions seem to carry with them, are to be ascribed to this mysterious factor of "belief,"—mysterious because it obviously implies that very distinction between mind and its perceptions which Hume was refusing to recognize.

Since the constituents of experience are discrete units, it followed that the relations between them must be wholly external to the units themselves, and can be only relations of order, the order in which the units come together and succeed one another. From this point of view, it is difficult to see why Hume should have repeated the familiar distinction between two types of knowledge,—relations of ideas and matters of fact,—because one

would have supposed that the only possible type of knowledge would have been the latter. And, in truth, Hume does not admit any fundamental difference. Necessity in thought signifies for him non-contradiction.

Accordingly, a relation between ideas must be either an actual occurrence, and then its non-occurrence would involve no contradiction, the characteristic, namely, of matters of fact, or it must be restricted to the content of the single idea, that is to say, the proposition expressing it must be purely analytical. Although in the well-known passage of the *Inquiry,* he instances mathematical propositions as coming under the head of relations of ideas, he did not really regard them either as analytical or as necessary and universal. They have, he was ready to assert, no other basis than experience; it is just as impossible to extract a mathematical proposition, a proposition implying a relation, from the content of a single idea, as it is to extract from any one perception taken by itself the idea of its cause or effect. And in reference to the idea of cause, the only ground of explanation which experience can furnish is that of custom or habit. Impressions come to us in certain orders of sequence or coexistence, and this natural conjunction, frequently recurring, gives rise to a particular feeling, which occasions the belief that they are necessarily connected. Similarly with reference to our ideas of permanent things and of the individual self. The former is due to the resemblance of recurring impressions which we take to be impressions of the same object, although, in truth, each is an independent fact. The latter arises from and is based upon the ease and rapidity with which each new impression or idea is conjoined with the train of ideas already present.

The value of Hume's work is largely dependent upon the thoroughness with which he attempted to work out a theory of knowledge from the strictly empirical point of view. Given only isolated mental states, he has done all that it is possible to do in attempting to show how the knowledge which we appear to have of things and their relations comes about. And in the end he was constrained to confess that the attempt had been unsuccessful, and names with penetrating sagacity the exact reason of the failure. His effort terminated in a position of thorough scepticism. It may be that the beliefs to which experience leads correspond to fact; but, if they do, there are no possible means by which we can logically show that such is the case.

c. **The Critical Theory.**—The empirical and rationalistic theories of knowledge, while diverging widely in fundamental principles, had been brought to a stand before similar problems. The rationalistic method had terminated in a complete severance of thought from things. Throughout the movement from Descartes to Leibniz it is discernible that the final conception of perfect knowledge was destined to become that of a mere system of isolated notions, each possessed no doubt of inner relations, but deprived of any significance as interpretative of real fact. On the other hand, the empirical method in its developed form as presented by Hume, found itself in the difficulty of offering, in terms of its main conception, any explanation of knowledge at all. Each isolated idea might either be called real or regarded as indicative of what was real, as by Hume and Locke respectively, but in either case the isolation seemed to make all relation of ideas, all systematic insight into existent reality, impossible.

Indeed, the empirical theory easily led to a final view as to the kinds of knowledge which even in words is almost identical with that reached by rationalism. Each isolated idea, seeing that it exists, has at least the formal mark of inner consistency. There appear to be always possible with regard to it those judgments which do not go beyond mere consistency,—analytical judgments. But any judgments whose import is relation among real facts must be pronounced to be impossible, or be designated by other terms than that of knowledge.

KANT'S CRITICAL THEORY

If this result is the divorce of mind from reality, then the underlying conception of the critical theory of Kant (1724–1804) is that knowledge or experience is only explicable in terms involving equally mind and real fact, thought and things. It may be that, in the end, the Kantian view tends again to a severance which reproduces the old difficulties, but the leading idea is undoubtedly that of a synthesis which shall give to both mind and its objects their due place in the constitution of experience. In describing his method as "critical" Kant intended to emphasise the change in the point of view from which he was regarding the problem of knowledge from that adopted by what he called the "dogmatic" method—the method of dealing with facts entering into knowledge without having first of all inquired into the meaning and legitimacy of the notions by which an attempt is made to interpret or explain those facts. All the difficulties in which the dogmatic method became involved seemed to him to result from neglect of that prior investigation into the nature of knowledge or experience itself, whereby alone can be determined what worth is to be assigned to the notions through which objects of knowledge are interpreted. It was this prior investigation that constituted the essence of the critical method.

As the central problem of a theory of knowledge Kant singled out the characteristic of objectivity. Why was it that what was known *stood over against* the knowing subject as other than and distinct from his act of knowing? By inspecting concrete instances of the knowledge or experience of objects, he became convinced that there is always involved therein a synthesising process which sensibility, regarded as a way in which mind is affected by things, is incapable of performing. It was only in so far as the receptivity of sense is conceived as being merely one ingredient in the process of knowing, the other being the combining activity of thought, that we can understand how there comes about the result,—the synthetical combination in the judgment whereby the conscious subject refers to a real object as known by him. The object cognised is essentially a complex of heterogeneous elements, and in and through the act of cognising a synthesis of these elements is brought about.

The process involves (a) a multiplicity of sensuous material, of sense-presentations,—mere impressions, not *per se* even cognisable, and devoid of any power to arrange themselves. These elements are *a posteriori,* particular and given. The process involves also (b) two general forms into which the manifold of sense-data is received. As universal conditions of sense-apprehension, these forms of Space and Time, although sensuous in character, do not belong to any special sense, nor are they, although general, notions or concepts. They are pure *a priori* intuitions,—ways in which any intelligence which like ours is sensuously affected *must* receive the data of sense. And, once more, the process involves (c) the principles according to which the given elements of sense are combined and cognised. The manifold of sense is in itself a merely indefinite mass of disjointed particulars; it can become content of knowledge only through being brought into relation with the unity of the self, and as referred to this unity the data of sense have imposed upon them systematic connectedness. The categories, the ultimate universals of thought,—such notions as those of unity and plurality, substance and attribute, cause and effect—are the ways in which the unity of consciousness expresses itself in relation to the empirical data, the modes in which the unity of consciousness plants itself out, so to speak, in the given material. And the gist of Kant's contention is that it is precisely the function of this act of synthesis to supply that centre of reference which is what we mean by objectivity.

All knowledge or experience *is* only for self-consciousness,—such was Kant's central position. But the unity of consciousness which finds expression in the categories was not to be identified with the individual subject. Rather was it to be conceived as the unity which is implied as a prior condition in making even the inner life an object of contemplation. It was the common factor in all individual subjects—consciousness in general, as Kant himself described it, which while characterising each individual centre of consciousness yet transcends the latter in the aspect of a "super-individual function." In every act of knowing, the individual *must,* therefore, conform to the conditions imposed by consciousness as such; it is precisely in virtue of being conditions

due to the nature of consciousness in general that the categories are universal and necessary. The object is apprehended by the individual knower as something distinct from himself because the categories by which he apprehends it are not his private property, but the common property of all knowing minds.

When, however, Kant came to work out the implications of the theory, a number of conflicting considerations were allowed to intrude. In consequence of his unfortunate mode of dealing with the so-called faculties of sensibility and thought in isolation from one another, the central principle tended in his treatment to be lost from sight. While insisting that experience is possible only as a synthetic combination in the unity of consciousness, and that nothing can enter into experience save what is in harmony with the conditions of such combination, he would have it that the matter of experience was extraneously given, and that it was the given data which constituted the elements of the synthesis. Consequently, the objects of knowledge could only be phenomena,—appearances possibly of realities not thus built up of sensuous material, but appearances which in any case are essentially distinct from that of which they are appearances. As a result, the realm of reality and the world of sense-objects fall asunder; and a baffling mode of existence comes to be assigned to phenomena as distinct from things-in-themselves. The weakest position of the Kantian theory comes here to light. The conception of presentations as given to the mind is irreconcilable with the notion of the unity of consciousness as a universal principle, which was not itself an existent entity that could be acted upon, or influenced by, other existent entities.

There are in the Kantian writings trends of reflection tending in a direction radically opposed to the subjectivism of Berkeley. Particularly, for example, in dealing with the notion of the whole of experience as adapted to human reason, Kant was led to a much more concrete determination of the nature of the unity in cognition than appears often permissible on the basis of his teaching. The relation of universal to particular, he here argues, is a relation only possible for intelligence. Represented as a relation of things-in-themselves, of things taken apart from the synthesis of mind and its objects, such a relation is meaningless. And in the idea of the adaptation of the particulars of experience to reason, it is in fact implied that the arrangement, order, distribution of those particulars is determined in accordance with the general principles necessary to secure the adaptation in question. We frame for ourselves, therefore, in all our procedure under the regulative principle of the unity of reason, the conception of the ground of things as an intelligence wherein the universal is not formed from, but is determinative of, the particulars. Kant himself would allow, it is true, no more than subjective possibility to this thought of an "intuitive understanding," whose procedure is not that merely of apprehending particular things by the help of general notions but of producing, by reason of its notions, the particulars which exemplify and realise them.

But in the hands more especially of Hegel (1770–1831) what Kant thus hints at was elaborated into the conception of absolute thought as exhibiting itself in the whole detailed structure of experience. Rejecting *in toto* the assumption of things-in-themselves as beyond the realm of the knowable, Hegel repudiated no less the Kantian view of knowable things as phenomena. A distinction between the real and the phenomenal might, indeed, be drawn, but it was a distinction between features that fall within the realm of experience and not between that which is without and that which is within it.

The Hegelian System.—The cardinal position of the Hegelian system might be expressed by saying that reality is reality in and for Mind or Self-Consciousness, that its nature or structure, when laid out in the abstract, is just such a system of pure thoughts or notions as Kant had adumbrated under the head of Categories and Ideas. Thought and reality, in other words, are one and the same.

By "thought," however, in this context is not to be understood the mere result of the subjective activity of thinking on the part of the finite mind. The thought relations which were regarded as giving the intelligible aspect of reality were taken to be objective in character. And this position, it was claimed, is in no way incompatible with what, as mere matter of fact, is and must be admitted in respect to thinking and knowing as modes of the finite mind's activity. As portions of the total world of reality these subjective activities have their function; in and through them the world of intelligible reality finds expression; but the fact that they are portions of that world in no way invalidates the view that the essential relations of all reality are relations of thought.

In describing the universals which form the necessary and essential framework, so to speak, of real fact "thoughts," Hegel was desirous of emphasising the consideration that they are dependent upon Mind or Self-consciousness as their ultimate ground, that they are, in truth, the unfolding in abstract terms of the very structure of Mind. And as thus dependent, they are not to be conceived as disconnected and independent generalities, but as constituting of themselves a system, any portion of which must evince itself as unintelligible and contradictory if regarded apart from its relation to the rest. In trying to exhibit the contents of this organic system and the mode of their interdependence, Hegel was doing no more than disentangling from concrete reality, as he viewed it, its indispensable elements.

But it seemed to him that the universals, the categories, must be considered in themselves and in their relation to each other, and not alone in relation to the concrete facts in which they are realised, if they are to be exhibited not as instruments which the finite mind *uses* but as moments or phases in a process which in its unity Mind itself *is*. Just as the scientist takes a specific fact or set of facts by itself, not in order to find out what it is apart from its relations to other facts or sets of facts but in order to disclose those relations, so Hegel took the various categories—those of Being, Essence, Cause, etc.—each by itself, in order to show that it is not merely *capable* of being combined with the others, but that there is contained that within it which must of necessity lead on to the others, and develop into them. Any one category, that is to say, when conceived in isolation, reveals inherent contradiction, passes over into its opposite—an opposition that is only overcome through both evincing themselves as ingredients in a category higher than either of them. Then this again exhibits a similar logical movement, with the same result as before. And so on, through ever-widening ranges of differentiation and integration, until at length the whole system of thoughts is compassed and seen to constitute an organic unity, or Thought in its entirety.

In laying out what he took to be the intelligible framework of reality Hegel was not attempting to deduce concrete facts from the system of pure thought. He was attempting rather to show *what* the fundamental nature of reality is and not *how* every detail of the world exhibits that nature,—a task obviously incapable of fulfilment. But it was his view that could we discover what every detail was we should discern that it was a logical consequence of the ultimate ground. In other words, like Plato and Spinoza, he was identifying truth and real existence; he was saying that although *we* cannot deduce concrete fact from the universals of thought, yet in the long run it must be deducible therefrom. "In the Absolute truth and existence are one." We come here upon the fundamental problem in the theory of knowledge.

On the one hand, thought has been regarded as a purely subjective procedure of the finite mind, and whatever contribution it may make towards clearing up and methodising the information we otherwise gather in respect to real existence, it does not in itself constitute the way in which real existence is manifested to us. Only through direct affection of ourselves in the form of sensations can there be given us indubitable signs of actually existing things. And then the difficulty is that the world of real fact would seem to lie altogether beyond our ken,—at the best knowledge is knowledge of phenomena only, which can never be accurately described as knowledge of the real.

On the other hand, thought and reality are declared by Hegel to be identical, and since the principles involved in thought are the principles inherent in reality itself, the contents of logical

thought must be the contents of reality. There can be no intervening "ideas," in Locke's sense of the term, screening the real from our view. The difficulty here is that, since the contents of thought are characterised throughout by universality, there appear to be no means of retaining as real the concrete particulars of experience. To deduce the particular from the universal would seem to evince itself as a futile undertaking, because from the very nature of the original position assumed, it *must* be impossible to extract from the universal, that wherein the particular specifically differs from it. Something over and above what is contained in the universal must be possessed by the particular; and this residuum can never be accounted for by reference to the universal.

And one aspect of the antithesis is striking. The contents of thought, as universals, would seem to be independent of time and unaffected by change, whereas the realm of perceived fact presents itself as essentially temporal in character and as constantly undergoing change. Certainly, the succession of categories in the Hegelian dialectic was not conceived as a temporal development; and, since the dialectic was regarded as the key to all reality, it is clear that reality was held to be timeless. Yet, in that case, the appearance of temporal succession and change calls for explanation, and all attempts hitherto made to furnish such explanation seem to be singularly unsuccessful. Naturally, then, in recent epistemological work, the general inquiry as to the relation in which the processes or results of thinking stand to the nature and relations of real existence has remained the central problem.

3. PROBLEMS OF CONTEMPORARY EPISTEMOLOGY

We may begin with a contention upon which stress was repeatedly laid by Lotze (1817–1881). As against the Hegelian conception, Lotze regarded thought as a process of subjective activity, which neither passively mirrors the real nor necessarily corresponds to the real. As an activity *in rerum natura,* it shares in the general traits that characterise real existence, and is adapted to real existence, but it reacts in its own way on the given, a way only capable of explanation by reference to its peculiar nature. So that, in constructing its picture of reality, it follows in part its own laws and in part is determined by the general characteristics of the given material.

Now, Lotze urges, that no effort of thinking in and for itself can render intelligible the significance either of concrete individual things or of change; and, in particular, change is that of which no thinking could ever inform us. It is only perception that can bring before us the fact of change. This contention rests upon a separation the legitimacy of which it is imperative to examine. Is it possible thus to sever these two mental processes, perceiving and thinking, without assigning to them so special a meaning as to deprive our general problem of more than half its significance? Doubtless, if we start by confining thought to those activities which operate on already given apprehended contents, what Lotze asserts of it is true. But what are we then to make of perception in which there is no element of thinking? What are we to make of an experience which is opposed to thought and which must therefore be presumed to be devoid of thought?

In order to come to close quarters with the issue, it is necessary to determine the nature of an act of perception, and it has been with this problem that a great deal of recent research has been occupied. As the outcome of much labour and discussion there are certain propositions which most of those (except Bertrand Russell) who have devoted attention to the subject would accept. These may be stated as follows:—(a) Perception as it takes place in ourselves is a complex act, involving much more than can be described as direct apprehension of sense-qualities. (b) So far as "sensations" are concerned, a distinction must be drawn between the act of sensing (*sentire*) and that which is sensed (*sensum*). (c) The sense-qualities or sensa of which we are aware in apprehending a physical object are never simply identical with the physical object itself or with any physical part of it and may not be identical with any qualities belonging to it. (d) What we know through sense-perception is based in the long run on the apprehension of sense-qualities and the perception of relations between apprehended sense-qualities. On the basis of these commonly accepted propositions, we can proceed to examine first the nature of our knowledge of physical objects by way of sense-perception.

At the outset let us ask what is to be understood by the "given" which it is said perception simply accepts? What Lotze understood by it is not doubtful. The "given" consisted, in his view, of impressions which the excitation of the nervous system called forth in the mind, and, until recently that has been the prevalent view. No one, indeed, doubts the fact that when a conscious being is (say) visually perceiving a coloured object, his visual organ has undergone stimulation, and that in consequence an influence of some sort has been conveyed to the cerebral centre with which the optic nerve is connected. But it may well be questioned whether the immediate result of that change is the production of a patch of colour either in the mind, or, in virtue of bodily reaction, for the mind. On the contrary, what we do seem to be justified in asserting is that either concomitantly with or in consequence of the cerebral change, there occurs a mental state or mode of activity in and through which, when a certain other set of conditions has been fulfilled, there ensues awareness of a definitely coloured object.

What, then, is this set of conditions which must be fulfilled? For one thing, the mental act must be directed upon something other than itself—something which comes to be regarded as a physical object. If, now, this act itself, as thus directed, is introspectively scrutinised, it reveals itself not at all as an act of constructing the parts of that of which it becomes aware. Viewed from within, it invariably evinces itself as a process, not of manufacturing an object, but of differentiating the features of one, and of tracing connections which were not at first discerned. It evinces itself, that is to say, as an act of *discriminating,* and this, rather than, as Kant maintained, synthesising, would seem to be its essential nature.

In the situation described as "perception of an object" two concrete facts are, accordingly, implicated, the object on the one hand and the act or process of perceiving it on the other. And if, following Aristotle, we distinguish between the existence and essence or content, between the "that" and the "what," of any concrete fact, we may say that each of these concrete facts exhibits the two aspects of existence and content.

But, in view of the circumstance that in this situation the conscious subject is gradually discriminating the content of the object, we need to distinguish what may be called the content apprehended both from the content of the object and from the content of the mental act itself. The content of the mental act is or becomes, partially at least, the *awareness* of qualities which are taken to be qualities of the object, and it would seem clear that the qualities in question must be distinguished from the awareness of them. Furthermore, as distinguished from the content of the mental act, the content apprehended is that which is frequently designated the "appearance" of the object to the percipient. Now, again, this "appearance" can hardly be the object upon which the mental act is directed, because in order that it should arise at all it would seem essential that the object should be already there. Moreover, the sum of qualities of which the conscious subject will be aware at any moment will be different from the sum of qualities of which he will be aware at another moment, and either of these will be, at the best, but a fragment of the much larger sum of qualities which the object itself possesses. It follows, therefore, that the sum of *apprehended* features (*i.e.,* the content apprehended, or the "appearance" of the object) is *distinguishable* from the larger sum of features constituting the *whole* content of the object.

If this analysis be so far on the right lines, an important consequence can at once be deduced,—namely, that the content apprehended or the "appearance" cannot be itself an existent. For it has evinced itself as only a selection from the features forming the content of the object, and *ex hypothesi* the content of anything is not to be confused with its existence. So far from being there, as an existent entity, prior to the act of perception, and in some way calling forth that act, it only comes to be in virtue

of the perceiving act being directed upon an existent object, and apart from the perceiving act it would have no "being" of any kind.

The main issue in regard to the nature of perception centres round the point just referred to. If the content apprehended be regarded as an existent—be it of the kind called an "idea" or a "presentation" or a "sensum" or what not—it assumes the position of a *tertium quid* between the apprehending mind and the physical thing, and the old difficulties of the empirical theory as propounded by Locke recur. It is, indeed, difficult to see how, in that case, it can be said to be an "appearance" of a physical object at all. Moreover, if apprehended contents are existents, they are existents of a very peculiar kind. They cannot be described as physical existents, for they do not, as such, act and react upon each other; they do not obey the law of gravitation, or any other physical law; they are not modes of energy. And equally they cannot be described as mental existents, at all events not in the sense in which states of feeling or of cognising or of conation are so described.

Further, their mode of generation is even more peculiar. If they are generated by physical and physiological processes, it must be in a way totally different from that in which change in one physical thing is said to be the cause of change in another, and why physical existents acting on other physical existents should give rise to existents which are not physical is a mystery. On the other hand, if they are generated by reaction of the mind on stimulation, it is no less inexplicable how the mind, being of the nature the psychologist finds it to be, should give rise to an immense number of qualities altogether unlike in character the qualities it is known to possess. Meanwhile, then, let us assume that "appearances" or "apprehended contents" are not, as such, existents, and see how far on that assumption we can advance to a coherent view of the nature of knowledge.

The next point to emphasise is that the process of perception is immensely furthered by the circumstance that in ourselves it takes place in a mind which by dint of long and repeated practice has come to perform such acts of discriminating habitually and by aid of the facility of retention or revival. What, however, is it that is "revived" or "reproduced"? Not the "content apprehended," for *it* obviously cannot be preserved after the act through which it has its being has ceased to exist. That content cannot persist in and for itself, because it is not an entity and it cannot persist in the mind, because, in the strict sense, it has never been "in" the mind. But the contents of our own cognitive acts, the awarenesses which we live through (*erleben*) are the mind's own property, or rather go to constitute its very structure, and these we are bound to recognise it has the power, in some form, of retaining and reviving. And in mature perception, a vast amount of what we appear to be immediately discerning is not, as a matter of fact, immediately discerned, it is discerned through the aid of the revival of previous awareness of similar objects.

Thus, our apprehension of things tends, as the mental life develops, to become, in one sense, less and less direct. The contents of what we call our knowledge come gradually to assume the form of an inward possession, constituting as it were an instrument wherewith we proceed further to differentiate the features of the world to be known. So that in the case of a familiar object, we do not require on each occasion to discriminate afresh its manifold features; it is enough that we discriminate at the moment relatively few of them; these immediately suggest the awareness of features previously discriminated, and the object is apprehended with a rapidity and ease that would otherwise have been impossible.

When, however, we proceed to what are called the "images" of memory and imagination there would seem, at first sight, to be more ground for assuming that *these* apprehended contents are existents. Yet here, again, it is extremely doubtful whether we are forced to assume that they are. For it is at least arguable that the process of imagining is of one piece with that of perceiving, the chief difference being that in the former a relatively larger proportion of revived factors are involved. It is quite possible, namely, that in imagination where objective imagery is present, where a so-called "image" appears to stand over against the conscious subject as an object, there is, in fact, as in perception, a physical object upon which the act of discriminating is directed, and that this accounts for the objective character which the content apprehended seems to possess, although the number of the features actually discriminated is far less than in perception, and the portion of the apprehended content ascribable to revived awareness considerably greater and more arbitrary and haphazard. It will be necessary, no doubt, to recognise that bodily factors, and not only extra-organic things, may and do, in these circumstances, function as objects.

Finally, when we pass to thought, in the more specific sense of the term, to the apprehension of universals as such, to *νόησις* or *νοῦς* as Aristotle termed it, there is no break in the course of development. It is only in virtue of the mind being able to revive the awareness of previously perceived contents, to compare these, and to free them from the accidental concomitants with which they were originally presented, that any generalisation on its part is possible. And any distinction recognised by the conscious subject involves the initial step of the liberation just referred to. For it is only by a process of comparing different contents that we are able to recognise resemblances or differences as such, and every resemblance or difference thus recognised is, by the very fact of its being a resemblance or difference, general in character.

The act of thought is, then, similar in character to the act of perceiving or of imagining. It, likewise, is essentially an act of discriminating, of comparing, and of relating. Moreover, here, too a distinction similar in nature to that already noted in the case of perceiving and imagining calls for acknowledgment. It is essential, namely, to distinguish the act of cognising a universal both from the universal itself and from the way in which that universal, in and through the act in question, is cognised. A mental state of conceiving is clearly a concrete event, which, although characterised by a plurality of properties possessed by it in common with other mental states, is in itself as definitely *particular* as any one of them. A concept, the content apprehended, is a way in which a universal is conceived, a mode in which it is apprehended by thought, and is obviously not to be confounded with the act through and by means of which it has been attained.

And, once more, although it is usual to identify concepts and the universals to which they refer, the identification is illegitimate. A concept is a product of thought, reached by a process that is at once analytic and synthetic; a process, on the one hand, of singling out what is imbedded in a matrix of reality, and, on the other hand, of bringing together what is presented in numerical difference. The universal to which it refers is, or may be, a quality characterising a number of particulars, often widely removed from one another in time and space,—a "pervasive character of things." Furthermore, in thinking there is invariably a reference to the objective order of things as contrasted with the merely subjective play of the inner life. Yet this, again, is no new feature, but the natural development from the establishment in consciousness of the distinction between subjective activity and objective reality. In judgments of perception the act of thinking is directed upon an actually present object, and in the higher stages signs and symbols probably play a part not wholly dissimilar to that played by the nucleus of perceived fact in the case of imagination.

We are thus led to recognise that cognition is, in all its various forms, essentially of one character. From the very first it is a process of discriminating, of distinguishing, of comparing; and, although in its earlier stages differing enormously in degree of completeness from those acts which we are in the habit of describing specifically as acts of comparing and relating, is yet similar to them. We are led, in short, to recognise that, as we trace back the stages of mental development, we come upon a discriminative activity that evinces itself in ever simpler and more rudimentary forms,—a discriminative activity which is prior to that in which so-called "ideas of relation" are consciously used, and on the basis of which these are subsequently formed and applied. We are returning, in fact, to the Aristo-

telian conception of cognitive activity as exhibiting ascending grades of scope and completeness, with, however, the important difference that we are not admitting, either at one end of the scale or at the other, a mode of apprehension that is intuitive in character as distinguished from what he too described as discriminative. The old Aristotelian difficulty recurs when it is claimed that there is a fundamental distinction to be drawn between "knowledge by acquaintance" and "knowledge by description," and that by the first we have immediate awareness of sense-data and of, at least, certain universals, as contrasted with the mediate awareness of things and of truths which is obtained by the other.

There are specific reasons for doubting the tenability of this view. It is hard to realise what a cognitive act can be which does not involve those simple functions of discriminating which afterwards evince themselves in the highly developed forms of mental activity for which the name "thinking" or "judging" is usually reserved. There would seem, then, to be a continuous advance from the simplest forms of cognition to the higher forms, and the generalising work of thought does not leave perception itself unaffected; perception is no longer what it was in its cruder stages, it too comes to involve generalisation.

From the point of view here taken, the question as to the relation between thought and reality assumes an aspect altogether different from that which it assumed in any of the historic theories dealt with above. Thought cannot be regarded as constructive of the world of concrete fact in the way in which either Kant or Hegel conceived it to be, nor on the other hand, can there be that opposition between thought and concrete fact, which the empirical writers would constitute. Cognitive activity is one ingredient in the whole of existent reality, and as such can neither be identified with the whole nor divorced from it. It presupposes as conditions of its possibility existent entities other than itself, and there is something incongruous in the notion that thinking which is throughout determined by the concrete material of the world within which it makes its appearance should in its procedure thoroughly distort that material.

Here, once more, the problem of error rather than that of truth would appear to be the crucial problem. The errors to which perception, for example, is liable cannot be accounted for by any one mode of explanation; there are numerous circumstances which, in each specific case, require to be considered. But if perception be of the nature indicated, if the characteristics are discriminated always in a more or less fragmentary fashion, and under some conditions much more imperfectly than under others, one general principle of explanation is at once provided. It is, indeed, precisely in the contrast between the fragmentary and the complete that the significance of what is denoted by the term "appearance" is to be discerned. In contradistinction to the fulness of content possessed by the existent object, the "appearance" carries with it marks of poverty, of mutilation, and these may result in leading to positive error. Always in sense-perception there *must* arise this contrast, but it does not imply that a new object, the "appearance," has come into existence, and is thenceforward there ready to be apprehended whenever the opportunity occurs. The "appearance" is no more than a way in which the existent object is known. And, *mutatis mutandis,* similar considerations hold with reference to the more developed process of thinking.

In the long run, the limitation of our thought is a result of the position of the finite mind as part of the totality to which we give the name reality; the finite mind stands, as Lotze put it, not at the centre of things, but has a modest position somewhere in the extreme ramifications of reality. All the same, the categories of thought are not mere forms capriciously invented by finite minds. It is true that the relations of logical dependence which we represent by means of judgments and syllogisms are not to be regarded as precise copies of relations that subsist in the realm of concrete fact. But in the first place, we never in our thinking assume any such literal correspondence; and, in the second place, the forms of thought *are* ways in which the modes of connectedness of concrete fact become intelligible to thinking minds and without which they would not become intelligible at all.

The distinction between truth and concrete fact comes most clearly to the front in what we call thinking; but it is involved in the simplest processes of apprehension. And in this connection it seems advisable to add a word respecting one aspect of the opposition between perceiving and thinking which is frequently emphasised and to which reference has already been made. The contents of thought are representative of an order that is independent of time. Temporal succession may be represented in and through the contents of thought, but taken in themselves, as concepts of universals, these contents are timeless. On the other hand, it is urged, perception is always apprehensive of changing fact, and is essentially concerned with temporal events.

The contrast thus drawn is, however, wrongly made. If we have regard to the mental processes themselves, both perceiving and thinking are temporal occurrences, dependent upon temporal conditions, and temporal determinations may be represented by means of thought no less than by means of perception. On the other hand, if we have regard to the content apprehended in each case, no such contrast can be constituted. A content perceived is, no less than a content thought, *quâ* content, outside the region of temporal flux and change. Nothing can alter it, for the simple reason that it is not an existent entity that can be operated on, acted on, or affected in any manner whatsoever.

Truth and Existence.—We have been speaking of existents and contrasting them with entities of which existence cannot be predicated, and it is now necessary to say something further about this distinction. To define an ultimate term, such as the term "existence," is impossible, but, by considering instances to which it is applicable, it is possible to give a description of it. Broad (*The Mind and its Place in Nature,* p. 18) distinguishes between what he calls "abstracta" and "existents." In the first place, an existent can be referred to in a proposition *only* as a logical subject, although some abstracta share this property with existents. In the second place, however, all existents are either directly and literally in time, or at least appear to human minds to be so, while abstracta, on the other hand, neither are nor appear to be directly and literally in time. And under the head of "abstracta" he includes qualities, relations, numbers, and also propositions and classes, if there be such entities.

Reality, then, is a much wider and more fundamental category than existence; all existents must be real but not all that is real exists. And it is convenient to employ the term subsistence in speaking of those entities which are real but which do not exist. Moreover, the term "subsistents" is more appropriate than Broad's term "abstracta," because there are, as we have seen, some entities, such as sensible appearances, which are not existents, but which may yet not be suitably designated "abstracta." It is obvious that some subsistents are very closely connected with existents and thereby become indirectly connected with time. A universal may, for example, change in its relation to conscious minds. It will be thought of at one time and not at another, and may thus be in relation to many minds or to few at the same time. It can, again, change in respect to the particular existents it is said to qualify or relate. The characteristic of being crimson may apply to a particular rose at one time and not at another. But the nature of a universal does not change, nor can its relation to another universal, except as involving one of the relations mentioned to a particular.

Passing now to what we ordinarily describe as truth in employing such a phrase as that mathematics is a body of truths or that philosophy is an effort to grasp the truth of things, it is clear that, however we may define the term "truth," we do not mean by it anything to which the term existence is applicable. In reference to existent entities, we have seen reason for concluding that they are not dependent either for their existence or their characteristic qualities upon the circumstance of being perceived or known. But are we also entitled to say that the being and nature of truth is likewise independent of its being known? That is a difficult question, about which great difference of opinion prevails. One thing, however, can be definitely asserted. Truth does not

depend upon its being known by individual human minds. Truth has a nature of its own to which our individual thinking must conform or fail to grasp it. By our thinking we can neither make nor alter truth; we may come to recognise it, but we cannot invent it; and its nature is unaffected by the circumstance that at a particular time and under certain conditions it is acknowledged by us. The truth that $2+2=4$ would subsist even though there were no human minds to know it.

What, then, is the relation of truth to concrete existing fact? The question concerns not all truth, for obviously there may be truth that has no reference to anything which either has existed or does exist or will exist. But it does concern a very large portion of what we may describe as the whole of truth. The answer of those thinkers who have recognised the distinction between truth and existence has usually been that there is a correspondence between these two realms of being, that a proposition is true when it corresponds to the "facts," or that a scientific theory is true when it corresponds to the nature of the things in reference to which it is asserted to hold. And that a correspondence of some sort does obtain between the truth about existent facts and the existent facts themselves may be accepted as indisputable. To determine the exact character of the correspondence may well be, however, a task beyond our power of accomplishing.

Certainly, truth is no mere likeness of reality, there is no "one-one" correspondence between them. The order and connection of truths is *not* the same as the order and connection of things. In the realm of concrete existence there are no connections of which the purely logical connections of general and particular, of ground and consequent are precise parallels. The subordination of notion to notion, for example, in a logical scheme of classification has no strict counterpart in the actual structure and development of things. To use Lotze's illustration, "this horse was not to begin with animal in general, then vertebrate in general, later on mammal, and only at the last stage of all, horse; nor can we at any moment of its life separate off as an independent set of qualities the more fully defined group of properties which make it a horse from the more general and less determinate which would make it a vertebrate, or from those most indeterminate of all which would merely constitute it an animal as such." Yet to set aside a crude conception of that sort is in no way to undermine what is known as the "correspondence theory." In order to justify the theory, it is not necessary that we should be in a position to formulate the precise kind of correspondence here involved.

It may be questioned whether there is any real incompatibility between the correspondence theory of truth and the view of truth as systematic coherence. The latter is the conception of truth as a significant whole, and, in the long run, it is not between bits of truth and isolated facts of reality, but between the whole of truth and the whole of reality that correspondence would need to evince itself. From the point of view of human intelligence, the conception of a whole of truth is an ideal; and, although nothing in our partial knowledge answers precisely to the demands of such an ideal, yet it would seem to be essentially involved.

By taking typical instances of true judgment, and asking what their truth virtually implies, it may be shown that any such judgment expands into a system of wider scope, a process which evidently can reach no terminus save that of a system at once self-contained and all-embracing. Every item of truth tends, so to speak, to open out and to be absorbed into a completer truth, and that tendency is the expression of the ideal struggling in it for self-fulfilment. When, for example, a fragmentary truth is absorbed into such a body of truth as we call a science, it does not retain the identical character which it possessed *per se;* it loses in large measure its fragmentariness, and gains in richness of meaning through its relation with the rest of the whole of which it has become a part. And whenever what purports to be a truth refuses to fit into such a coherent system it at once awakens suspicion as to its claim. But the truth can only form a coherent system in so far as the constituents of that system are truths. If truths and existent entities be indiscriminately mingled, and these be supposed to be related to one another in a way similar to that in which either of them are related among themselves, no coherence will disclose itself. And that is an error which has not seldom been committed in expositions of the theory in question. For metaphysics doubtless a vast problem is thus created, that, namely, of so conceiving the whole of reality as to render intelligible the presence in it of these two subordinate and correlative systems; but nothing but confusion can result from attempting to amalgamate them by introducing into the one conditions which determine the coherence of the other.

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KNOWLES, SIR JAMES (1831–1908), English architect and editor, was born in London in 1831, and was educated, with

a view to following his father's profession, as an architect at University college and in Italy. In 1867 he was introduced to Tennyson, whose house, Aldworth, on Blackdown, he designed; this led to a close friendship, Knowles assisting Tennyson in business matters, and among other things helping to design scenery for *The Cup,* when Irving produced that play in 1880. In 1869, with Tennyson's co-operation, he started the Metaphysical society, the object of which was to attempt some intellectual *rapprochement* between religion and science by getting the leading representatives of faith and unfaith to meet and exchange views. Its members included Dean Stanley, Seeley, Martineau, W. B. Carpenter, Hinton, Huxley, Hutton, Ward, Bagehot, Froude, Tennyson, Tyndall, Gladstone, Manning, Knowles, Lord Avebury, F. Harrison, Father Dalgairns, Sir G. Grove, Shadworth Hodgson, H. Sidgwick, Mark Pattison, duke of Argyll, Ruskin, Robert Lowe, Grant Duff, Greg, A. C. Fraser; Henry Acland, Bishop Magee, Croom Robertson, FitzJames Stephen, W. K. Clifford, Lord Selborne, John Morley, Leslie Stephen, Gasquet, A. J. Balfour, James Sully and others.

The last meeting of the society was held on May 16, 1880. The society formed the nucleus of the distinguished list of contributors who supported Knowles in his capacity as editor (1870–77) of the *Contemporary Review,* and (1877–1908) of the *Nineteenth Century.* Knowles, who was knighted in 1903, died at Brighton on Feb. 13, 1908.

KNOWLES, JAMES SHERIDAN (1784–1862), Irish dramatist and actor, was born in Cork, on May 12, 1784. His father was the lexicographer, James Knowles (1759–1840), cousin-german of Richard Brinsley Sheridan. The family removed to London in 1793, and the boy's talents secured him the friendship of Hazlitt, who introduced him to Lamb and Coleridge. He served for some time in the Wiltshire and afterwards in the Tower Hamlets militia, leaving the service to study medicine under Robert Willan (1757–1812). But he forsook medicine for the stage, making his first appearance probably at Bath, and playing Hamlet at the Crow theatre, Dublin. At Wexford he married, in Oct. 1809, Maria Charteris, an actress from the Edinburgh theatre. In 1810 he wrote *Leo,* in which Edmund Kean acted with great success; another play, *Brian Boroihme,* written for the Belfast theatre in the next year, drew crowded houses, but his earnings were so small that he had to turn to school-teaching, first at Belfast and then at Glasgow. His *Caius Gracchus* was produced at Belfast in 1815; and his *Virginius,* written for Edmund Kean, was first performed in 1820 at Covent Garden. In *William Tell* (1825) Macready found one of his favourite parts. His best-known play, *The Hunchback,* was produced at Covent Garden in 1832; *The Wife* was brought out at the same theatre in 1833; and *The Love Chase* in 1837. In his later years he became a Baptist preacher, and attracted large audiences at Exeter hall and elsewhere. He published two polemical works directed against the special doctrines of the Roman Catholic Church. Knowles for some years received an annual pension of £200, bestowed by Sir Robert Peel. He died at Torquay on Nov. 30, 1862.

A full list of the works of Knowles and of the various notices of him will be found in the *Life* (1872), privately printed by his son, Richard Brinsley Knowles (1820–82), who was a well known journalist.

KNOWLTON, FRANK HALL (1860–1926), American palaeobotanist, was born at Brandon, Vt., on Sept. 2, 1860, and graduated at Middlebury college in 1884. He became an aid at the U.S. National Museum in Washington, D.C., and in 1887 was made curator of botany and fossil plants at that institution. He resigned in 1889 to take a position as assistant palaeontologist with the U.S. Geological Survey. In 1900 he became palaeontologist and, in 1907, geologist of the survey, serving in the latter position until his death at Ballston, Va., on Nov. 22, 1926. His chief contribution to science was his studies of the distribution and structure of fossilized plants, a subject upon which he became, perhaps, the leading authority in the United States. His investigation led him on many field trips throughout the Western States. He was the founder of *The Plant World* and its editor from 1897–1904. His papers in scientific journals number over 200.

Among his more important books are *Fossil Wood and Lignite of the Potomac Formation* (1889); *Fossil Flora of Alaska* (1894); *Fossil Flora of the Yellowstone National Park* (1898); *A Catalogue of the Cretaceous and Tertiary Plants of North America* (1898); *Flora of the Montana Formation* (1900); *Birds of the World* (1909); *A Catalogue of the Mesozoic and Cenozoic Plants of North America* (1919); *The Laramie Flora of the Denver Basin* (1922); *Plants of the Past* (1927).

KNOW NOTHING or **AMERICAN PARTY,** in United States history, a political party of great importance in the decade before 1860. Its principle was political proscription of naturalized citizens and of Roman Catholics. In the years 1830–60 Irish immigration became increasingly preponderant; and that of Catholics was even more so. The geographical segregation and the clannishness of foreign voters in the cities gave them a power that Whigs and Democrats alike strove to control, to the great aggravation of naturalization and election frauds. "No one can deny that ignorant foreign suffrage had grown to be an evil of immense proportions" (J. F. Rhodes). In labour disputes, political feuds and social clannishness, the alien elements—especially the Irish and German—displayed their power, and at times gave offence by their hostile criticism of American institutions. In immigration centres like Boston, Philadelphia and New York, the Catholic Church, very largely foreign in membership and proclaiming a foreign allegiance of disputed extent, was really "the symbol and strength of foreign influence" (Scisco); many regarded it as a transplanted foreign institution, un-American in organization and ideas. Thus it became involved in politics. The decade 1830–40 was marked by anti-Catholic (anti-Irish) riots in various cities and by party organization of nativists in many places in local elections. Thus arose the American-Republican (later the Native-American) Party, whose national career began practically in 1845, and which in Louisiana in 1841 first received a State organization. New York city in 1844 and Boston in 1845 were carried by the nativists, but their success was due to Whig support, which was not continued, and the national organization was practically extinct by 1847. In the early '50s nativism was revivified by an unparalleled inflow of aliens. In 1853–54 there was a widespread "anti-popery" propaganda and riots against Catholics in various cities. Meanwhile the Know Nothing Party had sprung from nativist secret societies. Like these, its organization was secret; and hence its name—for a member, when interrogated, always answered that he knew nothing about it. Selecting candidates secretly from among those nominated by the other parties, and giving them no public endorsement, the Know Nothings, as soon as they gained the balance of power, could shatter at will Whig and Democratic calculations. Their power was evident by 1852—from which time, accordingly, "Know-Nothingism" is most properly dated. The charges they brought against naturalization abuses were only too well founded; and those against election frauds not less so. The proposed proscription of the foreign-born knew no exceptions: many wished never to concede to them all the rights of natives, nor to their children unless educated in the public schools. As for Catholics, the real animus of Know-Nothingism was against *political* Romanism; therefore, secondarily, against papal allegiance and episcopal Church administration (in place of administration by lay trustees, as was earlier common practice in the United States); and, primarily, against public aid to Catholic schools, and the alleged greed (*i.e.,* the power and success) of the Irish in politics. The times were propitious for the success of an aggressive third party, but the Know Nothings lacked aggression. In entering national politics the party abandoned its mysteries, without making compensatory gains. When it was compelled to publish a platform of principles, factions arose in its ranks; moreover, it "straddled" the slavery question. In 1854, however, Know Nothing gains were remarkable. In this year "American Party" became the official name. Its strength in Congress was almost thirtyfold that of 1852. It elected governors, legislatures, or both, in four New England States, and in Maryland, Kentucky and California; and almost won six Southern States. Thereafter the organization spread like wildfire in the South, in which section there were almost no aliens. Know Nothing evasion of the

slavery question probably helped the South, but neither Republicans nor Democrats would endure the evasion; Douglas and Seward, and later (1855–56) their parties, denounced it. In the North-West the Know Nothings were swept into the anti-slavery movement in 1854 without retaining their organization. The national platform of 1856 (adopted by a secret grand council), besides including anti-alien and anti-Catholic planks, offered sops to the North, the South and the "dough-faces" on the slavery issue. Millard Fillmore was nominated for the presidency. Eight months later the Republican wave swept the Know Nothings out of the North. Their popular vote in the North was under one-seventh, in the South above three-sevenths, of the total vote cast. By 1859 the party was confined almost entirely to the border States. The Constitutional Union—the "Do Nothing"—Party of 1860 was mainly composed of Know Nothing remnants. The year 1860 practically marked, also, the disappearance of the party as a local power. Except in city politics nativism had no vitality. Public opinion has never accepted its estimate of the alien nor of Catholic citizens. Some of its anti-Church principles, however—as the non-support of denominational schools—have been generally accepted.

See G. H. Haynes, "A Know Nothing Legislature" (Mass., 1855), in *American Historical Assoc. Report,* pt. 1 (1896); J. B. McMaster, *With the Fathers,* including "The Riotous Career of the Know Nothings" (1896); L. F. Schmeckebier, *Know Nothing Party in Maryland* (Johns Hopkins university, Baltimore, 1899); L. D. Scisco, *Political Nativism in New York State* (doctoral thesis, Columbia university, New York, 1901); H. F. Desmond, *The Know Nothing Party* (Washington, 1905); J. P. Senning, "The Know-Nothing Movement in Illinois, 1854–56," *Ill. State Hist. Soc. Jour.,* vol. vii., p. 7–33 (Springfield, Ill., 1914); E. E. Robinson, *The Evolution of American Political Parties* (1924); Benjamin Tuska, *Know-Nothingism in Baltimore, 1854–60* (1925); and H. R. Bruce, *American Parties and Politics* (1927).

KNOX, HENRY (1750–1806), American general, was born in Boston, Mass., of Scottish-Irish parentage, on July 25, 1750. He was prominent in the colonial militia and tried to keep the Boston crowd and the British soldiers from the clash known as the Boston massacre (1770). In 1771 he opened the "London bookstore" in Boston. He had read much of tactics and strategy, joined the American army at the outbreak of the Revolutionary War, and fought at Bunker Hill, planned the defences of the camps of the army before Boston, and brought from Lake George and border forts much-needed artillery. At Trenton he crossed the river before the main body, and in the attack rendered such good service that he was made brigadier-general and chief of artillery in the Continental army. He was present at Princeton; was chiefly responsible for the mistake in attacking the "Chew House" at Germantown; urged New York as the objective of the campaign of 1778; served with efficiency at Monmouth and at Yorktown; and after the surrender of Cornwallis was promoted major-general. His services throughout the war were of great value to the American cause; he was one of Washington's most trusted advisers, and he brought the artillery to a high degree of efficiency. In April 1783 he had drafted a scheme of a society to be formed by the American officers and the French officers who had served in America during the war, and to be called the "Cincinnati"; of this society he was the first secretary-general (1783–99) and in 1805 became vice-president-general. Knox was secretary of war in 1785–94, being the first to hold this position after the organization of the Federal Government in 1789. He urged ineffectually a national militia system, to enroll all citizens over 18 and under 60 in the "advanced corps," the "main corps" or the "reserve." For this and for his close friendship with Washington he was bitterly assailed by the Republicans. He died in Thomaston, Me., on Oct. 25, 1806.

See F. S. Drake, *Memoir of General Henry Knox* (Boston, 1873); and Noah Brooks, *Henry Knox* (1900) in the "American Men of Energy" series; and W. R. Sandham, "General Henry Knox," *Illinois State Hist. Soc. Journal,* vol. xviii., pp. 436–439 (1925).

KNOX, JOHN (*c.* 1505–1572), Scottish reformer and historian. Of his early life very little is certainly known, in spite of the fact that his *History of the Reformation* and his private letters, especially the latter, are often vividly autobiographical. Even the year of his birth, usually given as 1505, is matter of dispute. Beza makes it 1515; Sir Peter Young (tutor to James VI. of Scotland), writing to Beza from Edinburgh in 1579, says 1513; and a strong case has been made out for holding that the generally accepted date is due to an error in transcription. (*See* Dr. Hay Fleming in the *Bookman,* Sept. 1905.) He was a son of William Knox, who lived in or near Haddington, his mother's name was Sinclair, and his forefathers on both sides had fought under the banner of the Bothwells. William Knox was perhaps a prosperous East Lothian peasant. John went to school and to the university, where he sat "at the feet" of John Major. Major exchanged his "regency" or professorship in Glasgow University for one in that of St. Andrews in 1523. If Knox's college time was later than that date (as it must have been, if he was born near 1515), it was no doubt spent, as Beza narrates, at St. Andrews, and probably exclusively there. But in Major's last Glasgow session a "Joannes Knox" matriculated there; and if this were the future reformer, he may thereafter either have followed his master to St. Andrews or returned from Glasgow straight to Haddington. But there is no trace of him for another twenty years. Then he reappears in his native district as a priest without a university degree (Sir John Knox) and a notary of the diocese of St. Andrews. In 1543 he signed himself "minister of the sacred altar" under the archbishop of St. Andrews. But in 1546 he was carrying a two-handed sword in defence of the reformer George Wishart, on the day when the latter was arrested by the archbishop's order. Knox would have resisted, though the arrest was by his feudal superior, Lord Bothwell; but Wishart himself commanded his submission, with the words "One is sufficient for a sacrifice," and was handed over for trial at St. Andrews. Next year the archbishop himself had been murdered, and Knox was preaching in St. Andrews a fully developed Protestantism.

Knox gives us no information as to how this startling change in himself had been brought about. After Wishart's execution he fled from place to place, and, hearing that certain gentlemen of Fife had slain the cardinal and were in possession of his castle of St. Andrews, he gladly joined himself to them. In St. Andrews he taught "John's Gospel" and a certain catechism—probably that which Wishart had got from "Helvetia" and translated; but his teaching was supposed to be private and tutorial and for the benefit of his friends' "bairns." The men about him however—among them Sir David Lindsay of the Mount, "Lyon King" and poet—saw his capacity for greater things, and, on his at first refusing "to run where God had not called him," planned a solemn appeal to Knox from the pulpit to accept "the public office and charge of preaching." At the close of it the speaker (in Knox's own narrative) "said to those that were present, 'Was not this your charge to me? And do ye not approve this vocation?' They answered, 'It was, and we approve it.' Whereat the said Johnne, abashed, burst forth in most abundant tears and withdrew himself to his chamber," remaining there in "heaviness" for days, until he came forth resolved and prepared. Knox is probably not wrong in regarding this strange incident as the spring of his own public life. The St. Andrews invitation was really one to danger and death; John Rough, who spoke it, died a few years after at Smithfield. What to the others was chiefly a promise of personal salvation became for the indomitable will of Knox an assurance also of victory, even in this world, over embattled forces of ancient wrong. It is certain at least that from this date Knox never changed and scarcely even varied his public course. And looking back upon that course afterwards, he records with much complacency how his earliest St. Andrews sermon built up a whole fabric of aggressive Protestantism upon Puritan theory, so that his startled hearers muttered, "Others sned (snipped) the branches; this man strikes at the root."

Meantime the system attacked was safe for another thirteen years. In June 1547 St. Andrews yielded to the French fleet, and the prisoners, including Knox, were thrown into the galleys on the Loire, to remain in irons and under the lash for at least nineteen months. Released at last (apparently through the influence

of the young English king, Edward VI.), Knox was appointed one of the licensed preachers of the new faith for England, and stationed in the great garrison of Berwick, and afterwards at Newcastle. In 1551 he seems to have been made a royal chaplain; in 1552 he was certainly offered an English bishopric, which he declined; and during most of this year he used his influence, as preacher at court and in London, to make the new English settlement more Protestant. To him at least is due the Prayer-book rubric which explains that, when kneeling at the sacrament is ordered, "no adoration is intended or ought to be done." While in Northumberland Knox had been betrothed to Margaret Bowes, one of the fifteen children of Richard Bowes, the captain of Norham Castle. Her mother, Elizabeth, co-heiress of Aske in Yorkshire, was the earliest of that little band of women-friends whose correspondence with Knox on religious matters throws an unexpected light on his discriminating tenderness of heart. But now Mary Tudor succeeded her brother, and Knox in March 1554 escaped into five years' exile abroad, leaving Mrs. Bowes a fine treatise on "Affliction," and sending back to England two editions of a more acrid "Faithful Admonition" on the crisis there. He first drifted to Frankfort, where the English congregation was divided, and the party opposed to Knox got rid of him at last by a complaint to the authorities of treason against the emperor Charles V. as well as Philip and Mary. At Geneva he found a more congenial pastorate. Christopher Goodman (*c.* 1520–1603) and he, with other exiles, began there the Puritan tradition, and prepared the earlier English version of the Bible. Here, and afterwards at Dieppe (where he preached in French), Knox kept in touch with the other Reformers, studied Greek and Hebrew in the interest of theology, and having brought his wife and her mother from England in 1555 lived for years a peaceful life.

But even here Knox was preparing for Scotland, and facing the difficulties of the future, theoretical as well as practical. In his first year abroad he consulted Calvin and Bullinger as to the right of the civil "authority" to prescribe religion to his subjects—in particular, whether the godly should obey "a magistrate who enforces idolatry and condemns true religion," and whom should they join "in the case of a religious nobility resisting an idolatrous sovereign." In August 1555 he visited his native country and found the queen-mother, Mary of Lorraine, acting as regent in place of Mary, queen of Scots, now being brought up at the court of France. Knox was allowed to preach privately for six months throughout the south of Scotland, and was listened to with an enthusiasm which made him break out, "O sweet were the death which should follow such forty days in Edinburgh as here I have had three!" Before leaving he even addressed a letter to the regent, urging her to favour the Evangel. She accepted it jocularly as a "pasquil," and Knox on his departure was condemned and burned in effigy. But he left behind him a "Wholesome Counsel" to Scottish heads of families, reminding them that within their own houses they were "bishop and kings," and recommending the institution of something like the early apostolic worship in private congregations. Knox, though in exile, seems to have been henceforward the chief adviser of the Protestant lords; and before the end of 1557 they, under the name of the "Lords of the Congregation," had entered into the first of the religious "bands" or "covenants" afterwards famous. In 1558 he published his "Appellation" to the nobles, estates and commonalty against the sentence of death recently pronounced upon him, and along with it a stirring appeal "To his beloved brethren, the Commonalty of Scotland," urging that the care of religion fell to them also as being "God's creatures, created and formed in His own image," and having a right to defend their conscience against persecution. About this time, indeed, the regent showed a remarkable degree of toleration, but next year she forbade the reformed preaching in Scotland. A rupture ensued at once, and Knox appeared in Edinburgh on May 2, 1559 "even in the brunt of the battle." He was promptly "blown to the horn" at the Cross there as an outlaw, but escaped to Dundee, and commenced public preaching in the chief towns of central Scotland. At Perth and at St. Andrews his sermons were followed by the destruction of the monasteries. But while he notes that in Perth the act was that of "the rascal multitude," he was glad to claim in St. Andrews the support of the civic "authority." Edinburgh was still doubtful, and the queen regent held the castle; but a truce between her and the lords for six months to Jan. 1, 1560 was arranged on the footing that every man there "may have freedom to use his own conscience to the day foresaid"—a freedom interpreted to let Knox and his brethren preach publicly and incessantly.

Scotland, like its capital, was divided. Both parties lapsed from the freedom-of-conscience solution to which each when unsuccessful appealed; both betook themselves to arms; and the immediate future of the little kingdom was to be decided by its external alliances. Knox now took a leading part in the transaction by which the friendship of France was exchanged for that of England. He had one serious difficulty. Before Elizabeth's accession to the English crown, and after the queen mother in Scotland had disappointed his hopes, he had published a treatise against what he called "The Monstrous Regiment (regimen or government) of Women." Elizabeth never forgave him; but Cecil corresponded with the Scottish lords, and their answer in July 1559, in Knox's handwriting, assures England not only of their own constancy, but of "a charge and commandment to our posterity, that the amity and league between you and us, contracted and begun in Christ Jesus, may by them be kept inviolated for ever." The league was promised by England; but the army of France was first in the field, and towards the end of the year drove the forces of the "congregation" from Leith into Edinburgh, and then out of it in a midnight rout to Stirling—"that dark and dolorous night," as Knox long afterwards said, "wherein all ye, my lords, with shame and fear left this town," and from which only a memorable sermon by their great preacher roused the despairing multitude into new hope. Their leaders renounced allegiance to the regent; she died in the castle of Edinburgh; the English troops, after the usual Elizabethan delays and evasions, joined their Scots allies; and the French embarked from Leith. On July 6, 1560, a treaty was at last made, nominally between Elizabeth and the queen of France and Scotland; while Cecil instructed his mistress's plenipotentiaries to agree "that the government of Scotland be granted to the nation of the land." The revolution was in the meantime complete. Knox, who takes credit for having done much to end the enmity with England which was so long thought necessary for Scotland's independence, was destined, beyond all other men, to leave the stamp of a more inward independence upon his country and its history.

At the first meeting of the Estates, in August 1560, the Protestants were invited to present a confession of their faith. Knox and three others drafted it, and were present when it was offered and read to the parliament, by whom it was approved. The Scots confession, Calvinist rather than Lutheran, remained for two centuries the authorized Scottish creed, though in the first instance the faith of only a fragment of the people. Yet its approval became the basis for three acts passed a week later; the first abolishing the pope's authority and jurisdiction in Scotland; the second, rescinding old statutes which had established and enforced that and other Catholic tenets; the third, inflicting heavy penalties, with death on a third conviction, on those who should celebrate mass or even be present at it. The reformer and his friends could no longer be described as, in Knox's words, "requiring nothing but the liberty of conscience, and our religion and fact to be tried by the word of God."

Already "in our towns and places reformed," as the Confession puts it, there were local or "particular kirks," and these grew and spread and were provincially united, till, in the last month of this memorable year, the first General Assembly of their representatives met, and became the "universal kirk," or "the whole church convened." It had before it the plan for church government and maintenance, drafted in August at the same time with the Confession, under the name of *The Book of Discipline,* and by the same framers. Knox was even more clearly in this case the chief author, and he had by this time come to desire a much more rigid Presbyterianism than he had sketched in his "Wholesome Counsel" of 1555. In planning it he seems to have used his acquaintance with the "Ordonnances" of the Genevan Church

under Calvin, and with the "Forma" of the German Church in London under John Laski (or A. Lasco). Starting with "truth" contained in Scripture as the church's foundation, and the Word and Sacraments as means of building it up, it provides ministers and elders to be elected by the congregations, with a subordinate class of "readers," and by their means sermons and prayers each "Sunday" in every parish. In large towns these were to be also on other days, with a weekly meeting for conference or "prophesying." The "plantation" of new churches is to go on everywhere under the guidance of higher church officers called superintendents. All are to help their brethren, "for no man may be permitted to live as best pleaseth him within the Church of God." And above all things the young and the ignorant are to be instructed, the former by a regular gradation or ladder of parish or elementary schools, secondary schools and universities. Even the poor were to be fed by the Church's hands; and behind its moral influence, and a discipline over both poor and rich, was to be not only the coercive authority of the civil power but its money. Knox had from the first proclaimed that "the *teinds* (tithes of yearly fruits) by God's law do not appertain of necessity to the kirkmen." And this book now demands that out of them "must not only the ministers be sustained, but also the poor and schools." But Knox broadens his plan so as to claim also the property which had been really gifted to the Church by princes and nobles—given by them indeed, as he held, without any moral right and to the injury of the people, yet so as to be Church patrimony. From all such property, whether land or the sheaves and fruits of land, and also from the personal property of burghers in the towns, Knox now held that the state should authorize the kirk to claim the salaries of the ministers, and the salaries of teachers in the schools and universities, but above all, the relief of the poor—not only of the absolutely "indigent" but of "your poor brethren, the labourers and handworkers of the ground." For the danger now was that some gentlemen were already cruel in exactions of their tenants, "requiring of them whatever before they paid to the Church, so that the papistical tyranny shall only be changed into the tyranny of the lords or of the laird."

The danger foreseen alike to the new Church, and to the commonalty and poor, began to be fulfilled a month later, when the lords, some of whom had already acquired, as others were about to acquire, much of the Church property, declined to make any of it over for Knox's magnificent scheme. It was, they said, "a devout imagination." Seven years afterwards, however, when the contest with the Crown was ended, the kirk was expressly acknowledged as the only Church in Scotland, and jurisdiction given it over all who should attempt to be outsiders; while the preaching of the Evangel and the planting of congregations went on in all the accessible parts of Scotland. Gradually too stipends for most Scottish parishes were assigned to the ministers out of the yearly *teinds;* and the Church received—what it retained even down to recent times—the administration both of the public schools and of the Poor Law of Scotland. But the victorious rush of 1560 was already somewhat stayed, and the very next year raised the question whether the transfer of intolerance to the side of the new faith was as wise as it had at first seemed to be successful.

Mary Queen of Scots had been for a short time also queen of France, and in 1561 returned to her native land, a young widow on whom the eyes of Europe were fixed. Knox's objections to the "regiment of women" were theoretical, and in the present case he hoped at first for the best, favouring rather his queen's marriage with the heir of the house of Hamilton. Mary had put herself into the hands of her half-brother, Lord James Stuart afterwards earl of Moray, the only man who could perhaps have pulled her through. A proclamation now continued the "state of religion" begun the previous year; but mass was celebrated in the queen's household, and Lord James himself defended it with his sword against Protestant intrusion. Knox publicly protested; and Moray, who probably understood and liked both parties, brought the preacher to the presence of his queen. There is nothing revealed to us by "the broad clear light of that wonderful book,"[1] *The History of the Reformation in Scotland,* more remarkable than the four Dialogues or interviews, which, though recorded only by Knox, bear the strongest stamp of truth, and do almost more justice to his opponent than to himself. Mary took the offensive, and very soon raised the real question. "Ye have taught the people to receive another religion than their princes can allow; and how can that doctrine be of God, seeing that God commands subjects to obey their princes?" The point was made keener by the fact that Knox's own Confession of Faith (like all those of that age, in which an unbalanced monarchical power culminated) had held kings to be appointed "for maintenance of the true religion," and suppression of the false; and the reformer now fell back on his more fundamental principle, that "right religion took neither original nor authority from worldly princes, but from the Eternal God alone." All through this dialogue too, as in another at Lochleven two years afterwards, Knox was driven to axioms, not of religion but of constitutionalism, which Buchanan and he may have learned from their teacher Major, but which were not to be accepted till a later age. " 'Think ye,' quoth she, 'that subjects, having power, may resist their princes?' 'If their princes exceed their bounds, Madam, they may be resisted and even deposed,' " Knox replied.

But these dialectics, creditable to both parties, had little effect upon the general situation. Knox had gone too far in intolerance, and Moray and Maitland of Lethington gradually withdrew their support. The court and parliament, guided by them, declined to press the queen or to pass the Book of Discipline; and meantime the negotiations as to the queen's marriage with a Spanish, a French or an Austrian prince revealed the real difficulty and peril of the situation. Her marriage to a great Catholic prince would be ruinous to Scotland, probably also to England, and perhaps to all Protestantism. Knox had already by letter formally broken with the earl of Moray, "committing you to your own wit, and to the conducting of those who better please you"; and now, in one of his greatest sermons before the assembled lords, he drove at the heart of the situation—the risk of a Catholic marriage. The queen sent for him for the last time and burst into passionate tears as she asked, "What have you to do with my marriage? Or what are you within this commonwealth?" "A subject born within the same," was the answer of the son of the East Lothian peasant; and the Scottish nobility, while thinking him overbold, refused to find him guilty of any crime, even when, later on, he had "convocated the lieges" to Edinburgh to meet a crown prosecution. In 1564 a change came. Mary had wearied of her guiding statesmen, Moray and the more pliant Maitland; the Italian secretary David Rizzio, through whom she had corresponded with the pope, now more and more usurped their place; and a weak fancy for her handsome cousin, Henry Darnley, brought about a sudden marriage in 1565 and swept the opposing Protestant lords into exile. Darnley, though a Catholic, thought it well to go to Knox's preaching; but was so unfortunate as to hear a very long sermon, with allusions not only to "babes and women" as rulers, but to Ahab who did not control his strong-minded wife. Mary and the lords still in her council ordered Knox not to preach while she was in Edinburgh, and he was absent or silent during the weeks which preceded the murder of Rizzio. During the rest of the year Knox was hidden in Ayrshire or elsewhere, and throughout 1566 he was forbidden to preach when the court was in Edinburgh. But he was influential at the December Assembly in the capital where a greater tragedy was now preparing, for Mary's infatuation for Bothwell was visible to all. At the Assembly's request, however, Knox undertook a long visit to England, where his two sons by his first wife were being educated, and were afterwards to be fellows of St. John's, Cambridge, the younger becoming a parish clergyman. It was thus during the reformer's absence that the murder of Darnley, the abduction and subsequent marriage of Mary, the flight of Bothwell, and the imprisonment in Lochleven of the queen, unrolled

[1] John Hill Burton (*Hist. of Scotland,* iii. 339). Mr. Burton's view (differing from that of Professor Hume Brown) was that the dialogues —the earlier of them at least—must have been spoken in the French tongue, in which Knox had recently preached for a year.

themselves before the eyes of Scotland. Knox returned in time to guide the Assembly which sat on June 25, 1567, in dealing with this unparalleled crisis, and to wind up the revolution by preaching at Stirling on July 9, 1567, after Mary's abdication, at the coronation of the infant king.

His main work was now really done; for the parliament of 1567 made Moray regent, and Knox was only too glad to have his old friend back in power, though they seem to have differed on the question whether the queen should be allowed to pass into retirement without trial for her husband's death, as they had differed all along on the question of tolerating her private religion. Knox's victory had not come too early, for his physical strength soon began to fail. But Mary's escape in 1568 resulted only in her defeat at Langside, and in a long imprisonment and death in England. In Scotland the regent's assassination in 1570 opened a miserable civil war, but it made no permanent change. The massacre of St. Bartholomew rather united English and Scottish Protestantism; and Knox in St. Giles' pulpit, challenging the French ambassador to report his words, denounced God's vengeance on the crowned murderer and his posterity. When open war broke out between Edinburgh Castle, held by Mary's friends, and the town, held for her son, both parties agreed that the reformer, who had already had a stroke of paralysis, should remove to St. Andrews. While there he wrote his will, and published his last book, in the preface to which he says, "I heartily take my good-night of the faithful of both realms . . . for as the world is weary of me, so am I of it." And when he now merely signs his name, it is "John Knox, with my dead hand and glad heart." In the autumn of 1572 he returned to Edinburgh to die, probably in the picturesque house in the "throat of the Bow," which for generations has been called by his name. With him were his wife and three young daughters; for though he had lost Margaret Bowes at the close of his year of triumph, 1560, he had four years after married Margaret Stewart, a daughter of his friend Lord Ochiltree. She was a bride of only seventeen and was related to the royal house; yet, as his Catholic biographer put it, "by sorcery and witchcraft he did so allure that poor gentlewoman that she could not live without him." He died on Nov. 24, 1572, and at his funeral in St. Giles' Churchyard the new Regent Morton, speaking under the hostile guns of the castle, expressed the first surprise of those around that one who had "neither flattered nor feared any flesh" had now "ended his days in peace and honour."

Knox was a rather small man, with a well-knit body; he had a powerful face, with dark blue eyes under a ridge of eyebrow, high cheek-bones, and a long black beard which latterly turned grey. This description, taken from a letter in 1579 by his junior contemporary Sir Peter Young, is very like Beza's fine engraving of him in the *Icones*—an engraving probably founded on a portrait which was to be sent by Young to Beza along with the letter. The portrait, which was unfortunately adopted by Carlyle, has neither pedigree nor probability. After his two years in the French galleys, if not before, Knox suffered permanently from gravel and dyspepsia, and he confesses that his nature "was for the most part oppressed with melancholy." Yet he was always a hard worker; as sole minister of Edinburgh studying for two sermons on Sunday and three during the week, besides having innumerable cares of churches at home and abroad. He was undoubtedly sincere in his religious faith, and most disinterested in his devotion to it and to the good of his countrymen. But like too many of them, he was self-conscious, self-willed and dogmatic; and his transformation in middle life, while it immensely enriched his sympathies as well as his energies, left him unable to put himself in the place of those who retained the views which he had himself held. All his training too, university, priestly and in foreign parts, tended to make him logical overmuch. But this was mitigated by a strong sense of humour (not always sarcastic, though sometimes savagely so), and by tenderness, best seen in his epistolary friendships with women; and it was quite overborne by an instinct and passion for great practical affairs. Hence it was that Knox as a statesman so often struck successfully at the centre of the complex motives of his time, leaving it to later critics to reconcile his theories of action. But hence too he more than once took doubtful shortcuts to some of his most important ends; giving the ministry within the new Church more power over laymen than Protestant principles would suggest, and binding the masses outside who were not members of it, equally with their countrymen who were, to join in its worship, submit to its jurisdiction, and contribute to its support. And hence also his style (which contemporaries called anglicized and modern), though it occasionally rises into liturgical beauty, and often flashes into vivid historical portraiture, is generally kept close to the harsh necessities of the few years in which he had to work for the future. That work was indeed chiefly done by the living voice; and in speaking, this "one man," as Elizabeth's very critical ambassador wrote from Edinburgh, was "able in one hour to put more life in us than five hundred trumpets continually blustering in our ears." But even his eloquence was constraining and constructive—a personal call for immediate and universal co-operation; and that personal influence survives to this day in the institutions of his people, and perhaps still more in their character. His countrymen indeed have always believed that to Knox more than to any other man Scotland owes her political and religious individuality. And since his 19th century biography by Dr. Thomas McCrie, or at least since his recognition in the following generation by Thomas Carlyle, the same view has taken its place in literature.

BIBLIOGRAPHY.—Knox's books, pamphlets, public documents and letters are collected into the great edition in six volumes of *Knox's Works*, by David Laing (Edinburgh, 1846–64), with introductions, appendices and notes. Of his books the chief are the following: 1.—*The History of the Reformation in Scotland,* incorporating the Confession and the Book of Discipline. Begun by Knox as a party manifesto in 1560, it was continued and revised by himself in 1566 so as to form four books, with a fifth book apparently written after his death from materials left by him. It was partly printed in London in 1586 by Vautrollier, but was suppressed by authority and published by David Buchanan, with a *Life,* in 1664. 2.—*On Predestination: an Answer to an Anabaptist* (London, 1591). 3.—*On Prayer* (1554). 4.—*On Affliction* (1556). 5.—*Epistles,* and *Admonition,* both to English Brethren in 1554. 6.—*The First Blast of the Trumpet against the Monstrous Regiment of Women* (1558). 7.—*An Answer to a Scottish Jesuit* (1572).

Knox's life is more or less touched upon by all the Scottish histories and Church histories which include his period, as well as in the mass of literature as to Queen Mary. Dr. Laing's edition of the *Works* contains important biographical material. But among the many express biographies two especially should be consulted—those by Thomas McCrie (Edinburgh, 1811; revised and enlarged in 1813, the later editions containing valuable notes by the author); and by P. Hume Brown (Edinburgh, 1895). *John Knox and the Reformation,* by Andrew Lang (1905), is not so much a biography as a collection of materials, bearing upon many parts of the life, but nearly all on the unfavourable side. *See* also J. Glasse, *John Knox, a Criticism and an Appreciation* (1905); Edwin Muir, *John Knox* (1929). (A. T. I.)

KNOX, PHILANDER CHASE (1853–1921), American lawyer and cabinet officer, was born at Brownsville, Pa., on May 6, 1853. He graduated at Mount Union college, Ohio, in 1872, studied law and was admitted to the bar in 1875. The following year he was appointed assistant U.S. attorney for the western district of Pennsylvania. In 1877 he opened an office in Pittsburgh where he practised law continuously until in 1901 he was appointed attorney-general by President McKinley and was retained by President Roosevelt. While in this office he instituted many important suits, notably those against the "beef trust" and the Northern Securities Company, which marked a new policy on the part of the Government with regard to regulation of business. These prosecutions, together with his reports upon the regulation of trusts, mark him as one of the most capable of those who have held the office. He resigned in 1904, to fill the unexpired term of Matthew S. Quay, as senator for Pennsylvania, and was re-elected to serve in 1905–11.

His service in the Senate was interrupted by President Taft summoning him in 1909 to become secretary of State, which position he filled until the end of the Taft Administration in March 1913. Knox's attempt to use the influence of the State Department to encourage and extend American financial and commercial interests, especially in Latin-America, the Near-East and the Far-East, was criticized as "dollar diplomacy." In 1912

he made a tour of Central and South American countries to allay the suspicion aroused in these countries by the financial and industrial policy of the United States and by its Panama canal policy. In 1917 he was again returned to the Senate. There he became one of the foremost opponents of the League of Nations. He died in Washington (D.C.), Oct. 12, 1921.

KNOX, WILLIAM FRANKLIN (1874–1944), American politician, was born at Boston, Mass., Jan. 1, 1874. He was graduated from Alma college, Mich., and after serving briefly with Theodore Roosevelt's Rough Riders, became a reporter on the *Grand Rapids Herald,* a paper of which he later became city editor and circulation manager. He published the *Sault Ste. Marie News* (1901–12) and subsequently was publisher of two newspapers in Manchester, N.H., and two in Boston. During World War I he served in the army from Aug. 14, 1917, to Feb. 10, 1919, reaching the rank of lieutenant colonel. He later became a colonel in the field artillery reserve. In 1926 he joined the Hearst press, acting as general manager 1928–31, when he became publisher of the *Chicago Daily News.* In 1936 he was the Republican vice-presidential nominee. He was appointed secretary of the navy July 11, 1940. He died in Washington, D.C., April 28, 1944.

KNOXVILLE, a city of Tennessee, U.S.A., on the Tennessee river; the largest city in the eastern half of the State, a port of entry and the county seat of Knox county. It is on Federal highways 11, 25 and 70; and is served by the Louisville and Nashville and the Southern railways. The population was 77,818 in 1920 (14·5% Negroes) and had grown to 111,580 (by federal census) in 1940. It lies among the foot-hills of the Clinch and the Chilhowee mountains, at an altitude of 850 to 1,000 ft. There are zinc, copper, coal and iron mines, and some 30 large marble quarries, in the vicinity. The leading agricultural products are tobacco, apples, peaches, strawberries, cherries, poultry, corn and small grains. There are large railroad shops and cotton mills. Knoxville is the seat of the University of Tennessee. Among the other institutions are Knoxville college for Negroes (United Presbyterian; 1875), the eastern state hospital for the insane, and state schools (for white and for Negroes) for the deaf and dumb. There is a national cemetery with 3,865 graves. The home of William Blount, governor of "the Territory South of the Ohio," still stands in the heart of the city.

Knoxville was settled in 1786 by James White, a North Carolina pioneer, and was known at first as White's Fort. The town was laid out in 1791, and was named after Gen. Henry Knox, then secretary of War. In the early years it was attacked by the Indians several times, but was never captured. During the Civil War it was taken by Gen. Burnside (Union) on Sept. 2, 1863, and was then unsuccessfully besieged by Confederate troops under Longstreet from Nov. 16 to Dec. 4.

KNUCKLE, the joint of a finger, probably the diminutive of a German word *Knoke,* bone. The knuckle-joint of an animal killed for eating is the tarsal or carpal joint of its leg. In machinery a knuckle is the round projecting part of a hinge through which the pin is run, and in ships the acute angle on timbers.

KNUCKLEBONES (Hucklebones, Dibs, Jackstones, Chuckstones, Five-stones), a game of very ancient origin, played with five small objects, originally the knucklebones of a sheep, which are thrown up and caught in various ways. Modern "knucklebones" consist of six points, or knobs, proceeding from a common base, and are usually of metal. The winner is he who first completes successfully a prescribed series of throws, which, while of the same general character, differ widely in detail. The simplest consists in tossing up one stone, the *jack,* and picking up one or more from the table while it is in the air; and so on until all five stones have been picked up. Different throws have received distinctive names, such as "riding the elephant," "peas in the pod," and "horses in the stable."

The origin of knucklebones is closely connected with that of dice, of which it is probably a primitive form, and is doubtless Asiatic. Sophocles, in a fragment, ascribed the invention of draughts and knucklebones (*astragaloi*) to Palamedes, who taught them to his Greek countrymen during the Trojan War. Both the *Iliad* and the *Odyssey* contain allusions to games similar in character to knucklebones, and the Palamedes tradition, as flattering to the national pride, was generally accepted throughout Greece, as is indicated by numerous literary and plastic evidences. Thus Pausanias (*Corinth* xx.) mentions a temple of Fortune in which Palamedes made an offering of his newly invented game. According to a still more ancient tradition, Zeus, perceiving that Ganymede longed for his playmates upon Mount Ida, gave him Eros for a companion and golden dibs with which to play, and even condescended sometimes to join in the game (Apollonius). It is significant, however, that both Herodotus and Plato ascribe to the game a foreign origin. Plato (*Phaedrus*) names the Egyptian god Theuth as its inventor, while Herodotus relates that the Lydians, during a period of famine in the days of King Atys, originated this game and indeed almost all other games except chess. There were two methods of playing in ancient times. The first, and probably the primitive method, consisted in tossing up and catching the bones on the back of the hand, very much as the game is played today. In the Museum of Naples may be seen a painting excavated at Pompeii, which represents the goddesses Latona, Niobe, Phoebe, Aglaia and Hileaera, the last two being engaged in playing at Knucklebones.

According to an epigram of Asclepiodotus, astragals were given as prizes to school-children, and we are reminded of Plutarch's anecdote of the youthful Alcibiades, who, when a teamster threatened to drive over some of his knucklebones that had fallen into the wagon-ruts, boldly threw himself in front of the advancing team. This simple form of the game was generally played only by women and children, and was called *pentalitha* or five-stones. There were several varieties of it besides the usual toss and catch, one being called *tropa,* or hole-game, the object having been to toss the bones into a hole in the earth. Another was the simple and primitive game of "odd or even."

The second, probably derivative, form of the game was one of pure chance, the stones being thrown upon a table, either with the hand or from a cup, and the values of the sides upon which they fell counted. In this game the shape of the pastern-bones used for astragaloi, as well as for the *tali* of the Romans, with whom knucklebones was also popular, determined the manner of counting. The pastern-bone of a sheep, goat or calf has, besides two rounded ends upon which it cannot stand, two broad and two narrow sides, one of each pair being concave and one convex. The convex narrow side, called *chios* or "the dog" counted 1; the convex broad side 3; the concave broad side 4; and the concave narrow side 6. Four astragals were used and 35 different scores were possible at a single throw, many receiving distinctive names such as Aphrodite, Midas, Solon, Alexander, and, among the Romans, Venus, King, Vulture, etc. The highest throw in Greece, counting 40, was the Euripides, and was probably a combination throw, since more than four sixes could not be thrown at any one time. The lowest throw of all, both in Greece and Rome, was called the Dog.

See *Cassell's Book of Sports and Pastimes* (1896); W. W. Newell, *Games and Songs of American Children* (1893); and *The Young Folks' Cyclopaedia of Games and Sports* (1899), for the modern children's game. For the history *see* L. Becq de Fouquières, *Les Jeux des Anciens* (1869); Bolle, *Das Knochelspiel der Alten* (1886); W. Richter, *Die Spiele der Griechen und Römer* (1887).

KNUTSFORD, SYDNEY GEORGE HOLLAND, 2nd Viscount (1855–1931), eldest son of the first Viscount Knutsford, was born on March 19, 1855. He was educated at Wellington and at Trinity Hall, Cambridge. He was associated with a number of philanthropic enterprises and was appointed chairman of the London hospital. His proposal that certain city churches should be demolished in order to provide funds for the hospitals, though it attracted several supporters, embroiled him in controversy.

KNUTSFORD, market town, urban district, Knutsford parliamentary division, Cheshire, England; 24 mi. N.E. of Chester, on the L.M.S. railway. Pop. (1938) 6,333. Area 3.92 sq.mi. It is pleasantly situated on an elevated ridge, with the fine domains of Tatton park and Tabley respectively north and west of it. The meres in these domains are especially picturesque. Among several ancient houses is the Rose and Crown tavern built in 1641.

A cottage dated 1411 has been pulled down, though the timber is preserved. In a churchyard a mile from the town stood the ancient church, which, though partially rebuilt in the time of Henry VIII, fell into ruin in 1741. The church of St. John (1744), was supplemented (1880) by St. Cross church, in Perpendicular style. The town has a grammar school, founded in the 15th century, but reorganized in 1885. Lord Egerton built the Egerton schools in 1893. The industries comprise cotton, worsted and leather manufactures; but Knutsford is mainly a residential area for Manchester. Knutsford was the birthplace of Sir Henry Holland, Physician Extraordinary to Queen Victoria (1788–1873); and his son, the second Sir Henry, later Viscount Knutsford.

The name Knutsford (*Cunetesford, Knotesford*) is said to signify Cnut's ford, but there is no evidence of a settlement here previous to Domesday. In 1086 Erthebrand held Knutsford immediately of William FitzNigel, baron of Halton, who was himself a mesne lord of Hugh d'Avranches earl of Chester. In 1292 William de Tabley, lord of both Over and Nether Knutsford, granted free burgage in both Knutsfords. This charter is the only one which gives Knutsford a claim to the title of borough. In the same year, the king granted a market every Saturday at Nether Knutsford, and a three days' fair at the Feast of St. Peter and St. Paul. When this charter was confirmed by Edward III another market (Friday) and another three days' fair (Feast of St. Simon and St. Jude) were added. The Friday market was certainly dropped by 1592, if it was ever held. The crowning of the May queen on May day attracts large crowds. The streets are sanded in fancy designs. A silk mill was erected here in 1770.

See Henry Green, *History of Knutsford* (1859).

KOALA (*Phascolarctos cinereus*), a stoutly built marsupial, of the family Phalangeridae, which also contains the phalangers. This animal, which inhabits the eastern parts of the Australian continent, is about 2 ft. in length, and of an ash-gray colour, an excellent climber, residing in lofty eucalyptus trees, the buds and tender shoots of which form its principal food. From its shape the koala is called by the Australians the "native bear" or "native sloth." This species was formerly killed in great numbers for the skin, from which a cheap and durable fur was made. As a result it was almost exterminated. Stringent laws protected the koalas after 1936.

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THE KOALA (PHASCOLARCTOS CINEREUS), AN AUSTRALIAN MARSUPIAL

KOBDO, a town and district situated in one of the intermontane basins at the northern foot of the Altai in North-west Mongolia. The immediate vicinity of the town is a stony, arid plain, but it is an important market for cattle-breeding nomads from a wide district around. Its historic rôle has been that of a trade-depôt linked commercially with Peking, the exports to China including large numbers of sheep, skins and wool. In recent years, however, there has been a marked tendency for the outer parts of Mongolia to be brought within the trade-sphere of Soviet Russia. The pop. of the district (1934) was 51,000.

KOBE, a port of western Japan. Pop. (1940) 967,234. A considerable part of the trade of Yokohama was diverted to it as a consequence of the earthquake of 1923 and part of this transference will probably be permanent, owing to the excellent railway facilities of Kobe and the proximity of important industrial areas. Large sums were spent on port improvement and land reclamation.

A large shipbuilding yard, the fourth, was opened in 1917. In 1910 the bed of the Minatogawa river was reclaimed; the upper part has been made into a park, with a city hall and large market. Hyogo is now administratively a part of Kobe. The city stretches five miles between the hills and the river, and is extending rapidly towards Osaka; the hill of Rokko-Zan behind the city has become a favourite summer resort. Although the south and south-west parts of Japan are supposed to be immune from serious earthquakes, a shock in the neighbourhood of Kobe caused considerable damage and some loss of life in May 1925.

KOBELL, WOLFGANG XAVER FRANZ, BARON VON (1803–1882), German mineralogist, was born at Munich on July 19, 1803. He studied chemistry and mineralogy at Landshut (1820–23), and in 1826 became professor of mineralogy in the University of Munich. He introduced new methods of mineral analyses, invented the stauroscope for the study of the optical properties of crystals (1855), and described many new minerals. He died at Munich on Nov. 11, 1882.

His publications include *Charakteristik der Mineralien* (2 vols., 1830–31); *Tafeln zur Bestimmung der Mineralien,* etc. (1833; and later editions ed. 12, by K. Oebbeke, 1884); *Grundzüge der Mineralogie* (1838), *Geschichte der Mineralogie von 1650–1860* (1864); and numerous papers in scientific journals.

KOBLENZ: *see* COBLENZ.

KOCH, ROBERT (1843–1910), German bacteriologist, was born at Klausthal, Hanover, on Dec. 11, 1843. He studied medicine at Göttingen, where he came under the influence of Jacob Henle. While he was practising as medical officer at Wollstein he began those bacteriological researches that made his name famous. In 1876 he obtained a pure culture of the bacillus of anthrax, announcing a method of preventive inoculation against that disease seven years later. Cohn, the botanist, hailed the discovery as one of the greatest importance, and printed Koch's account in his *Beiträge.* Koch became a member of the sanitary commission at Berlin and a professor at the School of Medicine in 1880, and five years later he was appointed to a chair in Berlin university and director of the Institute of Health. By the improved methods of bacteriological investigation he was able to elaborate, he transformed the science of infection. In 1882 he isolated the bacillus of tuberculosis, and in the following year, having been sent on an official mission to Egypt and India to study the aetiology of Asiatic cholera, he identified the comma bacillus as the specific organism of that malady. In 1890 great hopes were aroused by the announcement that in tuberculin he had prepared an agent which exercised an inimical influence on the growth of the tubercle bacillus, but the expectations that were formed of it as a remedy for consumption were not fulfilled, though it proved useful as a means of diagnosing the existence of tuberculosis in animals intended for food. At the congress of tuberculosis held in London in 1901 he maintained that tuberculosis in man and in cattle is not the same disease, the practical inference being that the danger to men of infection from milk and meat is less than from other human subjects suffering from the disease. One of the results of this statement was the appointment of a British royal commission to study the question. Dr. Koch also investigated the nature of rinderpest in South Africa in 1896, and found means of combating the disease. In 1897 he went to Bombay at the head of a commission formed to investigate the bubonic plague, and he subsequently undertook extensive travels in pursuit of his studies on the origin and treatment of malaria. He was summoned to South Africa a second time in 1903 to give expert advice on other cattle diseases, and on his return was elected a member of the Berlin Academy of Sciences. In 1906–7 he spent 18 months in East Africa, investigating sleeping-sickness. He died at Baden-Baden of heart-disease on May 28, 1910. Koch was undoubtedly one of the greatest bacteriologists ever known. Apart from the immediate value of his discoveries, he must be recognized as a pioneer in new methods of bacteriological work. Honours were showered upon him, and in 1905 he was awarded the Nobel prize for medicine.

Among his works may be mentioned: *Untersuchungen über die Ätiologie der Wundinfektionskrankheit* (1878); *Weitere Mitteilungen über ein Heilmittel gegen Tuberkulose* (Leipzig, 1891); *Heilmittel gegen die Tuberkulose* (1891); *Über neue Tuberculinpräparate* (1897); and *Reiseberichte über Rinderpest, Bubonenpest in Indien und Afrika, Tsetse- oder Surra-Krankheit, Texasfieber, tropische Malaria, Schwarzwasserfieber* (1898). His *Sämtliche Schriften* (2 vols. 1912) were edited by Schwalbe, Gaffky and Pfahl. A bibliography of his works is given by W. Becher, *Robert Koch* (1891). From 1886 onwards

he edited with Dr. Karl Flugge, the *Zeitschrift für Hygiene und Infektionskrankheiten* (published at Leipzig). *See* Loeffler, "Robert Koch, zum 60 ten Geburtstage" in *Deut. Medizin. Wochenschr.* (No. 50, 1903).

KOCH, a tribe of northeastern India, which has given its name to the state of Cooch Behar (*q.v.*). They are probably of Mongoloid stock, akin to the Mech, Kachari, Garo and Tippera tribes, and originally spoke, like these, a language of the Bodo group. One of their chiefs established a powerful kingdom at Cooch Behar in the 16th century and they have gradually become Hinduized, and now adopt the name of Rajbansi (="of royal blood").

KOCK, CHARLES PAUL DE (1793–1871), French novelist, was born at Passy (Paris). He was a posthumous child, his father, a banker of Dutch extraction, having been a victim of the Terror. Paul de Kock lived on the Boulevard St. Martin, and was one of the most inveterate of Parisians. He died in Paris on April 27, 1871. In 1820 he began his long and successful series of novels dealing with Parisian life with *Georgette, ou la mère du Tabellion.* His period of greatest and most successful activity was the Restoration and the early days of Louis Philippe. He was relatively less popular in France itself than abroad, where he was considered as the special painter of life in Paris. Major Pendennis's remark that he had read nothing of the novel kind for 30 years except Paul de Kock, may be classed with the legendary question of a foreign sovereign to a Frenchman who was paying his respects, "Vous venez de Paris et vous devez savoir des nouvelles. Comment se porte Paul de Kock?" The disappearance of the *grisette* and of the cheap dissipation described by Henri Murger practically made Paul de Kock obsolete. But to the student of manners his portraiture of low and middle-class life in the first half of the 19th century at Paris still has its value. With the exception of a few not very felicitous excursions into historical romance and some miscellaneous works of which his share in *La Grande ville, Paris* (1842), is the chief, all his books are stories of middle-class Parisian life, of *guinguettes* and *cabarets* and various equivocal adventures. The most famous are *André le Savoyard* (1825) and *Le Barbier de Paris* (1826).

His *Mémoires* were published in 1873. *See* also Th. Trimm, *La Vie de Charles Paul de Kock* (1873).

KODAIKANAL, a sanatorium of southern India, in the Madura district of Madras, situated in the Palni hills, among beautiful scenery, about 7,000 ft. above sea level. Pop. (1941), 9,724. It is difficult of access, being 50 mi. from a railway station. It contains a government observatory, well known for investigations in terrestrial magnetism, seismology and solar physics.

KODÁLY, ZOLTÁN (1882–), one of the most original and interesting of modern composers, was born at Kecskemét, Hungary, Dec. 16, 1882. He studied under Hans Koessler at the Budapest Academy of Music, where he became professor of composition in 1907. A leading exponent of the ultra-modern tendency in Hungarian music, he has devoted himself enthusiastically to the collection and arrangement of Hungarian and Slovak folk-songs, and his pioneer work in this connection, carried on in conjunction with that of Béla Bartók, has been of great importance, as going to throw new light on Hungarian national music in its earlier and more primitive forms. His own works, employing frequently folk song material, and strikingly original and individual in treatment, includes two string quartets, a sonata for violoncello and piano, a sonata for violoncello alone, songs and pianoforte pieces, and a fine setting of Psalm LV. ("Psalmus Hungaricus") for tenor solo, chorus and orchestra (1923), which was performed in England at the Gloucester festival of 1928 under the direction of the composer.

KODAMA, GENTARO, COUNT (1852–1907), Japanese general, was born in Choshu. He studied military science in Germany, and was appointed vice-minister of war in 1892. He became governor-general of Formosa in 1900, holding at the same time the portfolio of war. When the conflict with Russia became imminent in 1903, he gave up his portfolio to become vice-chief of the general staff, a sacrifice which elicited much public applause. Throughout the Russo-Japanese War (1904–5) he served as chief of staff to Field Marshal Oyama, and it was well understood that his genius guided the strategy of the whole campaign, as that of General Kawakami had done in the war with China ten years previously. General Kodama was raised in rapid succession to the ranks of baron, viscount and count, and his death in 1907 was regarded as a national calamity.

KODUNGALUR, town, southern India, in Cochin state, within the presidency of Madras. Though now a place of little importance, its historical interest is considerable. Traditionally it was the first field of St. Thomas's labours (A.D. 52) in India and the seat of Cheraman Perumal's government. The Syrian Church was certainly firmly established here before the 9th century, and probably the Jews' settlement was still earlier. The latter, in fact, claim to hold grants dated A.D. 378. The cruelty of the Portuguese drove most of the Jews to Cochin. Up to 1314, when the Vypin harbour was formed, the only opening in the Cochin backwater, and outlet for the Periyar, was at Kodungalur, which must then have been the best harbour on the coast. In 1502 the Syrian Christians invoked the protection of the Portuguese, who in 1523 built their first fort there. In 1661 the Dutch took the fort, the possession of which for the next forty years was contested between this nation, the zamorin, and the raja of Kodungalur. It was then taken by Tippoo in 1776, retaken by the Dutch, ceded to Tippoo, sold to the Travancore raja, and finally sold to Tippoo, who destroyed it in 1790. The country round Kodungalur now forms an autonomous principality, tributary to the raja of Cochin.

KOESFELD or COESFELD, a town in the Prussian province of Westphalia, Germany, 38 mi. by rail N.N.W. of Dortmund. Pop. (1939), 13,884. The Gymnasial Kirche (Roman Catholic) is used by the Protestant community. Here are the ruins of the Ludgeri castle, formerly the residence of the bishops of Münster, and also the castle of Varlar. The leading industries include the making of linen and cotton goods and machinery.

KOHAT, a town and district of British India, in the North-West Frontier Province. The town is 37 mi. south of Peshawar by the Kohat Pass, along which a military road was opened in 1901. The population in 1941 was 34,316, including 9,250 in the cantonment. It is the military base for the southern Afridi frontier as Peshawar is for the northern frontier of the same tribe, and it lies in the heart of the Pathan country.

The DISTRICT OF KOHAT has an area of 2,707 sq.mi. It consists chiefly of a bare and intricate mountain region east of the Indus, deeply scored with river valleys and ravines, but enclosing a few scattered patches of cultivated lowland. The eastern or Khattak country especially comprises a perfect labyrinth of ranges. The Miranzai valley, in the extreme west, appears by comparison a rich and fertile tract. The frontier mountains; continuations of the Safed Koh system, attain in places a considerable elevation, the two principal peaks, Dupa Sir and Mazi Garh, just beyond the British frontier, being 8,260 and 7,940 ft. above the sea respectively. The Waziri hills, on the south, extend like a wedge between the boundaries of Bannu and Kohat, with a general elevation of less than 4,000 ft. The salt-mines are situated in the low line of hills crossing the valley of the Teri Toi, and extending along both banks of that river. The deposit has a width of a quarter of a mile, with a thickness of 1,000 ft.; it sometimes forms hills 200 ft. in height, almost entirely composed of solid rock-salt, and may probably rank as one of the largest veins of its kind in the world. Petroleum springs exude from a rock at Panoba, 23 mi. east of Kohat; and sulphur abounds in the northern range. In 1941 the population was 289,404. The frontier tribes on the Kohat border are the Afridis, Orakzais, Zaimukhts and Turis. All these are described under their separate names. A railway runs from Kushalgarh through Kohat to Thal, and the river Indus is bridged at Kushalgarh.

KOHAT PASS, a mountain pass in the North-West Frontier Province of India, connecting Kohat with Peshawar. From the north side the defile commences at 4½ mi. S.W. of Fort Mackeson, whence it is about 12 or 13 mi. to the Kohat entrance. The pass varies from 400 yd. to 1¼ mi. in width, and its summit is some 600 to 700 ft. above the plain. It is inhabited by the Adam Khel

Afridis, and nearly all British relations with that tribe have been concerned with this pass, which is the only connection between two British districts without crossing and recrossing the Indus (*see* AFRIDI). It is now traversed by a cart-road.

KOH-I-NOR, a famous diamond, whose history can be traced with certainty to the early 14th century. It was one of Aurungzebe's treasured possessions. In 1739 it passed into the possession of Nadir Shah, who gave the stone its name, which means "mountain of light." After the annexation to Great Britain of the Punjab in 1849 the diamond passed through the hands of the East India company to Queen Victoria, since when it has remained the property of the British Crown. Originally it weighed 186$\frac{1}{16}$ carats, but it was re-cut in 1851 and reduced to 106$\frac{1}{16}$ carats.

KOHISTAN, a tract on the Peshawar border of the North-West Frontier Province of India; also a district in Afghanistan and a tract of country in Sind. Kohistan means the "country of the hills" and corresponds to the English word highlands; but it is specially applied to a little known district to the south and west of Chilas, between the Kagan valley and the river Indus. It comprises an area of over 1,000 sq.m., and is bounded on the north-west by the river Indus, on the north-east by Chilas, and on the south by Kagan, the Chor Glen and Allai. It consists roughly of two main valleys running east and west, and separated by a mountain range over 16,000 ft. high. The mountains are snow-bound and rocky wastes from their crests downwards to 12,000 ft. Below this the hills are covered with fine forest and grass to 5,000 or 6,000 ft., and the valleys, especially near the Indus, are fertile basins under cultivation. The Kohistanis are Mohammedans, but not of Pathan race. They are a well-built, brave but quiet people who carry on a trade with British districts. There is little doubt that they are, like the Kafirs of Kafiristan, the remnants of old races driven by Mohammedan invasions from the valleys and plains into the higher mountains. The majority have been converted to Islam within the last 200 years. The total population is about 16,000.

An important district also known as Kohistan lies to the north of Kabul in Afghanistan, extending to the Hindu Kush.

KOHL. The name of the cosmetic used from the earliest times in the East by women to darken the eyelids, in order to increase the lustre of the eyes. It is usually composed of finely powdered antimony, but smoke black obtained from burnt almond-shells or frankincense is also used. The Arabic word *kohl,* from which has been derived "alcohol," is derived from *kaḥala,* to stain. "Kohl" or "kohl-rabi" (cole-rape, from Lat. *caulis,* cabbage) is a kind of cabbage (*q.v.*), with a turnip-shaped top, cultivated chiefly as food for cattle.

KOHLHASE, HANS, the hero of Heinrich von Kleist's novel, *Michael Kohlhaas,* was a merchant at Kölln in Brandenburg. Unable to obtain redress in the courts of law for an attack on him by a Saxon nobleman on his way to Leipzig fair, the merchant, in a *Fehdebrief,* challenged not only his aggressor, but the whole of Saxony. The elector of Saxony, John Frederick I., set a price upon his head. Kohlhase now collected a band of criminals which spread terror throughout Saxony. In March 1540 Kohlhase and his principal associate, Georg Nagelschmidt, were seized, and on the 22nd were broken on the wheel in Berlin.

The life and fate of Kohlhase are dealt with in several dramas. *See* Burkhardt, *Der historische Hans Kohlhase und H. von Kleists Michael Kohlhaas* (Leipzig, 1864).

KOHLRAUSCH, FRIEDRICH WILHELM (1840–1910), German physicist, was born on Oct. 14, 1840, at Rinteln on the Weser, the son of Rudolph Kohlrausch (1809–58), who, with Weber, had measured the ratio of the electro-magnetic to the electrostatic unit of charge. Kohlrausch studied at Göttingen and Erlangen. He held chairs at Göttingen (1866–70), at the School of Technology, Frankfurt-on-Main (1870–71), at Darmstadt (1871–75), at Würzburg (1875–88), at Strasbourg (1888–95), and finally he succeeded Helmholtz as president of the Reichanstalt at Charlottenburg. In 1900 he was made honorary professor of physics at the University of Berlin. He was a member of the scientific societies of many European countries, including the Royal Society and Physical Society of London. He died at Marburg on Jan. 17, 1910.

His research work was mainly on electricity and magnetism; he devised a method of simultaneously determining the measurement of the horizontal component of the earth's magnetic field and an electric current. He carried out a series of important investigations on electrolytic conductivity, using an alternating current in conjunction with a bridge method which reduced the polarisation of the electrolyte. This method is used to-day and is called after Kohlrausch. He investigated the variation of conductivity with dilution and showed that the ratio of the conductivity to the number of gram-equivalents of the salt per unit volume approached an upper limit for infinite dilution. He obtained a connection between this ratio and the sum of the velocities of the ions; this with the determination of the ratio of the velocities made by Hitorff enabled the absolute velocities of the ions to be found. Kohlrausch also did much to stimulate experimental work in physics, his *Leitfaden der Praktischen Physik* (1870) ran into many editions, and was translated into English. He constructed a number of electric and magnetic measuring instruments.

See Obituary Notice by Warburg in *Deutsche Physikalische Gesellschaft Verhandlungen,* xii. (1910).

KOKAND or KOKAN, a town of Asiatic Russia, in the Kokand district of the Uzbek S.S.R., in 40° 28′ N. 70° 40′ E. Pop. (1939) 84,665. Situated at an altitude of 1,375 ft., it has a severe climate, the average temperatures being—year, 56°; January, 22°; July, 65°. Yearly rainfall, 3·6 in. It is the centre of a fertile irrigated oasis, and consists of a citadel, enclosed by a wall nearly 12 m. in circuit, and of suburbs containing luxuriant gardens. The town is modernized, has an electric plant, broad streets, large squares, and a particularly handsome bazaar. The former palace of the khans, which recalls by its architecture the mosques of Samarkand, is the best building in the town. Kokand is one of the most important centres of trade in Turkistan. It is a railway junction, from which one line branches north-east through Namangan, and another south-east to Andijan. Raw cotton and silk are the principal exports, while manufactured goods are imported from Russia. There are cotton cleaning factories and flour mills. A women's co-operative store has been successfully established, with a centre of instruction in health and infant welfare. Coins bearing the inscription "Kokand the Charming," and known as *kokands,* had at one time a wide currency.

The khanate of Kokand was a powerful state which grew up in the 18th century. Its early history is not well known, but the town was founded in 1732 by Abd-ur-Rahim under the name of Iski-kurgan or Kali-i-Rahimbai. This must relate, however, to the fort only, because Arab travellers of the 10th century mention Hovakend or Hokand, the position of which has been identified with that of Kokand. Many other populous and wealthy towns existed in this region at the time of the Arab conquest of Ferghana. In 1758–1759 the Chinese conquered Dzungaria and East Turkistan, and the begs or rulers of Ferghana recognized Chinese suzerainty. In 1807 or 1808 Alim, son of Narbuta, brought all the begs of Ferghana under his authority, and conquered Tashkent and Chimkent. His attacks on the Bukharan fortress of Ura-tyube were however unsuccessful, and the country rose against him. He was killed in 1817 by the adherents of his brother Omar. Omar was a poet and patron of learning, but continued to enlarge his kingdom, taking the sacred town of Azret (Turkistan), and, to protect Ferghana from the raids of the nomad Kirghiz, built fortresses on the Syr-darya, which became a basis for raids of Kokand people into Kirghiz land. This was the origin of a conflict with Russia. Several petty wars were undertaken by the Russians after 1847 to destroy the Kokand forts, and to secure possession, first, of the Ili (and so of Dzungaria), and next of the Syr-darya region, the result being that in 1866, after the occupation of Ura-tyube and Jizakh, the khanate of Kokand was separated from Bukhara. During the forty-five years after the death of Omar in 1822, the khanate of Kokand was the seat of continuous wars between the settled Sarts and the nomad Kipchaks, the two parties securing the upper hand in turns. Kokand fell under the suzerainty of Bukhara, which supported Khudayar Khan, the representative of the Kipchak party, in 1858–1866; while Alim

Kul, the representative of the Sarts, put himself at the head of the *gazavat* (Holy War) proclaimed in 1860, and fought bravely against the Russians until killed at Tashkent in 1865. In 1868 Khudayar Khan, having secured independence from Bukhara, concluded a commercial treaty with the Russians, but was compelled to flee in 1875, when a new Holy War against Russia was proclaimed. It ended in the capture of the strong fort of Makhram, the occupation of Kokand and Marghelan (1875), and the recognition of Russian superiority by the amir of Bukhara, who conceded to Russia all the territory north of the Naryn river. War, however, was renewed in the following year. It ended, in Feb. 1876, with the capture of Andijan and Kokand and the annexation of the Kokand khanate to Russia. Out of it was made the Russian province of Ferghana, now merged in the Uzbek S.S.R.

See:—The following publications are all in Russian: Kuhn, *Sketch of the Khanate of Kokand* (1876); V. Nalivkin, *Short History of Kokand* (French trans., Paris, 1889); Niazi Mohammed, *Tarihi Shahrohi*, or *History of the Rulers of Ferghana*, edited by Pantusov (Kazan, 1885); Maksheev, *Historical Sketch of Turkestan and the Advance of the Russians* (St. Petersburg, 1890); N. Petrovskiy, *Old Arabian Journals of Travel* (Tashkent, 1894); *Russian Encyclopaedic Dictionary*, vol. xv. (1895). In English: F. H. Skrine and E. D. Ross, *The Heart of Asia* (1899).

KOKOMO, an industrial city of Indiana, 50 mi. N. of Indianapolis on federal highway 31; other state and federal roads are: 35, 22 and 17; the county seat of Howard county. Kokomo is also served by the Pennsylvania railroad and two branches of the Nickel Plate. The population in 1940 was 33,795 by federal census. In addition to its many industrial developments, Kokomo is in a fertile agricultural territory; the most important manufactured products are: steel, pottery, auto accessories, machine parts, wearing apparel, stoves and many others; its public utility service is adequate and efficient, with low rates. Kokomo has beautiful homes and public buildings, schools and churches and excellent streets and parks.

The region around Kokomo was a hunting ground of the Miami Indians, and some of their descendants still live in the village of Miami, 9m. N. of the city.

In 1842 David Foster, an Indian trader, bought several hundred acres for a few dollars from their chief, and built a cabin on the north bank of the Wildcat. In 1844 the little trading post (named after a Miami chief) was made the county seat, and in 1865 it became a city.

The early years were a struggle with ague and swamp fever, as the 40ac. given by Foster for the town site were covered with water most of the year. In 1860 the population was only 1,040, but it increased to 4,042 in 1880 and 10,609 in 1900, and in the next 20 years it was multiplied by almost three.

The first practical automobile was built there by Elwood Haynes in 1892. There were made also the first pneumatic rubber tires, the first aluminium castings, the first aerial bomb and the first stainless steel.

KOKO-NOR. The name of a lake of Central Asia in north-east Tibet and of an administrative division under the jurisdiction of China. The Koko-nor lake lies at an altitude of about 10,000 feet and measures 66 miles by 40. It is part of a high-lying basin, much of it very marshy, between the main axis of the Kunlun-Koko-nor mountains on the south and the curving arc of the Nan-shan on the north, the latter separating it from the Tarim basin. The level of the lake varies considerably. The administrative district of Koko-nor or Chinghai was carved out of north-eastern Tibet to protect the Kansu-Tarim corridor and unlike Tibet proper, now virtually independent, it is administered by Chinese officials. It includes the Nan-shan ranges as well as the Koko-nor Depression. Most of the country is grazing-land interspersed with swamps. The population is thin and scattered, consisting mainly of nomadic Mongols in the north and of Tibetans in the south. In the extreme south-east a wild tribe of Tibetan affinities known as the Golaks live an independent existence.

KOKOSCHKA, OSKAR (1886–), German poet and painter, was born at Pöchlarn, Austria, on March 1, 1886. He is an expressionist and has produced a number of semi-dramatic works, written in whimsical vein, in which the problems of life are treated in a somewhat loose and vague manner. *Mörder, Hoffnung der Frauen* (1907), *Der brennende Dornbusch* (1911), *Hiob* (1917) and *Orpheus und Eurydike* (1918) were first published in the *Sturm* and afterwards appeared in collected form under the title of *Vier Dramen* (1919). *Mörder, Hoffnung der Frauen* and *Hiob* were performed for the first time in Dresden in 1919 and *Der brennende Dornbusch* was produced in Berlin under Kokoschka's direction by the "Junge Deutschland." In his staging of this piece Kokoschka revealed original talent. His verse is, for the most part, complementary to the accompanying pictures. His poetical works include *Die träumenden Knaben* (Vienna, 1908; Leipzig, 1917); *Der weisse Tiertöter* (1920); *Der gefesselte Kolumbus* (1921); and among his more notable pictures and drawings are "Auswanderer" and "Der irrende Ritter." As a painter he is one of the leading representatives of the expressionist movement in Germany. *See* Paul Westheim, *O. Kokoschka* (1919).

KOKSHAROV, NIKOLAI IVANOVICH VON (1818–93), Russian mineralogist and major-general in the Russian army, assisted R. I. Murchison and de Keyserling in their survey of the Russian empire. He was later director of the institute of mines and of the Imperial mineralogical society in St. Petersburg (Leningrad). His papers on euclase, zircon, epidote, etc., were contributed to various scientific periodicals. He wrote *Materialen zur Mineralogie Russlands* (10 vol., 1853–91), and *Vorlesungen über Mineralogie* (1865).

KOKSTAD, a town of South Africa, in 30° 30′ S., 29° 28′ E.; altitude 4,500 ft.; 156 mi. by rail S.W. of Pietermaritzburg. The pop. (1936) was 5,643 of which 1,677 were whites, 2,375 natives, 9 Asiatics and 1,582 coloured. The town lies at the foot of Mt. Currie, an igneous mass, which rises to a height of more than 7,000 ft. It has a good water supply and the streets are lined with oak trees. There are two good hotels and several public buildings. Kokstad, which is named after its Griqua founder, Adam Kok, dates from 1869, and was granted municipal government in 1893. It is the chief centre of the Griqua people. A considerable trade in wool, grain and cattle is done with Basutoland, Pondoland and the neighbouring parts of Natāl. The surrounding country is well known for its cheesemaking.

KOLA, a peninsula of northern Russia lying between the Barents sea on the north and the White sea on the south and having an area of 50,000 sq.mi. It is a plateau 600–700 ft. in height, mainly composed of granite and gneiss and is, geographically, an eastward extension of the mountainous region of Scandinavia. The snow capped granitic mountain masses of Umptek and Luyavrot reach a height of 3,500 to 4,000 ft. West of them lies a lowland gap stretching from Kola gulf in the north to the Kandalaksk gulf of the White sea in the south. Near the middle lies Lake Imandra, 67 mi. from S.W. to N.E. from which the Niva river flows into Kandalaksk gulf, while to the north are smaller lakes connected by the Kola river. Lakes and rivers are numerous, and the watersheds are often ill-defined morasses, since the area is part of the Finnish moraine region. Towards the north the river valleys are clothed with birch and pine, in contrast to the general tundra nature of the region, but in the south thin birch woods extend over the whole area. Rapids make the rivers useless for navigation, and many are very shallow during summer and flooded in spring. Agriculture is impossible, the soil being poor and unproductive tundra, bog and podzol (*see* RUSSIA: *Soils and Their Influence*) and the climate unfavourable, with a very short, cool summer, av. July temp. 54.8° F., and a long winter, av. January temp. 11.8° F., av. rainfall per annum 8 in., half of which falls between June and August. The influence of the Atlantic drift is felt for some distance inland from the Murmansk (*q.v.*) coast. The northern limit of cultivation excludes all the peninsula east of the Kola-Kandalaksk depression, but west of it potatoes, turnips and barley are grown to a small extent; the peninsula depends entirely on imported grain. Cattle and pigs are raised in the grassy valleys. Cloudberries, bilberries and crowberries are abundant in summer. Birds are numerous, especially the ptarmigan, willow grouse, capercailzie, eider-duck, goose and puffin. The nomad tribes breed reindeer. Salmon are found in

the rivers, and herring and seal are caught off the White sea coasts. The settlements are mainly fishing stations on the Murmansk coast, and the chief town is Murmansk (*q.v.*). The railway constructed in 1917 runs through the main depression northwards to Murmansk.

Otherwise communication is extremely difficult. There are a few reindeer sledge tracks in winter, but in summer they become swampy and mosquitoes are so numerous as to interfere with transit, and make it impossible for animals to be used. Mineral wealth consists mainly of silver, lead and zinc ore reported, but not worked, on the Murmansk coast, and silver mines worked on Medvied island in Kandalaksk gulf. A scientific expedition in 1927 under Professor Fersman found a marked magnetic anomaly suggestive of more extensive iron deposits than the bog-ore already known to exist. Copper exists in the Ponoi valley near Umba and gold near Kola. Pearls are found in the rivers, especially in the Kola and Tuloma. Apart from the Russian Finns and Norwegians in the fishing settlements of the Murmansk district, the population consists mainly of Lapps. The Lapps are a Finno-Ugrian type, the shortest and most brachycephalic race in Europe. They have high cheek bones, narrow eyes, not Mongolian in type, a good deal of hair on the face and a broad nose. They have been much modified by interbreeding with Russians and Norwegians and their numbers, including half-breeds, are probably about 2,500–3,000. They differ from the Finnish Lapps in dialect and in being entirely illiterate; their language somewhat resembles Mordvinian, but also shows Finnish influence. The Lyavozersk Lapps speak a different dialect from that of the Ponoi Lapps; and the latter have been much more influenced by Russian customs than the former. The Lapps are nomads and breed reindeer in a somewhat casual way. In summer they allow the reindeer to run wild and occupy themselves with fishing; in winter the herds are kept near the winter villages feeding on the reindeer moss, and this method means that the village becomes bare of lichen and is deserted every few years. Their food is reindeer flesh and dried or salted fish in the winter, and snow chickens, waterfowl and berries in the summer. They trade their reindeer products for knives, gunpowder and small articles with the Russians and Zirians and, before the railway came, did much transport of goods in their boat shaped reindeer sledges. Administratively the peninsula forms part of the Murmansk district of the Leningrad area. Its total population including the town of Murmansk was 291,188 in 1939.

See *Handbook of Siberia and Arctic Russia,* I.D. 1207 (1920); A. O. Kihlmann and Palmén, *Die Expedition nach der Halbinsel Kola* (1887–92); A. O. Kihlmann, *Bericht einer naturwissenschaftlichen Reise durch Russisch-Lappland* (Helsingfors, 1890); and W. Ramsay, *Geologische Beobachtungen auf der Halbinsel Kola* (Helsingfors, 1899).

KOLABA, a district of British India, in the southern division of Bombay. Area, 2,212 sq.mi.; pop. (1941) 668,922. The headquarters are at Alibagh. Lying between the Western Ghats and the sea, Kolaba district is very hilly. The sea frontage, of about 20 mi., is throughout the greater part of its length fringed by a belt of coconut and betel-nut palms. Behind this belt lies a stretch of flat country devoted to rice cultivation. In many places along the banks of the salt-water creeks there are extensive tracts of salt marshland, and salt is largely manufactured. The district is traversed by a few small streams. Tidal inlets, of which the principal are the Nagothna on the north, the Roha or Chaul in the west, and the Bankot creek in the south, run inland for 30 or 40 mi., forming highways for a brisk trade in rice, salt, firewood, and dried fish and the fishing is of considerable value. The Western Ghats have two remarkable peaks—Raigarh, where Sivaji built his capital, and Miradongar. There are extensive teak and black wood forests, the value of which is increased by their proximity to Bombay. The Great Indian Peninsula railway crosses part of the district, and communication with Bombay is maintained by a steam ferry. Kolaba district takes its name from a little island off Alibagh, which was one of the strongholds of Angria, the Mahratta pirate of the 18th century.

KOLA NUT, a synonym for Colanut, the caffeine-containing nut of *Cola acuminata* of tropical west Africa. It is an important article of diet for natives and the dried nuts are exported for use in the manufacture of refreshing drinks. It is cultivated extensively in the American tropics.

KOLAR, a town and district of India, in the state of Mysore. The town is 43 mi. E. of Bangalore. Pop. (1931), 16,161. Although of ancient foundation, it has been modernized. Industries include blanket weaving and turkey breeding.

The DISTRICT OF KOLAR has an area of 3,161 sq.mi. It occupies the portion of the Mysore tableland immediately bordering the Eastern Ghats. The principal watershed lies in the northwest, around the hill of Nandidrug (4,810 ft.), from which rivers radiate in all directions; and the whole country is broken by numerous hill ranges. The chief rivers are the Palar, the South Pinakini or Pennar, the North Pinakini, and the Papagani, which are utilized for irrigation. The soil in the valleys consists of a fertile loam; and in the higher levels sand and gravel are found. The hills are covered with scrub, jungle and brushwood. In 1931 the population was 763,934. The district is traversed by the Bangalore line of the Madras railway, with a branch 10 mi. long, known as the Kolar Goldfields railway. Gold prospecting in this region began in 1876, and five companies were at work in 1924. More than 62¼ millions sterling worth of gold has been mined since 1882, and silver is also produced. The city called the Kolar Gold Fields had in 1941 a population of 133,859. Electricity from the falls of the Cauvery (93 mi. distant) is utilized as the motive power in the mines. Sugar manufacture and silk and cotton weaving are the other principal industries in the district.

KOLBE, HERMANN (1818–1884), German chemist, was born on Sept. 27, 1818, at Elliehausen, near Göttingen, where in 1838 he began to study chemistry under F. Wöhler (*q.v.*). In 1842 he became assistant to R. Bunsen (*q.v.*) at Marburg where he learned to analyze gases. Three years later he assisted Lyon Playfair at London, who needed an expert in gas analysis to aid him in his studies of explosions in mines. From 1847 to 1851 he was engaged at Brunswick in editing the *Dictionary of Chemistry,* started by Liebig ten years earlier. He then went to Marburg as successor to Bunsen in the chair of chemistry. In 1865 he was called to Leipzig in the same capacity. He died in that city on Nov. 25, 1884.

Kolbe developed chemical theory in regard to the constitution of organic compounds, which he viewed as derivatives of inorganic ones, formed from the latter, directly or indirectly, by simple processes of substitution. He accomplished the first generally accepted synthesis of an organic compound from inorganic materials. Carbon disulfide prepared from the elements was converted by chlorine into trichloroacetic acid and then into acetic acid by action of hydrogen. In his description of this experiment he used the word "synthesis" for the first time in connection with organic chemistry. Unable to accept J. Berzelius's doctrine of the unalterability of organic radicles in its entirety, he introduced a modified idea of the structural radicles, which, under the influence of his fellow-worker Edward Frankland's conception of definite atomic saturation-capacities, contributed in an important degree to the subsequent establishment of the structure theory. A great achievement to his credit was the forecast of the possible existence of secondary and tertiary alcohols. Kolbe was a successful teacher, emphasizing laboratory work, rather than lecture discussions. His caustic, often unjustified criticisms earned him the ill-will of many of the prominent chemists. He was a ready and vigorous writer and a brilliant experimentalist. He is best known for his work on the electrolysis of salts of fatty and other acids, for his important preparation of salicylic acid from phenol, and for his discovery of nitro-methane. Together with Frankland he found that nitriles are converted into the corresponding acids on hydrolysis. From 1869 he edited the *Journal fur praktische Chemie.*

His works include: *Lehrbuch der organischen Chemie* (1854); and *Zur Entwickelungsgeschichte der theoretischen Chemie* (1881). For biographical details *see* G. Lockemann's essay in Bugge's *Das Buch der grossen Chemiker* (1930). (R. E. O.)

KOLBERG or **COLBERG,** a seaport of the Prussian province of Pomerania, Germany, on the right bank of the Persante, which falls into the Baltic about a mile below the town, and at

the junction of the railway lines from Belgard and Gollnow. Pop. (1939) 37,632. Originally a Slavonic fort, Kolberg is one of the oldest places of Pomerania. At an early date it became the seat of a bishop, and although it soon lost this distinction it obtained municipal privileges in 1255. From 1284 it was a member of the Hanseatic League. It passed by the treaty of Westphalia to the elector of Brandenburg, who strengthened its fortifications, which were, however, razed in 1887. The red-brick church of St. Mary, with five aisles, one of the most remarkable churches in Pomerania, dates from the 14th century. Bathing attracts a number of summer visitors, and it has a harbour at the mouth of the Persante, where there is a lighthouse. Machinery, motor boats, electric motors and spirits are manufactured; there is an extensive salt-mine in the neighbouring Zillenberg; the salmon and lamprey fisheries are important; and a fair amount of commercial activity is maintained.

KOLCHAK, ALEXANDER VASILIEVICH (1875–1920), Russian admiral, was born in 1875 and entered the Russian Navy in 1888. He served in the Russo-Japanese War of 1904–5 and at the beginning of the World War was in command of a destroyer in the Baltic. In the summer of 1916 Kolchak was appointed commander of the Black Sea fleet, with the rank of rear-admiral. After the Revolution in 1917 he took an active part in the fighting against the Bolshevists in Siberia. On Nov. 18, 1918, by a decision of the Russian Government at Omsk, Admiral Kolchak assumed the title of Supreme Ruler of Russia. During the first half of 1919 the anti-Bolshevist army under his command met with some success, but in the summer the army disintegrated, there were risings in the rear, and Omsk, the capital of the Siberian Government was captured on Nov. 15, 1919. The Government was then transferred to Irkutsk, but after the creation of a new socialist administration at Irkutsk, Kolchak was asked to resign, and on Jan. 4, 1920 he signed a ukase transferring his powers to Gen. Denikin. Later he fell into the hands of the Bolshevists, and was shot at Irkutsk on Feb. 7, 1920.

KÖLCSEY, FERENCZ (1790–1838), Hungarian poet, critic and orator, was born at Szodemeter, in Transylvania, on Aug. 8, 1790. In his fifteenth year he made the acquaintance of Kazinczy, and zealously adopted his linguistic reforms. From 1821 to 1826 he published many separate poems of great beauty in the *Aurora, Hebe, Aspasia,* and other magazines of polite literature. He joined Paul Szemere in a new periodical, *Élet és literatura* (4 vols. 1826–29). From 1832 to 1835 he sat in the Hungarian Diet as a liberal. He was an original member of the Hungarian Academy. He died on Aug. 4, 1838.

See G. Steinacker, *Ungarische Lyriker* (Leipzig and Pest, 1874); F. Toldy, *Magyar Költök élete* (2 vols., Pest, 1871); J. Ferenczy and J. Danielik, *Magyar Irók* (2 vols., Pest, 1856–58). The collected works (6 vols.) appeared at Pest (1840–48).

KOLDING, a town of Denmark in the *amt* (county) of Vejle, on the east coast of Jutland, on the Koldingfjord, an inlet of the Little Belt, north of the German frontier. Pop. (1940), 25,335. The name of Kolding occurs in the 10th century, but its earliest known town-rights date from 1321. In 1644 it was the scene of a Danish victory over the Swedes, and on April 22, 1849, of a Danish defeat by the troops of Schleswig-Holstein. It contains the oldest stone church in Denmark, dating from the 13th century. To the north-west lie the ruins of the royal castle, "Koldinghus," built in 1248, and partially destroyed by fire in 1808. The large square tower was built by Christian IV. (1588–1648). It contains an antiquarian and historical museum (1892). A comprehensive view of the beautiful scenery surrounding the town is obtained from the Skamlingsbank, 8½ mi. S.E. Kolding has good railway connections, and an excellent ice-free harbour, with a depth of over 20 ft. It has large industrial concerns, and ordinarily exports about 40,000 head of cattle yearly.

KOLGUEV or **KOLGUEFF,** an island in the south-eastern part of the Barents sea, 50 m. off the coast of Russia, to which it belongs. It is, roughly, oval in form, has an area of about 1,300 sq.m. and a maximum height of 250 feet. The sea around it is shallow and blocked by ice throughout winter and spring. Tundra and great bogs cover the greater part of the surface; there are several streams and many small lakes. The island is of recent geological formation and consists of sands and clays, which rise in the north-west to cliffs of 60 feet. A few boulders of sandstone and granite occur. Vegetation is sufficient to give pasture for a few herds of reindeer, owned by Samoyeds. There are bears, foxes and many birds.

See A. Trevor-Battye, *Ice Bound on Kolguev* (London, 1893), with full scientific appendices and history; and A. Tolmachev, "Eine Sommerreise nach Kolgujew" *Geog. Annalen,* vol. ix. (Stockholm, 1927).

KOLHAPUR, a native state of India, in the Deccan and Kolhapur agency within Bombay, and the principal state under the political control of the government of Bombay. Together with its *jagirs* or feudatories, it covers an area of 3,219 sq.mi. In 1941 the population was 1,092,046. Kolhapur stretches from the heart of the Western Ghats eastwards into the plain of the Deccan. Along the spurs of the main chain of the Ghats lie wild and picturesque hill slopes and valleys, producing little but timber. One tenth of the district is reserved forest. The centre of the state is crossed by several lines of low hills running at right angles from the main range. In the east the country opens into a well-cultivated and treeless plain, broken only by an occasional river. Among the western hills are the ancient Mahratta strongholds of Panhala, Vishalgarh, Bavda and Rungna. The rivers, though navigable during the rains by boats of two tons burden, are all fordable during the hot months. Iron ore exists, but is not now worked. The principal agricultural products are rice, millets and sugar-cane, and coarse cloth and pottery are made.

The rajas of Kolhapur trace their descent from Raja Ram, a younger son of Sivaji the Great, the founder of the Mahratta power. The prevalence of piracy caused the British government to send expeditions against Kolhapur in 1765 and 1792; and in the early years of the 19th century the misgovernment of the chief compelled the British to resort to military operations, and ultimately to appoint an officer to manage the state. In recent years the state has been conspicuously well governed, on the pattern of British administration. The raja Shri Chhatrapati, G.C.I.E. (who is entitled to a salute of 19 guns) was born in 1897, and succeeded in 1922. The principal institutions are the Rajaram college, the Albert Edward Hospital, the high school, a technical school, and training-schools. The state railway from Miraj junction to Kolhapur town is worked by the Madras and Southern Mahratta company.

The town of KOLHAPUR (pop. 1941, 93,032) has, besides a number of handsome modern public buildings, many evidences of antiquity. Originally it appears to have been an important religious centre, and numerous Buddhist remains have been discovered in the neighbourhood. It has a cotton mill, and manufactures of pottery, paper, lace, etc.

KOLI, a low caste in India. Possibly akin to the Kols of Bengal, they form the bulk of the agricultural labourers in Gujarāt, where they were once robbers, and extend into the Deccan and Konkan. The name is of unknown origin, but certainly much older in India than the Turki *kulah,* "slave." It has been anglicized as "coolie." In 1921 the Kolis numbered 3,336,039, including the Koris or Kolis, a weaving caste of northern India.

KOLÍN, a town in Bohemia, on the Elbe 40 mi. E. of Prague in the centre of a flourishing agricultural area, producing sugar beet, fruit, vegetables and cereals. The industries are indicative of the surroundings and include flour-milling, sugar-refining, brewing and the manufacture of starch, syrup and spirits. Like many of the old Bohemian towns it contains a number of fine buildings, of which the 14th century Gothic church of St. Bartholomew is the most noteworthy. Pop. 18,509 (1930). In March 1939 Kolín came under German occupation.

Battle of Kolín, 1757.—This early battle of the SEVEN YEARS' WAR is described under the latter heading. It ended in the defeat of Frederick the Great owing to his excessive confidence not only in his ability to repeat the manoeuvre of Prague (*q.v.*) but in the sluggishness of his Austrian opponents. It also furnished a striking historical example of the psychological axiom that soldiers, even the most strictly disciplined, will be drawn towards any

point from which they are being fired on, to the abandonment of their assigned direction. This natural reaction to the magnetic effect of fire caused Frederick's manoeuvre to break down.

KÖLLIKER, ALBRECHT VON (1817–1905), Swiss embryologist and histologist, was born at Zürich on July 6, 1817, and studied under Johannes Müller. He became professor of anatomy at Zürich in 1846 and a year later at Würzburg. His *Entwicklungsgerschichte des Menschen und der Thiere,* which appeared in 1861, was the first work on comparative embryology. His work on histology was the first formal treatise on the subject. Von Kölliker anticipated some of Mendel's conclusions regarding heredity. Besides writing numerous papers on physiology and Darwinism, from 1849 he edited the *Zeitsch. fur wissenschaftliche Zoölogie.*

See his *Erinnerungen aus meinem Leben* (Leipzig, 1899).

KOLLONTAI, ALEXANDRA MIKHAILOVNA 1872–), Russian diplomatist, "first woman ambassador in the world." A member of the Menshevik section of Russia's social-democratic party before 1914, on the outbreak of the World War she joined Trotsky's "Internationalist" section and worked actively with the Bolsheviks abroad. On return to Russia in 1917 she joined the Bolshevik party, and became very popular as a speaker in St. Petersburg (Leningrad). Mme. Kollontai was arrested by the Provisional Government in July 1917. She was elected to the central committee of the Bolshevik party in August 1917, took part in the October revolution, and became the first people's commissar for social welfare in the Soviet Government. In 1920 she was prominent for her advocacy of the "Workers' Opposition" views, and in 1922 she was sent to Norway as political and trade representative of the Soviet Government. In 1927 she was sent to Mexico as ambassador, but remained in that capacity for only a few months.

KOLLONTAJ, HUGO (1750–1812), Polish politician and writer, was born in 1750 at Niecislawice in Sandomir, and educated at Pinczow, Cracow and Rome, where he devoted himself enthusiastically to the study of the fine arts, especially of architecture and painting. At Rome too he obtained a canonry attached to Cracow cathedral, and on his return to Poland in 1775 attacked the question of educational reform, and despite the obstruction of the clergy, carried through his reform of its university, of which he was rector 1782–85. In 1786 Kollontaj was appointed *referendarius* of Lithuania, and during the Four Years' Diet (1788–92) took a very active part in passing the constitution of May 3, 1791, and became vice-chancellor in June. On the triumph of the reactionaries he adhered to the new order, but probably less from ambition than from the desire to save something from the wreck of the constitution. He then emigrated to Dresden. On the outbreak of Kosciuszko's insurrection he returned to Poland, and became member of the national government and minister of finance. But his radicalism had now become of a disruptive quality; he quarrelled with and thwarted Kosciuszko for his refusal to adopt Jacobinic methods, and was himself regarded by the conservatives as "a second Robespierre," and suspected of complicity in the outrages of June 17 and 18, 1794, when the Warsaw mob massacred the political prisoners. On the collapse of the insurrection Kollontaj emigrated to Austria, where from 1795 to 1802 he was detained as a prisoner. Released through the mediation of Prince Adam Czartoryski, he returned to Poland discredited, and died at Warsaw Feb. 28, 1812.

Of his numerous works the most notable are: *Political Speeches as Vice-Chancellor* (Pol.) (in 6 vols., Warsaw, 1791); *On the Erection and Fall of the Constitution of May* (Pol.) (Leipzig, 1793; Paris, 1868); *Correspondence with T. Czacki* (Pol.) (Cracow, 1854); *Letters written during Emigration, 1792–1794* (Pol.) (Posen, 1872).

See Ignacz Badeni, *Necrology of Hugo Kollontaj* (Pol.) (Cracow, 1819); Henryk Schmitt, *Review of the Life and Works of Kollontaj* (Pol.) (Lemberg, 1860); Wojciek Grochowski, "Life of Kollontaj" (Pol.) in *Tygod Illus.* (Warsaw, 1861).

KÖLN: *see* COLOGNE.

KOLOMAN (Hung. KALMAN) (1070–1116), king of Hungary, was the son of King Geza of Hungary by a Greek concubine. King Ladislaus would have made him a monk, but Koloman had no inclination for an ecclesiastical career and escaped to Poland. On the death of Ladislaus (1095), he returned to Hungary and seized the crown. His legitimately born younger brother, Almos, did not submit to this usurpation and in 1108 won over the emperor Henry V., who thereupon invaded Hungary. The Germans were unsuccessful, and Koloman was reconciled with his brother for a time. Five years later Koloman imprisoned Almos and his infant son, Béla in a monastery and had them blinded. Nevertheless Koloman was a good king and a wise ruler. In foreign affairs he continued the policy of St. Ladislaus by trying to secure a seaboard for Hungary. In 1097 he overthrew Peter, king of Croatia, and acquired the greater part of Dalmatia, though here he came into collision with the Greek and the German emperors, Venice, the pope and the Norman-Italian dukes, who were all alike interested in the fate of the province. By 1102, however, he was in possession of Zara, Traú, Spalato and all the islands as far as the Cetina. But it was as a legislator and administrator that Koloman was greatest (*see* HUNGARY: *History*). He was not only one of the most learned, but also one of the most statesmanlike sovereigns of the earlier middle ages. Koloman died on Feb. 3, 1116.

KOLOMEA: *see* KOLOMYJA.

KOLOMNA, a town of Russia, in the region of Moscow, situated on the railway between Moscow and Ryazan, 72 mi. S.E. of Moscow, at the confluence of the Moskva river with the Kolomenka in 55° 5′ N., 38° 38′ E. Pop. (1939) 75,139. It is an old town mentioned in the annals in 1177, and until the 14th century was the capital of the Ryazan principality. It suffered greatly from the invasions of the Tatars in the 13th century, who destroyed it four times, as well as from the wars of the 17th century; but it always recovered and has never lost its commercial importance. It has several old churches of great archaeological interest.

There are railway workshops where locomotives and wagons are made, and a munition factory.

KOLOMYJA, a Polish town in the province of Stanislawów, 122 mi. S. of Lemberg by rail, on the Pruth. Pop. (1931) 33,385, half Jews. It has an active trade in agricultural products. As the capital of the frontier district of Pokucie, it suffered severely in the 15th and 16th centuries from the Moldavians and the Tatars. It was occupied by the U.S.S.R., 1939, and Germany, 1941.

KOLPINO, a town in the Leningrad region of the Russian S.F.S.R., on the Izhora river, 16 mi. southeast of the city of Leningrad, on the Leningrad-Moscow railway, 59° 43′ N., 30° 34′ E. Population 17,173. A government naval iron foundry was established here in the 18th century and is still working. The sacred image of St. Nicholas in the Trinity church was formerly much venerated and pilgrims visited it on May 22 in each year.

KOLS. Hindus use the word *"Kol"* as a generic term for the non-Aryan Munda (Austro-Asiatic) speakers of the Chota Nagpur plateau. "Most of the tribes simply call themselves *'men,'* the same word, with dialectic variations, *Kōl, Kōra, Kūrkū* (merely the plural of *Kūr*), *Hâr, Hārâkô* (another plural), or Hō, being used universally." (*Linguistic Survey of India,* vol. i, p. 38, 1927.)

See E. T. Dalton, *Ethnography of Bengal* (1872); S. C. Ray, *The Mundas* (1912); *Bengal Census Report,* p. 1911; *Tribes and Castes of the Central Provinces* (1916).

KOLYVAN, a small village in the Novosibirsk region of the Russian S.F.S.R., in 55° 23′ N., 82° 36′ E., on the Chaus river, 5 mi. from the Ob. It was formerly a wealthy town trading in cattle, hides, tallow, corn and fish, but its population had declined to 7,386 in 1923 and it was regraded as a village in 1924–25. Toward 1935 it increased to 8,088. It was founded in 1713 under the name of Chausky Ostrog and grew rapidly until the coming of the Trans-Siberian railway.

KOMÁRNO or KOMÁROM, Slovakia, at the confluence of the Váh and the Danube, an important harbour. Settlement on its site dates back to Roman times though charter as a town was not obtained till 1265. Commanding important routes north and west, Komárno occupies a powerful strategic position and was once considered to be the strongest fortress in Europe. It was besieged four times by the Turks between 1543 and 1663, by the Austrians in the 1848–49 revolution, and sheltered the treasure of the Austrian national bank during the Austro-Prussian war of

1866. The surrounding region is noted for cereals and wine, in which with timber, fish and stock a brisk export trade is carried on; river craft are also constructed. The town was transferred to Czechoslovakia from Hungary by the Treaty of Trianon, 1920, and back to Hungary in 1939. Pop. (1930) 21,137, many of whom were Magyars.

KOMATI, a river of southeastern Africa. It rises at an elevation of about 5,000 ft. in the Ermelo district of the Transvaal, 11 mi. W. of the source of the Vaal, and flowing in a general N. and E. direction reaches the Indian ocean at Delagoa bay, after a course of some 500 miles. The river descends the Drakensberg by a pass 30 mi. S. of Barberton, and at the eastern border of Swaziland is deflected northward, along the western side of the Lebombo mountains. Just W. of 32° E. and in 25° 25′ S. it is joined by one of the many rivers of South Africa named Crocodile. A mile below the junction the united stream, which from this point is also known as the Manhissa, passes to the coastal plain through a cleft 626 ft. high in the Lebombo known as Komati Poort, where are some picturesque falls. At Komati Poort, which marks the frontier between British and Portuguese territory, the river is less than 60 mi. from its mouth in a direct line, but in crossing the plain it makes a wide sweep of 200 mi., first N. and then S., forming lagoon-like expanses and backwaters and receiving from the north several tributaries. In flood time there is a connection northward through the swamps with the basin of the Limpopo. The Komati enters the sea 15 mi. N. of Lourenço Marques. It is navigable from its mouth, where the water is from 12 to 18 ft. deep, to the foot of the Lebombo.

KOMI (Kami) or ZIRIAN, autonomous republic of the Russian S.F.S.R., a district created in 1921, stretching from the region of Archangel on the north and west to the Urals on the east. The Kirov (formerly Vyatka) region lies on the south. Area, 144,750 sq.mi. Komi lies between 59° 30′ N. and 67° N., and 46° E. and 66° E.; thus, a part of the region is north of the Arctic circle. The Great Land tundra is a swampy district. The vegetation consists mainly of perennial lichens and mosses, with greatly developed root systems, and stunted, matted, cushionlike aerial systems. The leaves may be succulent, or leathery, stiff and needle-shaped, with a waxy or hairy surface. Winter is long and severe, and the temperature may drop to −50° F.; in spring the blocks of ice from the warmer south are piled by the current on the unthawed ice below, and extensive floods are formed. From May to July, the sun never sets below the horizon, and insects, especially mosquitoes, flourish. In rare places of better drainage, where there is no perpetually frozen soil below, oases of brightly coloured blossoms, forget-me-nots, lupins, saxifrage, pedicularis and poppies may occur. During July and August the mid-day temperature may reach 70° F. and crakeberries and cloudberries ripen. Cumulus clouds, heavy showers and driving mist may result from evaporation, the water of the north flowing streams being warmer than the air. By the end of August gales and snowstorms set in and by mid-September, the whole region is snow and ice covered. From November to February the sun does not rise above the horizon and tremendous blizzards, lasting for days, sweep the land. Dwarf willow scrub occurs near the rivers and on sandy soil and provides fuel for the wandering Samoyedes and covert for the nests of the willow grouse, Temming's stint, white fronted goose and red-throated pipit. Ducks and wading birds, stints, ruffs, gray plover and pharalope nest on the quaking treacherous moss bogs in summer, studded with islands of sphagnum—or lichen—covered driftwood brought down by the spring floods. The mammals of the tundra include reindeer, arctic fox and hare, wolf and ermine. The lemming is a vital link in the life cycle of the tundra. Reindeer, both wild and domesticated, are the most important economic animals. The Komi and latterly some Russians, have learned reindeer breeding from the Samoyedes, who are entirely dependent on reindeer for food, clothing and shelter. The splayed hoofs of the reindeer support them on the snow and soft moss, and their broadly spatulate antlers enable them to push the snow aside in search of food. Reindeer breeders are compelled to be nomadic, for their herds are driven northwards in summer by the swarms of mosquitoes and by the need for snow. In 1926–27, the number of reindeer was about 400,000, two-thirds of them bred by Komi and the remaining third by Samoyedes and Russians. In 1925 a veterinary station for reindeer breeders was established at Izhma.

South of this region is the *taiga* forest; two-thirds of Komi area is forest covered, and of this one-half is pine clad. Firs are common, and in the Urals, Siberian cedar, silver fir and larch.

The greater part of the timber products is floated down the Vychegda and Northern Dwina to Archangel and exported, while some is exported via the Perm railway either for local consumption or for the Volga districts. Timber accounts for 75 to 80% of all the exports of the region; the establishment of three electric stations in 1926 is providing power for sawmills and much increasing the output. Tar and pitch preparation and the making of small wooden articles are important *kustar* (home) industries. Linked with the forest is hunting for squirrel, hare, ermine, mink, marten, fox, arctic fox, otter, etc.

Game birds are also a source of income and the wings of the white partridge are exported. Hunting, however, forms a supplementary source of income except in the Izhma-Pechora district, where it is the main occupation. Salmon, Siberian salmon and gang fish are prepared for export in the Pechora region.

Cultivation occupies but a small area in the district. Forest clearings are made by burning; the stumps and roots are cleared away and the charcoal enriches the soil temporarily. Rye, barley, oats, flax, hemp and potatoes are grown; rye and barley occupy 78% of the sown area. Hay and vegetables are raised in a few places.

The meadow lands near the rivers favour cattle breeding which is carried on more intensively than cultivation. Horses are useful in the timber industry, and draught cattle and cows are increasingly bred. Dairying is beginning and several butter factories have been built. Industrial enterprises are non-existent, except for small sawmills, ironsmelting works and a salt preparing factory. But *kustar* or peasant industries and handicrafts have great importance and include the preparation of chamois leather, especially in the Izhma district, the making of harness, carpentry, flour milling, tar and pitch preparation, blacksmith's work, etc. In the Ustkulomsk and Shchugorsk districts whetstone is worked for millstones and grindstones both for the Russian and foreign market. The Komi area, Archangel and Kirov occupy the first place in the U.S.S.R. for the number of peasant artels producing *kustar* products.

Means of communication, except for the rivers, are poor. The Vychegda through its tributary the Keltma is linked by the Catherine canal with the South Keltma, a tributary of the Kama river, and thus with the Volga. The Pechora and its tributaries, linking with the frozen Arctic, play a small rôle. Roads are poor and there is no railway, beyond a few kilometres of the Kirov-Kotlas railway in the southwest. A railway linking Murashi on that line with Syktyvkar (formerly Ust-Sysolsk) on the Sysola river and Ukhtinsk on the Izhma river is planned. The mineral wealth of the Komi area is incompletely surveyed and little worked, but an extensive coal field was discovered in 1924. Iron ore was known in the 18th century in the Vychegda and Sysola districts; salt was worked on the Vyma, a tributary of the Vychegda as early as the 16th century, and grindstone was worked in the Tochil hills near the left bank of the Pechora from the beginning of the 17th century.

The settlements in the district are small, and Syktyvkar (formerly Ust-Sysolsk), pop. (1939) 17,200, the administrative centre, is the largest. The literacy rate is higher than among many nationalities in the U.S.S.R., and two-thirds of the children of school age are provided for; there are five schools for the Samoyedes. Medical and sanitary provision is far from adequate. The population in 1939 was 318,969 (rural, 289,806; urban, 29,163); the density of population is the smallest in European Russia, except for the Murmansk region. The Komi (Zirians) number 92.3%, Russians 6.6% and Samoyedes 1.0%. The Zirians (alternative spellings Syryenians, Zyrenians, Sirianians, Zirian-

ians, Zyrians) call themselves Komi or Kami. They are a Finnish race of the Permian branch, with a language closely related to that of the Permyaks and Votyaks. Many Russian words have been adopted, and when the Komi learnt reindeer breeding from the Samoyedes, they borrowed Samoyedic words for the art. Castrén published a Komi grammar, but no ancient Komi literature exists. The Finns and Russians were living peacefully together as early as the 9th century in this district, the Finns paying tribute: they have adopted many Russian village customs. They are fair, grey-eyed and of medium-stature and readily adapt themselves to commerce. Their log-houses (kerkas) have two rooms, with a store-shed between and a steam bath house, and in summer they take steam baths several times a week and then plunge immediately into the river. The national costume has been replaced by Russian attire. The nomadic Samoyede migrates north in summer and south in winter, following his reindeer, but many have become settled in the Komi villages. Their travelling tent or *chym* is made of about 20 fir poles, sharpened at each end, driven into the ground and lashed together at the top. Over these are tied large pieces of birch bark, secured by stones or lumps of earth to the ground. In winter the birch-bark is replaced by reindeer skin, well caulked with moss. A large flat stone serves as a fireplace. Their food is mainly reindeer meat, often in a semi-decaying condition. Syphilis, scurvy, smallpox and alcohol have much reduced their numbers and lessened their resistance to the increasing pressure of the Komi and Russians. They are entirely illiterate, but efforts are being made to teach the children and schools where instruction is given in the Samoyede language have been opened.

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KOMINTERN: *see* INTERNATIONAL, THE.

KOMOTAU, a town of Bohemia at the foot of the Erzgebirge on the main line from Prague to Dresden. Local supplies of lignite and other raw materials support a varied development of industry, *e.g.,* woollens, linens, paper, breweries, distilleries and vinegar works; in addition there are large locomotive workshops. Originally a Czech settlement, Komotau was Germanized in the 13th century and thereafter was an object of dispute between Catholics and Protestants and the overlord. In 1594 the lordship fell to the Crown, and, subsequently, in 1605 it was made a royal city. Pop. (1930) 33,279. The town, with the whole Sudetenland, came under German domination in 1938.

KOMURA, JUTARO, MARQUIS (1855–1911), Japanese statesman, was born in Hiuga. He graduated at Harvard in 1877, and entered the foreign office in Tokyo in 1884. He served as chargé d'affaires in Peking, as Japanese minister in Seoul, in Washton, in St. Petersburg (Leningrad) and in Peking (during the Boxer trouble), earning a high reputation for diplomatic ability. In 1901 he received the portfolio of foreign affairs, and held it throughout the course of the negotiations with Russia and the subsequent war (1904–05), being finally appointed by his sovereign to meet the Russian plenipotentiaries at Portsmouth, and subsequently the Chinese representatives in Peking, on which occasions the Portsmouth treaty of Sept. 1905 and the Peking treaty of November in the same year were concluded. For these services, and for negotiating the second Anglo-Japanese alliance, he received the Japanese title of count and was made a K.C.B. by King Edward VII. He resigned his portfolio in 1906 and became privy councillor, from which post he was transferred to the embassy in London, but he returned to Tokyo in 1908 and resumed the portfolio of foreign affairs in the second Katsura cabinet until 1911. He was created marquis in 1911. He died at Hayama on Nov. 24, 1911.

KONARAK or **KANARAK,** a ruined temple in India, in the Puri district of Orissa, for its size "the most richly ornamental building—externally at least—in the whole world," was erected in the middle of the 13th century, and dedicated to the sun-god. It consisted of a tower, once over 18oft. high, with a porch in front 140ft. high, sculptured with figures of lions, elephants, horses, etc.

KONDYLES, GEORGE (1880–1936), Greek general and statesman, was educated in Greece. He entered the army as a common soldier but left it in 1905 in favour of comitaji warfare against Bulgaria in Macedonia. He fought through both Balkan Wars, and the World War, rising from non-commissioned officer to colonel. He resigned his commission in Dec. 1920, on King Constantine's return, and retired to Constantinople, where he became an officer of the "National Defence." He afterwards commanded a division in Thrace, again resigned his commission, but again took command in Oct. 1923 to crush the threatened revolt against the "Revolutionary" Government. In Dec. 1923 he entered parliament as a republican, became minister of war under Papanastasion, formed a "National Republican Party" of his own and became minister of the interior under Michalakopoulos in Oct. 1924. He resigned on June 10, 1925, but was nevertheless arrested by General Pangalos and banished for a time to Santonia. On Aug. 22, 1926, he made a coup d'état, overthrew Pangalos and became prime minister, pledging himself to retire after holding elections, which he did with great fairness. In the autumn he dissolved his party and withdrew from politics; but resumed active opposition a few months later. He was minister of war again in 1932; and in Oct. 1935, following a monarchist *coup d'état,* he became prime minister but later resigned.

As minister of war, he used to take his whip into the Assembly and lay it on the table in front of him. He has been called "the Greek Cromwell," while his own soldiers nicknamed him Keraunós (Thunderbolt). He died on Jan. 31, 1936.

KONG, the name of a town, in the north-west of the Ivory Coast colony, French West Africa. The "circle of Kong," one of the administrative divisions of the Ivory Coast colony, covers 32,500 sq. kilometres and has a population of some 400,000. The inhabitants are of the Mandés-Dioulas. About a fourth of the population profess Mohammedanism; the remainder are spirit worshippers. The town of Kong, situated in 9° N., 4° 20′ W., is not now of great importance. In 1888 Captain L. G. Binger was the first European who visited the town; he has given an interesting description of it and estimated its population at 15,000. He induced the native chiefs to place themselves under the protection of France, and in 1893 the protectorate was attached to the Ivory Coast colony. For a time Kong was overrun by the armies of Samory (*see* SENEGAL), but the capture of that chief in 1898 was followed by the peaceful development of the district by France. (*See* IVORY COAST.)

See L. G. Binger, *Du Niger au golfe de Guinée* (1892).

KONGSBERG, a mining town of Norway in Buskerud *amt* (county), on the Laagen, 500 ft. above the sea, and 61 m. W.S.W. of Oslo by rail. Pop. (1931) 7,291. With the exception of the church and the town-house, the buildings are mostly of wood. The origin and whole industry of the town are connected with the government silver-mines in the neighbourhood. Their first discovery was made by a peasant in 1623, since which time they have been worked with varying success, but are now almost exhausted. During the 18th century Kongsberg was more important than it is now. Within the town are situated the smelting-works, and the royal mint. Three miles below the Laagen forms a fine fall of 140 ft. (Labrofos). The neighbouring Jonksnut (2,950 ft.) commands extensive views of the Telemark.

KONIA or KONYA. (1) A vilayet in Turkey including part of the Taurus range and the greater part of the central steppe. The population (620,936 in 1940) is for the most part agricultural and pastoral. The only industries are carpet-weaving and the manufacture of cotton and silk stuffs. The principal exports are salt, minerals, opium, cotton, cereals, wool and live stock; and the imports cloth-goods, coffee, rice and petroleum.

(2) Its chief town (anc. *Iconium*), altitude 3,320 ft., is situated at the south-west edge of the vast central plain of Asia Minor, amidst orchards famous in the middle ages for their yellow plums and apricots, and watered by streams from the hills. Pop. (1940) 56,465. After the capture of Nicaea by the Crusaders (1097), Konia became the capital of the Seljuk Sultans of Rum. (*See* SELJUKS and TURKS.) It was temporarily occupied by Godfrey, and again by Frederick Barbarossa, but this scarcely affected its

prosperity. During the reign of Ala ed-dīn I. (1219–1236) the city was a centre for artists, poets, historians, jurists and dervishes, driven westwards from Persia and Bokhara by the advance of the Mongols, and there was a brief period of great splendour (*see* ICONIUM). After the break-up of the empire of Rum, Konia became a secondary city of the amirate of Karamania and in part fell to ruin. In 1472 it was annexed to the Osmanli empire by Mohammed II. In 1832 it was occupied by Ibrahim Pasha who defeated and captured the Turkish general, Reshid Pasha, not far from here.

The walls and the palace of the Seljuk period were still in excellent condition at the beginning of the 19th century but were gradually pulled down for building material, until only vestiges remained. By the 1880s a large part of Konia was deserted, but about 1895 the advent of the Anatolian railway began to restore the city's prosperity. The sacred buildings were patched up and the walls were wholly removed. The water supply system was improved, and after 1914 water was brought in from Beyshehr lake to irrigate the surrounding land.

Konia is connected by railway with Istanbul and with Baghdad and Basra.

KONIECPOLSKI, STANISLAUS (1591–1646), Polish soldier, was the most illustrious member of an ancient Polish family which rendered great services to the Republic. Educated at the academy of Cracow, he learned the science of war under Jan Chodkiewicz, whom he accompanied on his Muscovite campaigns, and under Stanislaus Zolkiewski, whose daughter Catherine he married. On the death of his first wife he wedded, in 1619, Christina Lubomirska. In 1619 he was captured by the Turks and held prisoner in Constantinople for three years. On his return he was appointed commander of all the forces of the Republic. For his victories against the Tatars at Martynow and elsewhere he received the thanks of the diet and the palatinate of Sandomeria from the king. In 1625 he was appointed guardian of the Ukraine against the Tatars, but in 1626 was transferred to Prussia to check the advance of Gustavus Adolphus, against whom he won repeated victories, although the parsimony of his country forced him to confine himself generally to guerilla warfare. In 1632 he was appointed to the long vacant post of *hetman wielki koronny,* or commander in chief of Poland, and in that capacity routed the Tatars and Turks repeatedly and, after years of conflict, reduced to order the Cossacks, against whom he built the fortress of Kudak. He died in 1646, on the eve of a great expedition against the Turks.

See an unfinished biography in *Tyg. Illus. of Warsaw* (1863); Stanislaw Przylenski, *Memorials of the Koniecpolskis* (Pol.) (1842).

KÖNIG, KARL RUDOLPH (1832–1901), German physicist, was born at Königsberg (Prussia) on Nov. 26, 1832, and studied at the university of his native town. About 1852 he went to Paris. The instruments for which his name is best known are tuning-forks, which speedily gained a high reputation among physicists for their accuracy and general excellence. From this business König derived his livelihood. Acoustical research was his real interest, and to that he devoted his spare time and money. König was the inventor and constructor of many beautiful pieces of apparatus for the investigation of acoustical problems, among which may be mentioned his wave-sirens, the first of which was shown at Philadelphia in 1876, and of a tonometric apparatus consisting of a large number of accurate tuning forks. His original work dealt, among other things, with Wheatstone's sound-figures, the characteristic notes of the different vowels. He died in Paris on Oct. 2, 1901.

KÖNIGGRÄTZ: *see* HRADEC KRÁLOVÉ.

KÖNIGINHOF: *see* DVŮR KRÁLOVÉ.

KÖNIGSBERG (Polish *Krolewiec*), capital of the province of East Prussia, Germany, and a garrison town. Pop. (1939) 368,433 (including the incorporated suburbs). It is situated on rising ground, on both sides of the Pregel, 4½ mi. from its mouth in the Frische Haff, 397 mi. N.E. of Berlin, on the railway to Eydtkuhnen and at the junction of lines to Pillau, Labiau and Kranz.

The Altstadt of Königsberg grew up around the castle built in 1255 by the Teutonic order. Its first site was near the fishing village of Steindamm, but after its destruction by the Prussians in 1263 it was rebuilt in its present position. It received civic privileges in 1286, the two other parts of the present town—Löbenicht and Kneiphof—receiving them a few years later, but they were not united until 1724. In 1340 Königsberg entered the Hanseatic league. From 1457 it was the residence of the grand master of the Teutonic order, and from 1525 till 1618 of the dukes of Prussia. The trade of Königsberg was much hindered by the constant shifting and silting up of the channels leading to its harbour; and the great northern wars did it immense harm, but before the end of the 17th century it had almost recovered.

The Pregel flows through the town in two branches between which lies the island of Kneiphof. Its greatest breadth within the town is from 80 to 90yd., and it is usually frozen from November to March. Among the more interesting buildings are the Schloss, a long rectangle begun in 1255 and added to later, with a Gothic tower 277ft. high and a chapel built in 1592; and the cathedral, begun in 1333 and restored in 1856, a Gothic building with a tower 164ft. high, adjoining which is the tomb of Kant.

The north-west side of the parade-ground is occupied by the new university buildings, completed in 1865. The university (Collegium Albertinum) was founded in 1544 by Albert I., duke of Prussia, as a "purely Lutheran" place of learning. It possesses a famous observatory, established in 1811. Among its famous professors have been Kant (who was born here in 1724 and to whom a monument was erected in 1864), J. G. von Herder, Bessel, F. Neumann and J. F. Herbart.

Königsberg has been an important naval and military fortress and the protected position of its harbour has made it a very important commercial city. A channel has been made between it and its port, Pillau, 29m. distant, on the outer side of the Frische Haff, so as to admit vessels drawing 20ft. of water right up to the quays of Königsberg, and this canal has been deepened to 26 feet. Among the industries of Königsberg are ship building, printing-works and manufactures of machinery, locomotives, carriages, chemicals, cork, sugar, beer, tobacco and cigars, pianos and especially amber wares. The principal exports are cereals and flour, cattle, horses, hemp, flax, timber, sugar, bristles, hides and oilcake. It imports coal, phosphates and steel goods.

During World War II, Königsberg was bombed a number of times, principally by the Russians.

KÖNIGSBORN, a spa and suburb of Unna in the Prussian province of Westphalia, Germany, famous for salt works.

KÖNIGSHÜTTE: *see* KRÓLEWSKA HUTA.

KÖNIGSLUTTER, a town in the *Land* of Brunswick, Germany, 36 m. E. of Brunswick by rail. Pop. (1933) 5,856. It possesses a castle and some old houses. Its chief manufactures are sugar, machinery and paper. Near the town are the ruins of a Benedictine abbey founded in 1135. In its church are the tombs of the emperor Lothair II., his wife.

KÖNIGSMARK, MARIA AURORA, COUNTESS OF (1662–1728), mistress of Augustus the Strong, elector of Saxony and king of Poland, belonged to a noble Swedish family, and was born on May 8, 1662. Aurora went in 1694 to Dresden to make inquiries about her brother Philipp Christoph, count of Königsmark, who had suddenly and mysteriously disappeared from Hanover. Augustus made her his mistress; and in Oct. 1696 she gave birth to a son Maurice, afterwards the famous marshal de Saxe. The elector soon tired of Aurora, who was made coadjutor abbess and lady-provost (*Pröpstin*) of Quedlinburg, but lived mainly in Berlin, Dresden and Hamburg. In 1702 she went on an unsuccessful diplomatic errand to Charles XII. of Sweden on behalf of Augustus. The countess, described by Voltaire as "the most famous woman of two centuries," died at Quedlinburg on Feb. 16, 1728.

See O. J. B. von Corvin-Wiersbitzki, *Maria Aurora, Gräfin von Königsmark* (Rudolstadt, 1902); P. Burg, *Die schöne Gräfin Königsmark; aus den Briefen, Akten,* etc. (1920).

KÖNIGSMARK, PHILIPP CHRISTOPH, COUNT OF (1665–1694), was a member of a noble Swedish family, born on

March 14, 1665, at Stade, and is chiefly known as the lover of Sophia Dorothea, wife of the English king George I., then electoral prince of Hanover. After wandering and fighting in various parts of Europe he entered the service of Ernest Augustus, elector of Hanover. Here he made the acquaintance of Sophia Dorothea, and assisted her in one or two futile attempts to escape from Hanover. Regarded, rightly or wrongly, as the lover of the princess, he was seized, and disappeared from history, probably by assassination, on July 1, 1694.

See A. Köcher, "Die Prinzessin von Ahlden," in the *Historische Zeitschrift* (Munich, 1882); and W. H. Wilkins, *The Love of an Uncrowned Queen* (1900). *See* also the letters between Sophia Dorothea and Königsmark, printed in *Briefwechsel des Grafen Königsmark und der Prinzessin Sophie Dorothea von Celle,* edited by W. F. Palmblad (Leipzig, 1847).

KÖNIGSSEE, or Lake of St. Bartholomew, a lake in Upper Bavaria, about $2\frac{1}{2}$ m. S. from Berchtesgaden, 1,850 ft. above sea-level. It is 5 m. long, 500 yd. to over a mile wide and its greatest depth is 600 feet. Königssee is the most beautiful lake in the German Alps pent in by limestone mountains (rising to 6,500 ft.) which descend precipitously to the green waters below.

KÖNIGSTEIN, a town of Germany, in the *Land* of Saxony, situated on the left bank of the Elbe, at the influx of the Biela, in the centre of Saxon Switzerland, 25 m. S.E. of Dresden by the railway to Bodenbach and Tetschen. Pop. (1933) 3,776. The fortress of Königstein was probably a Slav stronghold as early as the 12th century, but is first mentioned in 1241 as a fief of Bohemia. In 1459 it was formally ceded by Bohemia to Saxony. About 1540 the works were strengthened, and the place was used as a *point d'appui* against inroads from Bohemia. Frederick Augustus II. of Saxony completed it in its present form. A remarkable feature of the place is a well, hewn out of the solid rock to a depth of 470 feet. It has some small manufactures of machinery, celluloid, paper, vinegar and buttons. It is chiefly remarkable for the huge fortress, lying on a sandstone rock north-west of the town and rising abruptly from the Elbe to a height of 750 feet.

KÖNIGSWINTER, a town and summer resort in the Prussian Rhine, Germany, on the right bank of the Rhine, 24 mi. S.S.E. of Cologne by the railway to Frankfort-on-Main, at the foot of the Siebengebirge. Pop. (1933) 4,724. The Drachenfels (1,010 ft.), crowned by ruins of a castle (early 12th cent.) of the archbishop of Cologne, rises behind the town. A cave in the hill is said to have sheltered the dragon slain by the hero Siegfried. The mountain is quarried, and from 1267 onward supplied stone (trachyte) for the building of Cologne cathedral. The castle of Drachenburg, built in 1883, is on the north side of the hill.

KONINCK, PHILIP DE (de Coninck, de Koningh, van Koening) (1619–1688), Dutch landscape painter, was born in Amsterdam in 1619. He was a pupil of Rembrandt, whose influence is to be seen in his work. He painted chiefly broad sunny landscapes, full of space, light and atmosphere. Portraits by him, somewhat in the manner of Rembrandt, also exist; there are examples of these in the galleries at Copenhagen and Christiania. Of his landscapes the principal are "Vue de l'embouchure d'une rivière," at The Hague; a slightly larger replica is in the National Gallery, London; "Lisière d'un bois," and "Paysage" (with figures by A. Vandevelde) at Amsterdam; and others in Brussels, Florence (Uffizi), Berlin and Cologne, New York and in private collections in England.

KONKAN, a maritime tract of Western India, situated within the limits of the presidency of Bombay, and extending from the Portuguese settlement of Goa on the south to the territory of Daman, on the north. On the east it is bounded by the Western Ghats, and on the west by the Indian ocean. This tract comprises the three British districts of Thana, Ratnagiri, Kanara and Kolaba, and the native states of Jawhar, Janjira and Sawantwadi. From the mountains on its eastern frontier, which in one place attain a height of 4,700 ft., the surface, marked by a succession of irregular hilly spurs from the Ghats, slopes to the westward, where the mean elevation of the coast is not more than 100 ft. above the level of the sea. Several mountain streams, but none of any magnitude, traverse the country in the same direction. One of the most striking characteristics of the climate is the violence of the monsoon rains. The coast has a straight general outline, but is much broken into small bays and harbours. This, with the uninterrupted view along the shore, and the land and sea breezes, which force vessels steering along the coast to be always within sight of it, rendered this country from time immemorial the seat of piracy, which was not finally extinguished until 1812. The southern Konkan has given its name to a dialect of Marathi, spoken mostly in Kanara and Goa.

KONKO, a people who physically and socially resemble the Bassari, and inhabit the upper valley of the Oti, which lies partly in the northern territories, Gold Coast, partly in Togo. The Konko speak a language akin to Kabre, are cultivators and cattle-raisers, and animist in religion.

KONTAGORA, a Fula emirate in Northern Nigeria; since 1926 part of the Niger province. It lies on the east bank of the Niger to the north of Nupe and opposite Bussa. After the establishment of British rule the emirate and certain adjacent territories were formed into the province of Kontagora; in 1925 this province was split up. Before the Fula domination, which was established in 1864, the ancient pagan kingdom of Yauri, now a division of Sokoto province, was the most important of the lesser kingdoms which occupied this region. The Fula conquest was made from Nupe on the south and a tribe of independent and warlike pagans continued to hold the country between Kontagora and Sokoto on the north. The town of Kontagora was taken by the British in Jan. 1901 to put a stop to audacious slave raiding in territory already under British protection. The emir, Ibrahim, fled, was captured and after a year's detention repented of his evil courses, took the oath of allegiance and (1903) was reinstated as emir. In 1904 an expedition reduced to submission the hitherto independent tribes in the northern belt, who had up to that time blocked the road to Sokoto. Under British guidance the native government of Kontagora worked smoothly and with increasing efficiency. The emirate is but sparsely peopled, its depopulation being attributed largely to the merciless slave raiding by the Fulani in the last half of the 19th century.

KOODOO or **KUDU,** a large species of African antelope (*q.v.*), with fine corkscrew-like horns in the male, and the body marked with narrow vertical white lines in both sexes. The female is hornless. *Strepsiceros strepsiceros* is the true kudu, which ranges from the Cape to Somaliland; there is a smaller species (*S. imberbis*) in east and north-east Africa.

KOORINGA or BURRA BURRA, a town of South Australia some 100 m. north by a little east of Adelaide (*q.v.*). From the once famous mines near by (Cambrian slates and limestones) over 51,000 tons of copper (*c.* £4,750,000) were extracted between the years 1847–77, just as, at Kapunda (*c.* 50 m. N.E. of Adelaide) some £1,000,000 worth was mined between 1842 and 1878. Both these mines have been closed since 1877–8 but are believed still to contain large quantities of good ore, and they will probably be worked again when conditions favour. The Burra (pop. [1933] 1,725) and Kapunda (pop. [1933] 1,388) are centres of local importance for pastoral (sheep) and agricultural (wheat) areas.

KOORT, JAN (1883–), Estonian sculptor, born on Nov. 7, 1883 in the Tartu (Dorpat) district. He received his artistic training in the Baron Stieglitz art school at St. Petersburg (Leningrad) and from 1905–08 studied at the École des Beaux-Arts in Paris under Professor Mercier. He then worked in the private studios in Paris of Adler, R. Collin and Lucas. He was represented in the exhibitions of the Paris spring and autumn salons in 1908. In 1915 he went to Moscow, where his best work was produced, and in 1915 and 1916 took part in the exhibitions known under the name of "Mir Iskustva." The Tretvakov gallery in Moscow acquired his granite "Frauenkopf," and the portrait of his wife executed in black granite is in the Moscow gallery. Koort, who worked in granite, marble and wood, produced various decorative works in memory of those who fell in the Estonian War of Independence. His great talents are most forcibly revealed in a number of finely executed character heads.

KOOTENAY, river in Canada and the United States, giving its name to a lake and district in south-eastern British Columbia. The river, 400m. long, rises in the Rocky mountains of British Columbia, flows south into Idaho and Montana, U.S.A., turns north into British Columbia again, and enters Kootenay lake, 75 m. long. This it leaves midway on the west side, to join the Columbia river. The district is rich in lead and silver, zinc, copper, gold and iron and in timber (cedar, hemlock, white pine, fir, etc.). White and blue marble is quarried, and mixed farming and fruit-growing (especially in the west) are well developed. Rainfall varies, ranging for example from a mean annual fall of 28in. at Nelson to 15in. at Fort Steele. Nelson (*q.v.*) with a population of 5,912 is the chief town, and among other centres, for the lumbering and fruit trades, are Creston and Cranbrook; and for mining, Fort Steele, Kimberley and Kaslo. Water power is developed at the Bonnington falls and Nelson. The district offers fine scenery, hunting and fishing.

KOOTENAY or **KUTENAI,** an American Indian tribe in the upper drainage of Columbia river, somewhat more than half the total of 1,000 being in British Columbia, the remainder in Montana and Idaho.

An inter-mountain tribe with culture fundamentally of plateau type, the Kootenay became seasonal buffalo hunters after obtaining horses, and approximated the Plains Indians (*q.v.*) in customs. They are noted for birch-bark canoes with undershot ends, recalling those of Amur river in Siberia. Kootenay speech, generally reckoned distinct, shows certain similarities to Algonkin (*q.v.*), which may indicate an original relationship. A. F. Chamberlain, in numerous scattered papers, is the principal authority. (A. L. K.)

KOPECK or **COPEK:** *see* ROUBLE.

KÖPENICK or **CÖPENICK,** a suburb of Berlin (*q.v.*), on an island in the Spree. Köpenick, which dates from the 12th century, received municipal rights in 1225. Brandenburg and Meissen both claimed it, the former successfully, and it became a favourite residence of the electors of Brandenburg. In the palace the famous court martial was held in 1730, which condemned the crown-prince of Prussia, afterwards Frederick the Great, to death.

KOPISCH, AUGUST (1799–1853), German poet, was born at Breslau on May 26, 1799. He was studying archaeology in Italy (1822–28), when, being an expert swimmer, he, with Ernst Fries, discovered (1826) the blue grotto of Capri. In 1828 he settled at Berlin and was granted a pension by Frederick William IV. He died at Berlin on Feb. 3, 1853. Among his *Gedichte* (1836) are some naïve and humorous little pieces such as *Die Historie von Noah, Die Heinzelmännchen, Das grüne Tier* and *Der Schneiderjunge von Krippstedt,* which became widely popular. His collected works were published in 5 vols. (1856).

KOPP, HERMANN FRANZ MORITZ (1817–1892), German chemist, was born on Oct. 30, 1817 at Hanau, where his father, Johann Heinrich Kopp (1777–1858), a physician, was professor of chemistry, physics and natural history at the Lyceum. He studied at Marburg and Heidelberg, and then, attracted by the fame of Liebig, went in 1839 to Giessen, where he became a *Privatdozent* in 1841, and professor of chemistry twelve years later. In 1864 he was called to Heidelberg in the same capacity, and he remained there till his death on Feb. 20, 1892.

Kopp devoted himself especially to physico-chemical inquiries, and his name is associated with several of the most important correlations of the physical properties of substances with their chemical constitution. Much of his work was concerned with specific volumes, the conception of which he set forth in a paper published when he was only twenty-two years of age. He also investigated the connection between the boiling-point of compounds, organic ones in particular and their composition. Kopp was also a prolific writer; in 1843–1847 he published a comprehensive *History of Chemistry* in four volumes, to which three supplements were added in 1869–1875. The *Development of Chemistry in Recent Times* appeared in 1871–1874, and in 1886 he published a work in two volumes on *Alchemy in Ancient and Modern Times.* In addition he wrote (1863) on theoretical and physical chemistry for the Graham-Otto *Lehrbuch der Chemie,* and for many years assisted Liebig in editing the *Annalen der Chemie* and the *Jahresbericht.*

KOPRÜLÜ or **KUPRILI,** a town of central Macedonia, situated 600 ft. above sea-level, on the river Vardar, and on the Salonika-Belgrade railway. Population 13,440. Koprülü has a trade in silk; maize and mulberries are cultivated in the neighbourhood. The inhabitants are mostly Slavonic Christians. The Yugoslav name for the town is Veles. The former Turkish town became a part of Serbia in 1912 and was occupied by Bulgarians in 1941.

KORAN (Arabic, *Qur'ān* "recitation"), the name of the sacred scripture of Islam, is regarded by Muslims as the Word of God, and, except in sūra I.—which is a prayer to God—and some few passages in which Muḥammad (VI., 104, 114; XXVII., 93; XLII., 8) or the angels (XIX., 65; XXXVII., 164 *sqq.*) speak in the first person, the speaker throughout is God. The rationale of revelation is explained in the Qur'ān itself as follows: In heaven is the original text (XLIII., 3; LV., 77; LXXXV., 22); by the process of sending down (*tanzīl*), one portion after another (XXV., 34) was communicated to Muḥammad, through the intermediation of an angel, who is called sometimes the "Spirit" (XXVI., 193), sometimes the "holy Spirit" (XVI., 104), and, later, "Gabriel" (only in II., 91, 92; LXVI., 4). A single portion was called either, like the entire collection, *qur'ān,* i.e., "recitation" (possibly, the equivalent of the Aramaic *geryānā* "lectionary"); or *kitāb* "writing"; or *sūra* "series." The last is the name given to the separate chapters, which are of very unequal length. The contents of the Qur'ān are extremely varied. The theological passages emphasize the Oneness, the Almightiness and the Righteousness of God. Idolatry and the deification of created beings are condemned, The joys of heaven and the pains of hell are depicted in vivid, sensuous imagery, and warnings are given of the approaching advent of the last day and the judgment of the world. Believers receive general moral instruction, as well as directions for special occasions. Many passages deal with the ordinances of religion, such as prayer, fasting, almsgiving and pilgrimage; or are of the nature of civil or criminal laws, concerning marriage and inheritance, the punishment of adultery, theft, murder, etc.

Prophets.—The warnings which Muḥammad addressed to his fellow countrymen were emphasized by stories of how God had punished those who rejected the message of his predecessors, the Prophets of the Old and New Testaments, and others. But the deviations from the Biblical narratives are very marked, and can in most cases be traced to the legendary anecdotes of the Jewish Haggada and the Apocryphal Gospels. Much has been written concerning the sources from which Muḥammad derived this information; there is no evidence that he was able to read, and his dependence on oral communications may explain some of his misconceptions, *e.g.* the confusion of Haman, the minister of Ahasuerus, with the minister of Pharaoh (XL., 38), and the identification of Miriam, the sister of Moses, with Mary (Miryam), the mother of Jesus (XIX., 29). It is certain that in Medina he had opportunities of becoming acquainted with Jews of some culture, and there is linguistic as well as literary evidence for his indebtedness to members of the Nestorian Church. Even in the rare passages where we can trace direct resemblance to the text of the Old Testament (*cf.* XXI., 105 with Ps. XXXVII., 29; I., 5 with Ps. XXVII., 11) or the New (*cf.* VII., 48 with Luke XVI., 24; XLVI., 19 with Luke XVI., 25), there is nothing more than might readily have been picked up in conversation with any Jew or Christian. His account of Alexander, introduced as "the two-horned one" (XVIII., 82) is derived from the Romance of Alexander, which was current among the Nestorian Christians of the 7th century in a Syriac version. Besides Jewish and Christian histories, there are a few references to early Arabian prophets, such as Ṣāliḥ (VII., 71) and Hūd (VII., 63; XI., 52).

Arrangement of Chapters.—It is probable that the whole Qur'ān was written down in Muḥammad's lifetime, but not brought together as a whole or arranged in order. As it exists now, it consists of 114 chapters, arranged generally (with the exception of the first, the *Fātiḥa* (lit. "opening"), in order of length, the longest coming first, the shortest (often the earliest in date) coming at the end. At the head of each chapter (*sūra*) is a title, the place of its

origin (Mecca or Medina) and the number of its verses (*āyāt*) together with the formula, "In the name of God, the Merciful, the Compassionate" (except in sūra IX.). For liturgical purposes the whole book is divided into 60 sections (*āḥzāb*) or 30 divisions (*ajzā*), each subdivided into a number of prostrations (*ruk'a* or *sajda*). Attempts have been made (by Nöldeke, Grimme, Hirschfeld, Rodwell, etc.) to arrange the chapters in chronological order. Muḥammad's position in Mecca, when he was only the despised preacher of a small congregation, was entirely different from that which he occupied after his migration to Medina (in 622), where he was from the first the leader of a powerful party, and gradually became the autocratic ruler of Arabia; and this difference appears in the Qur'ān, and in the majority of cases there is no doubt whatever whether a part first appeared in Mecca or Medina, and the revelations given in Medina frequently take notice of contemporary historical events; still in many cases it is exceedingly difficult to make out any strict chronological sequence.

Abrogation.—Another difficulty presented by the Qur'ān is the fact that Muḥammad sometimes revoked whole verses and declared them to be "abrogated" (II., 100, "Whatever verse We abrogate or cause to be forgotten, We bring a better or its like"; *see* also XVI., 103, 104). Thus the Qur'ān contains different directions as to the treatment which idolators are to receive at the hands of believers. The number of abrogated verses has been variously estimated by commentators at from five to five hundred.

At the head of 29 of the chapters stand certain initial letters (*e.g.* ALM, ḤM, etc.), for which various interpretations have been offered, *e.g.* that they are abbreviations for the names of God, for the signature of owners of mss. etc. (*See* Nöldeke-Schwally, II., 68–78; E. Goossens in *Der Islam,* XIII., 191 *sqq.*), but no explanation has yet gained general acceptance.

Recensions.—When Muḥammad died, separate pieces of the Qur'ān appear to have been already written down by individuals, but many portions had also been committed to memory. The first complete written version is attributed to Zayd ibn Thābit, who had been Muḥammad's secretary, and was instructed in the reign of Abū Bakr to collect the scattered portions into one volume. This copy passed into the possession of 'Umar, and at his death to his daughter, Ḥafṣa, one of the widows of the Prophet. When in the reign of 'Uthmān quarrels arose in the army as to the true form of the revealed text, Zayd was again appointed by the Caliph, together with three members of the tribe of the Quraysh, to prepare an authoritative version. Copies of this were sent to the chief cities of the empire, and all earlier codices, except that of Ḥafṣa, were ordered to be burnt. This recension of 'Uthman thus became the only standard text for the whole Muslim world up to the present day.

Commentaries.—The vast exegetical literature of Islam begins with the explanations of individual verses attributed in the Ḥadīth to the Prophet himself and his companions. Much of the work of the early commentators is embodied in the vast Tafsīr of Ṭabarī (ob. 922). The Kashshāf of the Mu'tazilite theologian, Zamakhsharī (ob. 1143) enjoyed a high reputation, in spite of its heretical tendencies, and was made by Bayḍāwī (ob. 1286) the basis of his own work, the most widely read commentary in the Muslim world. Thousands of other commentaries have been written, many of which still exist in manuscript form only. One of the most recent is that by Muḥammad 'Alī, *The Holy Qur-án, with English translation and commentary* (1917). For the history of Muslim exegesis, in Arabic, *see* I. Goldziher, *Die Richtungen der islamischen Koranauslegung* (1920); in Persian, C. A. Storey, *Persian Literature.* Section I., Qur'anic Literature. (1927).

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KORAT or NAKHON RACHASIMA, a rail and highway junction on the Korat plateau, in northeastern Thailand. The railway from Bangkok branches east to Ubon and north to Nong Kai, across the Mekong river from Indo-China. Korat is the distributing centre for the plateau, and the centre of Thailand's small silk industry. The population is a mixture of Thai, Laos and Cambodians. Rice and livestock are the chief commodities, sent to Bangkok by rail.

Korat became Thai in the 14th century, except for occasional conquests by Cambodia. The local ruins indicate that Korat was part of Cambodia prior to its incorporation in Thailand. There are reputedly rich copper mines in the vicinity, but there has been no exploitation on a commercial scale.

KÖRBER, ERNST VON (1850–1919), Austrian statesman, was born at Trieste on Nov. 6, 1850. He began his career as an official in the Austrian state service, and when the Emperor Francis Joseph was compelled to rely on cabinets of officials in view of the obstruction in Parliament, Körber became minister of trade under Gautsch in 1897, of the interior under Clary in 1890 and Prime Minister in 1900. He was the first man other than an aristocrat to hold this post since Schmerling. Körber attempted to solve the nationalist question by honest negotiation and compromise, but finally was forced to rule, as his predecessors had done, with the help of para. 14 of the Austrian constitution (which allowed a Government to pass any measure on its joint responsibility, with "provisional validity," should it prove impossible to pass the measure through Parliament in the ordinary way). Körber employed this expedient on no fewer than 33 occasions. He resigned in Dec. 1904, when the obstruction of the Hungarian party of independence made it impossible to carry through the periodical compromise with Hungary. He returned to politics as common finance minister in Feb. 1915 and became prime minister for the second time in Oct. 1916 after the murder of Count Stürgkh. His old confidence, however, was gone. He resigned in Dec. 1916 after a fresh dispute concerning the Hungarian compromise and died in Baden, disregarded and embittered, on March 5, 1919.

KORDOFAN, a country of northeast Africa, forming a province of the Anglo-Egyptian Sudan. It lies mainly between 12° and 16° N. and 29° and 32½° E., and has an area of about 146,930 sq.mi.

The greater part of Kordofan consists of undulating plains, riverless, in parts barren, with an average altitude of 1,500 ft. In the west, isolated peaks, such as Jebel Abu Sinun and Jebel Kordofan, rise from 150 to 600 ft. above the plain. To the north is the great "massif" of Jebel Haraza. Northwest are the mountain groups of Kaja and Katul (2,000 to 3,000 ft.). In the east are Jebel Dair and Jebel Tegale, ragged granitic ranges with precipitous sides. To the south lie the many groups of hills known as the Nuba mountains, interspaced with flat, fertile and thickly wooded plains. The Nuba mountain area is well-watered, the scenery is diversified and pretty, affording a welcome contrast to that of the rest of the country. Some of the hills in this area exceed 3,000 ft. in height. The southwestern part of the province, a vast and almost level plain, is known as Dar Messeria. Though there are no perennial rivers, there are water courses (khors or wadis) in the rainy season, the chief being the Khor Abu Habl which traverses the south central region. In Dar Messeria the Wadi El Ghalla and the Khor Shalango drain toward the Bahr El Arab. During the rainy season there is a considerable volume of water in these channels, but the surface of the country dries rapidly. The water which has found its way through the granitic sand flows over the surface of the mica schist below and settles in the hollows, and by sinking wells to the solid rock a supply of water can generally be obtained, though many of the wells are often dry for months together. These wells are narrow shafts going down usually 30 to 50 ft., but some are more than 200 ft. deep. The water is raised by rope and leather bucket at the cost of enormous labour, and in very few cases is any available for irrigation. Even the cattle are trained to go a long time without drinking. Entire villages migrate after the grain harvest to the neighbourhood of some plentiful well. In a few localities the sur-

face depressions hold water for the greater part of the year. In many cases they have been cleared and deepened by hand labour, and recently by mechanical means. There is only one permanent lake—Keilak—which is some 4 mi. by 2 mi.; but the great Rahad depression holds water for the greater part of the year. In recent years a number of deep bores have been sunk in various parts of the province. The rainy season lasts from mid-June to the end of September, rain usually falling every three or four days in brief but violent storms. In general the climate is healthful except in the rainy season when large tracts are converted into swamps and fever becomes prevalent. In the cold weather (October to February inclusive) there is a cool wind from the north. The hot weather lasts from March to mid-June, though the temperature rarely exceeds 105° F.

The chief and most valuable constituent of the scrub which covers the northern part of the country is the *Acacia verek* (hashab). In the south the red *Acacia seyal* (talh) is abundant. Both types, particularly the former, produce a valuable crop of gum arabic. In Dar Hamid, in the middle north, date, dom and other palms grow. The tebeldi or baobab tree (*Adansonia digitata*) is a fairly common and interesting feature of the countryside. It grows to a great size and, having a soft core, is hollowed out by the natives and used for storing water during the dry season. There is practically no evaporation and the water remains sweet and clear for months. Another common source of water supply is a small type of water melon which grows wild and is also cultivated. An American type of rain-grown cotton is cultivated in parts of the Nuba mountain area where a number of ginneries have been established.

The fauna includes the buffalo, giraffe, lion, leopard, cheetah, roan antelope, wart hog, hares, quail, partridge, jungle fowl, bustard and guinea fowl. Ostriches are found on the northern steppes. The chief wealth of the people is derived from the gum obtained from the acacias, and from cattle, camels and sheep. Large areas are sown to millet during the rainy season and form the staple diet of the people. Two types are cultivated, *Sorghum vulgare* (durra) and *Pennisetum typhoideum* (dukhn). The camel-owning nomads also subsist largely on milk if they cannot obtain millet. A little gold dust is obtained, but the old gold and other mines in the Tegale country have apparently been worked out. Iron is found in some districts and is smelted in a few places. There are large beds of hematite some 60 mi. northwest and the same distance northeast of El Obeid.

Inhabitants.—The population of Kordofan was officially estimated in 1942 to be 1,317,121. The inhabitants are roughly divisible into three types—Arabs in the plains, Nubas in the hills and a comparatively small pocket of nilotic Dinkas in the southwest. Many of the more sedentary villagers in the central area are of mixed blood and reflect the intermarriage of Arabs with the indigenous population during and after the great Arab invasion of the 14th century. The main language throughout the province is Arabic, but there are many Nuba dialects peculiar to the various hill-groups. The main Arab tribes are the Kabbabish, Hawawir and Kawahla in northern Kordofan; the Messeria and Hamar in western Kordofan; the Gawamaa in eastern Kordofan; the Hawazma who inhabit the plains in the Nuba Mountain area; and the Bedeiria who live round El Obeid. The nomad Arabs are of two classes, the camel owners (Siad el Ibil) and cattle owners (Baggara); the first named dwelling in the dry northern regions and the Baggara in the southwestern area. The Baggara are great hunters and were formerly noted slave raiders. They possess many horses, but when journeying they ride on oxen which they also use as baggage animals. They use a broad-bladed spear, small throwing spear and a broad flat sword. A few possess ancient suits of chain armour. The Nubas are split into many clans each under a "Mek" or kinglet. They come of mixed and primitive stock but in the main are a finely proportioned and virile people, very dark skinned and they make fine disciplined fighting men.

The provincial capital, El Obeid (*q.v.*), is centrally situated and is an important trade centre, with a population of (1941) 39,887, lying on the direct and main route from the central Sudan to Darfur and the west. It is the western terminus of the railway from Khartoum via Sennar which was built in 1909–1911. The chief commerce is in cattle and sheep (mainly destined for Egypt) and gum arabic.

The administrative districts are the central district with headquarters in El Obeid; eastern Kordofan, headquarters at Um Ruwaba; northern Kordofan, headquarters at Bara; western Kordofan, headquarters at Nahud; western Jebels, headquarters at Dilling; and eastern Jebels, headquarters at Rashad.

The commonest form of house built by both Arabs and Nuba is the 'tukl,' a round building with thatched conical roof, built of mud, wattle and daub, or straw. In the larger towns the houses are mainly built of stone or of burnt or mud bricks, and have flat roofs.

History.—Of the early history of Kordofan there is little record. It never formed an independent state. At about the beginning of the 16th century Fung from Sennar settled in the country, and toward the end of that century Kordofan was conquered by Suleiman Solon, Sultan of Darfur. In 1821 Kordofan was conquered by Mohomed Bey, son-in-law of the great Mohomed Ali Pasha of Egypt. It remained under Egyptian rule till 1882 when Mohomed Ahmed, the Sudan Mahdi, raised the country to revolt. It was at Sheikan in Kordofan that Hicks Pasha and his Egyptian troops, sent to crush the revolt, were annihilated (Nov. 1883). In 1899, a year after the battle of Omdurman, the Mahdi's successor, the Khalifa Abdullahi, met his death and the country passed into the hands of the present Anglo-Egyptian condominium government. (E. J. N. W.)

KOREA, a feudatory state of India, transferred from Bengal to the Central Provinces in 1905. Area 1,647 sq.mi.; pop. (1941) 126,874. It consists of an elevated tableland with hills rising to 3,000 ft. It lies to the north of Bilaspur district. It is wild country, agriculture poor and sparsely populated. The forests include some valuable sal. The chief, a Chauhan Rajput, resides at Sonhāt at the foot of the high plateau of that name. The principal river is the Hasdeo, a tributary of the Mahanadi. The inhabitants mostly belong to aboriginal tribes. The state is rugged and, though it is now served by a railway, much traffic is still carried on pack animals.

KOREA is a peninsula 600 mi. long and 135 mi. wide thrust down from Manchuria between Japan and China. Its area is 86,000 sq.mi. and it extends from 34° 18′ to 43° N. and from 124° 35′ to 130° 47′ E. The Tumen and Yalu rivers separate it from its northern neighbours. Because of its situation at the centre of the China-Japan-Russia triangle it is of immense strategic importance. The name by which it is best known to its own people is Chosen, "Morning Calm," though from time to time it has taken several names. The great mountain chain which runs from north to south near the eastern coast throws off spurs to south and west and as it sinks into the southern waters it becomes a very numerous archipelago, the largest island of which is Quelpart off the southern coast. The eastern coast is rugged and has few good harbours and tides that rise only one or two feet. All the larger rivers run south and west. The western coast is a network of estuaries and indentations where the tides rise from 20 to 36 ft., making navigation difficult. Several of the rivers of Korea are navigable for 100 mi. or more, notably the Naktong in the south, the Han in the centre, the Tatong in the north and the Yalu on the border. Many of the mountains of Korea are widely celebrated, especially Diamond mountain, a magnificent whorl of alpine peaks near the eastern coast. It has been famed in Chinese literature for 1,500 years. Paktusan in the far north is the chief and patriarch of Korean mountains. Hal-la-san on the island of Quelpart is a mark for mariners and is as legend-haunted as the Cretan Ida. Korea has no wide alluvial plains like China, nor is its arable land so restricted as is that of Japan, but everywhere there are abundant rice fields sufficient for the support of a dense population. Though a considerable portion of its territory is denuded of forests, there are still wide areas of timberland, especially in the north. There are practically no lakes in Korea, although there are unlimited opportunities for the production of water power, little of which has been utilized. The most important ports are Fusan in the southeast (the landing place from Japan), Wonsan (Gensan) and Sungjin to the northeast, Mokpo (Moppo) in the southwest, Chemulpo which serves the capital, Chinnampo, the port of the northern metropolis of Pyengyang and Yongampo near the mouth of the Yalu. The Japanese have added many more, but these are secondary, though some of them

are strategically important. The scenery of Korea differs widely from that of Japan. It is characterized by grandeur and sweep of view and western travellers have been high in its praise.

Geology.—The backbone of Korea is granite and it is in this that its mineral wealth is largely found. There are also considerable deposits of sandstone, slate and limestone which contain carboniferous beds of considerable value. Large iron deposits

A KOREAN HOME WITH ITS FURNISHINGS. A CHILD EATING. NOTE THE WOODEN AND STRAW SHOES, THE POTS AND KETTLES, THE CABINETS AT THE REAR, THE WINNOWING BASKET AND THE EMBROIDERED SCREEN AT THE RIGHT, AND THE STRAW STRAINER IN THE MIDDLE FOREGROUND

exist and rich copper deposits. The Koreans say that gold is found in every prefecture in the land. In the eastern mountains a superior quality of marble has been uncovered, while in another section there are deposits of crystal which is widely used for eyeglasses. During the early years of this century American and European mining concerns uncovered gold fields of astonishing richness, and this metal has long been one of the important exports of the country.

Korea is neither volcanic nor seismic like Japan, but there are not a few hot springs and an occasional earthquake tremor. Chinese records intimate that in the year A.D. 1007 Hal-la-san on the island of Quelpart was in eruption, but since the Korean records are silent about it, there may be doubts as to the historicity of the event.

Climate.—The climate of Korea is equable and salubrious, about the same as that of the region between Georgia and Maine in the United States. There is, however, a pronounced rainy season in July and early August for the coming of which the farmers look solicitously, since upon it depends the rice crop. The annual rainfall is about 40 in. The mean summer temperature of Seoul is 75° F. and that of winter is 33° F. Korea is somewhat colder than Japan and during the winter the temperature goes below zero occasionally. In spring and autumn the climate of Korea is superb.

Flora.—Among indigenous trees are the *Abies excelsa* and *microsperma, Pinus sinensis* and *pinea* and scores of others. What the ordinary observer sees are the oak, maple, lime, birch, juniper, ash, walnut, chestnut, hazel, willow, hornbeam, hawthorn, plum, pear, persimmon, bamboo and, not least, the *Brussonetai papyrafera,* a species of mulberry from the bark of which is made the Korean paper famed throughout the far east. Ginseng is intensively cultivated and the annual crop is marketed in China and forms an appreciable addition to the annual revenue. Azaleas and rhododendrons abound together with wild violets and lilies of the valley. Mulberry trees for silk culture are widely grown. Grapes and berries native and exotic are produced in abundance. Korean fruits suffer from lack of scientific pruning and grafting.

Fauna.—Cattle, horses, swine and poultry predominate among domestic animals, though Korea knows nothing about dairy products. The dog and cat are ubiquitous. For ferocity among wild animals the tiger comes first, but the wild boar makes a good second. Then there are the deer, bear, leopard, otter, badger, wildcat, weasel, squirrel, tortoise, marten, sable, etc. Among the birds there are eagles, hawks, bustards, pheasants, swans, geese, ducks of many species, white and pink ibis, cranes, storks, egrets, herons, curlews, pigeons, nightjars, owls, magpies, rooks, orioles, kingfishers, hummingbirds, jays, nuthatches, redstarts, snipe and, best of all, skylarks. In the matter of game birds Korea is a hunter's paradise.

Area and Population.—The area of 86,000 sq.mi. includes that of the many populated islands. The census of 1897 showed a population in round numbers of 17,000,000. By 1930 this had increased to over 21,000,000 and is (1942) approximately 23,000,000, including the enormous number who have emigrated to Siberia, Manchuria and China, perhaps a million or more. The nation is quite homogeneous from north to south in language and customs but their economic condition is immeasurably inferior to what it was at the beginning of the century. The density of the population increases from the colder north to the more salubrious south. A very large proportion of the people is engaged in agriculture. Japan has strongly encouraged emigration of its citizens to the peninsula, but with small success. There may be something like 500,000 Japanese in Korea but they are mostly overseers and directors of Korean labour.

Seoul has been the capital city since 1392 but its history reaches back 2,000 years. It is one of the most beautifully situated cities in the orient. The second city is Pyengyang on the Tatong river to the north. It was the centre of Korean civilization as far back as 1122 B.C. and possibly many centuries earlier. All the larger cities are walled, or were until recently. Only a small part of the Seoul wall has been dismantled. Throughout the land there are countless monuments of the past—temples, pagodas, altars, statues measuring 70 ft., noted caves, dolmens, tombs and Buddhist sculptures of a high order. Many of these are deeply impressive, especially the Tangun altar of Mari-san.

Ethnology.—The origin of the Korean people is lost in the mists of antiquity, but their language and their physiognomy would indicate that they are closely related to all the other Turanian people of northern Asia. The language is agglutinative and very highly developed syntactically. It differs greatly from the Japanese and wholly from the Chinese. The Koreans have dark, straight hair, a slight obliquity of the eye, high cheekbones and a moderately prognathous jaw like all the Turanian tribes. The male height averages 5 ft. 4½ in., and somewhat exceeds that of the Japanese. The ordinary Korean has a fine physique, is virile and is capable of enormous labour. The porters carry on their backs bales weighing up to 400 lb. Scientists have noticed two types of faces in Korea, one of which is of a more patrician cast. The same is true in Japan and there are those who harbour the theory that in prehistoric times there was immigration from the south which included both of these types.

BY COURTESY OF THE PRESBYTERIAN BOARD OF FOREIGN MISSIONS

KOREAN LADY OF THE UPPER CLASS IN FULL REGALIA

Products and Industries.—Korea is, of course, mainly agricultural and has been so for 3,000 years. It never had a pastoral age, and the complete absence of dairy products would indicate that it had its own distinctive social and economic system even before the Mongolic tribes had reached its borders. In 1927 the cultivated area was approximately 12,000,000 ac., and since that time this has been greatly enlarged by Japanese impulsion. In that year the rice crop was 85,000,000 bu. In the preceding year the yield of cotton was 200,000,000 lb. Korea also produces heavy crops of millet, barley, beans, sesamum, peppers and potatoes. The valuable ginseng crop has already been mentioned. The annual haul of fish in the year 1926 was valued at £500,000, but this can hardly be called a Korean industry, since Japan has taken over all but a small fraction of it. It used to be one of the

major industries of the Koreans. The breeding of horses and cattle for transport and plowing still continues, in lessening amount. The Koreans are excellent carpenters, cabinetmakers and boatbuilders. Houses of the better class are tiled. They are substantially built with heavy timbers and, with their heated stone floors, are more comfortable than either Japanese or Chinese houses. The art of inlaying cabinets with mother-of-pearl has been carried to a high point. Great quantities of grass cloth, ramie, are produced, although neither there nor elsewhere has a cheap means of decorticating the weed been invented. Workers in many specific articles have their guild which guards its rights jealously. Porcelain and crockery are in great demand and much of an inferior quality is produced. They have lost the art of making the exquisite celadon ware of former times. In Korea, as in all oriental lands, night soil is commonly used for fertilizer, much to the disgust of the uninitiated. The growing and eating of melons is universal, much to the encouragement of cholera and other dangerous germs. Frightful epidemics have periodically swept the country.

Commerce.—Since the earliest times the domestic commerce of Korea, excepting in the large urban centres, was carried on by means of periodic fairs or market days where the exchange of goods was largely by way of barter. The cumbersome "cash" which constituted their only medium of exchange for centuries had only one recommendation, that it was too low in intrinsic value to be worth counterfeiting. When the country was opened to foreign trade other coinages of higher intrinsic value were substituted, which unfortunately did not possess this virtue. The 20 years which succeeded the signing of foreign treaties witnessed the utmost confusion in the matter of exchange. The old-time cash, the Mexican dollar, the Japanese yen and the coinage of a five cent piece which was counterfeited by both Koreans and Japanese and dropped to a ruinous discount—all constituted a mélange which was a serious drawback to successful trade. Since the annexation of Korea by Japan this has been remedied but a careful examination of the status of the Korean merchant does not reveal a particularly happy outcome.

Religion.—Confucianism and Buddhism were introduced into Korea in the early centuries of the Christian era and they played leading parts not only in the religious but in the political field. Each of them brought in its train a flood of Chinese ideals which resulted in far-reaching changes in Korean culture, some for the better and some for the worse. Buddhism has always started as a court religion and has worked from the top downward. Its magnificent temples and its impressive pageantry were irresistibly attractive to the simple denizens of the peninsula while the strikingly dramatic quality of its ideology captured the imagination. Its recognition of the equal status of man and woman made it particularly attractive to the latter, and women have always been its most enthusiastic adherents. Confucianism is not only different but diametrically different. It is less a religion than a philosophical system, calculated to regulate the ordinary human relationships but without any distinctively spiritual or transcendental quality. It appeals to the cultured gentleman and is a patron of literature and art. It gives to woman a secondary place. For many centuries these two systems vied with each other to secure the favour of the Korean people, sometimes at the point of the sword. It was not until 1392 that the Confucian element secured a final triumph over the Buddhistic and since that time Buddhism has been practically moribund. But this not only does not exhaust the topic of Korean religion but hardly touches it. The immemorial animism that underlies all actual religious experience and practice, not only in the orient but among such a large portion of humanity, is the real religion in Korea, except as it has been modified by Christian propagandism. The Roman Catholic church has been working quietly but successfully in Korea for more than 100 years and has a large following. In 1884 American missionaries began their work there and by 1930 there were nearly 500,000 adherents of Christianity in the peninsula. The Bible was published in the vernacular and a large amount of other Christian literature was disseminated. British, Australian and Canadian missions have also done notable work there and it is considered one of the most important achievements of Christian missions in the orient. It has paid special attention to education. Many hundreds of schools were founded and several colleges and universities. In medical work the Christian leaders have been preeminent and hundreds of Korean physicians have been graduated from their schools. Since the annexation by Japan, that power has become more and more critical of such work, desiring, as is

STUDENTS OF AN OLD KOREAN MUSIC SCHOOL, SEATED ON THE FLOOR PLAYING ON THE SEVEN STRINGED KUMOONKO

natural, that its own influence should be absolute within the borders of Korea. All American institutions have (1942) been closed and Christian people have been compelled to compromise themselves by doing homage before Japanese shrines.

Literature.—Korea possesses a distinguished literature, written mostly in the Chinese character, which plays the same part that Latin did in England in the days of Chaucer. A thorough knowledge of that literary medium and facility in its use have been for 1,500 years the necessary conditions of political and social preferment. Korea has had the same system of government examinations as those which were held in China, and success in them was the surest door to fame and to political office. As early as the 9th century the Korean scholar Choe Chi-won attained honours at the imperial court of China for literary proficiency and became the *doyen* of a coterie of distinguished writers in the kingdom of Silla. Since that time the list of noted writers has constantly swelled. History, biography and belles-lettres form the principal topics but there are numberless works dealing with every phase of life, economic, artistic and ethical, all the way from agriculture to astronomy. There are encyclopaedias, any one of which would fill a shelf. There are geographies so detailed that every monument and every historical spot in every prefecture is minutely described and every noted man mentioned. Poetry occupies a large place in Korean literature and ability to produce it is a coveted distinction. Fiction plays a lesser part, though it is by no means neglected. The native alphabet, largely ignored by the elite, yet affords reading for the lower classes of society; and though the subject of "love," as known in more enlightened lands, is rightly eschewed in polite oriental literature, the stories in Korea, as often in other far eastern lands, are too often of a salacious character. The well-to-do Korean gentleman would commonly summon a professional storyteller who adds appreciably to the interest of the tale by dramatic intonation and gesture. The folklore of Korea is voluminous but can here be only hinted at. Stories of animals, of faithful wives and heroic exploits fill its pages.

Education.—Up to the time of the opening of Korea, education was carried on in local day schools in every prefecture and in every considerable town, where boys were taught exclusively the Chinese ideograms with a view to taking the government examinations and securing political favours. Success in such an effort was the signal for a holiday and the bestowal upon the boy of extravagant honours, for he had made the town famous. The curriculum of such a school did not include useful subjects like arithmetic, geography or the sciences. The first impulse toward genuine education was afforded by the missionaries. The general public took it up avidly and men of wealth gave generously for

the establishment of higher schools of learning. There is no discernible difference in intellectual quality between the Japanese, Koreans and Chinese. Given the same advantages and incentives, the Korean is the peer of any other oriental people. Hundreds of primary and intermediate schools were established by the Christian following and several universities of the first order. The matter of education was almost entirely in the hands of Americans, Canadians, Englishmen and Frenchmen. School textbooks were published in great numbers and, through the use of the excellent Korean alphabet, it seemed as if the rapid advance in learning would speedily make Korea a highly literate people. This was not at all in accord with the desires and purposes of the Japanese authorities, and as soon as the people of Korea came under Japanese control immediate plans were made to take the important matter of education out of western hands. All the schools of lower grade were closed on the pretext that the teachers were not pedagogical experts! After an interval during which common school education was almost wholly in abeyance the Japanese started schools in which the Japanese language and history were most prominent. Korean history was ignored and the undisguised purpose was to Japonicize the Korean people. All the Korean geographical names were changed to Japanese. Textbooks and publications of all kinds were issued in the Japanese language. Proficiency in that language was the only door to preferment. The official language in all courts of law was that of Japan, with the result that Korean plaintiffs were notoriously unable to secure justice. Few Japanese would condescend to learn the Korean language, and the use of incompetent interpreters put the Koreans at a ruinous disadvantage. It was the universal opinion of American observers that the Korean people had no rights which the Japanese were compelled or even supposed to respect.

KOREAN HISTORY

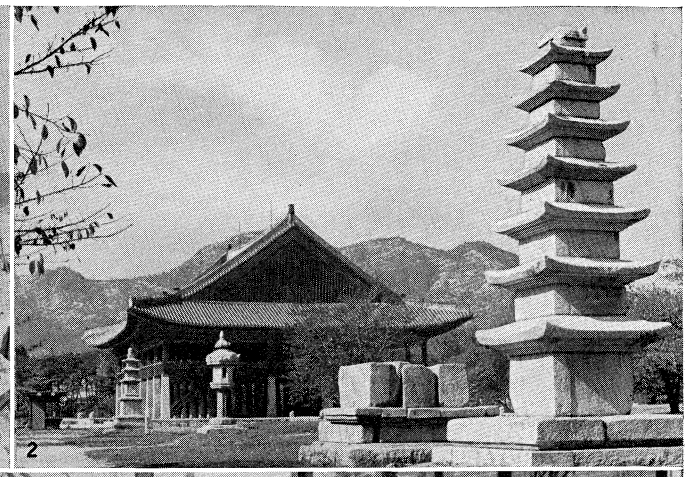
Legends and Traditions.—A divine being came to earth in the form of a wind, seeking incarnation. He found a virgin sitting beside a stream. He breathed upon her and she brought forth a son, Tangun, who taught the wild people the rudiments of civilization. His altar and his tomb are still shown. The dynasty lasted from 2333 B.C. until 1122 B.C. when the great Chinese sage, Kija, came with his followers and founded the kingdom of Chosun, "Morning Calm," with its capital at Pyengyang on the Tatong river. He welded all the north into an enduring state, stretching from the Han river to far beyond the Yalu. The dynasty lasted for 929 years, until 193 B.C. Although largely traditional, this kingdom is mentioned so frequently in Chinese annals that it is at least semihistorical. Many of its relics are still shown and a list of its 42 kings.

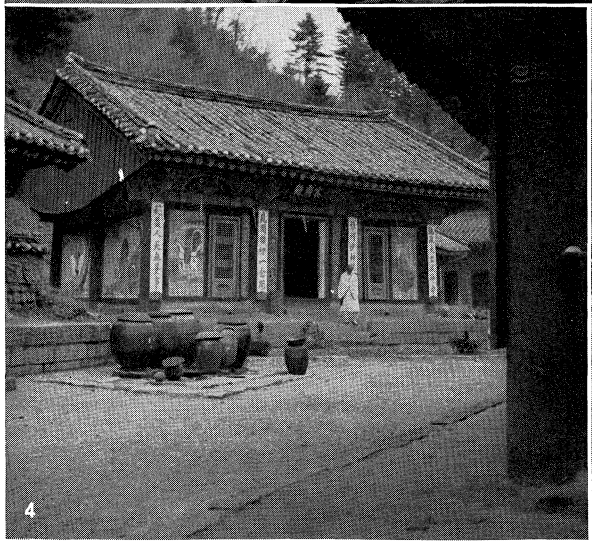
The Kingdom of Silla.—In the far south there were three groups of little states: Mahan, Pyonhan and Chinhan, perhaps peopled by immigrants from the south and related to the Yamato race in Japan. They formed a new kingdom, Silla, with its capital at Kyongju. This was the beginning of Korean recorded history, 57 B.C. At about the same time, Chumong, from the far north, established the kingdom of Kokuryo, with the already ancient city of Pyengyang as its capital, and another smaller kingdom, Pakche, was erected in the southwest. There was probably a certain infiltration of Chinese, refugees from the hardships attending the building of the Great Wall in China. In the 4th century Buddhism entered the peninsula and gained an immediate and numerous following. The cult crossed to Japan which Silla also supplied with many other elements of culture. From the 5th to the 10th centuries there followed an enormous influx of Chinese ideas and culture which was not entirely fortunate, for it made imitation of China the fashion and prevented the proper development of the native genius of the Korean people; but literature, art and science made rapid progress. With the approval of China and its substantial aid Silla overcame both Kokuryo and Pakche and united the whole country under a single realm. The language of the entire peninsula gradually became almost completely homogeneous. Silla was, however, a remarkably peaceful people and lacked that ruggedness of character necessary for the proper administration of the larger state, and fell an easy prey to the first strong contender.

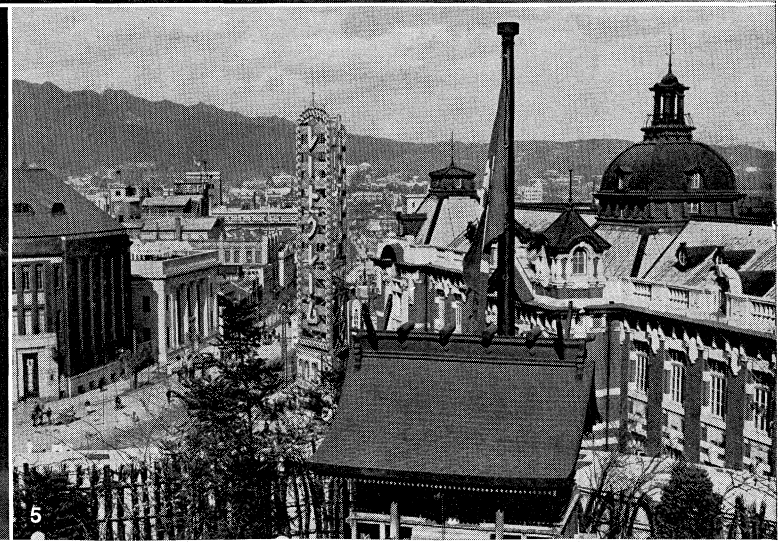
The Kingdom of Koryu.—One of Silla's generals, Wanggun, revolted in 918 and formed a new dynasty, called Koryu, with its capital at Songdo. This state was wholly devoted to Buddhism, in fact was dominated by priestcraft. This made for weakness, and when the Mongol hordes swept down upon it in 1231 it offered little resistance. It was compelled to provide a fleet of vessels for the Mongol invasion of Japan, but after two disastrous defeats the attempt was abandoned. The Mongol episode was not long-lived and before long the Golden Horde passed westward toward Europe and left Korea to its own devices.

The Kingdom of Chosun (Chosen).—In 1392 began a new era. General Yi, who is best known by his posthumous title of Yi Taicho, drove out the Japanese pirates who were ravaging the coastal towns of Korea, and then took over the government, inaugurating a dynasty that endured until modern times. He put Buddhism under the ban and a veritable renascence of Korean culture began. The first metal movable printing type was invented, anticipating Gutenberg by 50 years. In order to emancipate the common people from the incubus of the Chinese ideograms, which only the wealthy could find leisure to learn, an alphabet of 26 letters was invented, so simple in shape and of such phonetic adaptability that any Korean can learn to read in less than a month. Astronomical instruments of a high order were made, and a whole new literature was published. These were the most promising days that Korea has ever seen. They were rudely interrupted when, in 1592, Hideyoshi, the Japanese usurper, determined to conquer the world. He sent an army of 300,000 men to Korea, armed with matchlocks, of which the Koreans had none. At first they met with little or no opposition, but presently Admiral Yisunsin invented an ironclad war vessel which the Japanese could neither burn nor board. With a fleet of these he attacked a huge flotilla of Japanese vessels and won a battle which did for eastern Asia what the battle of Salamis did for Europe. The Koreans took heart and with the aid of a Chinese army drove the Japanese southward and finally out of the country. From that time dates the immemorial feud between the two peoples. Before the wounds of this ruthless war were half healed, the Manchu power in 1627 came down upon Korea with devastating savagery, carrying all before it. Korea was again prostrate. But, like the Mongols, the Manchus soon left Korea to itself. They never imposed the queue upon the Koreans as they did upon the Chinese in token of vassalage, nor the distinctive Manchu dress. Tribute was rather an exchange of presents than a badge of servitude. At the time of the opening of Korea to foreign intercourse, China made no objection to Korea's assumption of equality with the treaty powers, and specifically disavowed any responsibility of the peninsular kingdom. That was China's own answer to the moot question of Korea's virtual independence.

Foreign Pressure.—In 1866 Korea was ruled by Prince Taiwun as regent until his 12-year-old son should reach his majority. The regent was compelled by the constituency which placed him in power to start a persecution of Roman Catholicism which had long existed in the country and had a considerable following. Nine French priests who at the risk of their lives were residing in the country were arrested and offered safe conduct to China if they would promise not to return. This was declined and they were executed. The French government sent a punitive expedition to Korea under Admiral Roze which was severely handled by the Korean forces and retired from the scene. Again, in 1871, an American flotilla under Rear Admiral Rogers was sent to repeat Commodore Perry's exploit in Japan. Through a lamentable misunderstanding this fleet was fired upon by the Korean fort on the island of Kangwha, the Gibraltar of Korea. An American force was landed, stormed the fort, killing over 300 Korean soldiers. Having thus vindicated the honour of the flag, as they supposed, the American fleet sailed away leaving the court to believe that Korea was invulnerable. It was not until 1876 that the Japanese succeeded in forcing Korea open. The queen and her powerful party had come to see that this was inevitable. The regent







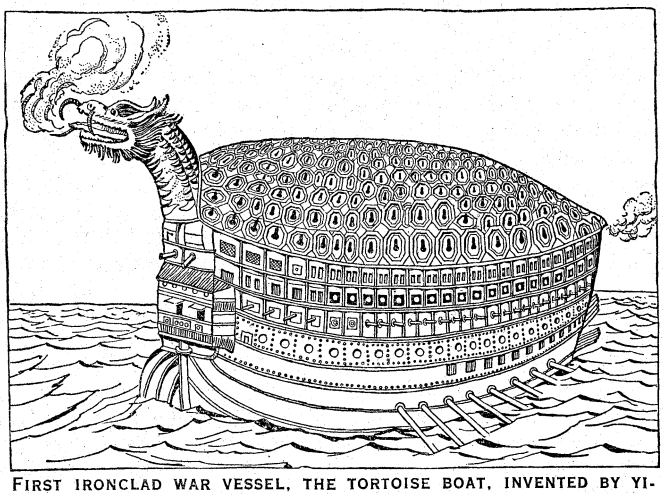
PHOTOGRAPHS, (1, 2, 5) FRITZ HENLE, (3) BURTON HOLMES FROM EWING GALLOWAY, (4) FRITZ HENLE FROM FREDERIC LEWIS

VIEWS OF KOREA

1. Old men with characteristic hats, on the highway to Seoul (Keijo)
2. A temple near Seoul
3. A girl's tea party in Seoul. Not even the upper classes of Koreans use chairs
4. A Buddhist monastery on Kongosan mountain. The wooden buildings are richly painted and carved
5. The centre of Seoul, capital of Korea

was violently opposed to it, but was compelled to retire in favour of his son. Here began the vendetta which ended only with the assassination of the queen in 1895.

The Treaties.—The Japanese treaty of 1876 was followed by the American treaty in 1883 and this, in turn, by all the major treaty powers. A clause in the American treaty obligated each of its signatories to aid the other diplomatically in case of danger to either.



FIRST IRONCLAD WAR VESSEL, THE TORTOISE BOAT, INVENTED BY YI-SUNSIN IN THE 16TH CENTURY, WHICH ENABLED THE KOREANS TO CONQUER THE GREAT JAPANESE GENERAL, HIDEYOSHI, IN CHINHAI BAY

The Emeute of 1884.—In this year a company of well-intentioned and patriotic Koreans, believing that Korea was ready to make the same *volte face* that Japan had made in 1868, secured momentary control of the government with the help of the Japanese, but a Chinese army had already landed in Korea with an overwhelming force, and the attempt proved abortive. The proponents of the new regime and the Japanese residents in Seoul were compelled to beat a hasty retreat. The Korean government composed the matter by a substantial indemnity. The Chinese army retired, leaving the famous Yuan Shih-kai as Chinese minister, who attempted to re-assert the suzerainty of China but with no success. China and Japan again faced each other as rivals for the favour of Korea. Yet in spite of the constant diplomatic tension some advances were made. A customs service was established under competent management, Judge O. N. Denny, former American consul-general in Tientsin, was invited to become adviser to the foreign office and experts in various lines—agricultural, educational and military—were engaged. Neither Japan, Russia nor China was recognized in the distribution of these favours, with one significant exception. The customs service was placed under the patronage of the Chinese customs service, administered by Sir Robert Hart in Peking. This was, naturally, very obnoxious to Japan. It was admirably managed by such men as Merrill, Schoenike and, latterly, J. McLeavy Brown, and formed the one sure and reliable source of revenue for the Korean government. Under the administration of Dr. Brown, Korea's small foreign debt to Japan was liquidated and the future promised further improvement; but it was the purpose of none of Korea's near neighbours that a strong, independent and self-reliant government should exist in the peninsula, and events hastened toward the sinister culmination.

The Japan-China War.—In 1894 Japan was ready to attempt by military means the elimination of Chinese influence in Korea. The immediate occasion was China's mistake in sending troops to Korea to help in overcoming the bandits who were disturbing the interior. These were not professional bandits but farmers and artisans who found this to be the only way to protest against unbearable conditions—conditions caused almost wholly by the chaotic state of affairs at the capital where rival powers were making use of Korean adventurers of the most questionable character in pursuit of their selfish aims. On this pretext Japan declared war on China. Its main result, so far as this résumé is concerned, was that although the independence of Korea was widely advertised it was actually in the hand of Japan. One of the significant turning points in history was reached when, although Japan was compelled by several of the European powers to retrocede the Liaotung peninsula to China, it was not required to retreat from Korea as well. Japan immediately took advantage of its superior position in Korea and demands were made along both political and economic lines to which Korea could not comply without serious damage to its interests. The opposition centred in the queen, who interposed objections which thwarted the purposes of Japan. This was an obstruction which could not be removed by diplomacy, by threats nor by bribery. Count Inouye, one of the most liberal of the Japanese, laboured patiently with her majesty but without success. He was recalled and Viscount Miura Goro was sent in his place late in 1895. Whether specifically instructed to perform the act which followed or whether it was left to his own discretion may never be known, but the responsibility lies at the door of the Japanese authorities. Miura immediately called in a company of the so-called *soshi,* irresponsible ruffians who are at the call of anyone's purse for any purpose however base. He specifically commissioned them to break into the palace and assassinate the queen. In conjunction with a certain number of Korean renegades and the Taiwunkun, on the night of the eighth of October, they entered the palace, forced their way into the presence of the king, searched until they found the queen whom they straightway killed. They then burned her body, wrapped in oil-soaked garments. Miura hastened to the palace and together with Taiwunkun placed about the king a cabinet of Koreans who were favourable to the Japanese. They immediately put out an edict, falsely purporting to come from the king himself, degrading the dead queen to the status of a prostitute. The representatives of the foreign powers refused to recognize the validity of this document. The king, fearing poison, for weeks ate no food except what came in a locked box from the home of an American citizen. Unable to endure for long this condition of virtual imprisonment, the king and the crown prince escaped from the palace and found refuge in the Russian legation, where they were treated with the utmost courtesy and were asked for no favours. This dramatic event put a stop for a time to Japanese operations in Korea; but it was not wholly fortunate, for it only made Japan the more determined to fight it out with Russia.

The Independence Club.—There followed a period of comparative peace during which the liberal element in Korea was able to voice itself. The club was formed by such loyal, patriotic and intelligent men as Baron Yun Chiho and Dr. Philip Jaisohn and for a time had a salutary influence over the court, which promised all sorts of reform. The first newspaper, the *Independent,* was published and had a wide circulation. But neither Japan nor Russia desired the rehabilitation of Korea and they, together with the strongly entrenched conservative element, were able to thwart the purposes of the reform party and finally to dissipate it. Then, as ever, the only hope lay in the possession of overwhelming physical force, of which the Independence club had none. Its proponents and protagonists were compelled to leave the country. The court relapsed into the welter of international intrigue. The king built himself a new palace within the foreign quarter where he deemed himself secure. The rival powers used Korean agents of the most disreputable sort and when these men by extortion and fraud made themselves so hated by the public that they were caught and killed, neither Japan nor Russia lifted a hand to save them from death. Japan was at last ready to fight Russia.

The Japan-Russia War.—This war belongs to Japanese and Russian history, but it had important repercussions in Korea. At its beginning Japan made a treaty with Korea guaranteeing the independence of the latter and the protection of the royal house, but it speedily became apparent that Japan had other ends in view. At the treaty of Portsmouth Japan was assured by the president of the United States that the assumption of authority in Korea by Japan would be looked upon favourably in America. Whether the European powers would have joined in a protest against the extinction of the liberties of Korea is a question, but this settled the matter. The emperor of Korea sent a letter to the

president asking him to implement that important clause in the treaty, but he declined to interfere.

The Japanese Protectorate.—It was on the night of the 17th of Nov. 1905 that Marquis Ito and General Hasegawa forced their way into the palace with a numerous armed retinue. They demanded from the emperor and his cabinet a new treaty granting Japan virtual control of the government. The prime minister, Han Kyusul refused to comply with this demand, and only after he had been segregated from the rest of the cabinet and threatened with physical violence did a few of the ministers give way and sign the document.

Japanese Domination.—At the end of the war, when Japan proper was largely denuded of troops, the government, unable to hold in check the acquisitiveness of its people, allowed thousands of the lower orders to swarm into Korea without police surveillance or regulation of any sort. The Korean populace, not daring to oppose these men by force, was subjected to widespread spoliation. The most notorious case was that of Viscount Tanaka who, when acting as envoy of the emperor of Japan to the wedding of the crown prince in Seoul, asked the emperor of Korea to give him the celebrated pagoda at P'ungdok as a souvenir of his visit. Being refused, he sent armed Japanese who dismantled the pagoda and transported it to Japan. No effort was made by the Japanese authorities to check these depredations. In 1907 the emperor of Korea was forced to abdicate in favour of his son, who was congenitally unable to perform the duties of the office. The Korean army of a few thousand men was disbanded. They fled to the country and carried on a stubborn guerrilla warfare for several years and were finally repressed only after the severest measures had been adopted. (*See* F. A. McKenzie's *Tragedy of Korea.*)

The Annexation.—In 1910, through the connivance of the Korean archtraitor Yi Wanyong, Japan secured the abdication of the emperor and the annexation of Korea to the Japanese empire. Thus ended a dynasty which had endured for 518 years. Under the governor-generalship of General Terauchi the rights of the Korean people were quite ignored. People despoiled of lands, of homes, of goods could find no redress in the courts. Hundreds of them brought the deeds of their farms and their homes and tried to sell them to Americans for a cent apiece in order to save them from wanton seizure. Thickly populated districts outside the gates of Seoul were seized en masse by the Japanese for "military purposes" and when the owners asked for compensation they were referred to their own government, though no provision had been made for payment. The Oriental Development company, backed by the whole power of Japan, carried things with a high hand. The fields, the forests, the fisheries, the mines were all brought under contribution. It is true that Japan poured great sums of money into Korea. Roads were built with forced Korean labour and large tracts were re-afforested, but not for the sake of the Korean people. Good roads were necessary for the conveyance of the grain and other products of the interior to the ports for shipment to Japan. Emigration to Korea was strongly encouraged but the better element in Japan declined to go. To them Korea was a barren, treeless land. Afforestation was necessary to make it more attractive. Unable to compete on equal terms with the Korean peasantry, the Japanese preferred to be only overseers and directors. By various devices the rice fields were expropriated until 80% of them were in Japanese hands and 1,000,000 Koreans had emigrated to Siberia and Manchuria in search of a livelihood. Most of those who remained were only serfs and peons on the lands that they had formerly owned. The finances of all well-to-do Koreans were carefully watched. Every gentleman of means was compelled by law to employ a Japanese fiscal agent who saw to it that every item of income was properly accounted for, and who held a veto power over all expenditure. In order to demonstrate their own indispensability the Japanese police faked a complicated plot against the life of the governor-general which implicated hundreds of perfectly innocent Koreans, who were imprisoned and tortured in ways some of which would not permit of publication; but in the final trial the fraud was exposed and the men were exonerated.

The Declaration of Independence.—In 1919, under the impulse of President Wilson's optimistic statements, the Korean people were fired with the hope of liberty and feeling ran high. A general uprising of the 23,000,000 people of Korea would have been a major disaster for Japan. It would have meant the massacre of hundreds of thousands of Japanese. It was the powerful Christian element in the peninsula which prevented such a demonstration. The leaders of Korean opinion saw the ultimate futility of such tactics. However much it would have injured Japan, it would have alienated the good will of the world and damaged Korea's hopes of freedom. They proposed an entirely peaceful demonstration that might appeal to the latent chivalry of the Japanese. That the idea was visionary and utopian does not detract from its intrinsic nobility. A body of carefully selected representatives of the nation met in Seoul on March 1, 1919 and wrote a declaration of independence which they presented to the Japanese authorities for their consideration. There was no threat of violence nor any show of physical force; but the Japanese, fairly panic-stricken by fear of massacre and wholly unable to appreciate the peaceful attitude of these proponents of liberty, broke upon them with unbridled ferocity, seizing, torturing and killing Koreans indiscriminately. The signers of this declaration who made no effort to escape but awaited calmly the coming of the Japanese police, were all imprisoned and tortured. For most of them it meant death.

The Provisional Republic of Korea.—The intrepidity of these martyrs to the cause of Korean independence had a deep and lasting effect upon the people at large. Though many leaders had been killed there were hundreds more to take their places. These met secretly in Seoul and established a provisional government of Korea and elected as its first president Dr. Seungman Rhee, who was then in the United States. Dr. Rhee is a Christian gentleman of the highest type, a former pupil of Prof. Woodrow Wilson at Princeton, from which institution Dr. Rhee received the degree of Ph.D. At about the same time Koreans in Siberia and Manchuria had made similar movements toward the establishment of a provisional republic, but these were merged with the more formal institution at Seoul. The executive headquarters of the new republic of Korea was established in Shanghai and was financed partly from Korea and from the Koreans in America and elsewhere. Strenuous efforts were made to secure recognition at the peace conference in Paris, at the Washington conference on the limitation of armaments and the League of Nations in Geneva but, though there were many expressions of sympathy, no action was taken. Matters of larger import had to be settled first. No one was prepared at that time to question Japan's position in Korea. A permanent Korean commission was established in Washington with Dr. Rhee in charge, and since 1922 the cause of Korean liberty has been kept before the attention of the western world. Koreans have fought on the Chinese side against Japan since 1937. A small Korean army, organized by General Yaksan Kim, was led by General Li Chungchun with headquarters in Chungking. In 1944 a provisional government was formed in Chungking for all parties under President Kim Koo and Vice-President Dr. Kuisic Kimm with General Yaksan Kim as war minister. In the Cairo declaration of December 1943 after the meeting of Roosevelt, Churchill and Chiang Kai-shek, Korea was promised "in due course" her independence.

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KOREA, BANK OF. This bank (*Chosen Ginko*) was founded in 1909 as a *de jure* central institution capitalized at 10,000,000 yen (£1,000,000). The first banking systems were introduced into Korea in 1901 when the Dai Ichi Ginko of Tokyo established a branch office at Fusan. As Japanese residents spread over the country other banks followed suit and on its foundation in 1909 the Bank of Korea took over all the functions belonging to a central bank hitherto performed by the Dai Ichi Ginko. The activities of the bank of Chosen soon spread beyond the confines of the peninsula; branches were opened in Manchuria, North China and East Siberia, but the branches in East Siberia were later closed. More business is done by the bank in these areas than in Korea proper. In 1918, stimulated by the steady expansion of its business, the bank increased its capital to 40,000,000 yen, and in 1920 a further increase brought it up to Y80,000,000. In 1925 the authorized capital was reduced from Y80,000,000 to Y40,000,000 and the paid-up capital from Y50,000,000 to Y25,000,000. The bank, according to the Government policy has also made loans to China and has opened an agency in New York and sent representatives to London with a view to facilitating exchange operations and utilizing the foreign money market in the interests of Korea and Manchuria. After the Manchoukuo Empire was built the bank abandoned its Manchurian branches to the Industrial Bank of Manchu. Since 1937 the bank has increased its activities in North China, opening many branches there. The volume of business and its increase in 30 years may be judged from the following figures: Capital subscribed (1910) Y10,000,000, (1939) Y40,000,000; Capital paid up (1910) Y10,000,000, (1939) Y25,000,000; Reserve Fund (1910) Y366,000, (1939) Y9,901,027; Deposits (1910) Y18,355,000, (1939) Y771,598,739. The Bank's headquarters are in Keijo, and there are branches in the more important cities of Japan, Chosen, Kuantung (Manchuria) and China. (H. Sa.; X.)

KŌRIN, OGATA (*c.* 1657–1716), Japanese painter and lacquerer, was born at Kōtō, the son of a wealthy merchant who had a taste for the arts and is said to have given his son some elementary instruction therein. Kōrin also studied under Soken Yamamoto, Kanō, Tsunenobu and Gukei Sumiyoshi; and he was greatly influenced by his predecessors Kōyetsu and Sōtatsu. On arriving at maturity, however, he broke away from all tradition, and developed a very original and quite distinctive style of his own, both in painting and in the decoration of lacquer. The characteristic of this is a bold impressionism, which is expressed in few and simple highly idealized forms, with an absolute disregard either of realism or of the usual conventions. In lacquer Kōrin's use of white metals and of mother-of-pearl is notable; but herein he followed Kōyetsu. Kōrin died on June 2, 1716, at the age of fifty-nine. His chief pupils were Kagei Tatebashi and Shikō Watanable; but the present knowledge and appreciation of his work are largely due to the efforts of Sakai Hōitsu, who brought about a revival of Kōrin's style.

See A. Morrison, *The Painters of Japan* (1902); S. Tajima, *Masterpieces selected from the Kōrin School* (1903); S. Hōitsu, *The 100 Designs by Kōrin* (1815) and *More Designs by Kōrin* (1826).

(E. F. S.)

KORKUS, an aboriginal tribe of India, dwelling on the Satpura hills in the Central Provinces. They are the westernmost representatives of the Munda family of speech. Totemistic exogamy and adult marriage are found. Each clan has a communal burial place. Formerly masters, with shifting cultivations, they are largely farm servants and ploughmen, honest, improvident.

FROM R. V. RUSSELL, "TRIBES AND CASTES OF THE CENTRAL PROVINCES OF INDIA"

KORKU WOMAN IN CEREMONIAL COSTUME

See *Tribes and Castes of the Central Provinces* (1916).

KÖRMÖCZBÁNYA: *see* KREMNICA.

KÖRNER, KARL THEODOR (1791–1813), German poet and patriot, was born at Dresden on Sept. 23, 1791. His father, Christian Gottfried Körner (1756–1831), a distinguished Saxon jurist, was Schiller's most intimate friend. Karl entered at 17 the mining academy at Freiburg in Saxony, but occupied himself less with science than with verse, a collection of which appeared under the title *Knospen* in 1810. He then began to study law at Leipzig, but became involved in a conflict with the police and removed to Berlin. In August 1811 Körner went to Vienna; there he became engaged to the actress Antonie Adamberger. He wrote opera libretti and comedies (*Der grüne Domino, Der Vetter aus Bremen,* etc.) and tragedies (*Rosamunde* and *Zriny*), and was appointed poet to the Hofburgtheater. In the German war of liberation in 1813 Körner gave up his prospects at Vienna, and joined Lützow's famous corps of volunteers at Breslau. On his march to Leipzig he passed through Dresden, where he issued his spirited *Aufruf an die Sachsen,* calling upon his countrymen to rise against the French. He was severely wounded at Kitzen near Leipzig June 7. He rejoined his corps, and fell in an engagement outside a wood near Gadebusch in Mecklenburg on Aug. 26, 1813. He was buried by his comrades under an oak close to the village of Wöbbelin, at which place a monument was erected in his honour.

The abiding interest in Körner is patriotic and political rather than literary. His fame as a poet rests upon his patriotic lyrics, which were published by his father under the title *Leier und Schwert* in 1814. Among the best known of these war-songs are "Lützow's wilde verwegene Jagd," "Gebet während der Schlacht" (set to music by Weber) and "Das Schwertlied." This last was written immediately before his death, and the last stanza added on the fatal morning.

His works have passed through many editions. Among the more recent are: *Sämtliche Werke* ed. E. Goetze (1900), and by H. Spiers (2 vols., 1912). The most valuable contributions to our knowledge of the poet have been furnished by E. Peschel, the founder and director of the Körner Museum in Dresden, in *Theodor Körners Tagebuch und Kriegslieder, aus dem Jahre 1813* (Freiburg, 1893) and, in conjunction with E. Wildenow, *Theodor Körner und die Seinen* (1898).

KORNEUBERG, a town of 10,035 (1939) inhabitants in Lower Austria, annexed with Austria to Germany in 1938. Situated on the left bank of the Danube, it is a steamship station and an important salt and cereal market, the latter function dating from the 12th century though its charter as a town was not received until 1298. In addition to the above there are also small manufactures of coarse textiles and cardboard.

KORNGOLD, ERICH WOLFGANG (1897–), Austrian composer, was born at Brno on May 29, 1897. He studied under Fuchs and Zemlinsky in Vienna, where his father held the influential post of critic to the *Neue Freie Presse*. His youthful compositions attracted considerable notice, in particular a pantomime, *The Snow Man,* which was performed at the Hofoper in Vienna when he was eleven. In his maturer work he showed marked dramatic talent and considerable skill in the treatment of voices. The operas: *Violanta, Der Ring des Polykrates, Die tote Stadt* and *Das Wunder der Heliane* were all played in the principal music centres of Europe. He wrote cinematic music for Hollywood, and received the academy award for "Anthony Adverse." He also wrote incidental music for "Much Ado about Nothing," symphonic overtures, and music for strings and piano.

KORNILOV, LAVR GEORGIEVICH (1870–1918), Russian soldier, was born on July 18, 1870 in Ust-Kamenogorodsk, Siberia, his father being a Cossack officer. He entered the army, and was in 1892 commissioned and posted to the Turkistan artillery brigade. He devoted himself to service in Turkistan, whence he undertook journeys into Afghanistan, Chinese Turkistan, Persia and Baluchistan. He saw service as a staff officer in the Russo-Japanese War of 1904–5, and subsequently spent four years (1907–11) as Russian military attaché in Peking. In the World War Kornilov commanded an infantry division in Galicia. He himself was captured and imprisoned in Hungary, but he managed to escape, reaching Russia in the autumn of 1916. He was at once appointed commander of the XX. Army Corps.

At the beginning of March 1917, with the outbreak of the Revolution, Kornilov was appointed to command the troops of the military district of Petrograd; these he found in such a demoralized state that he asked to be relieved and sent to the front, and at the beginning of May he was made commander of the VIII. Army. Appointed by Kerensky supreme commander-in-chief, Kornilov presented his programme enforcing discipline in the army. It was, however, rejected; and this was the beginning of a split between Kerensky and Kornilov, and in the struggle between them that ended in the outbreak of Sept. 8–12 Kerensky gained an apparent victory, and Kornilov was interned in Bikhov. On his release after the November revolution, Kornilov assisted Gen. Alexeyev in forming the Volunteer Army in which he took a command. On March 31, 1918 he was killed in the Caucasus by the bursting of a shell.

KOROCHA, a town of central Russia in the province of Kursk, in lat. 50° 52′ N., long. 37° 14′ E., on the Korocha river. Founded in 1638 as a small fort to check Tatar invasions, it later developed as a trading centre for fruit, especially dried cherries, and for cattle, grain, salt and tallow. Its population declined rapidly until there were about 3,500 inhabitants, mainly employed at the oil-pressing factory, or in gardening.

KOROLENKO, VLADIMIR GALAKTIONOVICH (1853–1921), Russian novelist, was born at Zhitomir, in Volynia, on July 27, 1853. He studied in the school of agriculture at Moscow, where he was arrested for addressing a collective petition to the director of the school. He started working in St. Petersburg as a proof-reader and journalist, but was arrested for his advanced social doctrines, and spent six years (1879–85), in exile in Siberia. On his return he settled in Nijni-Novgorod, and almost immediately published his story *Makar's Dream* (trans. 1916). From 1895 onwards he conducted the review, the *Russian Empire*. Korolenko wrote kindly stories of peasant life in the Ukraine, and in central Russia. Always a convinced radical and social reformer, he fought for the abolition of capital punishment and of martial law. He died in Dec. 1921 in Poltava. His best known works are: *Siberian Tales* (1901); *The Murmuring Forest* (1886; Eng. trans. M. Fell, 1916); *The Blind Musician* (1886; Eng. trans. A. Delano, 2nd ed. 1890); *Bad Company* (1886; Eng. trans. M. Fell, 1916); *The Vagrant and Other Tales* (trans. A. Delano, 1887, 2nd ed. 1896), and a delightful autobiographical record, *History of my Contemporary* (1910, 1922) (German translation by Rosa Luxemburg of vols. i. and ii. 1919).

KORSØR, a seaport of Denmark, in the *amt* (county) of the island of Zealand, 69 m. by rail W.S.W. of Copenhagen, on the east shore of the Great Belt. Pop. (1940), 9,896. A market town since the 14th century, Korsør has ruins of an old fortified castle, on the south side of the channel, dating from the 14th and 17th centuries. The harbour, which is formed by a bay of the Baltic, has a depth throughout of 20 ft. It is the point of departure and arrival of the steam ferry to Nyborg on Fyn, lying on the Esbjerg Fredericia and Copenhagen route. There is also regular communication by water with Kiel. The chief exports are fish, cereals, bacon; imports, petroleum and coal.

KORTCHA (KORÇE) (Slavonic, *Koritza*), Albania, situated on the edge of a fertile plain on which maize is cultivated, and surrounded by mountains in which there are granite and limestone quarries. Large quantities of coal are found too, but of an inferior quality. Pop. 22,787, consisting of Albanians, Vlachs and a few Bulgarians, divided fairly equally between the Muslim and Orthodox faiths. Kortcha is the see of an Orthodox Greek metropolitan, whose large cathedral is richly decorated with paintings and statues. It is a prosperous and healthy town, with a good water supply. There are steam flour mills and a tobacco factory; home weaving of woollen materials and carpets is also extensively carried on.

In 1908 the Kortcha school for girls was the only school in which the Turks permitted use of Albanian as the language of instruction. The town was captured from Venice at the close of the 18th century by Ali Pasha of Yannina, and in the Balkan Wars (1912–13) it was occupied by the Greeks. Occupied by the Italians in 1939, it was taken by the Greeks during the Greek-Italian war of 1940–41 and occupied by them until the German invasion of the Balkans compelled them to withdraw in April 1941.

KORUNA: *see* KRONE.

KORVEY, in the Prussian province of Westphalia, Germany, on the Weser, a mile north of Höxter. Its Benedictine abbey, which was founded and endowed by the emperor Louis the Pious about 820, received its name from a body of monks coming from Corbie in Picardy. Korvey became the centre of Christianity in Saxony and a nursery of classical studies. The abbot was a prince of the Empire, and Korvey was made a bishopric in 1783. In 1803 the abbey was secularized, in 1815 its lands were given to Prussia, in 1822 to the landgrave of Hesse-Rotenburg, and in 1834 to the duke of Ratibor. The abbey, now used as a residence, possesses a library rich in old illustrated works. Here in 1517 the manuscript of the five first books of the *Annals* of Tacitus was discovered. Here Widukind wrote his *Res gestae Saxonicae.* The *Annales Corbejenses 648–1148* of the monks can be read in the *Monumenta Germaniae historica,* Band iii.

KORYAKS, a Mongoloid people of north-eastern Siberia, inhabiting the coast-lands of the Bering sea to the south of the Anadyr basin and the centre of the Kamchatka peninsula. They resemble Chukchis in physique and in manner of life. They are divided into the settled fishing tribes and the nomad reindeer breeders and hunters. The Koryaks of the interior owned enormous reindeer herds. Families usually gather in groups of sixes or sevens, forming miniature states, in which the nominal chief has no predominating authority, but all are equal. The Koryaks are polygamous, earning their wives by working for their fathers-in-law. Sexual intercourse is forbidden before marriage. Blood relatives may not marry. The bride has to be taken by force. Divorce is easy. Levirate and Sororate are practised. The women and children are treated well, and Koryak courtesy and hospitality are proverbial. Formerly they killed the aged and infirm to save them from protracted sufferings in proof of affection. Infanticide was formerly common, and one of twins was always sacrificed. They burn their dead. The prevailing religion is Shamanism; sacrifices are made to evil spirits, the heads of the victims being placed on stones facing east.

See G. Kennan, *Tent Life in Siberia* (1871); "Über die Koriaken u. ihnen nahe verwandten Tchouktchen," in *Bul. Acad. Sc. St. Petersburg,* xii. 99; M. Czaplieka, *Aboriginal Siberia* (1914).

KOSCIUSCO: *see* ALPS, AUSTRALIAN.

KOSCIUSZKO, TADEUSZ ANDRZEJ BONAWENTURA (1746–1817), (kŏs-ĭ-ŭs′kō, Polish kŏs-chösh′kō), Polish soldier and statesman, son of Ludwik Kosciuszko, sword-bearer of

the palatinate of Brzesc, was born in Mereczowszczyno. On entering the corps of cadets at Warsaw, he attracted the notice of Prince Adam Casimir Czartoryski, by whose influence in 1769 he was sent abroad at the expense of the state to complete his military education. In Germany, Italy and France he studied diligently, completing his course at Brest, where he learnt fortification and naval tactics, returning to Poland in 1774 with the rank of captain of artillery. While engaged in teaching the daughters of the Grand Hetman, Sosnowski of Sosnowica, drawing and mathematics, he fell in love with the youngest of them, Ludwika, with whom he planned to elope, but was wounded and ejected by her father's retainers (1776). His wooing of Tekla Zurowska in 1791 ended little more happily.

In 1776 he entered the army of the United States as a volunteer, and brilliantly distinguished himself, especially at New York and Yorktown. Washington promoted Kosciuszko to the rank of a colonel of artillery and made him his adjutant. His humanity and charm of manner made him moreover one of the most popular of the American officers. In 1783 Kosciuszko was rewarded for his services and his devotion to the cause of American independence with the thanks of Congress, the privilege of American citizenship, a considerable annual pension with landed estates, and the rank of brigadier-general, which he retained in the Polish service.

In the war following upon the proclamation of the constitution of May 3, 1791 (*see* POLAND: *History*), Kosciuszko took a leading part, distinguishing himself as divisional commander at Zielence and Dubienka. When the king acceded to the Targowicians, Kosciuszko with many other Polish generals threw up his commission and retired to Leipzig, which speedily became the centre of the Polish emigration. In Jan. 1793 he visited Paris to attempt to win France for the cause of Poland and the fact that his visit synchronized with the execution of Louis XVI subsequently gave Poland's enemies a plausible pretext for accusing her of Jacobinism, and thus prejudicing Europe against her. On his return to Leipzig, Kosciuszko was invited by the Polish insurgents to take command of the national armies, with dictatorial power. He hesitated at first but when he heard that the insurrection had already broken out, and that the Russian armies were concentrating to crush it, he hastened to Cracow. On March 24, 1794, his arms were consecrated according to ancient custom at the church of the Capuchins, by way of giving the insurrection a religious sanction incompatible with Jacobinism. The same day, amidst a vast concourse of people in the market-place, Kosciuszko took an oath of fidelity to the Polish nation and swore to wage war against the enemies of his country, but protested at the same time that he would fight only for the independence and territorial integrity of Poland.

From March 24–April 1 Kosciuszko remained at Cracow organizing his forces, which were drawn almost entirely from the people and humbler gentry. On April 3 he defeated a superior Russian force at Raclawice, a victory which brought crowds of waverers into his camp. Owing to the poverty and unprepared condition of the country, he had, however, to remain long on the defensive. On June 4 he at last marched against General Denisov, whom he encountered the next day at Szczekociny. Kosciuszko had been at great pains to avoid provoking Austria or Prussia. Nevertheless, Prussian troops had joined the Russian, and Kosciuszko's force of 14,000 was heavily defeated and driven back on Warsaw, with fearful losses. A week later another Polish division was defeated at Kholm; Cracow was taken by the Prussians on the 22nd of June; and the mob at Warsaw broke upon the gaols and murdered the political prisoners. Kosciuszko summarily punished the ringleaders of the massacres and had 10,000 of the rank and file drafted into his camp, which measures had a quieting effect. But now dissensions broke out among the members of the Polish government, and it required all the tact of Kosciuszko to restore order amidst this chaos of suspicions and recriminations. At this very time too he had need of all his ability and resource to meet the external foes of Poland. Superior Russian and Prussian forces invested Warsaw on July 9. Kosciuszko, indeed, conducted the defence of the city with brilliance and success, but elsewhere his generals were outmanoeuvred and defeated in detail by Suvarov, who had advanced to Fersen's support. On Oct. 10 Kosciuszko attacked Fersen at Maciejowice. But the support on which he relied failed to arrive. The Polish army of 7,000 was almost annihilated by the 16,000 Russians; and Kosciuszko, seriously wounded and insensible, was made a prisoner on the field of battle. The long credited story that he cried "Finis Poloniae!" as he fell is a fiction.

Kosciuszko was conveyed to Russia, where he remained till the accession of Paul in 1796. On his return on Dec. 19, 1796, he paid a second visit to America, and lived at Philadelphia till May 1798, when he went to Paris, where the First Consul earnestly invited his co-operation against the Allies. But he refused offers even of high command unless Napoleon undertook to give the restoration of Poland a leading place in his plans, and lived in retirement at Berville, near Paris, where the emperor Alexander visited him in 1814. At the Congress of Vienna his importunities on behalf of Poland finally wearied Alexander, who preferred to follow the counsels of Czartoryski; and Kosciuszko retired to Solothurn, where he lived with his friend Zeltner. Shortly before his death, on April 2, 1817, he emancipated his serfs, insisting only on the maintenance of schools on the liberated estates. His remains were carried to Cracow and buried in the cathedral, while the people, reviving an ancient custom, raised a huge mound to his memory near the city.

Kosciuszko was essentially a democrat of the school of Jefferson and Lafayette. He maintained that the republic could only be regenerated on the basis of absolute liberty and equality before the law; but in this respect he was far in advance of his age, and the aristocratic prejudices of his countrymen compelled him to resort to half measures. He wrote *Manoeuvres of Horse Artillery* (New York, 1808) and a description of the campaign of 1792 (in vol. xvi. of E. Raczynski's *Sketch of the Poles and Poland,* Posen, 1843).

See Jozef Zajaczek, *History of the Revolution of 1794* (Pol.) (Lemberg, 1881); Leonard Jakob Borejko Chodzko, *Biographie du général Kosciuszko* (Fontainebleau, 1837); Karol Falkenstein, *Thaddäus Kosciuszko* (2nd ed., Leipzig, 1834; French ed., 1839); Antoni Choloniewski, *Tadeusz Kosciuszko* (Pol.) (Lemberg, 1902); Franciszek Rychlicki, *T. Kosciuszko and the Partition of Poland* (Pol.) (Cracow, 1875).

(R. N. B.; X.)

KOSEIR: *see* QOSEIR, EL.

KOSEL, a town of Germany, in the Prussian province of Silesia on the Oder, 29 mi. S.S.E. of Oppeln by rail. Pop. (1939) 13,075. The first record of Kosel dates from 1286. From 1306 to 1359 it was the seat of an independent duchy. In 1532 it fell to the emperor, was several times besieged during the Thirty Years' War, and came into Prussian possession in 1742. Frederick II. converted it into a fortress, which was besieged in vain by the Austrians in 1758, 1759, 1760 and 1762. In 1807 it withstood a siege, by the Bavarian allies of Napoleon. The fortifications were razed in 1874. There are steam saw-mills and flour-mills and a petroleum refinery.

KOSHER means "fit" or "proper" and is derived from Esther viii. 5, the only biblical instance of the adjective, KÒSHĚR (Ashkenazie form, with accent shifted vulgarly, common in N. Europe) or KĀSHĚR (Sephardic form, common in S. Europe and the East). Kosher is chiefly used in connection with the dietary laws and implies (a) that the food is not derived from the animals, birds or fish prohibited in Leviticus xi. or Deut. xiv., (b) that the animals or birds have been slaughtered by cutting the windpipe (*Sheḥīṭah*) so as to produce instantaneous loss of consciousness, (c) that the meat has been salted (*Melīḥah*) to remove the blood (Deut. xii. 16, 23–25 and elsewhere) after the carcass has been critically examined (*Bedīqah*) for physical blemishes, that the ischiatic nerve has been removed (porged) from hindquarters (Gen. xxxii. 32) and (d) that meat and milk have not been cooked together (Exod. xxiii. 19) and that separate utensils have been employed. Further information on these subjects will be found in *Jew. Enc. s.v.* Dietary Laws. For the Jewish mode of slaughter *see* Dr. M. Hyamson's pamphlet and the reports of Profs. Wood, Hill, Barcroft and Mr. L. F. Newman. In consequence of (b) the term *Ṭerēfah* (that which has been torn by beasts, Gen. xxxi. 39) is extended to all food violating the law, even, incorrectly

to admixtures of leaven on Passover (Exod. xii. 20), though *Kosher cal Peṣaḥ*, "fit for Passover" is fairly correct. So-called Kosher wine is wine grown and prepared under observation, to prevent libations from being taken from it. On this relic of Roman days, once common to Judaism and Christianity, *see* W. Elmslie's edition of *Mishnah 'Aboda Zara* (1911) in which the Jewish and Christian regulations (those of Tertullian) are compared. Kosher is often used generally of other matters: sometimes as opposed to *Paṣūl* (unfit), *e.g.*, of a scroll of the Law.

KOŠICE (Kassa), a town in Slovakia, on the right bank of the Hernad at a point where it leaves the highlands for the fertile plain. It was transferred from Hungary by the Treaty of Trianon, 1920. Surrounded on three sides by hills covered with forests and vineyards, Košice consists of an inner town, once walled, and five suburbs tolerably well-built and separated from the old town by the site of the ramparts. The old town, in which are the principal shops and markets, is grouped around the Gothic cathedral of St. Elizabeth (1270–1468), one of its few monuments of general interest and reputed to be the finest piece of architecture in old Hungary; the interior was transformed to the Renaissance style in the 18th century. At one time Košice was an important market for agricultural produce and a centre of trade between Hungary and Galicia, but in the 20th century turned its attention more and more to the selling and working of Slovakian wool; in addition there are distilleries, fertilizer factories, sawmills and breweries. Košice, created a town by Belá IV. in 1235, and a royal free town by Stephen V. in 1270, has had a very stormy history to which its position near fluctuating frontiers has freely contributed, for Austrians, Hungarians, Russians and Turks have held it at different times. Around it the life of Upper Hungary gathered in times of revolt and war, *e.g.*, in the 1848–49 revolution, and to it the surrounding districts naturally turn in days of peace. In 1939 Košice was transferred again to Hungary. Pop. (1930) 70,117; about 20% were Magyars.

KÖSLIN or Coslin, a town of Germany, in the Prussian province of Pomerania, at the foot of the Gollenberg (450 ft.), 5 mi. from the Baltic, and 105 mi. N.E. of Stettin by rail. Pop. (1939) 33,392. Köslin was built about 1188 by the Saxons, and raised to the rank of a town in 1266. In 1532 it accepted the doctrines of the Reformation. It suffered in several wars and in 1720 it was burned down. The industries include the manufacture of soap, cement, machinery, paper, bricks and tiles, beer and other goods. The town has two Evangelical and a Roman Catholic church, a cadet academy and a deaf and dumb asylum. On the Gollenberg stands a monument to the memory of the Pomeranians who fell in the war of 1813–15.

KOSSUTH, FERENCZ LAJOS AKOS (1841–1914), Hungarian statesman, the son of Lajos Kossuth, was born on Nov. 16, 1841, and educated at Paris and London, where in 1859 he won a prize for political economy. After working as a civil engineer on the Dean Forest railway he went (1861) to Italy, where he resided for the next 33 years, taking a considerable part in the railway construction of the peninsula, and at the same time keeping alive the Hungarian independence question by his pamphlets and newspaper articles. At Cesena in 1876 he married Emily Hoggins. In 1895 he returned to Hungary and from that time took an active part in Hungarian politics. In 1898 he became the leader of the "1848" or "Independence" party, which stood for restoration of the Hungarian "March Laws" of 1848, involving virtual separation from Austria. He was in opposition till 1906, but in that year joined Wekerle's coalition ministry. In 1909 Kossuth forced a crisis in the coalition and the Dual monarchy by pressing the constitution of a separate Hungarian State bank. Wekerle resigned, but although Kossuth was leader of the strongest party in the Hungarian House, Francis Joseph refused to ask him to form a Government. After a prolonged conflict, Kossuth's own party split; he remained leader of the smaller section, known as the "Independence, 1848, and Kossuth" party. Kossuth now advocated a compromise; but the end of the struggle was the ultimate return of Stephen Tisza (*q.v.*), the supporter of the compromise of 1867. Kossuth did not again hold office, and died in Budapest on May 25, 1914.

KOSSUTH, LAJOS (Louis) (1802–1894), Hungarian politician, was born at Monok, Zemplin, on Sept. 19, 1802, of a magyarized Slovak family of the poorer Hungarian nobility. His father was an advocate, and Kossuth, after studying at Sárospatak and Budapest, began his career practising with his father. Presently he moved to Pest, and was appointed by Count Hunyady to be his deputy at the National Diet in Pressburg (1825–27, and again in 1832). His letters to his patron (since as deputy he had no vote) were so excellent that they were circulated in ms. among the Liberal magnates, and soon developed into an organized parliamentary gazette (*Orszagyulesi tudositasok*), of which he was editor. At once his name and influence spread in spite of the efforts of the censorship to prevent circulation of the letters. In 1836 the diet was dissolved. Kossuth continued the agitation by reporting in letter form the debates of the county assemblies. In May 1837, Kossuth with Weszelenyi and several others, were arrested on a charge of high treason. After spending a year in prison at Ofen, he was tried and condemned to four more years' imprisonment. His arrest had caused great indignation. The Diet of 1839 supported the agitation for the release of the prisoners, and refused to pass any government measures; Metternich long remained obdurate, but the danger of war in 1840 obliged him to give way. Immediately after his release Kossuth married Teresa Meszleny, a Catholic. It was the refusal of the Roman priests to bless their union that first prompted Kossuth to take up the defence of mixed marriages.

He had now become a popular leader, and as soon as his health was restored was appointed (Jan. 1841) editor of the *Pesti Hirlap*, the newly founded organ of the party, which had an unprecedented success. Szechenyi's warning that by his appeal to the passions of the people he was leading the nation to revolution was neglected. Kossuth, indeed, was not content with advocating those reforms—the abolition of entail, the abolition of feudal burdens, taxation of the nobles—which were demanded by all the Liberals. He attacked Austria violently, and fostered Magyar chauvinism by his contemptuous denial of the rights of Hungary's Slavonic inhabitants. At last, in 1844, the government succeeded in breaking his connection with the paper. He then applied for permission to start a paper of his own. In a personal interview Metternich offered to take him into the government service. The offer was refused, and for three years he was without a regular position. He continued the agitation with the object of attaining both the political and commercial independence of Hungary. In the autumn of 1847, supported by the influence of Louis Batthyany, he was elected member for Budapest in the new diet, and at once became chief leader of the Extreme Liberals. The wiser heads distrusted his ambition and egoism, but his impassioned eloquence secured him immense influence.

On March 3, 1848, as soon as the news of the revolution in Paris arrived, in a speech of surpassing power he demanded parliamentary government for Hungary and constitutional government for the rest of Austria, appealing to "our beloved Archduke Francis Joseph," to perpetuate the ancient glory of the dynasty by meeting half-way the aspirations of a free people. He at once became the leader of the European revolution; his speech was read aloud in the streets of Vienna to the crowd by which Metternich was overthrown (March 13). Batthyany, who formed the first responsible ministry, could not refuse to admit Kossuth, but gave him the inoffensive post of ministry of finance. Kossuth, however, was irrepressible. He established a separate Hungarian coinage—as always, using every means to increase the national self-consciousness, and it was characteristic that on the new Hungarian notes which he issued his own name was the most prominent inscription. On July 3 he began to issue his own organ, the *Kossuth Hirlapia*. On July 11, as the danger of intervention from Austria and Croatia increased, Kossuth demanded that the nation arise in self-defense. When Jellačič (*q.v.*) advanced on Budapest, Kossuth went from town to town rousing the people to the defense of the country, and the popular force of the *Honved* was his creation. When Batthyany resigned (Sept. 11) he was appointed with Szemere to carry on the government provisionally, and at the end of September he was made President of the Com-

mittee of National Defence. From this time he was in fact, if not in name, dictator, although his control over the Hungarian forces was imperfect, largely owing to personal friction between Kossuth and the commanders. His energy and spirit were, however, dauntless, even after the new Emperor, Francis Joseph, had revoked his predecessor's concessions and proclaimed Kossuth a traitor. When Windischgrätz advanced into Hungary (Dec. 15), Kossuth and the diet retired to Debrecsen, taking with them the holy regalia of St. Stephen. The spring brought success to the Hungarian arms, and on April 19, 1849, Kossuth issued his famous declaration of independence, declaring that "the house of Habsburg-Lorraine, perjured in the sight of God and man, had forfeited the Hungarian throne." Kossuth himself was now elected dictator; but this extreme step by no means commanded universal assent in Hungary where he was widely accused of aiming at the throne as well as ruining his country by precipitating the Russian intervention. On Aug. 11 Kossuth abdicated in favour of Görgei, on the ground that in the last extremity the general alone could save the nation. Two days later Görgei capitulated at Világos.

Kossuth fled to Turkey, who, supported by Great Britain, refused to extradite him, interning him honourably in Vidin, Shumla and Kutahia, Asia Minor. Here he was joined by his children, who had been confined at Pressburg; his wife (a price had been set on her head) had joined him earlier, having escaped in disguise. In Sept. 1851 he was liberated and embarked on an American man-of-war. At Marseilles he received an enthusiastic welcome from the people, but the prince-president refused to allow him to cross France. On Oct. 23 he landed at Southampton and spent three weeks in England, where he was the object of extraordinary enthusiasm. In the United States of America his reception was equally enthusiastic, if less dignified. Other Hungarian exiles protested against his claim to be the one national hero of the revolution, and accused him of arrogance, cowardice and duplicity. He soon returned to England, where he lived for eight years in close connection with Mazzini, by whom with some misgiving, he was persuaded to join the Revolutionary Committee. Quarrels of a kind only too common among exiles followed; the Hungarians were especially offended by his claim still to be called governor. An attempt to organize a Hungarian legion during the Crimean War was stopped; but in 1859 he entered into negotiations with Napoleon, left England for Italy, and began the organization of a Hungarian legion, which was to make a descent on the coast of Dalmatia. The Peace of Villafranca made this impossible. From that time he resided in Italy, refusing to reconcile himself with the new regime, or to avail himself of the amnesty, and, though elected to the diet of 1867, never took his seat. In later years, with tardy wisdom, he advocated a federation of Danubian nationalities, thus reversing the policy of savage intolerance which had proved so fatal in 1848. A law of 1879, which deprived of citizenship all Hungarians who had voluntarily been absent ten years, was a bitter blow to him.

He died in Turin on March 20, 1894; his body was taken to Pest, where he was buried amid the mourning of the whole nation.

Many points in Kossuth's career and character will probably always remain the subject of controversy. His complete works were published in Hungarian at Budapest in 1880–95. The fullest account of the Revolution is given in Helfert, *Geschichte Oesterreichs* (Leipzig, 1869, etc.), representing the Austrian view, which may be compared with that of C. Gracza, *History of the Hungarian War of Independence, 1848–1849* (in Hungarian) (Budapest, 1894). *See* also E.O.S., *Hungary and its Revolutions, with a Memoir of Louis Kossuth* (1854); Horvath, *25 Jahre aus der Geschichte Ungarns, 1823–1848* (Leipzig, 1867); Szemere, *Politische Charakterskizzen: III. Kossuth* (Hamburg, 1853); Louis Kossuth, *Memoirs of my Exile* (1880); Pulszky, *Meine Zeit, mein Leben* (Pressburg, 1880); A. Somogyi, *Ludwig Kossuth* (1894).

KOSTER or **COSTER, LAURENS** (*c.* 1370–1440), Dutch printer, whose claims to be considered at least one of the inventors of the art (*see* TYPOGRAPHY) have been recognized by many investigators. His real name was Laurens Janssoen—Koster (*i.e.*, sacristan) being merely the title which he bore as an official of the great parish church of Haarlem. We find him mentioned several times between 1417 and 1434 as a member of the great council, as an assessor (*scabinus*), and as the city treasurer. He probably perished in the plague that visited Haarlem in 1439–40; his widow is mentioned in the latter year. His descendants, through his daughter Lucia, can be traced down to 1724.

See Peter Scriver, *Beschryvinge der Stad Harlem* (Haarlem, 1628); Scheltema, *Levensschets van Laurens d. Koster* (Haarlem, 1834); Van der Linde, *De Haarlemsche Costerlegende* (Hague, 1870).

KOSTROMA, town and formerly a province of the Russian S.F.S.R., surrounded by those of Yaroslavl, Vologda, North Dwina, Nizhegorod and Ivanovo-Vosnesensk, but now incorporated as part of the Yaroslavl region. Area, 12,875 sq.mi. Population 809,954 (mainly Great Russians). The north-east of the province is occupied by continuous coniferous forest, in which firs predominate, and there are extensive marshes in the north-east. Forest, much of it virgin, covers 60% of the province. Of the remaining area, about half is under meadow and pasture, and half under crops. The soil is mainly sandy and clayey and the climate is severe, average January temperature −13·3° F, July 64·5° F; frosts of −22° F are often recorded in January and the rivers are frozen for 150 to 160 days per annum.

Dairying is the chief agricultural occupation, and with better transport facilities could develop strongly in view of the demand in Moscow. Agriculture is developing on intensive lines with greater rotation of crops, better manuring and the sowing of grasses and lucerne. The chief crops are rye (40·1%) and oats (25·2%); barley, potatoes, grass, wheat, flax and vegetables are also grown. In the 18th century local flax was worked into linen for export, but the mass production of cheap cotton goods in western Europe in the latter half of the 19th century caused this industry to decline, and linen is now made to supply local needs only. The villages are small, averaging about 100 inhabitants and except for Kostroma, no town has a population of 10,000 or more. In accordance with the poor agricultural guarantee for the peasant, koustar (peasant) industries to supplement income are widespread and include textiles and felt, especially for boots, the making of wooden articles, pitch and tar, the preparation of dried vegetables, especially cabbage, and other foodstuffs, the making of household implements and distilling and brewing. There is some hunting and fishing. The railway net is poor and only 27% of the rivers are navigable for steamers; in years of low water, navigation may be suspended on the Volga during July and August, thus curtailing the already short season. The Volga flows for a short distance through the south-west of the province; its tributary, the Kostroma, lies entirely in the province, flowing from north to south near the western boundary. The upper course of the Unzha, another tributary of the Volga, is included near the eastern boundary. Roads are poor, and non-existent in many parts; during autumn many become impassable bogs.

KOSTROMA, the chief town of the above province, stands on the left bank of the Volga, at the mouth of the navigable Kostroma, with suburbs on the opposite side of the Volga, in 57° 45′ N., 40° 58′ E. Pop. (1939) 121,205. Its glittering gilded cupolas make it a conspicuous feature in the landscape as it climbs up the terraced river bank. It was founded in 1152. Its fort was often the refuge of the princes of Moscow during war, but the town was plundered more than once by the Tatars. The cathedral, built in 1239 and rebuilt in 1773, is situated in the *kreml,* or citadel, and is a fine monument of old Russian architecture. In the centre of the town is a monument to the peasant Ivan Susanin who saved the life of Tsar Michael Fedeorovich by leading the Poles astray in the forest. On the opposite bank of the Volga, close to the water's edge, stands the monastery of Ipatiyev, founded in 1330, with a cathedral built in 1586, both associated with the election of Tsar Michael (1669). Kostroma has been renowned since the 16th century for its linen, which was formerly exported to Holland. It has saw-mills and flour-mills, and manufactures reels and spools, linen clothing, footwear, *makhorka* tobacco and wooden wares.

KÖSZEG, a Hungarian town, near the Austrian frontier, in the county of Vas, on the eastern slopes of the Geschriebene Stein (2,900 ft.) near their passage to the plain of the Raab. The hills around are extensively planted on their lower slopes with fruit

trees and vineyards, while sheep are pastured on the higher grounds. A flourishing trade is carried on in fruit and wine, and saw-mills, woollen factories and breweries are other activities. The town is noted for its successful resistance to Turkish attacks, checking the advance towards Vienna, in 1532. Pop. (1930) 8,537.

KOTAH, an Indian state in the Rajputana agency, with an area of 5,714 sq.mi. The country slopes gently northwards from the high table-land of Malwa, and is drained by the Chambal with its tributaries, all flowing in a northerly or north-easterly direction. The Mokandarra range, from 1,200 to 1,600 ft. above sea-level, runs from south-east to north-west. The Mokandarra Pass through these hills, in the neighbourhood of the highest peak (1,671 ft.), has been rendered memorable by the passage of Colonel Monson's army on its disastrous retreat before Holkar in 1804. There are extensive game preserves, chiefly covered with grass. The chief articles of export are grains, as opium is no longer a staple; salt, cotton and woollen cloth are imported.

Kotah is an offshoot from Bundi state, having been bestowed about 1625 upon a younger son of the Bundi raja by the emperor Shah Jahan in return for services rendered him when the latter was in rebellion against his father Jahangir. In 1897 a considerable portion of the area taken to form Jhalawar (*q.v.*) in 1838 was restored to Kotah. In 1941 the population was 777,398. The maharao Bhim Singh, was born in 1909, and succeeded in 1940. He was educated at the Mayo College, Ajmere, and has a salute of 17 guns.

The town of Kotah is on the right bank of the Chambal. Pop. (1941) 45,032. It is surrounded and also divided into three parts by massive walls, and contains an old and a new palace of the maharao and a number of fine temples, besides several modern schools and hospitals. Muslins are the chief article of manufacture, but the town has no great trade.

KOTAS, an aboriginal tribe of the Nilgiri hills, India. They are a well-made people, tall, of a dull copper colour, medium heads and medium noses. Blue eyes have been recorded. They are divided into exogamous *keris* (streets). Their villages (of which there are seven) are large, averaging from thirty to sixty huts. They are agriculturists and herdsmen, and excel as carpenters, smiths, tanners and basket-makers. They do menial work for the Todas, to whom they pay a tribute. Their gods are not represented by any images. The language of the Kotas is a mixture of Tamil and Kanarese.

See *Tribes and Castes of Southern India* (1909).

KOTKA, a seaport of Finland, on an island of the same name at the mouth of the Kymmene river in 60° 28′ N., 26° 57′ E. Pop. (est. 1939) 22,135. The chief imports are coal, machinery and iron and the exports timber and wood pulp. There are three harbours, Kotka proper, West and East.

KOTLAS, a town in the North Dwina province of the Russian S.F.S.R., in lat. 61° 12′ N., long. 46° 50′ E., on the right bank of the north Dwina, 3 mi. S. of its confluence with the Vychegda river. Population 4,258. It has grown rapidly since the railway reached it; work on the continuation of the railway to Soroka on the Gulf of Onega began in 1928. Kotlas is the head of navigation at low water, and has steamer building workshops and steam flour mills, wharves, grain-elevators, an electric plant and a radio-station. Much Siberian grain is unloaded here for water transport.

KOTRI, a town of British India, in Karachi district, Sind, situated on the right bank of the Indus. Population 7,617. Kotri is the junction of branches of the North-Western railway, serving each bank of the Indus, which is here crossed by a railway bridge. Besides its importance as a railway centre, Kotri has a considerable general transit trade by river. Kotri was formerly the station for Hyderabad, which lies across the Indus, and the headquarters of the Indus steam flotilla, which was abolished in consequence of the development of railway facilities.

KOTTBUS, a town of Germany, in Brandenburg, a province of Prussia, on the Spree, about 70 mi. S.E. of Berlin. Pop. (1939) 56,132. At one time it formed an independent lordship of the Empire, but in 1462 passed to Brandenburg. From 1807 to 1813 it belonged to the kingdom of Saxony. The chief industry of the town is the manufacture of cloth. Wool-spinning and the manufacture of tobacco and machinery and the distillation of brandy are also carried on. In the town and neighbourhood the Wendish language is still in use.

KOTZEBUE, AUGUST FRIEDRICH FERDINAND VON (1761–1819), German dramatist, was born on May 3, 1761, at Weimar. In 1780 he completed his legal course at Duisburg, and was admitted an advocate. Through the influence of the Prussian ambassador at the Russian court, he entered the Russian service, and rose to be assessor to the high court of appeal in Reval. He was ennobled in 1785, and became president of the magistracy of the province of Estonia. In Reval he wrote the novels, *Die Leiden der Ortenbergischen Familie* (1785) and *Geschichte meines Vaters* (1788), and the plays *Adelheid von Wulfingen* (1789), *Menschenhass und Reue* (1790) and *Die Indianer in England* (1790). Kotzebue retired from the Russian service, and lived for a time in Paris and Mainz; he then settled in 1795 on his estate near Reval. Within a few years he published six volumes of miscellaneous sketches and stories, *Die jüngsten Kinder meiner Laune* (1793–96), and more than 20 plays, the majority of which were translated into several European languages. He was for a short time dramatist to the court theatre in Vienna, and then returned to his native town, but as he was not on good terms with Goethe, and had openly attacked the romantic school, his position in Weimar was not a pleasant one. He was returning to St. Petersburg, when he was, for some unknown reason, arrested at the frontier and transported to Siberia. Fortunately he had written a comedy which flattered the vanity of the emperor Paul I.; he was recalled, and presented with an estate from the crown lands of Livonia, and made director of the German theatre in St. Petersburg. He returned to Weimar when the emperor Paul died, but found it as impossible as ever to gain a footing there and turned his steps to Berlin, where in association with Garlieb Merkel (1769–1850) he edited *Der Freimütige* (1803–07) and began his *Almanach dramatischer Spiele* (1803–20). Towards the end of 1806 he was once more in Russia; as councillor of state he was attached in 1816 to the department for foreign affairs in St. Petersburg, and in 1817 went to Germany as a kind of spy in the service of Russia, with a salary of 15,000 roubles. In a weekly journal (*Literarisches Wochenblatt*) which he published in Weimar he scoffed at the pretensions of those Germans who demanded free institutions, and was obliged to move to Mannheim. He was especially detested by the young enthusiasts for liberty, and one of them, Karl Ludwig Sand, a theological student, stabbed him, in Mannheim, on March 23, 1819. Sand was executed, and the government made his crime an excuse for placing the universities under strict supervision.

Besides his plays, Kotzebue wrote several historical works, which, however, are too one-sided and prejudiced to have much value. Of more interest are his autobiographical writings, *Meine Flucht nach Paris im Winter 1790* (1791), *Über meinen Aufenthalt in Wien* (1799), *Das merkwürdigste Jahr meines Lebens* (1801), *Erinnerungen aus Paris* (1804), and *Erinnerungen von meiner Reise aus Liefland nach Rom und Neapel* (1805). As a dramatist he was extraordinarily prolific, his plays numbering over 200; his popularity, not merely on the German, but on the European stage, was unprecedented. Kotzebue possessed an extraordinary facility in the invention of effective situations, and an unerring instinct for the theatre. Kotzebue is to be seen to best advantage in his comedies, such as *Der Wildfang, Die beiden Klingsberg* and *Die deutschen Kleinstädter,* which contain admirable genre pictures of German life. These plays held the stage in Germany long after the once famous *Menschenhass und Reue* (known in England as *The Stranger*), *Graf Benjowsky,* or ambitious exotic tragedies like *Die Sonnenjungfrau* and *Die Spanier in Peru* (which Sheridan adapted as *Pizarro*) were forgotten.

Two collections of Kotzebue's dramas were published during his lifetime: *Schauspiele* (5 vols., 1797); *Neue Schauspiele* (23 vols., 1798–1820). His *Sämtliche dramatische Werke* appeared in 44 vols., in 1827–29, and again, under the title *Theater,* in 40 vols., in 1840–41. A selection of his plays in 10 vols. appeared at Leipzig in 1867–68. *See* also H. Döring, *A. von Kotzebues Leben* (1830); W. von Kotzebue, *A. von Kotzebue* (1881); Ch. Rabany, *Kotzebue, sa vie et son temps* (1893); W. Sellier, *Kotzebue in England* (1901).

KOTZEBUE, OTTO VON (1787–1846), Russian navigator, second son of the foregoing, was born at Reval on Dec. 30, 1787. He was educated at the St. Petersburg school of cadets and accompanied Krusenstern on his voyage of 1803–06. Kotzebue was placed in command of an expedition, fitted out at the expense of the imperial chancellor, Count Rumant, in the brig "Rurisevk." In this vessel, with only 27 men, Kotzebue set out (July 30, 1815) to find a passage across the Arctic ocean and explore Oceania. Proceeding by Cape Horn, he discovered the Romanzov, Rurik and Krusenstern islands, then made for Kamchatka, and in July proceeded northward along the north-west coast of America, and discovered Kotzebue gulf or sound and Krusenstern cape. Returning by the coast of Asia, he again sailed south, and on Jan. 1, 1817, discovered New Year island. He brought home a large collection of previously unknown plants and much new ethnological information. In 1823 Kotzebue, now a captain, commanded an expedition to take reinforcements to Kamchatka. A staff of scientists on board collected much valuable information and material in geography, ethnography and natural history. The expedition, proceeding by Cape Horn, visited the Radak and Society islands, and reached Petropavlovsk in July 1824. Many positions along the coast were rectified, the Navigator islands visited and several discoveries made. The expedition returned by the Marianna, Philippine, New Caledonia and Hawaiian islands, reaching Kronstadt on July 10, 1826. Kotzebue died at Reval on Feb. 15, 1846.

There are English translations of both Kotzebue's narratives: *A Voyage of Discovery into the South Sea and Bering's Straits for the Purpose of exploring a North-East Passage, undertaken in the Years 1815–1818* (3 vols. 1821), and *A New Voyage Round the World in the Years 1823–1826* (1830).

KOUMISS, milk-wine, or milk brandy, a fermented alcoholic beverage prepared from milk. It is of very ancient origin, and according to Herodotus was known to the Scythians. The name is said to be derived from an ancient Asiatic tribe, the Kumanes or Komans. It is one of the staple articles of diet of the Siberian and Caucasian races, but of late years it has also been manufactured on a considerable scale in western Europe, on account of its valuable medicinal properties. It is generally made from mares' or camels' milk by a process of fermentation set up by the addition to the fresh milk of a small quantity of the finished article. This fermentation, which appears to be of a symbiotic nature, being dependent on the action of two distinct types of organisms, the one a fission fungus, the other a true yeast, eventuates in the conversion of a part of the milk sugar into lactic acid and alcohol. Koumiss generally contains 1 to 2% of alcohol, 0·5 to 1·5% of lactic acid, 2 to 4% of milk sugar and 1 to 2% of fat. *Kefir* is similar to koumiss, but is usually prepared from cows' milk, and the fermentation is brought about by the so-called *kefir grains,* derived from a plant.

KOUMOUNDOUROS, ALEXANDROS (1814–1883), Greek statesman, whose name is commonly spelt Coumoundouros, was born in 1814. He took part in the Cretan insurrection of 1841, and was elected to the chamber in 1851, of which he became president in 1854, minister of finance in 1856, and again in 1857 and 1859. He adhered to the moderate wing of the Liberal party until the revolution of 1862 and the dethronement of King Otto, when he was minister of justice in the provincial government. He was twice minister of the interior under Kanaris, in 1864 and in 1865. In March 1865 he became prime minister, and he formed several subsequent administrations in the intervals of the ascendancy of Tricoupis. During the Cretan insurrection of 1866–68 he made warlike preparations against Turkey, but was dismissed by King George, who recognized that Greece could not act without the support of the Powers. He was again premier at the time of the insurrection in Thessaly in Jan. 1878, and supported by Delyanni as minister of foreign affairs he sent troops to help the insurgents against Turkey.

In Oct. 1880 the fall of the Tricoupis ministry restored him to power, when he resumed his warlike policy, but repeated appeals to the courts of Europe yielded little practical result, and Koumoundouros was obliged to reduce his territorial demands and to accept the limited cessions in Thessaly and Epirus, which were carried out in July 1881. His ministry was overturned in 1882 by the votes of the new Thessalian deputies, who were dissatisfied with the administrative arrangements of the new province, and he died at Athens on March 9, 1883.

KOUSSO (Kosso or Cusso), a drug which consists of the panicles of the pistillate flowers of *Brayera anthelmintica,* a handsome rosaceous tree 60ft. high, growing throughout the table-land of Abyssinia, at an elevation of 3,000 to 8,000ft. above the sea-level. The drug as imported is in the form of cylindrical rolls, about 18in. in length and 2in. in diameter, and comprises the entire inflorescence or panicle kept in form by a band wound transversely round it. The active principle is koussin or kosin, $C_{31}H_{38}O_{10}$, which is soluble in alcohol and alkalis, and may be given in doses of 30 grains. Kousso is also used in the form of an unstrained infusion of ¼ to ½ oz. of the coarsely powdered flowers, which are swallowed with the liquid. It is considered to be an effectual vermifuge for *Taenia solium.* In its anthelmintic action it is nearly allied to male fern, but it is much inferior to that drug and is very rarely used in Great Britain.

KOVALEVSKY, ALEXANDER (1840–1891), Russian embryologist, was born on Nov. 7, 1840, at Dünaburg, and was educated at Heidelberg and Tübingen. As professor of zoology in St. Petersburg (Leningrad) university, he carried out researches on the embryology of ascidians (1866–71) and of amphioxus (1867), showing the relation between these two forms, on the anatomy of Balanoglossus (1866), and on the embryology of worms and arthropods (1871). His writings include: *Anatomie des Balanoglossus delle Chiaje* (1866); *Entwicklungsgeschichte der einfachen Ascidien* (1866); *Entwicklungsgeschichte des Amphioxus lanceolatus* (1867); *Embryologische Studien an Würmern und Arthropoden* (1869); *Coeloplana metschnikowii* (1882) and *Etude sur l'anatomie de l'Acanthobdella peledina* (1896).

KOVALEVSKY, SONYA [SOPHIE] (1850–1891), Russian mathematician, was born at Moscow on Jan. 15, 1850. She married in 1868 a young student, Waldemar Kovalevsky, and the two went together to Germany to continue their studies. In 1869 she went to Heidelberg where she studied under H. von Helmholtz, G. R. Kirchhoff, L. Königsberger and P. du Bois-Reymond, and from 1871–1874 read privately with Karl Weierstrass at Berlin, as the public lectures were not then open to women. In 1874 the University of Göttingen granted her a degree *in absentia,* excusing her from the oral examination in consideration of the three dissertations sent in, one of which, on the theory of partial differential equations, is one of her most remarkable works. After lecturing in Stockholm university, Madame Kovalevsky was appointed professor there in 1884, at the instance of Gustav Mittag-Leffler, also a pupil of Weierstrass, and held the post until her death. In 1888 she achieved the greatest of her successes, gaining the Prix Bordin offered by the Paris academy. The problem set was "to perfect in one important point the theory of a movement of a solid body round an immovable point," and her solution added a result of the highest interest to those submitted to us by Leonhard Euler and J. L. Lagrange. So remarkable was this work that the value of the prize was doubled as a recognition of unusual merit. Unfortunately Madame Kovalevsky did not live to reap the full reward of her labours, for she died on February 10, 1891, just as she had attained the height of her fame and had won recognition, even in her own country, by election to membership of the St. Petersburg Academy of Science.

See Anna Leffler, *Sonja Kovalevsky* (1892), based on Sonya's autobiography, which is a human document of extraordinary interest.

KOVAŘOVIC, KAREL (1862–1920), Czech composer, was born at Prague on Dec. 9, 1862, and educated at the conservatoire of his native city. From 1900–20 he conducted at the National Opera in Prague, raising the performances to a very high level. As a composer he was a follower of Smetana, though by no means a slavish one. Of his operas the most famous are: *Psohlavci* ("The Peasants' Charter"), which makes telling use of the story of the peasant revolt of 1695 against Austrian rule; and *Na starém Bělidle* ("At the old Bleaching-House"), a rustic opera which makes use effectively of the national folk-music. Kovařovic died

on Dec. 9, 1920.

KOVESLIGETHY, RADO DE (1862–1934), Hungarian astronomer, was born at Verona, Italy, on Sept. 1, 1862. Educated at Pozsony and the University of Vienna, he became assistant to H. C. Vogel at Potsdam observatory and later astronomer at the O-Gyalla observatory. While still a student he evolved from Greenwich observations of velocities in the line of sight a first approximation of solar velocity. He constructed further for the Kis Kartal observatory a handy and powerful spectrophotometer based on the principle of extinction by polarization. After a year's collaboration at the Central Institute of meteorology and terrestrial magnetism at Budapest he became assistant to Baron Eötvös. In 1897 he was appointed extraordinary, and in 1904 ordinary professor of cosmography and geophysics at Budapest. In 1905 he became general secretary of the International Seismological Association, a position he held till the dissolution of the association in 1916. In 1905 he founded the Seismological institute of Budapest. After the great earthquake of Messina he investigated the conditions under which a rational prevision of earthquakes would be possible (*Sur l'hystérisis sismique,* 1912).

KÖVESS, HERMANN, Freiherr von Kövesshaza (1854–1924), Austro-Hungarian field-marshal, was born in Temesvar. At the beginning of World War I he commanded the XII (Transylvania) Corps in the defense in east and central Galicia, and later in Russian Poland. In 1915 he captured the fortress of Ivangorod, and, under the command of Mackensen, led the III Army, with which he captured Belgrade and penetrated into Serbia, and, in independent command, overthrew Montenegro and occupied Albania. In 1916 after the break-through of Brussilov he was transferred to the Galician theatre of war, and soon after commanded the VII Army in the defense of the Carpathians, and in the following summer took Czernowitz and Radautz and drove the Russians almost entirely from the Bukovina. In the early part of 1918 Kövess commanded the army front from the Dniester to the south-eastern corner of Transylvania, and after the desertion of Bulgaria he took over the command in the Balkans. He died at Vienna on Sept. 22, 1924.

KOVNO: *see* KAUNAS.

KOVROV, a town of the Russian S.F.S.R. in the province of Vladimir, in lat. 56° 24′ N., long. 41° 20′ E. It is on the Klyazma river and is a railway junction. Pop. (1939) 67,163. It has railway workshops, iron and copper foundries, timbermills and cotton and woollen mills, and has a civic electricity and water supply. Limestone is quarried in the district.

KOWTOW or KOTOU, the Chinese ceremonial act of prostration as a sign of homage, submission or worship. The word is formed from *ko,* knock, and *tou,* head. To the emperor, the "kowtow" was performed by kneeling three times, each act accompanied by touching the ground with the forehead.

KOZLOV, a town of the Russian S.F.S.R. in region of Tambov, in 52° 56′ N., 40° 30′ E., on the Lyesnoi Voronezh river. Pop. (1939) 70,202. It had its origin in a small monastery founded in 1627 in the forest, now almost vanished; nine years later, an earthwork was raised close by for the protection of the Russian frontier against the Tatars. Situated in fertile country, on the highway to Astrakhan and at the head of water communication with the Don, the town soon became a centre of trade; as the junction of the railways leading to the Sea of Azov, to Stalingrad on the lower Volga, to Saratov and to Orel, its importance has recently been still further increased. It is a centre for the export of cattle, meat, grain and eggs. The town has a civic electricity and water supply, a grain elevator and cold storage facilities. It has a railway workshop, steam flour-mills and a large sausage factory. It is now re-named Michurinsk.

KPELLE, a dark-skinned, well-proportioned patrilineal people of medium stature who practise ornamental scarification, occupying the Upper Nuon and Upper St. Paul country on the borders of French Guinea and Liberia. They speak Mande-fu, a language related to Toma and Gbandi, and live in federated villages under a paramount chief, with extended family groups having goods in common and administered by the patriarch and elders. There is individual ownership of personal possessions for both men and women. No characteristic marriage customs or prohibitions exist. Inheritance of the family property goes to the brother of the deceased, whom failing, to the son or cousin on the father's side. Personal possessions go to the son, a woman's personal possessions sometimes go to her family. There are age classes of political importance regulated by initiation into the secret societies (*Poro* [*see* PURRAH] for the men, *Sande* for the women). Other intertribal societies (Leopard, Serpent, Antelope) exist. The Kpelle are engaged in cultivation, arboriculture (palm and kola), hunting and fishing.

Industry is fairly well developed. Their religion is animist, and there are traces of totemism. The dead are buried in the presence of fellow members of the secret society of the deceased, in special localities in which members of a family are all grouped together.

KRA (*Macaca irus*), a name given to the long-tailed or crab-eating macaque (*see* MACAQUE; PRIMATES), a monkey inhabiting the Malay Peninsula, the Philippines and most of the East Indies. The island forms vary in size and colour, which may be various shades of gray or brown. These monkeys swim readily and spend most of their lives near the water, feeding on crabs and other crustaceans as well as fruits and vegetation. (J. E. HL.)

KRAAL (krawl), in south Africa, a native village surrounded by a palisade, mud wall or other fencing, roughly circular in form; by transference, the community living within the enclosure. It is, perhaps, derived from an African word, but may be the Spanish *corral,* an enclosure for horses or cattle. Folds for animals and enclosures made specially for defensive purposes are also called kraals.

KRAFFT or **KRAFT, ADAM** (*c.* 1455–1509), German sculptor, of the Nuremberg school, was born, probably at Nuremberg about the middle of the 15th century, and died at Schwabach in 1509. He seems to have emerged as sculptor about 1490, the date of the seven reliefs of scenes from the life of Christ, which, like almost every other specimen of his work, are at Nuremberg. The date of his last work, an Entombment, with life-size figures, in the Holzschuher chapel of the St. John's cemetery, is 1507. Besides these, Krafft produced the great Schreyer monument (1492) for St. Sebald's at Nuremberg, a skilful though mannered piece of sculpture opposite the Rathaus, with realistic figures in the costume of the time; Christ bearing the Cross, above the altar of the same church; and various works made for public and private buildings, as the relief over the door of the Wagehaus, a St. George and the Dragon, several Madonnas, and some purely decorative pieces, as coats of arms. His masterpiece is perhaps the magnificent tabernacle, 62 ft. high, in the church of St. Laurence (1493–1500).

KRAGUJEVAC (krä-gōō-yāv′äts), the capital of a department of Serbia, Yugoslavia. Pop. (1931) 27,208. It is situated on a tributary of the Morava. On the opposite bank stands the picturesque hamlet of Obilichevo, with a government powder factory and saddlery establishment. Kragujevac is the main arsenal of Serbia and is largely garrisoned. It is a training centre for infantry officers. The town boasts the finest college building and the finest modern Cathedral (in Byzantine style) in Serbia, and has also a hospital, a secondary school, a gymnasium, a girls' school, and an excellent library. It is the seat of a prefecture and tribunal. In the first years of Serbia's autonomy under Prince Milosh (1818–39) Kragujevac was the capital and was taken from the Turks in the rebellion of 1835. The whitewashed shed, which served as Serbia's first parliament house, is still to be seen. The town is a road centre and in 1885 it was connected by a branch line with the Belgrade-Nish railway. Afterwards its prosperity steadily increased. It has an iron foundry, steam flour mills, a vegetable-preserving factory, and several small cloth factories.

KRAIT (*Bungarus coeruleus*) one of the more dangerous of the Indian snakes. There are about 12 species of the genus *Bungarus.*

KRAKATOA (krah-kah-tō′ą), a small volcanic island in Sunda strait, Netherlands Indies. A large volcano rose in the centre of the tract where the Sunda strait now runs. An explosion blew the mountain away and its base was left as a broken

ring of islands. Subsequently small cones were formed within the great crater ring. The most important rose 2,623 ft. above the sea and formed the peak of the volcanic island of Krakatoa. In 1680 it appears to have been in eruption; great earthquakes took place and large quantities of pumice were ejected. But the effects of this disturbance had been so concealed by tropical vegetation that the eruption had been called in question. About 1877, earthquakes began to be frequent in the Sunda strait. In 1883 the manifestations of subterranean commotion became more decided, for, in May, Krakatoa broke out in eruption, discharging pumice and dust, with the usual accompaniment of detonations and earthquakes. On Aug. 26, paroxysms began which lasted till the morning of the 28th. The four most violent took place on the morning of the 27th. The whole northern and lower portion of Krakatoa, within the original crater ring, was blown away; the northern part of the cone of Rakata almost entirely disappeared, leaving a vertical cliff which laid bare the inner structure of that volcano. Instead of the previous volcanic island, which seems to have had an area of 18 sq.m., and rose from 300 to 1,400 ft. above the sea, there was now left a submarine cavity, with its bottom more than 1,000 ft. below sea-level. This was the result of explosions of superheated vapour absorbed in the molten magma within the earth's crust. The vigour and repetition of these explosions may have been caused by sudden inrushes of the ocean as the throat of the volcano was cleared and the crater ring was lowered and ruptured. Access of bodies of cold water to the top of the column of molten lava would probably give minor explosions, and then chilling of the lava surface would temporarily lessen or stop volcanic eructations. But until the pent-up water-vapour in the lava found relief, it would gather strength until it burst through the crust and overlying water, and hurled cooled lava, pumice and dust into the air.

The discharge during the two days was enormous. A large cavity replaced the island, and the sea-bottom was covered with a wide and thick sheet of fragmentary materials; while surrounding islands had their forests buried and their area increased by masses of the material ejected; also new islands appeared in the sea. A vast body of the fine dust was carried far and wide by aerial currents, while the floating pumice was transported for many hundreds of miles on the surface of the ocean. At Batavia, 100 m. from the centre of eruption, the sky was darkened by the quantity of ashes borne across it, and lamps had to be used in the houses at midday. The darkness even reached as far as Bandung, a distance of nearly 150 miles, and 2,300 ft. above sea level. It was computed that the column of stones, dust and ashes projected from the volcano shot up into the air for a height of 17 m. or more. The finer particles coming into the higher layers of the atmosphere were diffused over a large part of the surface of the earth, and showed their presence by the brilliant sunrise and sunset-glow-effects to which they gave rise. Within the tropics they were at first borne along by air-currents at an estimated rate of about 73 m. an hour from east to west, until within a period of six weeks they were diffused over nearly the whole space between the latitudes 30° N. and 45° S. Eventually they spread northwards and southwards and were carried over North and South America, Europe, Asia, South Africa and Australasia. In the Old World they spread from Scandinavia to the Cape of Good Hope.

Another remarkable result of this eruption was the world-wide disturbance of the atmosphere. The culminating paroxysm on the morning of Aug. 27 gave rise to an atmospheric wave or oscillation, which, travelling outwards from the volcano as a centre, became a great circle at 180° from its point of origin, whence it continued travelling onwards and contracting till it reached a node at the antipodes to Krakatoa. It was then reflected or reproduced, travelling backwards again to the volcano, whence it once more returned in its original direction. "In this manner its repetition was observed not fewer that seven times at many of the stations, four passages having been those of the wave travelling from Krakatoa, and three those of the wave travelling from its antipodes, subsequently to which its traces were lost" (Sir. R. Strachey).

The actual sounds of the volcanic explosions were heard over a vast area, especially towards the west. They were noticed at Rodriguez, nearly 3,000 English miles away, at Bangkok (1,413 mi.), in the Philippine islands (about 1,450 mi), in Ceylon (2,058 mi.) and in West and South Australia (1,300–2,250 mi.). On no other occasion have sound-waves ever been perceived at the extreme distances to which the detonations of Krakatoa reached. Far more serious were the effects of the successive explosions of the volcano upon the waters of the ocean. A succession of waves was generated which appear to have been of two kinds, long waves with periods of more than an hour, and shorter but higher waves, with irregular and much briefer intervals. The greatest disturbance, probably resulting from a combination of both kinds of waves, reached a height of about 50 ft. The destruction caused by the rush of such a body of sea-water along the coasts and low islands was enormous. All vessels lying in harbour or near the shore were stranded, the towns, villages and settlements close to the sea were either at once, or by successive inundations, entirely destroyed, and more than 36,000 human beings perished. The sea-waves travelled to vast distances from the centre of propagation. The long wave reached Cape Horn (7,818 geographical miles) and possibly the English channel (11,040 mi.). The shorter waves reached Ceylon, and perhaps Mauritius (2,900 mi.).

The volcano became active again in the latter half of 1927, the various phases of eruption lasting till early 1929. A new eruption point (265 ft.) arose from the sea, Anak Krakatoa ("Child of Krakatoa"), on the rim of the submerged caldera of 1883, between Lang Island (Rakata Ketjil) and Verlaten Island (Sertung), north of Rakata, or Krakatao proper.

See R. D. M. Verbeek, *Krakatau* (Batavia, 1886); "The Eruption of Krakatoa and Subsequent Phenomena," *Report of the Krakatoa Committee of the Royal Society* (London, 1888); *Krakatau* . . . Part 1, C. E. Stehn, "The Geology and Volcanism of the Krakatau Group," Part 2, Dr. W. M. van Leeuwen, "Krakatau's New Flora," Part 3, Dr. K. W. Dammermann, "Krakatau's New Fauna," bibliography, pp. 54–55 (Fourth Pacific Science Congress, Batavia-Bandoeng, 1929); Cornelis Andries Backer, *The Problem of Krakatau, as Seen by a Botanist* (Weltevreden, Java, 1929).

KRAKEN, in Norwegian folk-lore, a sea-monster, believed to haunt the coasts of Norway. The description given in 1752 by Norwegian bishop Pontoppidan, with the assertion that it darkened the water around it by an excretion suggests that the myth was based on the appearance of a gigantic cuttle-fish.

See J. Gibson, *Monsters of the Sea* (1887); A. S. Packard, "Colossal Cuttle-fishes," *American Naturalist* (Salem, 1873), vol. vii.; A. E. Verrill, "The Colossal Cephalopods of the Western Atlantic," in *American Naturalist* (Salem, 1875), vol. ix.; and "Gigantic Squids," in *Trans. of Connecticut Academy* (1879), vol. v.

KRALJEVO, capital of the Kraljevo department of Serbia, Yugoslavia, occupied by Germany in 1941. Population 3,580. Formerly known as Karanovats, Kraljevo received its present name, signifying "the King's town," from King Milan (1868–89), who also made it a bishopric instead of Chachak. It has a prefecture and court of first instance. The agricultural school makes a special study of cultivation in mountainous regions, and also of cattle breeding. By far its most interesting feature is the Coronation church belonging to Jicha monastery, where the kings of the Nemanya dynasty are said to have been crowned. Here also, the unfortunate King Alexander, assassinated in 1903, assumed the kingship of Serbia. The church is Byzantine in style and has been partially restored, but the main tower dates from 1210, when it was founded by St. Sava, the patron saint of Serbia. The famous monastery of Studenitca, 24 mi. S. by W. lies amid wild mountain scenery, and consists of a group of timber and plaster buildings, a tall belfry and a diminutive church of white marble, founded in 1190 by King Stephen Nemanya, who himself turned monk and was canonized as St. Simeon.

KRAMER, PIETER LODEWIJK (1881–), Dutch architect, was born at Amsterdam, on July 1, 1881. His work so far shows considerable variation in style and therefore as a whole carries less conviction than that of others of the Amsterdam group. He was a collaborator of de Klerk and J. M. van der Mey in the shipping house at Amsterdam, completed in 1913. The Sailors' Union buildings at Den Helder, with its severe emphasis on perpendicular lines, followed in 1914. In 1921 the

Amsterdam housing-block known as "de Dageraad," which shows the influence of de Klerk's manner, was completed. After a later and less successful block, Kramer built another in 1923 which, with its unbroken row of windows running along the straight unrelieved façade, suggests the influence of a later and less national movement. Kramer's experiments include an interesting use of an outer layer of bricks to cover a ferro-concrete construction, a method which ensures suitability to the surroundings without the sacrifice of any constructional possibilities.

See J. P. Mieras and I. R. Yerbury, eds., *Dutch Architecture of the 20th Century* (1926); Prof. J. G. Wattjes, *Modern Dutch Architecture* (1928).

KRAN. The monetary unit of Persia. It is a silver coin containing 71·04 grains of silver, 900 fine. Other pieces coined out of silver are those of five kran, two kran, a half-kran and a quarter-kran. The subsidiary coin is known as a shahi, and 20 of these go to a kran. The toman is a gold coin, and so the ratio between the toman and kran is theoretically a fluctuating one.

The sterling value of the kran varies with the sterling price of silver. When silver is worth 30d. per ounce, the corresponding exchange on London should be 54·05 kran to the pound, making the kran worth approximately 4½d. The actual exchange rate, so far as there is a quotation at all, naturally varies considerably at times from this theoretical parity, which in its turn is variable.

It must be remembered that Persia is a country which is only partially developed, and that the currency and coinage regulations are by no means perfect or strictly enforced. One of the problems the Government has had to face is that of the issue of debased and clipped coinage, and when prior to 1878 coins were issued by local mints, abuses were very prevalent. Since 1878, the right of coinage has been in the hands of the central Government, but even so trouble has arisen. According to one report in 1927, no new dies had been received since the accession of the then ruling shah soon after the war, with the result that the coinage was once more beginning to sink into chaos and disrepute. From 1922 to 1925, however, Persia enjoyed comparative prosperity and a favourable trade balance. This permitted the importation of silver upon a fairly adequate scale. This arrived from England and Russia, and took the form partly of bars and partly of kran minted abroad. This aided the replacement of worn and debased coins by new coins, a policy which according to the British commercial secretary at Teheran, was vigorously pursued. It is unnecessary to describe "vigour" as practised by an Eastern Government.

Nevertheless, in 1926 there was still a shortage of good coins, and this led to "tight money" at home and a depreciation in the exchange abroad. Still even at the end of 1926, after one year of bad trade the exchange was 52·30 kran to the pound, against a theoretical parity (corresponding to the contemporary sterling piece of silver) of 55·78 kran—or in other words at a premium over sterling.

Notes are issued by the Imperial Bank of Persia in denominations of tomans. The Department of Overseas Trade gives the sterling value on March 30, 1927, of the total issue as £2,155,000. Silver coin in circulation or held by the banks is estimated by the same authority at £5,000,000 in value. (N. E. C.)

KRANTZ or **CRANTZ, ALBERT** (1450?–1517), German historian, was a native of Hamburg. He studied law, theology and history at Rostock and Cologne, and became professor, then rector of the university at Rostock. In 1493 he returned to Hamburg as theological lecturer, canon and prebendary in the cathedral. He was employed by the city on diplomatic missions, and in 1500 he was chosen by the king of Denmark and the duke of Holstein as arbiter in their dispute regarding the province of Dithmarschen. Appointed dean of the cathedral chapter in 1508, Krantz applied himself with zeal to the reform of ecclesiastical abuses, but he had little sympathy with the drastic measures of Wycliffe or Huss. He died on Dec. 7, 1517.

His historical works include: *Chronica regnorum aquilonarium Daniae, Sueciae, et Norvagiae* (Strasbourg, 1546); *Vandalia, sive Historia de Vandalorum vera origine*, etc. (Cologne, 1518), *Saxonia* (1520); and *Metropolis, sive Historia de ecclesiis sub Carolo Magno in Saxonia* (Basel, 1548). *See* life by N. Wilckens (Hamburg, 1722).

KRASLICE, a town of western Bohemia in the Erzgebirge, annexed by Germany in 1938. It specializes in the manufacture of musical instruments, lace and embroidery. There are also several button factories and clock manufacturers, and near by copper and lead mines. Pop. (1930) 13,953.

KRASNODAR, a town of South Russia in the Kuban country of the North Caucasian area, on the right bank of the Kuban river, in 45° 1′ N., 38° 53′ E. It was founded in 1794 by Catherine II as a small fort. The town was formerly known as Ekaterinodar. In spite of its swampy site, and of frequent river floods, the town has progressed rapidly. Pop. (1897) 65,697, (1939) 203,946. It has a natural outlet by the navigable Kuban to the Black sea, and is a railway junction with lines running to Novorossiyisk and Rostov-on-Don, and also to Baku on the Caspian.

There are naphtha beds to the south of the city. Its municipal undertakings include an electricity supply, a water supply and a tramway system. There are glass, starch, potash, chemical, tobacco and wheel factories. The town is a collecting centre for the grain, fruit and naphtha of the district. There is a Workers' Scientific Institute, with a natural history museum, and there are several technical schools. Near the town is an experimental fruit farm.

KRASNOVODSK, a seaport of the Turcoman S.S.R. in 40° 1′ N., 52° 52′ E., on the south side of the Caspian sea, opposite to Baku, on the northern shore of Balkhan or Krasnovodsk bay 69 ft. below sea level. Pop. (1939) 29,600. The town is the western terminus of the Central Asiatic Railway, built in 1880 for strategic purposes, starting from Michael gulf to the south of Krasnovodsk bay. In 1896 Krasnovodsk, a fort dating from 1717, became the terminus, in view of the shallow waters in Michael gulf. The increasing importance of the railway as a commercial link between the cotton producing regions of central Asia, and the cotton manufacturing regions of European Russia led to the construction 1900–1906 of the line from Orenburg to Tashkent, to avoid the difficulties of loading and unloading, and the seasonal nature, of the route from Krasnovodsk to Astrakhan. However, Krasnovodsk is still the main outlet for the raw cotton and dried fruits of Turkmenistan and western Uzbekistan. Its imports include naphtha, timber, corn and sugar, and much exceed its exports.

The naphtha is mainly from Baku, though efforts were made to revive the naphtha production of Cheleken island to the south of the town, which ceased during the war and civil war subsequent to 1914.

During this period also the harbour of Krasnovodsk became silted and capital expenditure on dredging and on development of harbour facilities was needed. The fishing industry also declined. Glauber salts are found in Kara Bugaz bay to the north, and salt and sulphur are worked in the region. Ozokerite is obtained from Cheleken island.

KRASNOYARSK, a town in the Siberian Area of the Russion S.F.S.R., the centre of a district of the same name. It is situated on the left bank of the Yenisei river, at its confluence with the Kacha, altitude 520 ft., in 56° 8′ N., 93° 0′ E. Since the construction of the railway, the town has grown rapidly, and its population in 1939 was 189,999. It is the centre of a gold mining district and has a gold refinery; it also manufactures machinery, porcelain, macaroni, leather goods, especially shoes, and it has brewing and distilling industries. The river here is about a mile wide and is usually frozen from early December to the end of the first week in May. The town has a civic electricity and water supply; a municipal museum, a technical railway school and other educational institutions. It was founded by the Cossacks in 1628 and was frequently besieged by Tatars and Kirghiz in the 17th century.

KRASSIN, LEONID BORISOVICH (1870–1926), Russian politician, was born in Kurgan, Tobolsk, the son of a civil servant. He was expelled from the St. Petersburg technical institute in 1891 for taking part in a political demonstration on the occasion of the funeral of Shelgunov. He was arrested in 1892, 1894, 1895 and 1908, and in addition served several terms of

banishment. He combined continuous revolutionary activity with great success in the engineering profession, taking part in many large works in Russia and holding eventually a responsible post in the company of Siemens and Schuckert. After the November Revolution, 1917, he organized the supply of munitions to the Red Army during the civil war and became people's commissar for trade and industry. In 1920 he was president of the Soviet delegation that concluded the trade agreement with England. In 1922 he was a member of the Soviet delegation to Genoa. In London he concluded an agreement with Urquhart concerning concessions in Siberia, but this agreement was not ratified in Russia, owing to the personal intervention of Lenin. He was for some time Soviet diplomatic representative in Paris and was appointed British ambassador, in October, 1925. He died in London on Nov. 24, 1926. His ashes were deposited in the Kremlin, Moscow.

KRASZEWSKI, JOSEPH IGNATIUS (1812–1887), Polish novelist and miscellaneous writer, was born at Warsaw on July 28, 1812. His activity falls into two well-marked epochs, the earlier when, residing upon his estate at Grodas, he produced romances like *Jermola, Ulana* (1843), *Kordecki* (1852), devoid of any special tendency, and that after 1863, when the suspicions of the Russian Government compelled him to settle in Dresden. To this period belong several political novels published under the pseudonym of *Boleslawita,* historical fictions such as *Countess Cosel,* and the "culture' romances *Morituri* (1874–75) and *Resurrecturi* (1876), by which he is perhaps best known out of his own country. In 1884 he was accused of plotting against the German Government and sentenced to seven years' imprisonment in a fortress, but was released in 1885, and withdrew to Geneva, where he died on March 19, 1887. Kraszewski was also a poet and dramatist; his most celebrated poem is his epic *Anafielas* (3 vols., 1840–43) on the history of Lithuania. He was indefatigable as literary critic, editor and translator, wrote several historical works, and was conspicuous as a restorer of the study of national archaeology in Poland. Among his most valuable works were *Litwa* (Warsaw, 1847–50), a collection of Lithuanian antiquities; and an aesthetic history of Poland (Posen, 1873–75).

See J. Bohdanowicz, *J. v. Kraszewski in seinem Wirken und in seinen Werken* (1879).

KRAUS, KARL (1874–1936), Austrian critic and poet, was born on April 28, 1874, at Jičin, Czechoslovakia. He attended the University of Vienna and attracted notice by two brochures, *Die demolierte Literatur* and *Eine Kron für Zion,* and by his periodical, *Die Fackel.* This review, of which he became editor in 1899, was at first largely, and later entirely, written by him. It began its career by violent attacks upon abuses in literary, theatrical, social and political circles in Vienna, and especially upon the newspaper press. Gradually it became the mouthpiece of a pitiless and scathing critic and, though the satirist's point of view changed in the course of time, the middle classes and the liberal press always remained the chief objects of Kraus's attack. His satire was most acute in his collected essays, *Sittlichkeit und Kriminalität* (1902) and his volume of anti-war poetry *Die letzten Tage der Menschheit* (1918) was compared with that of Juvenal and Swift. Kraus must also be reckoned among the German masters of aphorism. Kraus's other works include *Sprüche und Widersprüche* (1909); *Pro domo et mundo* (1912); *Nachts* (1919); and the plays *Die letzten Tage der Menschheit* (1919) and *Wolkenkuckucksheim* (1923).

See L. Liegler, *Karl Kraus und sein Werk* (1920); B. Viertel, *Karl Kraus* (1921).

KRAUSE, KARL CHRISTIAN FRIEDRICH (1781–1832), German philosopher, was born at Eisenberg on May 4, 1781, and died at Munich on Sept. 27, 1832.

For Krause, God, intuitively known by Conscience, is not a personality (which implies limitations), but an essence, which contains the Universe within itself. This system he called *Panentheism,* because it asserts that God contains the Universe without being exhausted in it. Man and the Universe form an organic whole made in the image of God, and the form in which the life of the whole develops is Right or the Perfect Law. Ideal society results from the widening of the organic operation of this principle from the individual man to small groups of men, and finally to mankind as a whole. The differences disappear as the inherent identity of structure predominates in an ever-increasing degree, and in the final unity Man is merged in God.

Krause's principal works are *Entwurf des Systems der Philosophie* (1804); *System der Sittenlehre* (1810); *Das Urbild der Menschheit* (1811 Eng. trs. 1900); and *Vorlesungen über das System der Philosophie* (1828). His correspondence was published at Leipzig 1903.

See H. S. Lindemann, *Uebersichtliche Darstellung des Lebens . . . Krauses* (1839); P. Hohlfeld, *Die Krausesche Philosophie* (1879); A. Procksch, *Krause, ein Lebensbild nach seinen Briefen* (1880); R. Eucken, *Zur Erinnerung an Krause* (1881); B. Martin, *Krauses Leben und Bedeutung* (1881); Leonhardi, *Krauses Leben u. Lehre* (1902); and Überweg, *Grundriss der Gesch. der Phil.* vol. 4 (1923).

KRAWANG, a regency of the province of West Java, Dutch East Indies, bounded on the east by Indramayu, south by Priangan, west by Batavia and Buitenzorg, and north by the Java Sea. Area 4,970 sq.km.; pop. 1,010,937. The country about the sea-coast and the mouths of the two rivers, the Tarum and the Asem, is very flat and marshy, and continues flat for some distance inland, rising eventually to high ground, especially in the south-east: the rivers flow northwards from this hilly ground to the sea. Rice, coconuts and rubber, and the usual native crops are grown, and in the hills, tea and cinchona. There are extensive forests yielding timber. Krawang, the capital (pop. 18,227), is a centre of the rice industry, and is a station on the main railway line from Batavia to Cheribon, which runs through the central parts of the residency, and from which a branch, at Chikampek, runs to Bandung. Purkawarta, the capital (pop. 15,141), is on this branch line, and is the centre for the great Pamanukan and Chiasem estates in this neighbourhood. Krawang was occupied by Japanese troops in March 1942.

KRAY VON KRAJOVA, PAUL, FREIHERR (1735–1804), Austrian soldier, saw his first service in Transylvania and against Turkey. Made major-general in 1790, three years later he commanded the advanced guard of the Allies operating in France. He distinguished himself at Famars, Charleroi, Fleurus, Weissenberg, and indeed at almost every encounter with the troops of the French Republic. In the campaign of 1796 on the Rhine and Danube he did conspicuous service as a corps commander at Wetzlar, Amberg and Würzburg; but in 1797 was defeated on the Lahn and the Main. Commanding in Italy in 1799, he reconquered from the French the plain of Lombardy. For his victories of Verona, Mantua, Legnago and Magnano he was promoted *Feldzeugmeister,* and ended the campaign by further victories at Novi and Fossano. Next year he commanded on the Rhine against Moreau. (*See* FRENCH REVOLUTIONARY WARS.) Defeated at Biberach, Messkirch, etc., Kray was driven into Ulm, but escaped to Bohemia. He died in 1804.

KREHBIEL, HENRY EDWARD (1854–1923), American writer and critic, was born at Ann Arbor, Michigan, March 10, 1854. After studying law at Cincinnati 1872–74, he drifted into journalism, devoting himself more particularly to musical criticism. He was on the staff of the Cincinnati *Gazette,* 1874–80, then editor of the New York *Musical Review,* and finally musical critic for the New York *Tribune* till his death, which occurred in New York city, March 20, 1923. One of the most influential musical critics of his time, he also lectured on musical topics and wrote a number of popular books.

Among these are *Studies in Wagnerian Drama* (1891), *How to Listen to Music* (1896), *Music and Manners in the Classical Period* (1898), *The Pianoforte and Its Music* (1911), *Afro-American Folk Songs* (1914), also works explaining grand opera plots, motives and music. He was the American editor of the 2nd ed. of Grove's *Dictionary of Music and Musicians* (1904–10), edited Thayer's *Life of Ludwig van Beethoven* (1921), and translated a number of foreign musical works.

KREISLER, FRITZ (1875–), Austrian violinist, was born at Vienna, Feb. 2, 1875. At the age of seven he was admitted to the Vienna Conservatoire and in 1887 won the Grand Prix on graduation from the Paris Conservatoire, where he studied under Massenet and Delibes. In 1889 he made a successful tour of the United States, but then abandoned music for some years, studying medicine and serving in the Austrian army as an officer in a Uhlan regiment. His reappearance on the concert stage in

Berlin, March 1899, was followed by a wonderful tour of the United States and Great Britain in 1900–01, and he later visited the chief musical centres of the world. On the outbreak of the World War in 1914 he rejoined his former regiment, but was wounded and discharged from service, thereafter resuming his musical career. He published his war experiences *Four Weeks in the Trenches,* in 1915. His compositions include a number of delightful pieces in the lighter style for his own instrument, an effective string quartet, and an operetta, *Apple Blossoms,* which was produced in New York in 1919.

KREMENCHUG, a town in the Ukrainian S.S.R., in 49° 5′ N., 33° 30′ E., on the left bank of the Dnieper, in a district of the same name. A tubular bridge 1,081 yards long connects the town with its right bank suburb, Kryukov, and there is also a bridge of boats. It is subject to floods, but its situation at the southern limit of navigation of the Dnieper above the falls and on the highway between Moscow and Odessa, made it important and it was already a wealthy town in the mid-17th century. It has municipal electricity, water-supply and tramways. Its industries include the making of agricultural machinery, timber milling and the manufacture of tobacco and *makhorka.* Timber is floated down the river to Kremenchug, and there is a trade in salt, brandy, linseed and grain (rye, wheat, oats and buck wheat), for Dnepropetrovsk (Ekaterinoslav). The construction of the hydro-electric station and canal at the falls between Kremenchug and Dnepropetrovsk will modify the breakage of freight at Kremenchug, but will probably develop its trade in other ways. The town was founded at the end of the 16th century. From 1765 to 1789 it was the capital of "New Russia." It suffered severely in the 1914–21 disturbances. Population (1939) 89,553.

KREMNICA, an old mining centre in a valley of the Slovakian highlands. Once a flourishing town, raising large quantities of gold and silver, it has declined.

Kremnica was probably founded in the eighth century being later colonized by Saxon miners. It belonged to Hungary until 1920, being one of the oldest free towns (1328) and a mint. Pop. (1930), 5,389.

KREMS, a town in Lower Austria, annexed to Germany in 1938, at the confluence of the Krems and the Danube. It is joined by a suburb Und to Stein. Steel goods, mustard, vinegar and a white lead (*Kremser Weiss*) are manufactured while there is also a trade in wine, saffron and tobacco prepared at Stein. Pop., including Stein (1939) 28,151.

KREMSIER: *see* KROMĚŘIZ.

KŘENEK, ERNST (1900–), Czech composer, was born in Vienna on Aug. 23, 1900. He studied composition with Schreker in Vienna and continued his studies in Berlin. The recent success of *Jonny spielt auf* has brought Křenek's name very much to the fore, but this sensational work presents only one aspect of a many-sided personality. He has revived the "concerto grosso" for orchestra and has written three symphonies, smaller symphonic works, a piano and a violin concerto, a divertimento for 9 solo instruments (Symphonic Music II.), a Concerto for flute, violin, cembalo and string orchestra and four string quartets. His four *a cappella* choruses *The Seasons* were sung at the Donaueschingen festival of 1925. He has followed up *Jonny* with three one-act pieces: *Der Diktator,* opera in two scenes; *Das geheime Königreich,* fairy opera in two scenes; and *Schwergewicht,* burlesque. These were produced at Wiesbaden in May 1928. His earlier dramatic works include *Orpheus u. Eurydike,* op. 17; *Zwingburg,* scenic cantata; *Der Sprung über den Schatten,* comic opera, op. 21, and *Mammon,* a ballet.

KRETZER, MAX (1854–), German novelist, born at Posen on June 7, 1854, the son of an innkeeper. Father and son worked for some time in a factory, and Kretzer's realistic descriptions of working-class life in Berlin are based on real knowledge of the *milieu.* Kretzer made his name with the novels *Die Betrogenen* (1882), *Die Verkommenen* (1883), and *Meister Timpe* (1888). He has been called the founder of the realistic school in Germany, but the influence of Heyse and of Gutzkow is evident in his works. Their chief interest lies in the descriptions of Berlin life. With *Das Gesicht Christi* (1897) he went over to the Symbolists. His many later novels approximate more nearly to the ordinary type.

KREUTZER, KONRADIN (1780–1849), German musical composer, was born on Nov. 22, 1780, at Messkirch in Baden, and died on Dec. 14, 1849 at Riga. He owes his fame almost exclusively to one opera, *Das Nachtlager von Granada* (1834), which kept the stage for half a century in spite of the changes in musical taste. His part-songs for men's voices, *Der Tag des Herrn* and others, were at one time extremely popular in Germany and several of his numerous operas enjoyed favour also in their day.

KREUTZER, RUDOLPH (1766–1831), French violinist, of German extraction, was born at Versailles, his father being a musician in the royal chapel. Rudolph gradually became famous as a violinist, playing with great success at various continental capitals. It was to him that in 1803 Beethoven dedicated his famous violin sonata (op. 47) which is now universally known by his name. Kreutzer was also a prolific composer.

KREUZBURG, a town of Germany, in the Prussian province of Silesia, on the Stober, 24 mi. N.N.E. of Oppeln. Pop. (1939) 11,670. It became a town in 1252. Here are flour-mills, iron-works and manufactories of sugar and of machinery.

KREUZER, a small copper coin formerly in use in Austria, so called from the cross (kreuz) stamped upon it—100 making a florin or gulden. The kreuzer was also part of the German currency. *See* FLORIN.

KREUZNACH, a town and watering-place of Germany, in the Prussian Rhine province, situated on the Nahe, a tributary of the Rhine, 9 mi. S. of Bingen. Pop. (1939) 30,246. The earliest mention of the springs of Kreuznach occurs in 1478, but it was only in the early part of the 19th century that they came into prominence. Kreuznach was evidently a Roman town, as the ruins of a Roman fortification, the Heidenmauer, and various antiquities have been found in its immediate neighbourhood. In the 9th century it was known as Cruciniacum, and it had a palace of the Carolingian kings. In 1065 the emperor Henry IV. presented it to the bishopric of Spires; in the 13th century it obtained civic privileges and in 1416 it became part of the Palatinate. The town was ceded to Prussia in 1814. It consists of the old town on the right bank of the river, the new town on the left, and the Bade Insel containing the chief spring. The chief industries are marble-polishing and the manufacture of leather, celluloid and tobacco.

KRIEGSPIEL, the original German name, used at first in England and America for the War Game, a device making use of metal counters on a miniature battlefield for the instruction of officers in military tactics.

KRIEMHILD (GRÎMHILD), heroine of the *Nibelungenlied* and wife of Siegfried. The name means "the helmed warrior woman," and has been taken to prove her to have been originally a mythical figure representing darkness and death. In the north, indeed, the name *Grimhildr* was applied only to daemonic beings; but in the *Nibelungenlied* Kriemhild is merely a beautiful princess, daughter of King Dankrât and sister of the Burgundian kings Gunther, Giselhêr and Gêrnôt, the masters of the Nibelungen hoard. As wife of Attila and sister of Gunther, she seems to be of historical origin. According to Jordanes (*c.* 49), borrowing from the contemporary and trustworthy account of Priscus, Attila died of a violent haemorrhage at night, as he lay beside a girl named Ildico. The story got abroad that he was killed by her in revenge for her relations slain by him; according to some (*e.g.,* Saxo and the Quedlinburg chronicle) it was her father whom she revenged; but when the overthrow of the Burgundians by Attila had become a theme for epic, she figured as a Burgundian princess, and her act as done in revenge for her brothers. Now the name of Hildikô is the diminutive of Hild, which again by a common custom may have been used as an abbreviation of Grîmhild (cf. *Hildr* for *Brynhildr*). It has been suggested (Symons, *Heldensage,* p. 55) that when the legend of the overthrow of the Burgundians, which took place in 437, became attached to that of the death of Attila (453), Hild, the supposed sister of the Burgundian kings, was identified with the daemonic Grîmhild, the sister of the mythical Nibelung brothers, and thus

helped the fusion of the Nibelung myth with the historical story of the fall of the Burgundian kingdom. The older story, according to which Grîmhild slays her husband Attila in revenge for her brothers, is preserved in the Norse tradition, though Grîmhild's part is played by Gudrun, the name of Grîmhild being transferred to Gudrun's mother, a semi-daemonic figure, who brews the potion that makes Sigurd forget his love for Brunhild. In the *Nibelungenlied,* the primitive supremacy of the blood-tie has given place to the idea of the supremacy of love, and Kriemhild marries Attila (Etzel) in order to compass the death of her brothers, in revenge for the murder of Siegfried. Theodor Abeling further suggests a confusion of the story of Ildico with that of the murder of Sigimund the Burgundian by the sons of Chrothildis, wife of Clovis. (*See* NIBELUNGENLIED.)

See B. Symons, *Germanische Heldensage* (Strassburg, 1905); Jiriczek, *Hilden-Sagen* (Strassburg, 1898); T. Abeling, *Einleitung in das Nibelungenlied* (Freiburg-im-Breisgau, 1909).

KRIM, a Sierra Leone people resembling the Timne. They live between the Sherbro and the Sulima river, and speak a language related to Bulom and Kissi.

See N. W. Thomas, *Anthropological Report on Sierra Leone* (1916).

KRIS, a dagger or poniard, the universal weapon of the inhabitants of the Malayan Archipelago. It is made in many forms, long, short, straight or crooked. Also written *Krees* and *Creese.*

KRISHNA, in the earlier Vedic period Krishna the Swift is a powerful chief of the aborigines, and may be so named from his dark complexion. He is destroyed by Indra (*q.v.*). Another Krishna—the Island-born—is in the Epic era half-brother of Bhîshma and compiler of the *Vedas,* but in the older part of the *Mahābhārata* he is still a chief, of the Yādavas of Guzerāt, a descendant of Manu (*q.v.*). In its later interpolation, the *Bhagavad-Gîta,* he becomes partial incarnations of Vishnu, as dwarf he overthrows Bali, usurper of Indra's power (*see* AVATĀR), and has several cult-titles. But his worship is recommended rather than practised and as Krishna-Vāsudeva it was hampered by a rival Paundraka-Vāsudeva in Bengal, who imitated his insignia. Krishna's exploits as child and warrior were eclipsed by his achievements as Vishnu incarnate in preaching that god's gospel and realizing it in works for man's salvation. In his final development he is a full incarnation of Vishnu, entitled Bhagwān, "blessed," and reveals *bhakti,* "loving devotion." Myth now runs riot with his life-story. He escapes a massacre of the innocents, whence later his worship as a child-god, and dallies with the Gopis or cowherds' daughters. His cult became widespread, probably at the close of the 15th century. Its better side owed much to Chaitanya, a Vaishnava reformer of Bengal; its worse to Vallabha, who founded the notorious sect of the Vallabhachāryas of Guzerāt and Rājpūtāna. In the 19th century Swāmi Narayan purified it in the former tract and his followers are numerous.

KRISTIANSTAD, a Swedish port and chief town of the district (*län*) of Kristianstad, on a peninsula in Lake Sjövik, an expansion of the river Helge, 10 mi. from the Baltic. Pop. (1943) 22,032. It was founded and fortified in 1614 by Christian IV. of Denmark, who built the church. The town was ceded to Sweden in 1658, retaken by Christian V. in 1676, and again acquired by Sweden in 1678. It has engineering works, flour-mills, distilleries, weaving mills and sugar factories. Granite and wood-pulp are exported, and coal and grain imported. The town is the seat of the court of appeal for the provinces of Skåne and Blekinge.

KRIVOI ROG, a town in the Ukrainian S.S.R., in 47°, 51′ N., 30° 20′ E., in a district of the same name, on the Ingulets river, a tributary of the Dnieper. Pop. (1939) 197,621. The district is rich in mineral ores obtained from a narrow stretch of crystalline schists underlying the Tertiary deposits. Its iron ore contains on an average 62 to 67% iron, 9% silica and ·03 to ·06% phosphorus. In 1913 the output of the Krivoi Rog mines was more than six and a half million tons, but during 1919 and 1920 the mines were unworked. Since their re-starting in 1921–22 progress has been steady; most of it is forwarded to the southern smelting factories. Copper ore, colours, brown coal, graphite, slate and lithographic stone are also obtained. The town has iron foundries and chemical works.

KRÍŽKOVSKÝ, PAVEL (1820–1885), Czech composer, one of the "fathers" of modern Czech music, was born at Holasoviče, on Jan. 9, 1820, of poor parents, and entered an Augustinian monastery in 1845. As professor in the divinity school of this foundation he began to collect and arrange folk songs for male choirs, and eventually became director of church music to the community. These songs passed into the repertory of choirs throughout Bohemia and helped to develop the national school of music. Krížkovský died at Brno.

KRK, an island in the Adriatic Sea (Ital. *Veglia*), Yugoslavia, with an area of 156 sq.mi. Pop. (1931) 20,013. The island is famous for its red wine. Krk, the capital, lies on a sheltered bay, but the other harbours are exposed to the *bora.* Except on the east the island is well wooded. It was assigned to Italy in 1808, became French in 1811, and Austrian from 1813 to 1918, in which latter year it was incorporated in the kingdom of Yugoslavia. It was occupied by Italy in 1941.

KRNOV, or **JÄGERNDORF,** an old highland town in Silesia, Czechoslovakia, on the Opava. Historically it is important as the cause of the first Silesian War (1740–42) when Prussia claimed the principality of Jägerndorf. It was one of the foremost woollen-working centres in Czechoslovakia with subsidiary manufactures of cloth and machines. Pop. (1930), 23,465, mostly German. In 1938 the town and district came under German rule.

KROBATIN, ALEXANDER, FREIHERR VON (1849–1933), Austro-Hungarian field-marshal, was born at Olmütz on Sept. 12, 1849. From Dec. 1912 to April 1917 he was war minister, and in the World War supported the army in the field by bold and comprehensive measures. He commanded the IV. Army on the eastern front and then the X. Army operating against Italy on the Carinthian and Tirolese fronts.

KROCHMAL, NAHMAN (1785–1840), Jewish scholar, was born at Brody in Galicia in 1785. He was a pioneer in the revival of Jewish learning in the early 19th century. His chief work was the posthumous *Moreh Nebuche hazeman* ("Guide for the Perplexed of the Age") (1851), a title imitated from that of the 12th-century "Guide for the Perplexed" of Maimonides (*q.v.*). Krochmal, under Hegelian influences, regarded the nationality of Israel as consisting in its religious genius, its spiritual gifts. Thus Krochmal may be called the originator of the idea of the mission of the Jewish people, "cultural Zionism" as it has more recently been termed. He died at Tarnopol in 1840.

See S. Schechter, *Studies in Judaism* (1896), pp. 56 *seq.;* N. Slouschz, *Renascence of Hebrew Literature* (1909), pp. 63 *seq.*

KROGH, SCHACK AUGUST STEENBERG (1874–), Danish physiologist, was born at Grenaa, and took his doctor's degree in 1903 by a thesis on the respiration of frogs. In 1916 he became professor of animal physiology at the University of Copenhagen. Krogh made important discoveries by his experiments in connection with respiration, and in 1906 was awarded a prize by the Vienna Academy of Science for the investigations which he carried out and described in a treatise, *Mechanism of Gas Exchange in Lungs.* In 1920 he was awarded the Nobel Prize for medicine for his discovery of the capillary regulation of the conveyance of blood to the muscles. He afterwards continued his investigations of the capillaries and the blood, in which he discovered an element which influences the contraction of the capillaries. (*See* PHYSIOLOGY.)

Among his publications are: *The Respiratory Exchange in Animals and Man* (1916) and *The Anatomy and Physiology of Capillaries,* being the Silliman lectures delivered at Yale (1922, revised, enlarged ed. 1928); and articles in *The Journal of Physiology.*

KROHG, CHRISTIAN (1852–1925), Norwegian painter and author, was born at Christiania (Oslo), Aug. 13, 1852. He was the pioneer of the art of open-air painting in Norway which had its heyday in the first half of the 'eighties. His deep interest in the social problems of his age is shown in his "Struggle for Existence" (1890) in the Oslo National Gallery. A selection of his literary works in four volumes appeared in 1920–1. He died on Oct. 16, 1925.

KRÓLEWSKA HUTA (KÖNIGSHÜTTE), a town of Poland, situated in the middle of the Upper Silesian coal and iron district.

Pop. (1852) 4,495; (1939 est.) 110,000. In 1869 it was incorporated with various neighbouring villages, and raised to the dignity of a town. It has two Protestant and three Roman Catholic churches. The largest iron-works in Silesia is situated at Królewska Huta, and includes puddling works, rolling-mills, and zinc-works. It was founded in 1797. There are also manufactures of bricks and glass and a trade in wood and coal. As a result of the partition of Upper Silesia between Germany and Poland in 1921 (*see* SILESIA) Królewska Huta was transferred to Poland. Germany occupied the town in World War II.

KROMĚŘÍŽ (German *Kremsier*), a town in Moravia, on the Morava below its confluence with the Haná. The surrounding district, cultivated in strips, is a noted sugar-beet and barley region and the town is a large cattle, cereal and fruit market with industries natural to its area, *e.g.*, brewing, flour-milling and the manufacture of agricultural machinery. In 1848–49 it was the seat of the Austrian Parliament which met in the palace, later used as a summer residence by the bishop of Olomouc. Pop. (1930) 18,583. The town passed under German rule in March 1939.

KRONA. The monetary unit of Sweden. It is based on the gold standard, and is equivalent at par to 26.80 cents. Kr.18.159 equal one pound sterling. It is divided into 100 öre. The krone (*q.v.*), which is the monetary unit of Norway and Denmark, is nominally equivalent, and in normal times the two are interchangeable. During the years after the World War, when different values ruled in each of the three countries, interchangeability was perforce suspended.

Unlike most currencies, the krona maintained its value during the war and the period immediately succeeding it. In the early days of the war it actually stood at a premium to gold. This was because Germany was shipping large quantities of gold to Sweden in payment for goods, while the Swedish authorities were taking steps to prevent a decline in the internal purchasing power of the krona. Such a situation was, of course, untenable, and Swedish prices had to be allowed to rise to the world level.

During the years immediately succeeding the war, the krona was slightly depreciated in terms of the dollar, but stood above the pound sterling. Sweden was one of the earliest countries to return to the gold standard, and though she abandoned it in Sept. 1931, the krona and dollar have been practically at par with each other since the end of 1922. At Dec. 31, 1938, the exchange stood at 26.90 (19.40 to the £).

Notes in circulation are issued by the Bank of Sweden. In 1913, Kr.234,000,000 were outstanding. At the end of 1920 the volume had risen to 760 millions, by the end of 1927 had contracted to 519 millions, and at Dec. 31, 1938, had reached the total of 1,060,676,458.

KRONE. (1) The monetary unit of Norway and Denmark. Divided into 100 öre. It is based upon the gold standard, and at parity is equivalent to 26.799 cents. The pound sterling equals 18.159 kroner.

Notes are issued in Denmark solely by the National bank, and in Norway solely by the Norges bank. Statistics of these are shown below.

Year.	Denmark.			Norway.		
	Note issue kr. million.	Wholesale prices.	New York exchange cents.	Note issue kr. million.	Wholesale prices.	New York exchange cents.
1913 end	152	100	26·80	108	100	26·80
1920	557	341	14·80	492	377	14·81
1921	471	178	19·43	419	269	15·30
1922	459	181	20·63	395	220	18·94
1923	473	210	17·82	407	244	14·93
1924	478	234	17·63	402	278	15·07
1925	438	157	24·86	366	218	20·32
1926	386	141	26·63	337	177	25·30
1927*	346	145	26·80	318	160	26·50

*November; remaining years are December.

Like other neutral areas, Scandinavia did not escape the inflation of the World War and subsequent years, and as the table shows, the internal value of the krone continued to fall in both countries until early 1925, while externally the Norwegian and Danish exchange against New York began to pick up in 1924. By the end of 1927 both rates stood very nearly at parity, and by the middle of the following year the gold standard had been re-established in both countries.

The recovery of the krone during the period 1924–27 caused grave concern in both countries, as for a time the effects of deflation were extremely severe. Trade and industry were seriously affected, and in their attempts to deal with the financial problems that arose the Government and the banks were beset with many difficulties.

In each country, the krone has had the post-war record of a currency that has undergone a moderate depreciation, which was at length arrested. At the expense of a temporary crisis the ground lost was regained. Depreciation was worse in Norway than Denmark, but in so far as the direction of the changes was concerned, the two countries moved upon almost exactly parallel lines.

(2) Formerly the monetary unit of the former Austrian empire, in Czech KORUNA. It was divided into 100 heller, and was worth 20.26 cents. The equivalent with sterling at parity was kr.24.02 to the pound, and from 1892 until the outbreak of the war, the krone was based upon the gold exchange standard, in that it was permissible to import or export gold, but the notes in internal circulation were inconvertible.

After the break-up of the Austrian empire in 1918, the krone or koruna became the monetary unit of Austria, Hungary and Czechoslovakia. In Austria it rapidly became worthless, being quoted in Aug. 1922 at 0.0022 cent. It was then that the Government appealed to the League of Nations for help, and under the guidance and supervision of the League, the task of economic reconstruction was put in hand.

The krone was "pegged" during this period at 0.0014 cent, or roughly $\frac{1}{14000}$ of its original gold value of 20.26 cents. When reconstruction was complete, the krone was abandoned as being, at its new value, far too small a unit to be practicable. In its place was substituted the schilling, introduced in 1925. This was fixed as equal to 10,000 kronen or 14.071 cents, and until the *Anschluss* of 1938 was the monetary unit of Austria; after that event the schilling was demonetized and gradually withdrawn, German coinage and notes taking its place.

In post-war Hungary, the krone, known as korona, went through much the same experience, and came to much the same end. Here, too, after extreme depreciation, the League of Nations came to the rescue, and during reconstruction the korona was in Hungary, too, pegged at 0.0014 cent. The new unit adopted was called the pengo. It was fixed as equal to 12,500 koronen or to 17.49 cents, or 27.82 to the pound sterling. It is based upon the gold standard and is the monetary unit of Hungary to-day.

In Czechoslovakia, the koruna survived. Until 1921 the problems facing the Government proved insurmountable, and the Czech koruna rose and fell with the German mark on one side and the Austrian krone on the other. The year 1922 witnessed a recovery—a recovery which was too rapid for the industrial interests of the country—and from 1923, the Czech koruna was stabilized at approximately 3 cents; ultimately settling down at 2.961 cents. In March 1926 the Czech koruna was legally stabilized between the rates cts.2.90 to cts.3.03, and in Nov. 1929 was stabilized at 164.24 to the pound sterling. In Oct. 1936 a further devaluation to the extent of 86% took place.

KRONENBERG, town in the Prussian Rhine province, Germany, 6 mi. S.W. from Elberfeld, with which it is connected by rail. Pop. 14,000. It consists of an agglomeration of hamlets. Its industries consist mainly of steel and iron manufactures.

KRONSTADT, a naval port of the Russian S.F.S.R., situated on the island of Kotlin (Finnish *Retusari* or Rat Island) in the narrow bay in which the Gulf of Finland terminates, in 59° 59′ N., 29° 49′ E. The waters to the north of the island are not navigable for large ships. To the south a sand bank stretches along the coast of Oranienbaum, so that the channel for large ships is close to the island, and forms the only way to Leningrad, which can be easily reached from Kronstadt. Fortifications are erected

on the Oranienbaum coast, also, so that ships enter between fortifications to the north and south.

Since the Baltic countries have become independent, the strategic impotance of Kronstadt has greatly increased, the coast of Finland being only 15 km. and that of Estonia 75 km. from the island. It is the chief naval base of the Soviet Union, and admission to the war harbour, docks and forts is prohibited, while the number of inhabitants of the island is strictly limited. The strategic value of Kotlin was recognized by Peter the Great, who captured Kotlin from the Swedes in 1703 and constructed a fort and docks on the island. It was renamed Kronstadt in 1823. It was at first an important commercial harbour, since ships could not reach St. Petersburg (Leningrad) owing to the shallowness of the channel, and cargoes were here transferred to smaller vessels. In 1875–85, a canal, 23 ft. deep was constructed through the channel and the island lost its trading importance. New batteries and a new fort were constructed in 1856–71, and the fortifications have been frequently strengthened and increased since that date. The sailors and special troops of Kronstadt always formed the most revolutionary element of the Russian army and navy; a Kronstadt officer led the mutiny of the Dekabrists in 1825. A Kronstadt sailor, Sukhanov, was the leader of the military organisation of the revolutionary Narodnaya Volya group and was shot in 1882. Mutinies broke out among the troops in 1905 and 1906, but were ferociously suppressed.

After the February 1917 revolution, the Kronstadt Soviet opposed the provisional government and declared a "Kronstadt Republic" and took part in the July 1917 mutiny. During the October 1917 revolution, the Baltic fleet cruiser "Aurora" bombarded the Winter Palace and thus helped in the Bolshevist victory. In 1919, during the first attack of General Yudenich against Leningrad, Kronstadt was bombarded from the air by White Army troops, then established on the coast to the south of the island, and an English warship penetrated the harbour and torpedoed a cruiser. In the autumn of 1919 Kronstadt aided in the repulse of Yudenich's second attack. In accordance with their revolutionary reputation, the Kronstadt navy in March, 1921 mutinied against the Soviet government, and took possession of the fortress and two ironclads. After a bombardment lasting many days, the Soviet troops made a night attack across the ice and the revolt was crushed with much severity. The port is ice-bound for 140 to 160 days each year, from about the beginning of December until April.

KROONSTAD, a town in South Africa, 27° 30′ S., 27° 42′ E.; altitude 4,489 ft.; on the Valsch river, 127 mi. by rail N.E. of Bloemfontein. Pop. (1936) 5,333 Europeans, 584 coloured (mixed), 7,459 natives and 2 Asiatics. It is the centre of an agricultural district, which produces maize and wool. In 1923 a large grain elevator was constructed. Kroonstad is at the junction of a railway from Natal, via Harrismith and Bethlehem, with the main Bloemfontein-Johannesburg line. It is developing as an educational and holiday centre.

KROPOTKIN, PETER ALEXEIVICH, Prince (1842–1921), Russian geographer, author and revolutionary, was born at Moscow on Dec. 9, 1842, the son of Prince Alexei Petrovich Kropotkin. At the age of fifteen he entered the Corps of Pages at St. Petersburg (1857), which combined the character of a military school endowed with special rights and of a court institution attached to the imperial household. Kropotkin had early developed an interest in the condition of the Russian peasantry, and this interest increased as he grew older. During his last years as a student Kropotkin came under the influence of the new Liberal-revolutionary literature, which largely expressed his own aspirations. In 1862 he was gazetted to a Siberian Cossack regiment in the recently annexed Amur district. For some time he was aide-de-camp to the governor of Transbaikalia at Chita, and subsequently attaché for Cossack affairs to the governor-general of East Siberia at Irkutsk. In 1864 Kropotkin took charge of a geographical survey expedition, crossing North Manchuria from Transbaikalia to the Amur, and shortly afterwards was attached to another expedition which proceeded up the Sungari river into the heart of Manchuria. Both these expeditions had valuable geographical results.

In 1867 Kropotkin quitted the army and returned to St. Petersburg, where he entered the university, becoming at the same time secretary to the physical geography section of the Russian Geographical Society. In 1873 he published a map and paper in which he proved that the existing maps of Asia entirely misrepresented the physical formation of the country, the main structural lines being in fact from south-west to north-east, not from north to south, or from east to west as had been previously supposed. In 1871 he explored the glacial deposits of Finland and Sweden for the Russian Geographical Society, and while engaged in this work was offered the secretaryship of that society. But by this time he had decided not to work at fresh discoveries but to aid in diffusing existing knowledge among the public, and he accordingly refused the offer, and returned to St. Petersburg, where he joined the revolutionary party.

In 1872 he visited Switzerland, and became a member of the International Workingmen's Association at Geneva. He found this body too conservative, and after studying the programme of the more advanced Jura Federation at Neuchâtel and spending some time in the company of the leading members, he definitely adopted the creed of anarchism (*q.v.*) and, on returning to Russia, took an active part in spreading the nihilist propaganda. In 1874 he was arrested and imprisoned, but escaped in 1876 and went to England, and then to Switzerland, where he joined the Jura Federation. In 1877 he went to Paris, where he worked in the socialist movement, returning to Switzerland in 1878, where he edited for the Jura Federation a revolutionary newspaper, *Le Révolté,* also publishing various revolutionary pamphlets. Shortly after the assassination of the tsar Alexander II. (1881) Kropotkin was expelled from Switzerland by the Swiss government, and after a short stay at Thonon (Savoy) went to London, where he remained for nearly a year, returning to Thonon towards the end of 1882. Shortly afterwards he was arrested by the French government, and, after a trial at Lyons, sentenced by a police-court magistrate (under a special law passed on the fall of the Commune) to five years' imprisonment, on the ground that he had belonged to the International Workingmen's Association (1883).

In 1886, however, as the result of repeated agitation on his behalf in the French Chamber, Kropotkin was released, and settled near London. He now devoted himself to literary work, and to the development of his doctrine of "mutual aid." He was an authority on agriculture as well as on geographical subjects, and put forward many practical suggestions for its development. Kropotkin had a singularly gentle and attractive personality, and was much loved and respected in England. He desired the minimum of government, and the development of a system of human co-operation which should render government from above superfluous. When the Russian revolution broke out he decided to return to Russia. He arrived in June 1917, and settled near Moscow, taking no part in politics. He died on Feb. 8, 1921.

His works include: *Paroles d'un révolté* (1884); *La conquête du pain* (1888); *L'Anarchie: sa philosophie, son idéal* (1896); *The State, its Part in History* (1898); *Fields, Factories and Workshops* (1899, new ed. 1919); *Memoirs of a Revolutionist* (1900); *Unsuspected Radiations* (1901); *Mutual Aid, a Factor of Evolution* (1902, later ed. 1915); *Modern Science and Anarchism* (1903); *The Desiccation of Asia* (1904); *The Orography of Asia* (1904); *Russian Literature* (1905, 2nd ed. 1916); *Modern Science and Anarchism* (1912); *Ethics, Origin and Development* (1924).

KRÜDENER, BARBARA JULIANA, Baroness von (1764–1824), Russian mystic, was born at Riga on Nov. 11, 1764, daughter of Otto von Vietinghoff and his wife, née von Münnich. At 18 she married Baron von Krüdener, a widower of 34, a distinguished Russian diplomatist. There were two children of the marriage, Paul and Juliette. In 1789 the baroness, who was a nervous, highly strung woman, formed a passionate attachment for a young French officer, Charles Louis de Frégeville. Her husband declined to divorce her, and in 1798 she joined him again for a short time at Berlin where he was ambassador. His death (June 14, 1802), released her. In the meantime the baroness had been enjoying literary society at Coppet and in Paris, and, under the influence of Chateaubriand, had written her sentimental and

largely autobiographical romance of *Valérie*. In Jan. 1804 she returned to Riga, where she underwent "conversion" under the ministrations of a Moravian shoemaker.

From the date of her conversion began her extraordinary career in the execution of her "mission" in Europe. At Königsberg she met Queen Louise of Prussia and a peasant named Adam Müller, who revealed to her that a man would be raised up "from the north . . . from the rising of the sun" (Isa. xli., 25) to destroy Antichrist (Napoleon) and that the millennium would then begin. The baroness spent 11 years wandering over Europe before she was able to reveal to the tsar Alexander that he was the predestined man "from the rising of the sun." Wherever she went she gathered a crowd of followers and great excitement prevailed. She was expelled from one Swiss Canton after another for seeking to persuade the peasants to flee from the wrath to come.

Madame de Krüdener achieved her famous interview with Alexander I. on June 4, 1815. She came upon him as he was brooding over an open Bible; she preached to him for three hours, at the end of which he "found peace." "Chiliasm," as the new cult was called, established itself in the most powerful court in Europe, and Madame de Krüdener, who followed Alexander to Heidelberg and Paris, found herself a political force and one of the moving spirits in the conception of the Holy Alliance (*q.v.*). The proclamation which was to herald the reign of peace was issued on Sept. 26, signed by the sovereigns of Russia, Austria and Prussia. Madame de Krüdener claimed, though the tsar reproved her indiscretion, that the idea was hers. She expected to travel back to Russia by way of Switzerland in the tsar's company. But he had by this time recovered from his infatuation and left her behind in Switzerland.

She was not able to return to St. Petersburg until 1820, when she urged the tsar to take up arms for the Greeks in their war of independence. Alexander's reply was a letter asking her to leave St. Petersburg. She went to the Crimea, where Princess Galitzin had established a pietistic colony. There, at Karasu Bazar, she died on Dec. 25, 1824. The misery of the colony of peasants who had "fled from the wrath to come" seems to have opened her eyes. She said: "The good I have done will endure; the evil I have done the mercy of God will blot out."

The most authoritative study on Madame de Krüdener is E. Mühlenbeck, *Étude sur les origines de la Sainte-Alliance* (Paris, 1909), with numerous references to original authorities. *See* also C. Ford, *Life and Letters of Mme. Krüdener* (contains bibliog.) (1893), and *Lives* by P. J. G. Eynard (2 vols., Paris, 1849), Lacroix (Paris, 1880), and Turquan (Paris, 1900).

KRUG, WILHELM TRAUGOTT (1770–1842), German philosopher, was born at Radis, Prussia, on June 22, 1770, and died at Leipzig on Jan. 12, 1842. He studied at Wittenberg under Reinhard and Jehnichen, at Jena under Reinhold, and at Göttingen. From 1801 to 1804 he taught philosophy at Frankfort-on-the-Oder, after which he succeeded Kant in the chair of logic and metaphysics at Königsberg. From 1809 till his death he was professor of philosophy at Leipzig. Krug regarded philosophy as the explanation of the Ego by an examination of the nature of its reflection upon the facts of consciousness. Being is known to us only through its presentation in consciousness; consciousness only in its relation to Being; the relation between them is immediately known to us. By this Transcendental Synthesis he proposed to reconcile Realism and Idealism.

Of his collected works published in 12 vols. (Braunschweig 1830–41), the chief are: *Fundamentalphilosophie* (1803); *System der theoretischen Philosophie* (1806–10), *System der praktischen Philosophie* (1817–19); *Handbuch der Philosophie* (1820); *Logik oder Denklehre* (1827); *Geschichte der Philos. alter Zeit* (1815); *Allgemeines Handwörterbuch der philosophischen Wissenschaften* (1827–34); *Universalphilosophische Vorlesungen für Gebildete beiderlei Geschlechts*. His *Beiträge zur Geschichte der Philos. des XIX. Jahrh.* (1835–37) contains interesting criticisms of Hegel and Schelling.

See his autobiography, *Meine Lebensreise* (Leipzig, 2nd ed., 1840).

KRUGER, STEPHANUS JOHANNES PAULUS (1825–1904), president of the Transvaal republic, was born in Colesberg, Cape Colony, on Oct. 10, 1825. His father was Caspar Jan Hendrick Kruger, who was born in 1796, and whose wife bore the name of Steyn. In his ancestry on both sides occur Huguenot names.

At the age of ten Paul Kruger—as he afterwards came to be known—accompanied his parents in the migration, known as the Great Trek, from the Cape Colony to the territories north of the Orange in the years 1835–40. Brought up on the borderland between civilization and barbarism, constantly trekking, fighting and hunting, he had little education. His literature was almost confined to the Bible, and the Old Testament was preferred to the New. Kruger, like Piet Retief and others of the early Boer leaders, believed himself the object of special Divine guidance. At about the age of 25 he is said to have disappeared into the veldt, where he remained alone for several days, under the influence of deep religious fervour. He belonged to the narrow and puritanical Dopper sect, the members of which were always unswerving in their support, and at all critical times in the internal quarrels of the state rallied round him.

When the lad, who had already taken part in fights with the Matabele and the Zulus, was 14 his family settled north of the Vaal and were among the founders of the Transvaal state. At the age of 17 Paul found himself an assistant field cornet, at 20 he was field cornet, and at 27 held a command in an expedition against the Bechuana chief Sechele—the expedition in which David Livingstone's mission-house was destroyed. In 1853 he took part in another expedition against Montsioa. When not fighting natives in those early days Kruger was engaged in distant hunting excursions which took him as far north as the Zambezi. In 1852 the Transvaal secured the recognition of its independence from Great Britain in the Sand River convention. In 1856–57 Kruger joined M. W. Pretorius in his attempt to abolish the district governments in the Transvaal and to overthrow the Orange Free State government and compel a federation between the two countries. The raid into the Free State failed.

In 1864, when the faction fighting ended and Pretorius was president, Kruger was elected commandant-general of the forces of the Transvaal. In 1870 a boundary dispute arose with the British government, which was settled by the Keate award (1871). The decision caused so much discontent in the Transvaal that it brought about the downfall of President Pretorius and his party; and Thomas François Burgers, an educated Dutch minister, resident in Cape Colony, was elected to succeed him. During the term of Burgers' presidency Kruger did everything in his power to undermine his authority, going so far as to urge the Boers to pay no taxes while Burgers was in office. The *impasse* in the government of the country drew bitter protest from Burgers, and terminated in the annexation by the British in April 1877. Kruger and his party were determined to secure the downfall of Burgers, and they did not foresee the results of his fall. The Transvaal was annexed and Kruger accepted office under the British government.

He continued, however, to agitate for the retrocession of the country, being a member of two deputations which went to England endeavouring to get the annexation annulled, and in 1878 Sir Theophilus Shepstone, the British administrator, dismissed him from the service. In 1880 the Boer rebellion occurred, and Kruger was one of the famous triumvirate, of which General Piet Joubert and Pretorius were the other members, who, after Majuba, negotiated the terms of peace on which the Pretoria convention of Aug. 1881 was drafted. In 1883 he was elected president of the Transvaal, receiving 3,431 votes to 1,171 recorded for Joubert.

In Nov. 1883 President Kruger again visited England, and secured the London convention, granted by Lord Derby in 1884 on behalf of the British government. In 1888 he was elected president for a second term of office. In 1889 Dr. Leyds, a young Dutchman, was appointed state secretary, and a system of state monopolies around which much corruption grew up was begun. President Kruger now turned his attention to securing Boer political monopoly in face of the increase in the Uitlander population. In 1890, 1891, 1892 and 1894 the franchise laws (which at the time of the convention were on a liberal basis) were so modified that Uitlanders were practically excluded. In 1893 Kruger had to face a third presidential election, in which his majority fell to about 700. His opponent, Joubert, accused the government of tampering with the returns, and appealed to the *volksraad*. The

appeal, however, was fruitless, and Kruger retained office.

Kruger's external policy had been to try to enlarge the frontiers of the Transvaal at the expense of Great Britain. In successive disputes he usually gained something, but in 1895 he was definitely defeated in his endeavours to reach the sea at Delagoa Bay. His internal policy was narrow and bigoted. It is said that in replying to a deputation of Uitlanders, who desired to obtain legal status for the English language in the Transvaal he stated "This is my country; these are my laws. Those who do not like to obey my laws can leave my country." The Jameson Raid strengthened him in his resistance to reform of the franchise or any concession to the Uitlanders. It also strengthened his hold on his own people.

In 1898 Kruger was again elected president of the Transvaal, this time with an overwhelming majority. A conference was arranged at Bloemfontein between Sir Alfred (afterwards Lord) Milner, the high commissioner, and President Kruger on the franchise and other questions. No agreement was reached. In Oct. 1899, after a long and fruitless correspondence with the British government, war with Great Britain was ushered in by an ultimatum from the Transvaal. (*See* SOUTH AFRICAN WAR.) In 1900, Bloemfontein and Pretoria having been occupied by British troops, Kruger, too old to go on commando, with the consent of his executive proceeded to Europe, where he endeavoured in vain to induce the European powers to intervene on his behalf.

He took up his residence at Utrecht, where he dictated a record of his career, published in 1902 under the title of *The Memoirs of Paul Kruger*. He died on July 14, 1904, at Clarens, near Vevey, on the shores of the Lake of Geneva. He was buried at Pretoria on the following Dec. 16, Dingaan's day, the anniversary of the day in 1838 when the Boers crushed the Zulu king Dingaan—a fight in which Kruger, then a lad of 13, had taken part. Kruger was thrice married, and had a large family.

See J. F. van Oordt, *P. Kruger en de opkomst d. Zuid-Afrikaansche Republiek* (Amsterdam, 1898); the *Memoirs* already mentioned; F. R. Statham, *Paul Kruger and his Times* (1898); and, among works with a wider scope, G. M. Theal, *History of South Africa* (for events down to 1872 only); Sir J. P. Fitzpatrick, *The Transvaal from Within* (1899); *The Times History of the War in South Africa* (1900–09); A. P. Hillier, *South African Studies* (1900); Philip R. Botha, *Die Staatkundige ontwikkeling van die Zuid-Afrikaanse Republiek onder Krüger en Leyds*, etc. (1926); H. Hallman, *Krugerdepesche und Flotterfrage*, etc. (1927); J. P. La G. Lombard, *Paul Kruger, die Volksman* (1925).

KRUGERSDORP, town, a mining centre in South Africa on the Witwatersrand, 20 mi. from Johannesburg, 26° 5′ S., 27° 40′ E.; altitude, 5,709 ft. Pop. (1921), 13,439 whites, increasing by 1936 to 18,066, 35,285 natives, 431 Asiatics and 1,028 coloured (mixed).

Some manganese is worked, in addition to the gold. The railway from Johannesburg to Mafeking meets the line from the Cape, via Fourteen Streams at Krugersdorp. The town dates from 1887 in consequence of the discovery of gold at the Witwatersrand, and is named after President Kruger.

There are memorials of World War I, and of the Boer victory over the Zulu chief, Dingaan, in 1838, which attract many visitors.

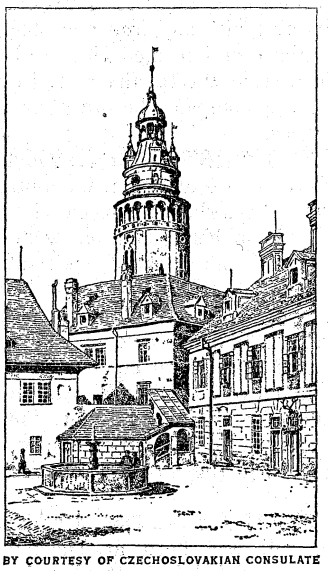
KRUMAU: *see* KRUMLOV.

KRUMBACHER, CARL (1856–1909), German Byzantine scholar, was born at Kürnach in Bavaria, and was professor of mediaeval and modern Greek at Munich (1897–1909). He also founded the *Byzantinische Archiv* (1898) and the *Byzantinische Zeitschrift* (1892). His chief work is *Geschichte der byzantinischen Literatur* (from Justinian to the fall of the Eastern empire, 1453).

KRUMEN, a people, inhabiting the coast of the republic of Liberia, of the same stock as the Bakwe. They comprise the Gre, Kra, Bassa, Gi or Gibi and De tribes, and furnish crews for European vessels. They live in federated villages under a paramount chief of little authority. The extended family group is the social unit, and owns property in common; there is also individual ownership of personal possessions. Marriage in general is exogamous. Descent is patrilineal. Inheritance is to the brother, then to the son. The Krumen are fishermen and cultivators, and animists by religion. They have secret societies and age classes, and practise the ordeal and use masks.

See Büttikofer, *Reisebilder aus Liberia* (1890).

KRUMLOV or BÖHMISCH KRUMAU, a town in south-western Bohemia, on the Vltava where it breaks through the Böhmerwald. Graphite is mined in the vicinity. The Rosenberg family lived in its magnificent castle from the 14th to the 17th century. Peter Vok of Rosenberg sold Krumlov to the emperor Rudolph II. because the Jesuits established themselves in the vicinity. The castle still preserves much of its ancient magnificence and picturesque character. Pop. (1930), 8,589.



BY COURTESY OF CZECHOSLOVAKIAN CONSULATE

A STREET SCENE IN KRUMLOV

KRUMMACHER, FRIEDRICH ADOLPH (1767–1845), German theologian, was born on July 13, 1767, at Tecklenburg, Westphalia. He died at Bremen on April 14, 1845. He was the author of many religious works, but is best known by his *Parabeln* (1805; Eng. trans. 1844).

See A. W. Möller, *Friedrich Adolf Krummacher und Seine Freunde* (1849); Marie Krummacher, *Unser Grossvater* (1926).

KRUPP, ALFRED (1812–1887), German metallurgist, was born at Essen on April 26, 1812. His father, Friedrich Krupp (1787–1826), had purchased a small forge in that town about 1810 and worked on the problem of manufacturing cast steel; but the product put on the market by him in 1815 commanded but little sale. After his death the works were carried on by his widow, and Alfred, as the eldest son, left school at 14 to undertake their direction. For many years the concern, which in 1845 employed only 122 workmen, did scarcely more than pay its way. But in 1847 Krupp made a 3-pdr. muzzle-loading gun of cast steel, and at the Great Exhibition of London in 1851 he exhibited a solid flawless ingot of cast steel weighing two tons. This exhibit caused a sensation in the industrial world, and the Essen works sprang into fame. Another successful invention, the manufacture of weldless steel tyres for railway vehicles, was introduced soon afterwards. The profits derived from these and other steel manufactures were devoted to the expansion of the works and to the development of the artillery with which the name of Krupp is especially associated. (*See* ORDNANCE.) The model settlement, which is one of the best known features of the Krupp works, was started in the '60s, when difficulty began to be found in housing the increasing number of workmen; and now there are various "colonies," practically separate villages, dotted about to the south and south-west of the town, with schools, libraries, recreation grounds, clubs, stores, etc. The policy also was adopted of acquiring iron and coal mines, so that the firm might have command of supplies of raw materials.

Alfred Krupp, who was known as the "Cannon King," died at Essen on July 14, 1887, and was succeeded by his only son, Friedrich Alfred Krupp (1854–1902) who was born at Essen on Feb. 17, 1854. The latter devoted himself to the financial rather than to the technical side of the business, and under him it again underwent enormous expansion. Among other things he in 1896 leased the "Germania" shipbuilding yard at Kiel, and in 1902 it passed into the complete ownership of the firm. The total number of men employed at Essen and its associated works at the time of his death was over 40,000. His elder daughter Bertha, who succeeded him, married, in Oct. 1906, Dr. Gustav von Bohlen und Halbach, who took the name Krupp von Bohlen und Halbach and became head of the firm (Friedrich Krupp Akt. Ges.). The enormous increase in the German navy involved further expansion in the operations of the Krupp firm as manufacturers of the armour plates and guns required for the new ships, and in 1908 its capital, then standing at £9,000,000, was augmented by

£2,500,000.

During World War I the firm acquired an international significance for its manufacture of armaments, of which it had a virtual monopoly in Germany. This was enhanced by its construction of a new model of a long distance range gun ("die Dicke Berta") which was of great importance to the German armies. The number of persons employed in the Krupp works rose from 80,000 before the war to 167,000 in 1918. After 1918, however, the firm turned its attention to the manufacture of locomotives, agricultural implements and to smaller steel manufactures of various kinds. It acquired a controlling interest in many iron and steel works in Germany, as well as in mines, and formed close relationship with the other allied industries in Westphalia and elsewhere. With its branch concerns, the company before World War II employed about 65,000 persons.

KRUPSKAYA, NADEZHDA KONSTANTINOVNA (1869–1939), Russian educationalist and wife of Lenin, was born on Feb. 26, 1869, in St. Petersburg, where she was educated at the Woman's college. She aided Lenin in his revolutionary activity, became his wife in 1898 and shared his years of work and exile in Europe. When Lenin came to power in Russia, she became a member of the commissariat of education and developed the party's plan for popular education. She was also vice commissar of education and a member of the central committee of the Communist party and the Presidium of the U.S.S.R. She remained influential after Lenin's death, particularly in education, and her 70th birthday was the occasion for a popular celebration in Moscow. She died in Moscow, in the Kremlin, on Feb. 27, 1939.

KRUSENSTERN, ADAM IVAN (1770–1846), Russian navigator, hydrographer and admiral, was born at Haggud, Estonia, on Nov. 19, 1770. He was seconded from the Russian navy to serve in the British fleet for several years (1793–99), and visited America, India and China. After publishing a paper on the advantages of direct communication between Russia and China by Cape Horn and the Cape of Good Hope, he was commissioned to carry out the project. The expedition left Kronstadt in two English ships in Aug. 1803 and proceeded by Cape Horn and the Sandwich Islands to Kamchatka, and thence to Japan. Returning to Europe by the Cape of Good Hope, Krusenstern reached Kronstadt in Aug. 1806, his being the first Russian expedition to circumnavigate the world. He later became admiral. He died at Reval on Aug. 24, 1846.

Krusenstern's *Voyage Round the World in 1803–1806* was published at St. Petersburg in 1810–14, in 3 vols., with folio atlas of 104 plates and map (Eng. ed., 2 vols. 1813; French ed., 2 vols., and atlas of 30 plates, 1820). He also published *Atlas de l'Océan Pacifique,* with accompanying *Recueil des mémoires hydrographiques* (St. Petersburg, 1824–27).

KRUŠEVAC, a town in the Moravska banovina, Yugoslavia, occupied by Germany in 1941. Pop. (1931) 11,054. It is strategically important as commanding three river valleys and as the meeting point of many roads. The town is built round a central *place,* from which the streets radiate in the form of a cross, and has an active trade in tobacco, hemp, flax, grain and livestock, for the sale of which it holds seven or eight markets yearly. There is a munitions industry and one for the making of railway trucks. It has several good schools. It was from Kruševac that the last Serbian tsar Lazar marched against the Turks and lost his empire at Kosovo in 1389. A fragment of the white tower is still standing, whither, according to legend, crows brought the tidings of defeat to his queen Militsa, and a church, dating from the reign of Stephen Dushan (1336–56) with beautiful rose windows. The town was taken by the Serbs in the Austro-Turkish war of 1788–91, but by the Treaty of Svishtov was restored to Turkey. For a brief period under Prince Michael (1839–42), Kruševac was the capital of Serbia.

KRYLOV, ALEXEI NIKOLAIEVICH (1863–1945), Russian mathematician and naval architect, was born Aug. 3, 1863 in Alātyr, Simbirsk province, and educated in the naval school and naval academy at St. Petersburg (Leningrad). In 1881 he joined the navy. In 1896 and 1898 he read before the Institution of Naval Architects in London two remarkable papers on the oscillation of a ship on waves and was awarded the gold medal of the institution. From 1900 to 1908 he was superintendent of the experimental tank at St. Petersburg; and from 1908 to 1910 director of naval construction. In 1910 he became professor at the naval academy and in 1916 member of the Russian Academy of Sciences. He devised for the Russian navy a series of special optical instruments. He died Oct. 26, 1945.

His works, mostly in Russian, include: *Approximate Calculations* (1906, 1933); *Differential Equations of Mathematical Physics* (1912); *Numerical Integration of Differential Equations* (1927); *Theory of Gyroscopes* (1932); *Teaching of Mechanics* (1943).

KRYLOV, IVAN ANDREEVICH (1768–1844), great national fabulist of Russia, was born on Feb. 14, 1768, at Moscow, the son of an army officer. When he was nine he worked as an office boy, but after his father's death in 1779 his mother moved to St. Petersburg (Leningrad); and until she died in 1788 Krylov held a post in the civil service there. Already in 1783 he was writing, but his early work showed no distinction: *Kofrenitsa* ("The Coffeestall keeper"), an opera, written in 1784, was not published until 1868; of two tragedies, *Cleopatra* (1785) and *Philomela* (1786), the former is not even preserved. From 1789 to 1790 Krylov, assisted by Radistchev, edited a monthly satirical journal, *Pochta Dukhov* ("The Ghosts' Mail"); in 1792 he bought a printing press with which he printed another satirical journal, *Zritel* (the Observer) which in 1793 became the *St. Petersburg Mercury.* Nothing is known of Krylov's movements from 1794 till 1797 when he turned up in Moscow as a tutor and secretary in the family of Prince Golitzyn, whom he accompanied when the latter was made governor general of Riga. In 1801 he wrote a comedy, *Pirog* ("the Pie"), which was performed in St. Petersburg in 1802. From 1803, when he resigned his post, to 1805 he appears to have wandered from place to place, gratifying a passion for playing cards, and visiting country fairs, which had always attracted him from his early childhood. It was not until 1805, when he was 37, that he produced any of the work for which he is famous. In that year he showed his translations of two of La Fontaine's fables to Dmitriev, from whom he received great encouragement. In 1808 he printed 17 fables, most of them original, and in 1809 he published the first edition of his *Fables* (23 in number) in which he satirized, especially, the slavish imitation of things French by the Russian intelligentsia.

Meanwhile he had obtained the patronage of the imperial family, and was appointed to a post in the mint in 1808, and in 1810 to an assistant librarianship in the Imperial public library. His unfinished comedy, *The Sluggard,* had a great success in Moscow in 1807. In 1811 he became a member of the Russian academy, and won its gold medal in 1823, besides receiving many other honours. He died on Nov. 9, 1844 (O.S.).

The Russians are appreciative of fabulists, and Krylov is by far the greatest that they have. Even when he is translating La Fontaine his translations have an individual style of their own. Throughout the Napoleonic wars the tone of his work was patriotic, but he was afterward affected by the wave of reaction. Although he held a government post he maintained an independent attitude, and the official classes were a favourite butt of his wit. Krylov's fables are written for the most part in the colloquial language of the peasants, satirizing in homely anecdotes the slothfulness, greed, untidiness, etc., in everyday life.

BIBLIOGRAPHY.—A collected edition of Krylov's works appeared at St. Petersburg in 1844; the best semi-contemporary edition is that by I. A. Pletnev, with drawings by K. A. Trutovsky (St. Petersburg, 1864). A good later edition is by K. Kenevich, 1872. The author's life has been written in Russian by Pletnev, by Lebanoff and by Grot, *Liter. zhizn Kruilova.* "Materials" for his life are published in vol. vi of the *Sbornik Statei* of the literary department of the Academy of Sciences. W. R. S. Ralston prefixed an excellent sketch to his English prose version of the *Fables* (1868; 2nd ed., 1871). Another translation, by Sir Bernard Pares, appeared in 1926.

KRYPTON, a very unreactive chemical element of the "rare gas" series. (Symbol Kr, atomic number 36, atomic weight 82.9) It was discovered in 1898 by Sir W. Ramsay and M. W. Travers, who found it in the least volatile fraction of liquid air—hence its name (Gr. *krypton,* the hidden one). This gas is estimated to

form about a millionth part of ordinary air (*see* ATMOSPHERE); it boils at −151.7° C., melts at −169° C., and is colourless and odourless.

KSHATTRIYA (Kshaht'rē-yah), the second of the four Indian castes, earlier also called Rājanya. The word is from the Sanskrit *Kshatra,* "rule" or "power." The term included the old Aryan nobility, aboriginal families who had maintained princely status. In the later Vedic literature the Kshattriya is distinct from the Brahmana, "priest," and markedly above the Vaisya, the "subject people" and the Sūdra, "serfs." Though closely connected with the Brahman the Kshattriya was his rival and even in religion was independent, having a literature of his own in the *Upanishads,* and contributing largely to Buddhism, Jainism and to the modern sect of the Sikhs. A strange legend declares that the Kshattriyas were exterminated by a Brahman, Parasu-Rāma, meaning probably that Brahmanism regained and strengthened its prestige. The Kshattriyas ceased to exercise power under their old title, but their status was assumed by the Rajputs. The modern Kshatri inherits the name but not the functions of the Kshattriya, who was a warrior, feudal chief and administrator.

KU, HUNG-MING (1856–1928), Chinese essayist and translator. He was one of the last of the old mandarins to refuse service under the republic. He was for 17 years secretary to the late viceroy, Chang Chih-tung, later managing director of the Whangpoo conservancy board at Shanghai and dean of Nanyang college. He published *Translation of Discourses and Sayings of Confucius; The Conduct of Life; Higher Education; Papers from a Viceroy's Yamên,* and the *Story of a Chinese Oxford Movement.*

KUBAN: *see* CAUCASIAN AREA, NORTH.

KUBAN, a river of southern Russia, rising in the western glaciers of Elburz. Kiukurtli glacier, lower termination 9,114 ft., and Ullukam glacier, 9,730 ft., are the sources of the western Kuban. Its important tributary, the Teberda flows from a glacier west of the Klukhor pass. Kuban is a Tatar name; the river is called Kuman by the Nogai, Kubin by the Abkhasians and Psishche (old water) by the Cherkess. It is the Hypanis of Herodotus and Strabo, and the Vardanes of Ptolemy. Its length is about 500 m. and its drainage area 21,480 sq.m. Its left bank tributaries, the Teberda, Great and Little Zelenchuk, Urup, Great and Little Laba, Bielaya, Pshchekha, Aphins, Adagum, Pshishch and Psekups rise as mountain torrents rushing through the narrow forested gorges of the Caucasus, and later water the wide, treeless plains, from 1,000 to 2,000 ft. high, south of the main river. Its right hand tributaries are short and unimportant. Upon entering the steppe region south of Stavropol the river turns north-west and then west and enters the Kyzyl-tash gulf of the Kerch district of the Black sea. In its lower course the Kuban forms a wide, low, rush-grown delta, a swampy malarial area, where the wild boar is found. Although the river lies farther south than the river Po in Italy, it is frozen from December to February. It is subject to floods three times in the year, in spring and midsummer from the melting of the mountain snows, and in autumn from the rains; Krasnodar and the Taman region suffer severely at these times, when the river may increase to half a mile in width instead of the normal 700 ft. It is navigable for steamers from the delta to its confluence with the Laba, a distance of 73 m. There are naphtha beds south of the river near the delta.

KUBELIK, JAN (1880–1940), Bohemian violinist, was born near Prague, of humble parentage. He learned the violin from childhood, and appeared in public at Prague in 1888, subsequently being trained at the Conservatorium by the famous teacher Ottakar Sevčik, and gaining from him an extraordinary technique. He first appeared in London in 1900, and in America in 1901. In 1903 he married the Countess Czaky Szell, becoming at the same time a naturalized Hungarian. His compositions include six violin concertos.

KUBERA (Kuvera), in post-Vedic Hindu mythology, god of the north and of wealth, typified in sculpture by his *embonpoint.* Half-brother to the demon Rāvana, who drove him from Ceylon, his original home, he then dwelt on Mt. Kailāsa, and his plaisance, the world's treasure-house, is Chaitraratha on Mt. Mandara. In later times Lakshmi is his spouse.

See E. W. Hopkins, *Epic Mythology* (1915).

KUBLAI KHAN (or KAAN, as the supreme ruler descended from Jenghiz was usually distinctively termed in the 13th century) (1216–1294), the most eminent of the successors of Jenghiz (Chinghiz), and the founder of the Mongol dynasty in China. He was the second son of Tulē, youngest of the four sons of Jenghiz by his favourite wife. Jenghiz was succeeded in the khanship by his third son Okkodai, or Ogdai (1229), he by his son Kuyuk (1246), and Kuyuk by Mangu, eldest son of Tulē (1252). Kublai was born in 1216, and, young as he was, took part with his younger brother Hulagu (afterwards conqueror of the caliph and founder of the Mongol dynasty in Persia) in the last campaign of Jenghiz (1226–27). The Mongol poetical chronicler, Sanang Setzen, records a tradition that Jenghiz himself on his deathbed discerned young Kublai's promise and predicted his distinction.

Northern China, Cathay as it was called, had been partially conquered by Jenghiz himself, and the conquest had been followed up till the Kin or "golden" dynasty of Tatars, reigning at K'ai-fēng Fu on the Yellow River, was completely subjugated (1234). But China south of the Yangtsze-kiang remained many years later subject to the native dynasty of Sung, reigning at the great city of Lingan, or Kinsai (*King-sz',* "capital"), now known as Hang-chow Fu. Operations to subdue this region had commenced in 1235, but languished till Mangu's accession. Kublai was then named his brother's lieutenant in Cathay, and operations were resumed. By what seems a vast and risky strategy, the first campaign of Kublai was directed to the subjugation of the remote western province of Yunnan. After the capture of Tali Fu, Kublai returned north, leaving the war in Yunnan to a trusted general. Some years later (1257) the khan Mangu himself entered on a campaign in west China, and died there, before Ho-Chow in Szech'uen (1259).

Kublai assumed the succession, but it was disputed by his brother Arikbugha and by his cousin Kaidu, and wars with these retarded the prosecution of the southern conquest. Doubtless, however, the fulfilment of this task was in his mind when he selected as the future capital of his empire the Chinese city now known as Peking. Here, in 1264, to the north-east of the old city, which under the name of Yenking had been an occasional residence of the Kin sovereigns, he founded his new capital, a great rectangular plot of 18 m. in circuit. The (so-called) "Tatar city" of modern Peking is the city of Kublai, with about one-third at the north cut off, but Kublai's walls are also on this retrenched portion still traceable.

The new city, officially termed T'ai-tu ("great court"), but known among the Mongols and western people as Kaanbaligh ("city of khan"), was finished in 1267. The next year war against the Sung Empire was resumed, but was long retarded by the strenuous defence of the twin cities of Siang-yang and Fen-chēng, on opposite sides of the river Han, and commanding two great lines of approach to the basin of the Yangtsze-kiang. The siege occupied nearly five years. After this Bayan, Kublai's best lieutenant, took command. In 1276 the Sung capital surrendered, and Bayan rode into the city (then probably the greatest in the world) as its conqueror. The young emperor, with his mother, was sent prisoner to Kaan-baligh; but two younger princes had been despatched to the south before the fall of the city, and these successively were proclaimed emperor by the adherents of the native throne. An attempt to maintain their cause was made in Fu-kien, and afterwards in the province of Kwang-tung; but in 1279 these efforts were finally extinguished.

The conquest of southern China had occupied the Mongols during half a century of intermittent campaigns. But at last Kublai was ruler of all China, and probably the sovereign (at least nominally) of a greater population than had ever acknowledged one man's supremacy. For, though his rule was disputed by the princes of his house in Turkistan, it was acknowledged by those on the Volga, whose rule reached to the frontier of Poland, and by the family of his brother Hulagu, whose dominion

extended from the Oxus to the Arabian desert. For the first time in history the name and character of an emperor of China were familiar as far west as the Black Sea and not unknown in Europe. The Chinese seals which Kublai conferred on his kinsmen reigning at Tabriz are stamped upon their letters to the kings of France, and survive in the archives of Paris. Adventurers from Turkistan, Persia, Armenia, Byzantium, even from Venice, served him as ministers, generals, governors, envoys, astronomers or physicians; soldiers from all Asia to the Caucasus fought his battles in the south of China. Once in his old age (1287) Kublai was compelled to take the field in person against a serious revolt, raised by Nayan, a prince of his family, who held a vast domain on the borders of Manchuria. Nayan was taken and executed. The revolt had been stirred up by Kaidu, who survived his imperial rival, and died in 1301. Kublai himself died in 1294, at the age of seventy-eight.

Though a great figure in Asiatic history, Kublai misses a record in the short list of the good rulers. He was the first of his race to rise above the innate barbarism of the Mongols, and he retained the force and warlike character of his ancestors. He had great intelligence and a keen desire for knowledge, with apparently a good deal of natural benevolence and magnanimity. But his love of splendour, and his fruitless expeditions beyond the sea, created enormous demands for money, and he shut his eyes to the character and methods of his agents. A remarkable narrative of the oppressions of one of these, Ahmed of Fenāket, and of the revolt which they provoked, is given by Marco Polo, in substantial accordance with the Chinese annals.

Kublai patronized Chinese literature and culture generally. The great astronomical instruments which he caused to be made were long preserved at Peking, but were carried off to Berlin in 1900. Though he put hardly any Chinese into the first ranks of his administration, he attached many to his confidence, and was personally popular among them. He made efforts to procure European priests for the instruction of his people, of which we know through Marco Polo (*q.v.*). Failing this momentary effort, Kublai probably saw in the organized force of Tibetan Buddhism the readiest instrument in the civilization of his countrymen, and that system received his special countenance. Early in his reign he appointed a young lama of intelligence and learning, Mati Dhwaja, the head of the Lamaite Church, and eventually also prince of Tibet. This ecclesiastic was employed by Kublai to devise a special alphabet for use with the Mongol language. It was chiefly based on Tibetan forms of Nagari; some coins and inscriptions in it are extant; but it soon perished. Of the splendour of his court and entertainments, of his palaces, summer and winter, of his great hunting expeditions, of his revenues and extraordinary paper currency, of his elaborate system of posts and much else, an account is given in the book of Marco Polo, who passed many years in Kublai's service.

His foreign expeditions were almost all disastrous. Nearly all arose out of a hankering for the nominal extension of his empire by claiming submission and tribute. Expeditions against Japan were several times repeated; the last, in 1281, on an immense scale, met with huge discomfiture. Kublai's preparations to avenge it were abandoned owing to the intense discontent which they created. In 1278 he made a claim of submission upon Champa (Cochin China). An attempt to invade the country through Tongking led to a war with that state, in which the Mongols had much the worst of it. A war with Burma (or Mien, as the Chinese called it) was more favourable to Kublai's arms. The country was overrun as far as the Irrawaddy delta, the ancient capital, Pagān, with its magnificent temples, destroyed, and the old royal dynasty overthrown. The last attempt of the kind was against Java, and occurred in the last year of the old khan's reign. The envoy whom he had commissioned to claim homage was sent back with ignominy. A great armament was equipped in the ports of Fu-kien to avenge this insult; but after some temporary success the force was compelled to re-embark with a loss of 3,000 men. The death of Kublai prevented further action.

Some other expeditions, in which force was not used, gratified the khan's vanity by bringing back professions of homage, with presents, and with the curious reports of foreign countries in which Kublai delighted. Such expeditions extended to the states of southern India, to eastern Africa, and even to Madagascar.

Of Kublai's twelve legitimate sons, Chingkim, the favourite and designated successor, died in 1284/5; and Timur, the son of Chingkim, took his place. No great king arose in the dynasty after Kublai. He had in all nine successors of his house on the throne of Kaan-baligh, but the long and imbecile reign of the ninth, Toghon Timur, ended (1368) in disgrace and expulsion and the native dynasty of Ming reigned in their stead.

(H. Y.)

See Sir H. Yule, *Marco Polo* (1875); Sir H. H. Howorth, *History of the Mongols* (part i. 1876).

KUBUS, a tribe inhabiting the central parts of Sumatra. They are nomadic savages living entirely in the forests in shelters of branches and leaves built on platforms. They are probably of Malay origin, though the frizzle in the hair might indicate a certain mixture of negrito blood. They are of a rich olive-brown tint, their hair jet black and inclined to curl, and, though not dwarfs, are below the average height.

KUCHAN (QUCHAN), a fertile and populous district of the province of Khurasan in Iran, bounded on the north by Russian Turkistan. The population is principally composed of the descendants of a tribe of Zafaranlu Kurds which was established there, with a hereditary Khan at its head, by Shah Abbas I in the 17th century, and is estimated at 100,000. A large proportion are nomads and live in tents. The district produces much grain and there are extensive vineyards. The two chief towns are Quchan and Shirvan (pop. 6,000). The former suffered severely from earthquakes in 1852, 1871, 1893 and 1895. In that of 1893, it is said, 12,000 perished and only 10,000 were left. The present town was rebuilt after the last earthquake on a site 8 mi. E. of the ruined town. The geographical position of the old town, now consisting of about 200 wooden huts, is 37° 8′ N., 58° 25′ E., at an elevation of 4,280 feet. The new town was regularly laid out with broad streets and spacious bazaars, and situated as it is on a cart-road about midway between Ashkhabad on the trans-Caspian railway and Meshed, is a place of considerable trade. On the hill now called Nadir-Tepe, near by, Nadir Shah was killed in A.D. 1747.

(P. Z. C.)

KUEN-LUN or KWEN-LUN, a term applied generally to mountain ranges on the north edge of the great Tibetan plateau. In a wider application it means the succession of ranges which extend from the Pamirs to 113° E. In the narrower sense it applies only to those ranges which part the desert of Takla-makan from the Tibetan plateau, between the Pamirs and the transverse glen of the Kara-muren (about 85½° E.). Although the name is thus restricted, the mountain system so designated in fact, extends eastwards as far as the Tsaidam depression (say 95° E.).

Broadly defined, the range of the Kuen-lun Mountains thus extends for nearly 2,500 m. from east to west, and while in the west their constituent ranges are folded and squeezed, to some 150–200 m. broad, their summits being correspondingly high, in the east they spread out to some 600 m., the ranges being here less folded, and consequently flatter and lower. The folding of the Kuen-lun commenced in Hercynian times but was continued in early Tertiary times, when the direction of movement was northward, that of the Himalayas being southward whilst the Tibetan plateau was driven upwards between the two. Although the crests of its component ranges reach altitudes of 21,500 to 22,000 ft., there are few individual peaks of commanding elevation, as in the Himalayas. The outermost border range of the Western Kuen-lun and Ustun-tagh is throughout double; and this feature, as also the intermont lake-basins among the Kuen-lun ranges, is a peculiar feature of the Tibetan plateau.

Western Kuen-lun.—On the east the Pamir is separated from the East Turkistan lowlands by the double border-ridge of Sarikkol (the Sarik-kol and the Muztagh ranges), with the Tarim basin (4,000–4,500 ft.) on the east and the Pamirs (10,500 to 13,000 ft. above sea-level) on the west, while its own summits, *e.g.*, the Muztagh-ata (24,388 ft.), are far above the snow line. This double

border-ridge is continued east of the meridian of Yarkand (77° E.) by a succession of twin ranges, under different names. These eastward continuations of the double border-range of the Pamirs are the constituent ranges of the Kuen-lun proper. The names given to them are the Kilian, the Khotan and the Keriya Mountains in the northern range and the Raskan, the Sughet and the Ullugh-tagh Mountains in the southern range. Although they all decrease in altitude from west to east, they nevertheless reach elevations of 19,000 ft., with individual peaks, some 2,000–2,500 ft. higher. On the north the ascent is steep, and the passes across both sets of ranges lie at great altitudes; *e.g.*, the Sanju-davan in the lower range is 16,325 ft. above sea-level, and the Kyzyl-davan, farther east, is 16,900 ft., while the Sughet-davan in the higher range is 17,825 ft. The latter range is separated from the Karakorum Mountains by the deeply trenched gorge of the Raskam, while the deep glen of the Kara-kash intervenes between the upper (Sughet Mountains) and the lower (Kilian Mountains) border-ranges. This western extremity of the Kuen-lun system is a very rugged mountainous region. In the broad orographical disposition, the ranges of north Tibet are crowded together in the west, but spread out towards the east. To the two principal ranges in this part of the system the names, the Altyn-tagh and Ustun-tagh are given although there are no less than six parallel ranges altogether.

Middle Kuen-lun.—Between the upper transverse glens of the Karamuren and the Cherchen-darya stretches the short range of Tokuz-davan. From it, on the east side of the Cherchen-darya in about 86° E., the component ranges of the middle Kuen-lun begin to diverge like the fingers of the outspread hand. And here at least four principal ranges or groups of ranges admit of being discriminated, namely the Ustun-tagh, the Chimen-tagh, the Kalta-alaghan and the Arka-tagh, all belonging to the mountainous country which borders on the north the plateau region of Tibet. Although these several ranges differ considerably in orography the following description will apply generally to the entire region. The broad features of the surface configuration are a series of nearly parallel mountain-ranges, and separated by high intermont valleys, choked with disintegrated material and divided into shallow lacustrine basins. Usually the crests of the ranges are worn down to rounded domes by sub-aerial denudation. Hard rock (mostly granite and crystalline schists, with red sandstone in places) appears only in the transverse glens, which are often choked with débris. The flanks of the mountains are deeply buried in disintegrated material. As each successive range, proceeding south, represents a higher step in the terraced ascent from the desert of Gobi to Tibet, the ranges when viewed from the north frequently appear like distinct mountain ranges and this appearance is accentuated by the steepness of the ascent; but, when viewed from the south, owing to their long and gentle slope in that direction, they have the appearance of comparatively gentle swellings. As a rule, the streams flow alternately east and west down the intermont latitudinal valleys, until they break through some transverse glen on the north side of the valley. In the western parts they mostly feed the Kara-muren or the Cherchen-darya, while farther east they flow down into some basin of internal drainage, *e.g.*, the Achik-kul, the two lakes Kara-kul, or the Ghaz-kul, and even yet farther east make their way into the lakes of the Tsaidam depression or are lost in its sands or in those of the Kum-tagh desert, or go to feed the great rivers, the Hwang-ho and the Yangtsze-kiang. The rivers which reach the deserts of Gobi and Takla-maken grow increasingly larger in magnitude from east to west. The great latitudinal streams in the Arka-tagh and the Chimen valley flow close under the foot of the range that shuts in each individual valley on the north. There is a marked difference in precipitation between the valleys of the north and those of the south. Those in the north are arid and desolate in the extreme, whilst those of the Arka-tagh and beyond are so damp that, in summer, the surface is in many parts little better than a quag-mire. Vegetation throughout is scanty and faunal life poor in species.

The *Ustun-tagh,* although like the twin ranges of the Western Kuen-lun, it forms the outermost escarpment on the north of the Tibetan plateau, would appear, in the opinion of the most competent judges, to be only a branch or subsidiary range of the main range of the Kuen-lun. It is not, however, a single chain, but consists of two parallel ranges, and in the east of three, and even north-east of Tsaidam of four, being flanked throughout by several subsidiary chains, spurs and offshoots. Beyond, it swells into the vast *massif* of Anambaruin-ula, which is traversed by at least three minor parallel chains. Farther east it once more contracts to two main ranges, the more southerly being the Humboldt Range (crossed by a pass at 13,200 ft.). This branch is probably continued in the South Kukunor Range. The northern branch merges eastwards into the Nanshan Mountains. The passes in the Lower Ustun-tagh range from altitudes of 10,150 to 10,700 ft., and in the Upper Ustun-tagh of 11,770 to 15,680 ft., one pass beside the Charkhlik-su being only 9,660 ft. high. The general elevation of the twin border ridge decreases towards the east, but there exists a striking difference between the crests of the Ustun-tagh and those of the ranges of the Tibetan plateau. The Ustun-tagh mountains are severely weathered and consist of hard, bare and barren rock, weathered into sharp peaks and pinnacles. The ranges on the Tibetan plateau on the other hand are of softer rock and have rounded outlines. In the former regions aeolian action removes the products of disintegration and with arid conditions prevailing the mountains are left bare. In Tibet, precipitation is heavy and uniformly distributed so that disintegration is likewise heavy and the mountain sides are covered with great masses of scree material. The twin ranges of the Ustun-tagh are fairly equivalent in point of magnitude and regularity; but while the Lower Range, on the north, sensibly decreases in altitude towards the east, the Upper Range maintains its general altitude in a remarkable way.

The next parallel range on the south, the *Akato-tagh,* and the valley which separates it from the Ustun-tagh, are equally arid and waterless. The valley, known by the general name of Kakir, meaning a "hard, dry, sterile expanse of clay," is chequered with shallow self-contained basins of the usual type and has remarkably gentle slopes up to the mountains. Its surface slopes from altitudes of 10,100 to 10,600 ft. in the west, where is lake Uzunshor (9,650 ft.) to 9,400 ft. in the east. Farther east it continues to the Anambaruin-ula and the flat basin of Särtäng, a north extension of Tsaidam. Like the Ustun-tagh it stretches towards the east-north-east, and appears to be built up of granite and schists, but its crest is greatly denuded. The slopes on both sides are very gentle, but that on the south is eight to ten times as long as that on the north. In the east the range is narrow, and dies away on the edge of the Tsaidam depression; but in the west it swells out into the lofty mass of the Ilve-chimen or Shia-manglay, which is capped with perpetual snow. This part is crossed by the pass of Chopur-alik (16,160 ft.), but farther east the passes lie at altitudes of 13,380 to 10,520 ft. The latitudinal valley south of the Akato-tagh, the Chimen-tagh, slopes for the most part eastwards, from 12,500 ft. down to the shallow salt lake of Gass-kul (9,305 ft.).

The *Chimen-tagh* is identical in its western parts with the Piazlik-tagh and in the east with the Tsaidam chain, and it is probably continued westwards by Moscow Range or the Achik-tagh, running north of the Achik-kul and connecting on the west with the Tokuz-davan. The Chimen-tagh rises into imposing summits, rounded or pyramidal, which in winter are capped with snow. Its slopes are not so arid as those of the Akato-tagh and the Ustun-tagh. Snow falls all the year round on the Chimen-tagh, and water is abundant everywhere. The southern slope of the range is gentle but short, the northern slope long and steep. Grass is able to grow, and animal life is more abundant. The range is crossed by passes at 13,970, 13,230 and 13,760 ft., and the Piazlik-tagh by a pass at an altitude of 13,640 ft.

The next important range, still going south, is the *Kalta-alaghan* (Columbus Range). A short secondary range, the Ara-tagh, rises along the middle (*ara*=middle) of the valley between the Chimen-tagh and the Kalta-alaghan. It is of lower elevation than them both and it dies away towards the west, the valleys on each side of it meeting round it to form one broad valley, with an altitude of 11,790 to 13,725 ft. The Ara-tagh is crossed by a pass at an altitude of 14,345 ft. In the Kalta-alaghan, which is the cul-

minating range of this part of the Kuen-lun, and is over-topped by towering, snow-clad peaks, the passes are at high altitudes, *viz.* 14,560, 14,470, 14,430 and 14,190 ft., while the pass of Avraz-davan is at 15,700 ft. This range appears to be linked on to the Tokuz-davan by the Muzluk-tagh, in which are passes at 16,870 and 15,450 ft.

Immediately south of the Kalta-alaghan comes a relatively deep depression, the *Kum-kol valley*. It is crossed transversely by a water-divide which separates the basin of the twin-lakes of Kum-kol (12,700 ft.) from the basin of Tsaidam, some 3,500 ft. lower. The floor of the valley consequently slopes away in both directions, like the Chimen valley. Not far from the Kum-kol lakes there is a drift-sand area, though the dunes are stationary. The upper lake of Kum-kol (Chon-kum-kol) (12,730 ft.), which contains fresh water, is of small area (8 sq.m.) and shallow (13 ft.); but the lower lake (Ayak-kum-kol) (12,685 ft.), which is salt, is much bigger (283 sq.m.) and 64 and 79 ft. in depth. Farther west, lying between the Muzluk-tagh and the Arka-tagh, is the lake of Achik-kol (13,940 ft.), 16½ m. broad.

The next great parallel range is the lofty *Arka-tagh,* which is continued eastward in the Marco Polo Range (altitude 15,750–16,250 ft.) and Gurbu-naiji Mountains. The Arka-tagh is the true backbone of the Kuen-lun system, and in Central Asia is exceeded in elevation only by the Tang-la, of the Karakorum Mountains. The Arka-tagh is the actual border-range of the Tibetan plateau; to the south none of the lofty parallel ranges which ridge Tibet seems to have any connection with the Kuen-lun system. Of great length, the Arka-tagh, a mountain-system rather than a range, varies greatly in configuration, sometimes exhibiting a sharp main crest, with several lower flanking ranges, and sometimes numerous parallel crests of nearly uniform altitude. Amongst these one can distinguish four predominant ranges, of which the second from the north is probably the principal range, though the fourth is the highest. These lofty mountains are covered with sand and powdery, finely sifted disintegrated material and where hard rock does crop out on the surface, it is excessively weathered. The culminating summits are frequently crowned with ice caps which shape themselves into a flat cap, from which there are offshoots at intervals; nowhere do there exist any of the long, glacier tongues which are so characteristic of the Alps. The view south from the heights of the Kalta-alaghan is the picture of a chaos of mountain chains, ridges, crests, peaks, spurs and detached masses. Immediately north of the Arka-tagh the country is studded with three or four conspicuous and detached mountain masses, all capped with snow and some of them carrying small glaciers.

The next succeeding parallel range, the *Koko-shili,* which is continued eastwards by the Baien Kara Mts. between the upper head-streams of the Hwang-ho and the Yangtsze-kiang, belongs orographically to the plateau of Tibet.

The succession of ranges from the deserts of Takla-makan and Gobi to Tibet rise in steps, each range being higher than the range to the north of it. The difference in altitude between the lowest, most northerly range, the Lower Ustun-tagh, and the most southerly of the Arka-tagh ranges amounts to nearly 7,500 ft. With one exception, namely the climb out of the Kum-kol valley to the Arka-tagh, the first three steps are individually the biggest. When the altitudes of the intermont latitudinal valleys are compared, the significance orographically of the Chimen valley and of the Kum-kol valley is strikingly emphasized. These ten parallel ranges of the middle Kuen-lun system may be grouped in three divisions —(1) the more strictly border ranges of the Upper and Lower Ustun-tagh and the Akato-tagh; (2) the three ranges of Chimen-tagh, Ara-tagh and Kalta-alaghan, which may be considered as a transitional system between the foregoing and the third division; (3) the Arka-tagh, which constitute the elevated rampart of the Tibetan plateau proper.

The *Nan-shan Highlands* overlook Tsaidam on the north-east. They consist of parallel mountain ranges all running from the north-west to the south-east. Broad, flat, longitudinal valleys, at altitudes of 12,000 to 14,000 ft. (9,000 to 10,000 at the south-western border) and dotted with lakes (Koko-nor, 9,970 ft.; Khara-nor, 13,285 ft.), fill up the space between these mountain ranges. In the south-east are the highlands of the Chinese province of Kansuh; near the northward bend of the Hwang-ho, the escarpments by which the Great Khingan and the In-shan ranges are continued, and by which the Mongolian plateau steps down to the lowlands of China; on the north-east, the Mongolian plateau (average altitude, 4,000 ft.), *i.e.,* in the Ala-shan; and on the north-west a border range, the Da-sue-shan, a continuation of the Ustun-tagh, with passes at 12,200–13,000 ft., and is pierced by several rivers flowing west to Lake Khara-nor.

On the south-west the Nan-shan mountains consist of short irregular chains, separated by broad plains, dotted with lakes (altitude from 8,800–9,000 ft.). Next, narrow ranges intervene between this lower border terrace and the higher terrace (12,000–13,500 ft.). The first mountain range on this higher terrace is Ritter's range, covered in part with extensive snow-fields. There are passes at both ends of this *massif* at 15,990 ft. and 14,680 ft. The next range is the Humboldt range, which runs from the Ustun-tagh to about 38° N.

Generally speaking, the Nan-shan highlands (12,000 to 14,000 ft.) are intersected by wild, stony and partly snow-clad mountains, towering another 4,000 to 7,000 ft. above its surface, and arranged in narrow parallel chains. The chains of mountains are from 8 to 17 m. wide, seldom as much as 35, while broad, flat valleys between them attain widths of 20 to 27 miles. The passes are at 12,000 to 14,000 ft., and the peaks reach 18,000 to 20,000 ft. in the west, while in the east they are 2,000 ft. lower.

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KUFYA, a ruined city of 'Iraq in 32° N. 44° E., on the shore of the Hindieh branch of the Euphrates, about 7 m. E. by N. of Najaf, with which it is connected by tramway. The city was founded by the Arabs in 638 A.D. and was the capital of the Caliph Ali, in whose memory there is still a mosque. On the removal of the caliphate to Baghdad, the city, a purely artificial creation, fell into decay and its ruins have been continuously plundered to provide the bricks out of which the modern Najaf is built.

KÜHLMANN, RICHARD VON (1873–), German diplomatist, was born on March 17, 1873, at Constantinople. From 1908 to 1914 he was counsellor of the German embassy in London, and was very active in the study of all phases of contemporary political and social life in Great Britain and in Ireland. During the World War he was successively counsellor of embassy at Constantinople, minister at The Hague, and from Sept. 1916 to Aug. 1917, ambassador at Constantinople. He was then appointed foreign secretary and represented Germany in the Brest-Litovsk negotiations, which on March 3, 1918, led to the treaty of peace with Russia. He also negotiated the Peace of Bucharest (May 7, 1918) with Rumania. In July 1918 he delivered in the Reichstag a speech in which he declared that the war could not be ended by arms alone, but must be a "peace of understanding." Kühlmann was practically thrown over by the chancellor, Count Hertling, in a speech intended to explain away his statement and, after an interview with the emperor at the front, he tendered his resignation (July 9, 1918).

KUHN, FRANZ FELIX ADALBERT (1812–1881), German philologist and folklorist, was born at Königsberg, Neumark, on Nov. 19, 1812. From 1841 he was connected with the Kollnisches gymnasium at Berlin, of which he was appointed director in 1870. He died at Berlin on May 5, 1881. Kuhn was the founder of a new school of comparative mythology, based upon comparative philology. He first devoted himself to German stories and legends, but his reputation is founded on his researches into the language and history of the Indo-Germanic

peoples as a whole. In his *Zur ältesten Geschichte der Indogermanischen Völker* (1845), he gave an account of the earliest civilization of the Indo-Germanic peoples before their separation into different families, by comparing and analysing the original meaning of the words and stems common to the different languages.

See obituary notice by C. Bruchmann in Bursian's *Biographisches Jahrbuch* (1881) and J. Schmidt in the above *Zeitschrift*, xxvi. n.s. 6.

KÜHNE, WILLY (1837–1900), German physiologist, was born at Hamburg on March 28, 1837. He studied at Lüneburg, at Göttingen, at Berlin under Du Bois-Reymond, at Paris under Claude Bernard, and at Vienna under K. F. W. Ludwig and E. W. Brücke. In 1863 he received an appointment in the pathological laboratory at Berlin; in 1868 he was made professor of physiology at Amsterdam; and in 1871 was chosen to succeed H. von Helmholtz in the same capacity at Heidelberg, where he died on June 10, 1900. Kühne's original work falls into two main groups—the physiology of muscle and nerve and the chemistry of digestion.

KUIBYSHEV, R.S.F.S.R.: *see* SAMARA.

KUKA or KUKAWA, a town of Bornu, a Mohammedan State of the central Sudan, incorporated in the British protectorate of Nigeria (*see* BORNU). Kuka is situated in 12° 55′ N. and 13° 34′ E., some 5 m. from the western shores of Lake Chad, in the midst of an extensive plain. It is the seat of the British resident in Bornu; was formerly the residence of the sovereign, who in Bornu bears the title of shehu.

The modern town of Kuka was founded *c.* 1810 by Sheikh Mohammed al Amin al Kanemi, the deliverer of Bornu from the Fula invaders. In 1840 the town was laid waste by Mohammed Sherif, the sultan of Wadai; and when it was restored by Sheikh Omar he built two towns separated by more than half a mile of open country, each town being surrounded by walls of white clay. The town became wealthy and populous (containing some 60,000 inhabitants), being a centre for caravans to Tripoli and a stopping-place of pilgrims from the Hausa countries to Mecca. The chief building was the great palace of the sheikh. Between 1823 and 1872 Kuka was visited by several English and German travellers. In 1893 Bornu was seized by the ex-slave Rabah Zobeir (*q.v.*) who chose a new capital, Dikwa, Kuka falling into complete decay. It was found in ruins in 1902 by the British expedition which replaced on the throne of Bornu a descendant of the ancient rulers. In the same year the rebuilding of Kuka was begun and it again became a trade centre.

For an account of Kuka before its destruction by Rabah, *see* the *Travels* of Heinrich Barth (new ed., London, 1890); and *Sahara und Sudan*, by Gustav Nachtigal (Berlin, 1879), i. 581–748.

KUKI, a name given to a group of tribes inhabiting both sides of the mountains, dividing Assam and Bengal from Burma, south of the Namtaleik river. These tribes are comparatively recent immigrants into the area they now occupy, and appear to have come down the Chindwin valley from the north, sending offshoots into the hills to the west which have fused with the Naga tribes, leaving more or less evident traces on their culture. The main body having reached the sea turned north again up the hills. In the course of migration, and by the practice of slave-hunting, alien blood has been incorporated and the earliest Kuki immigrants, known in Manipur and Cachar as "Old Kukis," are so mixed with Naga stock that some tribes seem as much Naga as Kuki. In the case of the Thado Kuki who followed them, the Lushei, who drove the Thado north from the district called Lushai hills, the Lakher, and the various tribes of the Chin hills in Burma—Haka, Siyin, Sokte, etc.—there is, in spite of divergences, so strong a similarity in general type and culture that they can be fairly treated as forming a single group, ruled by chiefs on a quasi-feudal system, exogamous, patrilineal, attaching great importance to genealogy and descent. Heirlooms and antiques are valued inordinately. They are wasteful cultivators but good artificers; they are still actually migratory or but recently settled. Clans claim descent from a common ancestor, polygyny is allowed and the levirate practised, marriage is by purchase, and subject to involved post-mortem claims against the woman's descendants for the benefits conferred by her bearing of children into her husband's clan. Chiefs wield wide authority; their subjects are bound to them by service tenures, and a man accepting a chief's protection assumes a vassalage which he cannot put off at will. Communal houses for bachelors are found sporadically. All disease is ascribed to spirits and can be driven off by appropriate disinfectants or ceremonies, but a beneficent Creator is believed in, to whose abode souls go after death, having to pass a malignant demon on the way. The dead are frequently buried, but by some tribes exposed on platforms and cremation has been known. Heads of enemies and of animals are sought for to put on the graves of relatives, that the souls of the former may accompany the latter to the next world. The heads of important persons used to be disposed of separately in ledges of cliffs. Ordeals are undergone by plunging under water. As weapons, guns have superseded the simple bow and arrows, sometimes poisoned, and the shield. The spear seems never to have been popular. The Kuki is generally an indefatigable hunter and snarer of game, warlike, bloodthirsty and destructive. His languages belong to the Tibeto-Burman family and his folklore savours of the Arabian Nights.

See Cary and Tuck, *Chin Hills Gazetteer* (1896); J. Shakespear, *Lushei-Kuki Clans* (1912). (J. H. H.)

KU KLUX KLAN. There have been two distinct organizations of this name in American history. The first Ku Klux Klan was an outgrowth of the tense feeling in the South during the reconstruction period succeeding the Civil War; the second was organized during the World War and attained its greatest strength in the period of social and economic readjustment which followed the restoration of peace.

The first organization was a secret association of Southern whites united for self-protection against the recently emancipated negroes and to oppose the reconstruction measures (1865–76) of the U.S. Congress. The name Ku Klux Klan is generally applied not only to that order, but to other similar societies that existed at the same time, such as the Knights of the White Camelia, a larger order than the Klan, the White League, the Invisible Circle, Pale Faces and numerous smaller societies that sprang up in the South after the Civil War. The result of the whole movement was a more or less successful revolution against the reconstruction and an overthrow of the governments based on negro suffrage or "Carpetbag" government.

The most important orders were the Ku Klux Klan and the Knights of the White Camelia. The former began in 1865 in Pulaski, Tenn., as a social club of young men. It had an absurd ritual and a strange uniform. The members accidentally discovered that the fear of it had a great influence over the lawless but superstitious blacks, and soon the club expanded into a great federation of regulators, absorbing numerous local bodies that had been formed in the absence of civil law and partaking of the nature of the old English neighbourhood police. The White Camelia was formed in 1867 in Louisiana and spread rapidly over the States of the late Confederacy. The period of organization and development of the Ku Klux Klan movement was from 1865 to 1868; the period of greatest activity was from 1868 to 1870, after which came the decline. Nearly all Southern whites (except "scalawags"), whether members of the secret societies or not, in some way took part in the Ku Klux movement. As the work of the societies succeeded, they gradually passed out of existence. In some communities they fell under the control of violent men and became simply bands of outlaws, dangerous even to the former members; and the anarchical aspects of the movement excited the North to vigorous condemnation. Congress in 1871–72 enacted a series of "Force Laws" intended to break up the secret societies and to control the Southern elections. Several hundred arrests were made and a few convictions secured. Violence was checked and the elections were controlled for a few years, but the Ku Klux movement went on until it accomplished its object by giving protection to the whites, reducing the black vote, replacing the whites in control of government, expelling the worst of the carpet-baggers (*q.v.*) and scalawags, and nullifying laws of Congress which had resulted in

placing the Southern whites under the control of a party supported principally by ex-slaves.

In organization the Klan was modelled after the Federal Union. Its Prescript or constitution, adopted in 1867, and revised in 1868, provided for the following organization: The entire South was the Invisible Empire under a Grand Wizard, Gen. N. B. Forrest; each State was a Realm under a Grand Dragon; several countries formed a Dominion under a Grand Titan; each county was a Province under a Grand Giant; the smallest division being a Den under a Grand Cyclops. The staff officers bore similar titles, relics of the time when the order existed only for amusement: Genii, Hydras, Furies, Goblins, Night Hawks, Magi, Monks and Turks. The private members were called Ghouls. In 1869 the central organization was disbanded and the order then gradually declined. The White Camelia, with a similar history, had a similar organization, without the queer titles. Its members were called brothers and knights, and its officials commanders.

Second Ku Klux Klan.—The second organization, known as the Knights of the Ku Klux Klan, was formed by William Joseph Simmons, preacher, travelling salesman and experienced promoter of fraternal orders, on Stone mountain, near Atlanta, Ga., on Thanksgiving night in 1915. A charter issued by the State of Georgia gave corporate rights to the new fraternal order. Thus legally established, Simmons called upon the world to witness that his was a "high-class, mystic, social, patriotic, benevolent association" devoted to the sacred duty of protecting womanhood, to the idea of the "Fatherhood of God, Brotherhood of man," to the principle of "white supremacy"—in short, to "real patriotism" and "pure Americanism." In fact its aims were a composite revival of those of three prior organizations. From the Know Nothing movement of 1844–56 and from the American Protective Association of 1887–97 it inherited opposition to Roman Catholicism, adding a measure of antagonism to the Jew. It took from its namesake of post-Civil War times its hostility to assumption of negro equality with the white race and much of its ritual and regalia. Unlike the first Ku Klux Klan its appeal was not sectional, consequently, it spread from the South throughout the nation.

During the first few years of its existence the order grew slowly and early in 1920 was threatened with financial disaster. Under such circumstances Simmons contracted with E. Y. Clarke, an advertising man, to increase the membership. Clarke's scheme of promotion was successful to such an extent that when Congress made an investigation in Oct. 1921, it found that the Invisible Empire then had a membership little short of 100,000. Expert salesmanship alone, however, did not account for the rapid growth of the Klan. Its appeal came to a people suffering from the hysteria of World War I. Those who had enjoyed power in Citizens' committees which forced the purchase of Liberty Bonds, intimidated German sympathizers and hounded slackers, saw in the Klan a continued outlet for their patriotism. Those who were outraged by immorality flaunted before inert police used the terror of the Klan to punish evil-doers. Those chafed by the deliberation of the courtroom and convinced that the guilty too often slipped through some loophole in the law found the Klan a direct way to prevent the miscarriage of justice. But far more numerous were those who cherished the racial and religious prejudices of their ancestors. Kleagles had no difficulty in selling membership in a crusade for Protestant Christianity, native Americanism and white supremacy. The movement gained its greatest strength in the South and Middle-west, among descendants of the first white stock of America, those English and Scotch-Irish pioneers, strong Protestants, who laid the foundations of American society.

Shortly after the success of the Klan became assured, control slipped from the grasp of Simmons and Clarke into the hands of Dr. Hiram Wesley Evans of Texas. Dissentions arose but they had little effect on the organization's rapid growth. In the elections of 1922, 1924 and, to a certain extent, 1926, the Klan concentrated its powers at the polls so effectively that it was able to elect, in several States, U.S. senators, congressmen, State officials and to control local politics. By 1928 its power had waned appreciably, and had little effect on the elections of that year. This rapid disintegration is difficult to account for unless it is found in the abuses of power and corruption that alienated many of its more conservative members and brought about factional strife in official circles. Whether authorized or not, certain acts of violence were perpetrated in the name of the Invisible Empire. Attorney General C. C. McCall of Alabama, in resigning his Ku Klux Klan membership in 1927, bared its methods in that State and pronounced the organization a menace to decent government. In the same year D. C. Stephenson, former Grand Dragon of the order in Indiana, made striking revelations of the Klan's participation in political bribery and corruption. Resulting indictments were followed by the conviction of the mayor of Indianapolis and the governor of Indiana.

BIBLIOGRAPHY.—For the first organization *see* J. C. Lester and D. L. Wilson, *Ku Klux Klan* (1905); "Report of the Joint Select Committee on the Condition of Affairs in the Late Insurrectionary States," *Report No. 22,* 42nd Congress, 2nd Session (1872); W. L. Fleming, *Civil War and Reconstruction in Alabama* (1905) and *Documentary History of Reconstruction* (1906); W. G. Brown, *Lower South in American History* (1901); J. M. Beard, *Ku Klux Sketches* (1876); S. L. Davis, *Authentic History, Ku Klux Klan 1865–77* (1924). For the second Ku Klux Klan there is no unbiased account. Much of its earlier history is given in *The Ku Klux Klan,* Hearings before the Committee on Rules, House of Representatives, 67th Congress, 1st Session (1921). *See* also H. P. Fry, *The Modern Ku Klux Klan* (1922); W. J. Simmons, *The Klan Unmasked* (1923) and *America's Menace* (1926); J. M. Mecklin, *The Ku Klux Klan: A Study of the American Mind* (1924); S. Frost, *The Challenge of the Klan* (1924); L. A. Curry, *The Ku Klux Klan under the Searchlight* (1924).

KUKU: *see* BARI-SPEAKING TRIBES.

KUKU KHOTO: *see* KWEIHWA.

KULANGO, a people inhabiting the Bondoukou district of the north-east Ivory Coast, long subject to the Abron but without any organization outside the village. The social unit is the extended family group of several households. Labour is both individual for personal profit and communal on the common fields. Cross-cousin marriage is frequent. Descent is patrilineal, and there are traces of matriarchy. The Kulango are cultivators and cattle-raisers, and animist in religion.

See Tauxier, *Le Noir de Bondoukou* (1921).

KULJA (Chinese ILI-HO), one of the six circuits of the Chinese province of Sinkiang. It is bounded on the west by the Kazakstan republic of the Russian S.F.S.R., and consists of a depression which cuts deeply for some distance eastwards into the great plateau of Central Asia. The snow clad Boro-khoro mountains, a north-western extension of the Iren-khabirga mountains, form its northern boundary and rise to an average altitude of 11,500 ft., with passes at 7,000 to 7,415 ft.; their slopes, between 6 and 9,000 ft. are covered with coniferous forest. Along the south, beginning with the glacier-topped Khantengri range in the west, which has an average altitude of 11,500 ft. (highest peak 22,800 ft.) stretches a mountain barrier, the Terskei range (*n.b. not* the Terskei Ala-tau), the Eshik-bashi, and the Narat ranges. The Narat range forms a diagonal east-north-east to west-south-west link between the northern and southern ranges enclosing the valley; it is crossed by the Jambi pass (11,415 ft.), the Dundeh-keldeh (11,710 ft.), the Sary-tyur (10,800 ft.) and the Mukhurdai (11,800 ft.). Upon the slopes of this range grow deciduous forests (wild apple, apricot, birch and poplar), with pines above. The Temur-lik-tau range extends into Kulja, being over 9,800 ft. high near the western boundary of the province but lower in the east. The Tekes or Upper Ili makes its way through a gap in this range, which continues in a south-westerly direction as far as the Narat range. The province is drained by the Ili river, which rises in the Kazakstan A.S.S.R. south of the Temur-lik-tau and east of Lake Issyk-kul, and flows north-eastwards into Chinese Turkistan, receiving many tributaries, the longest of which are the Kok-su and the Jirgalan. It then turns north through a gap in the mountains, after which it receives the Kunghez on its right bank and flows westward to the north of the Temur-lik-tau, receiving the Kash on the right and finally, after a westerly course of 120 m. recrosses the frontier into Kazakstan, where it flows into Lake Balkash. During the summer months it has a good volume of water and is navigable for shallow

draught steamboats near the Russian frontier. The valley of the Kunghez is about 120 m. long; the river flows first in a gorge and then amidst thickets of rushes; very little of its valley is available for cultivation. The valley of the Tekes or Upper Ili is at first a series of wild gorges, but then broadens out and, in this section, there are evidences of irrigation in earlier times. After the junction with the Kunghez, the river flows through a fertile valley, 50 m. wide at Horgos-Koljat, once known as the granary of Western China with black earth soil and loam, and cultivated in dependence on irrigation from the river. The climate is continental and extremely dry; frosts of −22° F and summer heat of 110° F have been recorded. Apricots, peaches, pears and vine are grown, and cotton near the town of Kulja, while barley can be grown up to an altitude of 6,500 ft. Gold, silver, copper, galena and coal are found, the last within a few miles of the town of Kulja, but they are little worked; the copper and silver mines were at one time extensively exploited. Fertile as the valley is, agriculture is insufficient to supply the needs of the population and grain is imported from Russia. Nomad herdsmen pasture their flocks in the valleys in winter and on the high alpine meadows in summer. The eastern end of the valley has a sandy soil with gypsum, marl and clay and a scanty flora.

This valley, like the Dzungarian gate to the north, has been a highway of the nations, and was invaded in early times by Scythians and Persians. The Uzuns, a blue-eyed, fair-haired people who are recorded as living in the region in the 2nd and 1st centuries B.C., were driven out by the Huns and some took refuge near Lake Issyk-kul (*q.v.*). Later the region became a dependency of Dzungaria. The Uighurs and the Kara-Khitai successively occupied it, Jenghiz Khan and his armies swept through it in the 13th century, after which it became a Mongolian khanate. The Oirats (*see* OIRAT AUTONOMOUS AREA) occupied it from the end of the 16th or the beginning of the 17th century until 1775, when the Chinese annexed it, and practically depopulated it. Chinese cultivators from Kashgaria, military colonists and criminals were then settled in the region. Other tribes, attracted by its fertility, came into the region and in 1771 the Kalmucks from the Volga (*see* KALMUCK) reached it after their terrible 3,000 m. journey through a hostile country. Unsettled conditions prevailed, but no serious outbreak occurred until after the great Mohammedan rebellion of 1862 which began in the adjacent provinces of Kansu and Shensi and soon spread to the Ili valley, where many thousands of Chinese were massacred and towns and settlements were laid waste. Amongst these was New Kulja, Manchu Kulja or Ili, lower down the valley on the same side of the river as old Kulja. It was previously the seat of the Chinese government, with a large penal establishment and a garrison, but its 70,000 inhabitants were massacred by the Dungans in 1868 and it is still a heap of ruins. The Dungans and Taranchis formed a Taranchi sultanate, but from 1871 the Russians occupied the region for 10 years, during which they built a large Russian suburb near the town of Kulja. By the treaty of St. Petersburg 1881, the territory was restored to China, together with the command of the Tian Shan passes, though the Chinese had to pay indemnity to cover cost of the Russian occupation.

After the Chinese revolution, 1911, the governor of Sinkiang, resident at Urumchi, remained practically independent. White Russian refugees fled to the region after the Russian revolution, causing an increase in the Russian element of the population. But after 1932 when a Mohammedan revolt was suppressed with Soviet Russian assistance, Soviet Russian control over the province became strong until Russia withdrew her troops and material in 1942. The population is varied. The Taranchis (*taran*—millet) were introduced into the region from Kashgaria. The Tungans are Chinese Mohammedans, of uncertain origin, though they are supposed to be descended from Mohammedan tribes from the trans-Caspian area who were permitted to settle in Chinese territory in the 8th century in return for military aid given to the Chinese. Like the Taranchis they are settled cultivators. The Kalmucks and the Kirghiz tribes are nomad herdsmen. Some Russian colonists have remained since the Russian occupation. Both cultivators and nomads depend mainly on their own craftsmanship for clothing, household utensils, etc., and the district round the town of Kulja is specially noted for the making of leather goods.

KULJA (old Kulja) is the chief city. It is situated in 43° 54′ N., 81° 19′ E. on the Ili river. No figures are available for its population or for that of the territory as a whole. The town is surrounded by broad walls 30 ft. in height and the houses are mainly clay built and flat roofed; its Taranchi and Dungan mosques show Chinese influence. Wheat, barley, lucerne and the opium poppy are cultivated on the outskirts of the town. Kulja lies 40 m. east of the Russian frontier, from which a good post road links with Tashkent. There is also a trading route from Kulja to Lake Issyk-kul (*q.v.*). A Russian consulate exists in the town, which has telegraphic communication with Tashkent.

KULM: *see* CHELMNO.

KULMBACH, a town of Germany, in the Bavarian province of Upper Franconia, on the Weisser Main, and the Bamberg-Hof railway, 11 mi. N.W. from Bayreuth. Pop. (1939) 12,576. The town has several woollen and hosiery manufactories and a large cotton spinnery, but is chiefly famed for its breweries, producing a black beer, which is largely exported. On a rock to the south-east stands the former fortress of Plassenburg, the 14th and 15th century residence of the margraves of Bayreuth. It was dismantled in 1807. Kulmbach and Plassenburg belonged to the dukes of Meran, and they passed in the 14th century to the Hohenzollerns, burgraves of Nuremberg, and thus to the margraves of Bayreuth.

KULP, formerly a Russian town, but ceded to Turkey by the treaty of Kars, 1921. It lies 60 m. W.S.W. from the town of Erivan, and 2 m. S. of the Aras river. Close by is the Kulp salt mountain, about 1,000 ft. high, consisting of beds of clay intermingled with thick deposits of rock salt which have been worked from time immemorial.

KULPMONT, a borough of Northumberland county, Pa., U.S.A., on the Pennsylvania railroad and federal highway 122, 45 mi. S.W. of Wilkes-Barre. The population was 4,695 in 1920 (26% foreign-born white), and 6,159 in 1940. Coal mining is the dominant occupation and there are several factories.

KULU, a subdivision of Kangra district, Punjab, British India, which nominally includes the two Himalayan cantons or *waziris* of Lahul and Spiti. The Sainj, which joins the Beas at Largi, divides the tract into two portions, Kulu proper and Soraj. Kulu proper, N. of the Sainj, together with inner Soraj, forms a great basin or depression in the midst of the Himalayan system, having the narrow gorge of the Beas at Larji as the only outlet for its waters. The higher villages stand 9,000 ft. above the sea; and even the cultivated tracts have probably an average elevation of 5,000 ft. The Beas, which, with its tributaries, drains the entire basin, rises at the crest of the Rohtang pass, 13,326 ft. above the sea, and has an average fall of 125 ft. per mile. Its course presents cataracts, gorges, precipitous cliffs and mountains clad with forests of deodar, towering above the tiers of pine on the lower rocky ledges. Hot springs occur at three localities, much resorted to as places of pilgrimage. Tibetan polyandry still prevails in Soraj, but has almost died out elsewhere. Kulu is an ancient Rajput principality, which was conquered by Ranjit Singh about 1812. Its hereditary ruler, with the title of Rai, is now recognized by the British government as *jagirdar* of Rupi.

BY COURTESY OF DR. COOMERASWAMY

HINDU WOMAN, WEARING SKIRT, KURTA (JACKET) AND CHADAR (SHAWL)

KUM: *see* QUM.

KUMANOVO, a town of South Serbia, Yugoslavia. Pop. (1931) 16,949, mainly Albanians and Serbs. Wheat and the poppy are cultivated, and cattle rearing is also carried on. Iron and lead ores are found in the district, and there are important, but unworked, manganese deposits. The town is chiefly memorable as the scene of the most decisive battle in the Balkan Wars

(1912–13), the Serbian victory here rendering the Turkish plan of campaign abortive and the Bulgarians free to conquer Thrace. Here the Bulgarian army capitulated at the close of World War I. In 1941 the town was again occupied by Bulgaria.

KUMAON or **KUMAUN,** an administrative division of British India, in the United Provinces, with headquarters at Naini Tal. It consists of a large Himalayan tract, together with two submontane strips called the Tarai and the Bhabhar; area 13,757 sq.mi.; population (1941) 1,581,262. The submontane strips were up to 1850 an almost impenetrable forest, given up to wild animals; but since then the numerous clearings have attracted a large population from the hills, who cultivate the rich soil during the hot and cold seasons, returning to the hills in the rains. The rest of Kumaon is a maze of mountains, some of which are among the loftiest known. In a tract not more than 140 m. in length and 40 m. in breadth there are over thirty peaks rising to elevations exceeding 18,000 feet. The rivers rise chiefly in the southern slope of the Tibetan watershed north of the loftiest peaks, amongst which they make their way down valleys of extraordinary depth. The principal are the Sarda (Kali), the Pindar and Kailganga, whose waters join the Alaknanda. There is valuable timber in the uncleared forest tracts. The chief trees are the *chir,* or three-leaved Himalayan pine, the cypress, fir, alder, *sāl* or iron-wood, and *saindan.* There are mines of iron, copper, gypsum, lead and asbestos. Except in the submontane strips and deep valleys the climate is mild. The rainfall of the outer Himalayan range, which is first struck by the monsoon, is double that of the central hills, in the average proportion of 80 in. to 40. No winter passes without snow on the higher ridges, and in some years it is universal throughout the mountain tract. Frosts, especially in the valleys, are often severe. Leprosy is prevalent in the east of the district while goitre and cretinism are found.

Kumaon proper constituted an old Rajput principality, which became extinct at the beginning of the 19th century. The country was annexed after the Gurkha war of 1815. In 1891 the division was composed of the three districts of Kumaon, Garhwal and the Tarai; but the two districts of Kumaon and the Tarai were subsequently redistributed and renamed after their headquarters, Naini Tal and Almora. Rice and wheat are important crops and in those areas which escape severe frost much fruit is grown.

KUMASI (COOMASSIE), the capital and business centre of Ashanti, British West Africa, in 6° 34′ N., 2° 12′ W. Pop. 1921 census, 20,268; 1937 estimate 43,413. The inhabitants include 200 to 300 Europeans and a number of Syrians. Of the Africans nearly half are non-Ashanti; many come from the Ivory Coast. Kumasi has been rebuilt since 1901 and is divided into the business quarter, Kingsway being the main thoroughfare, and the European and African residential quarters; many Kumasis live in substantial bungalows. The public buildings include the fort, built in 1896, and now used as the European club house; and several churches, hospitals and schools, including a Wesleyan training college for teachers. A modern drainage system has been provided, and the town is lit by electricity. Most of the swamps in and around Kumasi had been reclaimed by 1929; one of the largest swamps was converted into the central market site. The town is governed by a public health board (established 1925), on which Europeans and Africans are equal members. Kumasi is connected by railway with Takoradi and Accra, and is the centre of a network of motor roads. A motor park of seven acres is provided.

Kumasi derives its name from the okum trees which lined the streets (*Kum-ase,* under the okum tree). The old town was practically destroyed by the British in 1874 (*see* ASHANTI). It is described as having had a handsome appearance and as showing the comparatively high state of culture attained by the Ashanti. The king's palace, built of red sandstone had been modelled, it is believed, on Dutch buildings at Elmina. It was blown up by Wolseley's forces on Feb. 6, 1874. The houses were built of red clay, the streets were numerous, broad and regular; the main avenue was 70 yd. wide. A large market-place existed on the south-east, and behind it, in a grove of trees, was the Spirit House. This was the place of execution. A new royal palace was built, after the withdrawal of the British in 1874, but it was of clay, not brick, and within the limits of the former town were wide stretches of grass grown country. In 1896 the town again suffered at the hands of the British, when several of the largest and most ancient houses in the royal and priestly suburb of Bantama were destroyed by fire. In the revolt of 1900 Kumasi was once more injured. The railway from Sekondi (near Takoradi) reached Kumasi in Sept. 1903, and from that time is dated the revival in trade leading to the rapid expansion of the town. The return of Prempeh in 1924, followed by his election in 1926 as Head Chief of the Kumasi division, had a marked effect on its development.

See J. Maxwell, "Ashanti and Kumasi—The Garden City of West Africa," in *Jnl. African Soc.,* April 1928; and the authorities cited under ASHANTI.

KÜMMEL, a sweet liqueur, flavoured with cumin and caraway seed. There are about 50 brands on the market. The originals were made in Riga, a famous Hansa town on the Baltic, once the capital of Latvia. The caraway seeds for the making of Kümmel grow best in the neighbourhood of Riga. Allasch, a generic term used to describe all kinds of kümmels, was originally an estate in the former Russian territory of Livonia, near Riga. It belonged to the family of von Blanckenhagen. A liqueur produced there in 1823 under the name of "Allasch Doppelt Kümmel" gained fame and found acceptance at Queen Victoria's court. In 1846 Mr. A. A. Wolfschmidt founded the firm bearing his name. He earned distinction as the maker of Riga Kümmel, the brand which bore his name becoming a favourite after-dinner liqueur.

KUMQUAT, the group name of several shrubs of the genus *Fortunella,* closely allied to the orange and lemon, and formerly placed under *Citrus japonica.* Natives of eastern Asia, these small trees are now widely cultivated throughout the subtropics; they grow 8 to 12 ft. high, the branches are mainly thornless and have dark green, glossy leaves and pure white orange-like flowers standing singly or clustered in the leaf-axils. The bright orange-yellow fruit is round or ellipsoidal, about 1 in. in diameter, with mildly acid, juicy pulp and a sweet, edible, more or less pulpy skin. The kumquat has long been cultivated in China and Japan, and was introduced into Europe in 1846 by Robert Fortune, collector for the London Horticultural society, and shortly after into North America. It is much hardier than most plants of the orange tribe, and succeeds well when grafted on the trifoliate orange, *Poncirus trifoliata.* It is largely used by the Chinese as a candied fruit.

The oval or Nagami kumquat (*F. margarita*) is the commonest species; the fruits are elliptic, reddish when ripe, and about 1½ in. to 2 in. long. The round or Marumi kumquat is *F. japonica.* The Meiwa kumquat, in which both the pulp and the rind of the fruit are sweet, is considered an intrageneric hybrid and is widely grown in China.

KUMYKS, a people of Turkish stock in Caucasia, occupying the Kumyk plateau in north Daghestan and south Terek, and the lands bordering the Caspian. It is supposed that Ptolemy knew them under the name of Kami and Kamaks. They are neighbours of the Nogai Tatars.

KUN, BÉLA (1886–), Hungarian politician, was born near Győr, of middle class Jewish parentage. He passed his youth unnoticed, and he eventually entered the University of Kolozsvár (Chij), where he graduated in jurisprudence. He intended to become a lawyer, but soon tired of the profession and took up journalism and politics, early becoming an extremely active member of the Socialist party; his work and influence at this period were, however, no more than local. Having become implicated in the mismanagement of the funds of a workmen's co-operative society, he fell into disgrace, withdrew temporarily from public life, and obtained a minor post on the socialist daily paper, *Nepszava,* in Budapest.

Captured by the Russians early in the World War, Kun was in Russia at the time of the revolution. He immediately ranged himself on the side of the Bolsheviks and became an apostle of their gospel among the Hungarian prisoners of war. After the Armistice, he planned to return to his country in order to help to win her to Bolshevism. He was already known to, and appreciated by, Lenin. He was therefore furnished with a false

passport, and, disguising himself as a Red Cross doctor, crossed the frontier with a party of fellow-revolutionaries.

Lenin had supplied Kun with liberal funds; but the whole political situation favoured him. The extreme revolutionary gazette *Vörös Ujsag* (*Red News*), which he soon began to publish, won him many supporters among the despairing masses who found Karolyi's half-measures futile. Kun soon found himself in conflict with the police and on one occasion shortly before his advent to power was badly injured and imprisoned. He had not yet recovered and was still in gaol when, in the spring of 1919, the Karolyi cabinet, as a protest against the harsh conditions of the victorious powers, decided to hand over the Government to the Bolsheviks, and placed Kun at their head.

Kun's programme was to "arm at once, and forcibly transfer every industry and all landed property without conservation into the hands of the proletariat." At first he collaborated with the Social democrats, but soon shouldered them aside, nationalized all banks, all concerns with over 20 employees, all landed property over 1,000 ac., every building other than workmen's dwellings. All jewellery, all private property above the minimum (*e.g.*, two suits, 4 shirts, 2 pairs of boots and 4 socks) was seized; servants abolished, bathrooms made public on Saturday nights; priests, with the insane, criminals and shopkeepers employing paid assistants were declared incapable of the active or passive suffrage. International loans of over 10,000 kronen were repudiated. All this entailed prodigious work and the creation of a new bureaucracy which was most unpopular. Moreover, the reforms were unsuccessful; in practice the former owners of estates and factories remained on as their managers, the only difference being that production deteriorated very rapidly and the State had to pay the wages and make up the deficit. Kun started to issue a new currency, which the peasants, already disappointed that the division of the large estates, proposed and partly begun by Karolyi, had been stopped, and fearful that their turn would come to be nationalized, refused to accept. They boycotted the towns; and as the blockade was still on, the urban population starved, while prices soared.

Kun planned to convert the peasants to communism by force of arms; but meanwhile there were foreign campaigns to wage. After a first failure with the "soldiers councils" system, Kun and Boehm organized a well-disciplined army, with which they attacked and defeated the Czech troops occupying Slovakia. Kun, who considered himself Lenin's advance guard in Central Europe, and held long daily conversations by wireless with his master, made tireless communist propaganda at home and in Vienna, and tried hard and not unsuccessfully to play off the Allied great and lesser Powers against each other. When, however, the Entente stopped the Hungarian advance in Slovakia, he could no longer appeal to nationalist feelings, and his position became desperate. The peasants were discontented, the counter-revolution was organizing. Kun commenced a "Red terror" against his enemies in Hungary, and again attacked the Rumanians, but they easily drove his forces back, and he fled to Vienna on Aug. 1. Here he was interned in the local lunatic asylum, but after an attempt had been made to murder him by means of poisoned Easter eggs (which, being a Jew, he did not eat), he was allowed to go to Russia. Here he played an obscure but apparently important part, and was believed to visit central Europe periodically. On April 26, 1928, he was arrested in Vienna, whither he had returned to organize a Hungarian Communist party. The Austrian Government refused to extradite him to Hungary, on the ground that the evidence given at his previous trials *in absentia* in Hungary had not satisfactorily proved criminal offences against him. He therefore escaped with three months' imprisonment for minor offences and a renewal of his deportation order.

Kun was the only man amongst the Hungarian Bolsheviks who possessed at the same time an aptitude for ruling a country, and a genuine fanaticism. He was a cruel and violent man only when he thought it necessary for the triumph of his ideas. But he was impulsive and incredibly naïve, with an extremely limited knowledge of men. (G. Ro.; C. A. M.)

KUNAR, a river and valley of Afghanistan, on the north-west frontier of British India. The Kunar valley (Khoaspes in the classics) is the southern section of that great river system which reaches from the Hindu Kush to the Kabul river near Jalalabad, and which, under the names of Yarkhun, Chitral, Kashkar, etc., is more extensive than the Kabul basin itself. The lower reaches of the Kunar are wide and comparatively shallow, the river meandering in a multitude of channels through a broad and fairly open valley, well cultivated and fertile, with large flourishing villages and a mixed population of Mohmand and other tribes of Afghan origin. Here the hills to the eastward are comparatively low, though they shut in the valley closely. Beyond them are the Bajour uplands. To the west are the great mountains of Kafiristan, called Kashmund, snow-capped, and running to 14,000 ft. of altitude. Amongst them are many wild but beautiful valleys occupied by Kafirs. From 20 to 30 m. up the river on its left bank, under the Bajour hills, are thick clusters of villages, amongst which are the ancient towns of Kunar and Pashat. The chief tributary from the Kafiristan hills is the Pechdara, which joins the river close to Chagan Sarai. It is a fine, broad, swift-flowing stream, with an excellent bridge over it (part of Abdur Rahman's military road developments), and has been largely utilized for irrigation. Above Chagan Sarai, as far as Arnawai, where the Afghan boundary crosses the river, and above which the valley belongs to Chitral, the river narrows to a swift mountain stream obstructed by boulders and hedged in with steep cliffs and difficult "parris" or slopes of rocky hill-side. Wild almond here sheds its blossoms into the stream, and in the early summer much of the floral beauty of Kashmir is to be found. At Asmar there is a slight widening of the valley, and the opportunity for a large Afghan military encampment, spreading to both sides of the river and connected by a very creditable bridge built on the cantilever system. There are no apparent relics of Buddhism in the Kunar, such as are common about Jalalabad or Chitral, or throughout Swat and Dir. The Kunar valley route to Chitral and to Kafiristan is being developed by Afghan engineering.

KUNBI, "householder," the great agricultural caste of Western India (post-Vedic Skt. *kutumbika,* which may be a Sanskritized form of an aboriginal word). The name becomes Kurmi in the north where that caste is numerous along the Ganges and to the south of that river. The Kunbi corresponds to the Kāpu of the Telugu country in Madras, and to many castes elsewhere. The Marātha is really an upper-class Kunbi, who in some parts of the Deccan forms an actual majority of the population. Marātha, or Mahratta, is not originally a caste name, being derived from the Sanskrit Mahārāshtra, "Great Kingdom," a territory. In 1921 the Kunbis numbered 6,769,502, including the Kurmis.

KUNCHINJINGA: *see* KANCHENJANGA.

KUNDT, AUGUST ADOLPH EDUARD EBERHARD (1839–1894), German physicist, was born at Schwerin in Mecklenburg on Nov. 18, 1839. He studied at Leipzig, but afterwards went to Berlin. In 1867 he became *Privatdozent* in Berlin University, and in the following year professor of physics at the Zürich Polytechnic; then, after a year or two at Würzburg, he was called in 1872 to Strassburg, where he was one of the founders of the Physical Institute. Finally in 1888 he succeeded Helmholtz in the chair of experimental physics and directorship of the Berlin Physical Institute. He died at Israelsdorf, near Lübeck, on May 21, 1894. Kundt's special work was done in sound and light. In the former he developed a valuable method for the investigation of standing waves within pipes. He used a finely divided powder such as lycopodium,. dusted over the interior of a tube to show the position of the nodes. The method can be used for the determination of the velocity of sound in gases and in solids. In light Kundt's name is widely known for his inquiries in anomalous dispersion, not only in liquids and vapours, but even in metals, which he obtained in very thin films by means of a laborious process of electrolytic deposition upon platinized glass. He also carried out many experiments in magneto-optics, and succeeded in showing the rotation under the influence of magnetic force of the plane of polarization in certain gases and

vapours.

KUNDUZ, a khanate and town of Afghan Turkistan. The khanate is bounded on the east by Badakshan, on the west by Tashkurghan, on the north by the Oxus and on the south by the Hindu Kush. It is inhabited mainly by Uzbegs and is the trade centre of a considerable district, including Kataghan, where the best horses in Afghanistan are bred.

KUNENE, formerly known also as Nourse, a river of South-West Africa, with a length of over 700 m., mainly within Portuguese territory, but in its lower course forming the boundary between Angola and South-West Africa. The main stream rises in 12° 30′ S. and about 160 m. in a direct line from the sea at Benguella and runs generally from north to south through four degrees of latitude, but finally flows west to the sea through a break in the outer highlands. A little south of 16° S. it receives the Kulonga from the east, and in about 16° 50′ the Kakulovar from the west. Between the mouths of the Kulonga and Kakulovar the Kunene traverses a swampy plain, inundated during high water, and containing several small lakes at other parts of the year. From this swampy region divergent branches run south-east. They are mainly intermittent, but the Kwamatuo, which leaves the main stream in about 15° 8′ E., 17° 15′ S., flows into a large marsh or lake called Etosha, which occupies a depression in the inner tableland about 3,400 ft. above sea-level. From the south-eastern end of the Etosha lake streams issue in the direction of the Okavango, to which in times of great flood they contribute some water. From the existence of this divergent system it is conjectured that at one time the Kunene formed part of the Okavango, and thus of the Zambezi basin. (*See* NGAMI.)

On leaving the swampy region the Kunene turns decidedly to the west, and descends to the coast plain by a number of cataracts, of which the chief (in 17° 25′ S., 14° 20′ E.) has a fall of 330 feet. The river becomes smaller in volume as it passes through an almost desert region with little or no vegetation. The stream is sometimes shallow and fordable, at others confined to a narrow rocky channel. Near the sea the Kunene traverses a region of sand-hills, its mouth being completely blocked at low water. The river enters the Atlantic in 17° 18′ S., 11° 40′ E. There are indications that a former branch of the river once entered a bay to the south.

KUNERSDORF, a village of Germany, 4 mi. E. of Frankfurt-on-Oder, the scene of a great battle, fought on Aug. 12, 1759, between the Prussian army commanded by Frederick the Great and the allied Russians under Soltykov and Austrians under Loudon, in which Frederick was defeated with enormous losses and his army temporarily ruined. (*See* SEVEN YEARS' WAR.)

KUNGRAD, a town in the Kara Kalpak autonomous area of the Kazakstan S.S.R. in lat. 42° 58′ N., long. 58° 50′ E., on the Taldyk arm of the delta of the Amu-darya, 50 mi. S. of Lake Aral, altitude 260 ft. Population 3,098. It is the centre for caravan routes linking the Khorezm oasis and Khiva with Krasnovodsk and other places on the Caspian, and with the Emba river, and the region of Aktyubinsk.

KUNGUR, a town in the Uralsk area of the Russian S.F.S.R. in 57° 25′ N., 56° 48′ E., on the railway from Perm to Sverdlovsk, where it crosses the Sylva river. Pop. (1935) 24,602. It has a civic electricity and water supply, and its industries include the making of alabaster, of leather goods and of beer. The town was founded in 1642, and frequently attacked by the tribes of the Volga during the 17th century. Its fortress, erected in 1673, was destroyed at the beginning of the 19th century. Its situation on the main road to Siberia and on a navigable river led in pre-railway times to its development as a trading centre; its leather goods were noted in Moscow and Gorky, and its merchants imported tea and other goods direct from Kiakhta.

KUNKEL (or KUNCKEL) **VON LOWENSTJERN, JOHANN** (1630–1703), German chemist, was born in 1630, near Rendsburg, his father being alchemist to the court of Holstein. He became chemist and apothecary to the dukes of Lauenburg, and then to the elector of Saxony, Johann Georg II, who put him in charge of the royal laboratory at Dresden. In 1679 he became director of the laboratory and glass works of Brandenburg, and in 1688 Charles XI. brought him to Stockholm, gave him the title of Baron von Lowenstjern in 1693 and made him a member of the council of mines. He died on Mar. 20, 1703 (others say 1702) at Dreissighufen, his country house near Pernau. Kunkel shares with Boyle the honour of having discovered the secret of the process by which Brand of Hamburg had prepared phosphorus in 1669, and he found how to make artificial ruby (red glass) by the incorporation of purple of Cassius. His work also included observations on putrefaction and fermentation, on the nature of salts, and on the preparation of pure metals. Although he derided the notion of the alkahest, or universal solvent, and denounced the deceptions of the fraudulent alchemists, he apparently believed in the possibility of transmuting metals.

His chief works were *Oeffentliche Zuschrift von dem Phosphor Mirabil* (1678); *Ars vitriaria experimentalis* (1689) and *Laboratorium chymicum* (1716).

KUN-LUN: *see* KUEN-LUN.

KUNZITE, a transparent lilac-coloured variety of spodumene (*q.v.*), used as a gem-stone. It was discovered in 1902 near Pala, in San Diego county, Calif., and named after Dr. George F. Kunz, of New York. Since then it has also been found in Madagascar.

KUOPIO, one of the nine administrative departments of the republic of Finland, with that of Oulu (Uleåborg) on the north, Vaasa (Vasa) on the west, and Mikkeli (St. Michel) on the south. Russia lies to the east. Area, 13,970 sq.m. excluding lakes. Pop. (est. 1937) 390,911. The surface is hilly, from 600 to 800 ft. of altitude in the north (Suomenselkä hills), and from 300 to 400 ft. in the south. It is built up of gneisso-granites, which are covered, especially in the middle and east, with younger granites, and partly of gneisses, quartzite, and talc schists and augitic rocks. The whole is covered with glacial and later lacustrine deposits. The soil is of moderate fertility, but often full of boulders. Large lakes cover 16% of the surface, marshes and peat bogs over 29% of the area, and much of the remainder is forest clad. The climate is severe, the average temperature being for the year 36° F, for January 13° and for July 63°. A very small portion is under cultivation. Rye, barley, oats and potatoes are the chief crops. Dairy farming and cattle breeding are of rapidly increasing importance. Iron ore is mined and smelted. There are small engineering and chemical works, tanneries, saw-mills, paper-mills and distilleries. The preparation of carts, sledges and other wooden goods is an important domestic industry. Timber, iron, butter, furs and game are exported. The chief town is Kuopio (*q.v.*).

KUOPIO, the chief town of the above department, in 62° 50′ N., 27° 35′ E., on Lake Kalla-vesi and on the railway. Pop. (est. 1939) 24,836. Kuopio, in consequence of rail and steamer communication with middle Finland and the sea (via Saima canal), is a trading centre of considerable importance. There is an agricultural school at Leväis, close by.

KUPKA, FRANTISEK (1871–), Czech painter, born at Dobruška in Bohemia, studied at the Academy of Fine Arts in Prague, at Vienna and in Paris, where he finally settled. His inventive talent, strengthened by a close knowledge of contemporary society and coloured by his sceptical outlook, was manifested notably in satirical drawings and caricatures which appeared in *Cocorico, L'assiette au beurre, Le Canard Sauvage* and other Parisian papers. He became known principally through a series of drawings entitled "L'Argent" and through his admirable illustrations to the book *L'homme et la terre* by E. Reclus (1905). In 1908 Kupka provided the illustrations for a bibliophile edition of *The Fates* by C. M. R. Leconte de Lisle and three years later for the *Lysistrata* of Aristophanes. In search of a new form of artistic expression, he became an adherent of the tendency known as "Orphism," and produced large canvases in which the interest of the subject matter is subordinated to the rhythm of the colour scheme. His ironical powers of observation, his bold imagery and philosophical outlook make Kupka one of the most interesting artistic figures of his time.

KUPRILI, the name of a family of Turkish statesmen.

1. MOHAMMED KUPRILI (*c.* 1586–1661) was the grandson of an Albanian who had settled at Kupri in Asia Minor. He began

life as a scullion in the imperial kitchen, became cook, then purse-bearer to Khosrev Pasha, and so, by wit and favour, rose to be master of the horse, "pasha of two tails," and governor of a series of important cities and sanjaks. In 1656 he was appointed governor of Tripoli; but before he had set out to his new post he was nominated to the grand vizierate. He suppressed an *émeute* of orthodox Mussulman fanatics in Constantinople (Sept. 22), and put to death certain favourites of the powerful Valide Sultana, by whose corruption and intrigues the administration had been confused. A little later (January 1657) he suppressed with ruthless severity a rising of the spahis; a certain Sheik Salim, leader of the fanatical mob of the capital, was drowned in the Bosporus; and the Greek Patriarch, who had written to the voivode of Wallachia to announce the approaching downfall of Islam, was hanged.

Having cowed the disaffected elements in the state, he turned his attention to foreign enemies. The victory of the Venetians off Chios (May 2, 1657) was a severe blow to the Turkish sea-power, which Kuprili set himself energetically to repair. A second battle, fought in the Dardanelles (July 17–19), ended by a lucky shot blowing up the Venetian flag-ship; the losses of the Ottoman fleet were repaired, and in the middle of August Kuprili appeared off Tenedos, which was captured on the 31st and reincorporated permanently in the Turkish empire. Thus the Ottoman prestige was restored at sea, while Kuprili's ruthless enforcement of discipline in the army and suppression of revolts, whether in Europe or Asia, restored it also on land. But his haughty and violent temper broke the traditional friendly relations between Turkey and France. The French ambassador, de la Haye, had delayed bringing him the customary gifts; Kuprili was bitterly offended, and, on pretext of an abuse of the immunities of diplomatic correspondence, bastinadoed the ambassador's son and cast him and the ambassador himself into prison. A special envoy, sent by Louis XIV., to demand reparation, was treated with studied insult; Mazarin therefore abandoned the Turkish alliance, and threw the power of France on to the side of Venice, openly assisting the Venetians in the defence of Crete.

Kuprili's restless energy continued to the last, exhibiting itself on one side in wholesale executions, on the other in vast building operations. By his orders castles were built at the mouth of the Don and on the bank of the Dnieper, outworks against the ever-aggressive Tatars, as well as on either shore of the Dardanelles. His last activity as a statesman was to spur the sultan on to press the war against Hungary. He died on Oct. 31, 1661. Kuprili recommended the sultan to appoint his son as his successor, and so founded a dynasty of able statesmen who occupied the grand vizierate almost without interruption for half a century.

2. FAZIL AHMAD KUPRILI (1635–1676), son of the preceding, succeeded his father as grand vizier in 1661 (this being the first instance of a son succeeding his father in that office since the time of the Chenderélis). Three years after his accession to office Turkey suffered a crushing defeat at the battle of St. Gothard, and was obliged to make peace with the Empire. But Kuprili's influence with the sultan remained unshaken, and five years later Crete fell to his arms (1669). He fought against Poland, in defence of the Cossacks, who had appealed to Turkey for protection. At first successful, Kuprili was defeated by the Poles under John Sobieski at Khotin and Lemberg; the Turks, however, continued to hold their own, and finally in October 1676 consented to honourable terms of peace by the treaty of Zurawno (October 16, 1676), retaining Kaminiec, Podolia and the greater part of the Ukraine. Three days later Ahmad Kuprili died. He was a liberal protector of art and literature, and the kindliness of his disposition formed a marked contrast to the cruelty of his father.

3. ZADE MUSTAFA KUPRILI (1637–1691), surnamed Fazil, son of Mohammed Kuprili, became grand vizier to Suleiman II. in 1689. Called to office after disaster had driven Turkey's forces from Hungary and Poland and her fleets from the Mediterranean, he began by ordering strict economy and reform in the taxation. He reorganized the army and navy, and enacted the *Nizam-i-jedid,* or new regulations for the improvement of the condition of the Christian ayas. He was killed at Salankamen on Aug. 19, 1691, when the total defeat of the Turks by the Austrians led to their expulsion from Hungary.

4. HUSSEIN KUPRILI (surnamed AMUJA-ZADE) was the son of Hassan, a younger brother of Mohammed Kuprili. He became grand vizier in 1697, and owing to his ability and energy the Turks were able to drive the Austrians back over the Save, and Turkish fleets were sent into the Black Sea and the Mediterranean. The efforts of European diplomacy succeeded in inducing Austria and Turkey to come to terms by the treaty of Carlowitz, whereby Turkey was shorn of her chief conquests (1699). After this event Hussein Kuprili, surnamed "the Wise," suppressed the revolts which had broken out in Arabia, Egypt and the Crimea, subdued the Janissaries, and instituted administrative and financial reform. He was driven from office in 1702, and died shortly afterwards.

5. NUMAN KUPRILI, son of Mustafa Fazil, became grand vizier in 1710. He failed to introduce order into the administration and was dismissed from office in less than fourteen months after his appointment.

6. ABDULLAH KUPRILI, a son of Mustafa Fazil Kuprili, was appointed Kaimakam or deputy of the grand vizier in 1703. He commanded the Persian expedition in 1723 and captured Tabriz in 1725, resigning his office in 1726. In 1735 he again commanded against the Persians, but fell at the disastrous battle of Bagaverd.

KUPRIN, ALEXANDER IVANOVICH (1870–1938), a Russian writer, received his education at the cadet school in Moscow and entered the Russian army in 1890. In 1897 he resigned his commission and devoted his time to literature. His first collection of short stories was published in 1903, but it was not until 1905 that his name was made famous by his novel *The Duel,* a realistic picture of garrison life on the western frontier, which made Kuprin popular with the radicals, who accepted the book as a categorical condemnation of the army. In the revolution, however, he was anti-Bolshevik, and emigrated to France after the collapse of the White Army. Unlike the usual Russian type of story, his tales are full of action, but his style shows his lack of a literary education. Kuprin's works were published in 1910 at St. Petersburg (now Leningrad) in 6 vols., later increased to 14 vols. The following, among others, have been translated into English: *The Bracelet of Garnets* (1911; Eng. trans. by Leo Pasvolsky, 1919); *Sasha* (Eng. trans., 1920); *The River of Life* (Eng. trans. by S. Koteliansky and J. Middleton Murry, 1916); *A Slav Soul* (trans. 1916, with introduction by Stephen Graham). His novel, *Yama,* was translated into French under the title *La Fosse aux Filles* (1923). He died March 15, 1938.

KURA'AN: *see* NUBA.

KURAKIN, BORIS IVANOVICH, PRINCE (1676–1727), Russian diplomatist, brother-in-law of Peter the Great, was one of the earliest of Peter's pupils. In 1697 he was sent to Italy to learn navigation. He filled many important diplomatic missions. He was sent to Rome in 1707 to prevent papal recognition of Stanislaus Leszczynski as king of Poland. From 1708 to 1712 he represented Russia at London, Hanover and The Hague successively, and, in 1713, was the principal Russian plenipotentiary at the peace congress of Utrecht. From 1716 to 1722 he was ambassador at Paris, and when, in 1724, Peter set out on his Persian campaign, Kurakin was appointed the supervisor of all the Russian ambassadors accredited to the various European courts. "The father of Russian diplomacy" was most useful to Russia perhaps when the Great Northern war (*see* SWEDEN: *History*) was drawing to a close. He prevented Great Britain from declaring war against Peter's close ally, Denmark, at the crisis of the struggle. Kurakin's autobiography, carried down to 1709, is an historical document of the first importance. He wrote *History of Tsar Peter Aleksievich and the People Nearest to Him* (1682–1694) (Rus.).

See *Archives of Prince A. Th. Kurakin* (Rus.) (St. Petersburg, 1890); A. Brückner, *A Russian Tourist in Western Europe in the beginning of the XVIIIth Century* (Rus.) (St. Petersburg, 1892).

KURANDVAD or **KURUNDWAD,** native state of India, in the Deccan and Kolhapur agency within Bombay, part of the Southern Mahratta *jagirs.* Created in 1772 by a grant from the peshwa, the state was divided in 1811 into two parts one of which,

called Shedbal, lapsed to the British government in 1857. In 1855 Kurundwad was further divided between a senior and a junior branch. The territory of both is widely scattered among other native states and British districts. Area of the senior branch, 200 sq.mi.; pop. (1941) 52,552. Area of junior branch, 126 sq.mi.; pop. (1941) 46,609. The joint tribute is £640. The chiefs are Brahmans by caste, of the Patwardhan family. The town of Kurundwad, in which both branches have their residence, is on the right bank of the Panchganga river near its junction with the Kistna. Pop. (1941) 9,026.

KURANKO, a light-skinned, robust people of medium height and Mandinga origin, living on the Niger sources in French Guinea and Sierra Leone. They have elected high chiefs. The nephew usually marries the widow of his maternal uncle. Descent is patrilineal. Family property is inherited by the brother of the deceased, and personal possessions by his son. Each of the several clans has its *tana* or tabu animal. Several secret societies exist for men and women (*Segere, Andomba, Kono*). The Kuranko practise cultivation and arboriculture (Kola tree), and their religion is animist.

See N. W. Thomas, *Anthropological Report on Sierra Leone* (1916).

KURBASH or **KOURBASH,** a whip or strap about a yard in length, made of the hide of the hippopotamus or rhinoceros. It was an instrument of punishment and torture used in various Mohammedan countries, especially in the Turkish empire. "Government by kurbash" denotes the oppression of a people by the constant abuse of the kurbash to maintain authority, to collect taxes or to pervert justice.

KURDISTAN, in its broadest or ethnographical acceptation, means the region inhabited by the Kurds, an area stretching north and south from Mount Ararat to the Diyala tributary of the Tigris, and east and west from about 28° E. to the Kara Su. Thus the country occupied more or less continuously by the Kurds is 600 m. in length from south-east to north-west and from 120–150 m. in breadth. The territory is now divided between Persia, 'Iraq and Turkey and probably has a total Kurdish population of about 1,500,000.

In Persia the Kurds occupy mainly the provinces of Kermanshah and Kurdistan as well as the southern part of Azerbaijan and the mountainous region of the districts of Urmia, Khoi, and the southern slopes of Ararat. Colonies of Kurds are found also in Khurasan, Fars and Burujird (Luristan). In Asiatic Turkey the principal localities occupied by Kurds lie just along the Turco-Persian frontier and Kurds mingled with Christians inhabit the region around Lake Van. Between the upper courses of the Tigris and Euphrates Kurds are found mainly to the north of a line joining Feshkhabur (near Jazirat ibn Omar) to Sumaisat above Birejik and they are also found considerably westward of the Euphrates. They are numerous around Bitlis, Erzinjan, Diarbekr, Erzerum and on the western slopes of Ararat. In the mandated territory of 'Iraq, in what was formerly the Turkish *vilayet* of Mosul, according to the census of 1939, they numbered 500,000; they occupy the whole of the town of Sulaimaniya, and form a majority in Erbil and Kirkuk. (In Russian Transcaucasia the Kurds of Erivan and Kars were said to number 125,000 in 1910.) The Kurdish race is thus distributed under three jurisdictions: a condition which is likely to retard their development into a homogeneous community.

BY COURTESY OF THE NEAR EAST RELIEF

KURD WOMAN AND CHILD

Kurdistan, in the narrower sense, is a province of Persia situated in the mountainous country between Azerbaijan on the north, and Kermanshah on the south, extending to the frontier of Iraq on the west and bounded east by the provinces of Gerrus and Hamadan.

The administrative headquarters is Sinandaj (more generally called Sinneh). The revenue of the province is small in comparison with the area and due to the fact that a great part of the population consists of restive and turbulent nomads who are resentful of official control.

The province occupies the mountainous system which starting from the range of Anti-Taurus sweeps east to become the Zagros, which the Kurds share with the Lurs farther south. The country presents either masses of mountains heaped upon each other or great upland tablelands covered with flocks and the tents of the Ilyats. The valleys are deep and narrow, wherein the villages are commonly built in situations which protect the inhabitants from the inclemency of the weather. The soil in the valleys is good and would yield in abundance, but the Kurds prefer a pastoral life. The district of Ardalan in particular produces excellent pasture. The chief natural productions are wheat, barley, cotton, tobacco and all kinds of fruits (particularly cherries) and vegetables. The walnut tree is common and the oaks here yield great quantities of gall-nuts which are largely exported. Snow falls for four months of the year during which the sedentary people live much in underground houses as a protection from the weather, where they store food for themselves and fodder for their cattle. The great need is fuel and dried dung is carefully stored for this purpose.

The population consists almost wholly of hill people and nomad tribes, except at Sinandaj and a few other populous centres. Sinandaj is situated in 35° 15′ N. and 47° 18′ E., at an elevation of 5,300 ft. and is 200 m. S. of Tabriz, 80 m. N.W. of Hamadan and 87 m. N. of Kermanshah to all of which places cart-tracks lead. The population is estimated at about 32,000, of whom a few hundreds are Jews and Armenians. The town lies snugly in a valley and in general appearance is pleasing, the houses being generally well built among gardens. The residence of the governor is a castle called Dar ul Ayaleh on a hill above the town. The chief industries are the making of carpets of wool and felt and as the local wool is of excellent quality the products are highly prized. Other articles of trade are hides, skins, sheep and cereals.

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(P. Z. C.)

HISTORY

The origin of the Kurds cannot yet be accurately defined. The oldest Sumerian records leave little doubt that not later than 2,000 B.C. a people named Gūtū or Kūti, later on called Kūrtie by the Assyrians, held the region of middle Tigris from the district of Bohtan roundabout Mount Gûdi (perverted into Jebel Judi by the Arabs), across Bezabda (*Jezirat Ibn Omar* of the Arabs), to the mountains of Kuh-i-Shengar (Jebel Sinjar) in the west and the chains of Zagros in the east. Another group of kindred tribes named Kassites (Kassu) descended into Babylon from the southern hills of Zagros and governed Babylonia (Akkad) for about six centuries (1800–1200 B.C.). It appears that these original

Kurdish tribes, perhaps of pure Aryan stock, were one of the oldest autochthonous people of those mountain regions.

Called Kardu by later Assyrians and pre-Muslim Arabs, Gortūkh by Armenians, and Carduchi (Καρδοχοῦι) Gordse, Cyrti, etc., in the Greek and Roman classics, the history of the Kurds has consequently been very confused and illusory. There is, however, little doubt that by a comparative study of the records of Sargon II. and Assarhaddon of Assyria, of Herodotus, of Moses of Chorene (Armenian) and Persian epic poems some of the great Kurdish tribes, the Bokhtis, the Mukris, the Hadabanis, the Mihranis (Millis), the Babans and others, can be identified as existing as early as the 6th century B.C. and living the same sort of life as to-day. They constitute the oldest aristocracy throughout the world in so far as their tribal names are concerned.

BY COURTESY OF THE NEAR EAST RELIEF

TURKISH KURD

From the dawn of history the Kurdish tribes have scarcely submitted to any empire or conqueror for long. They fought the Sumerian dynasties, one of which called itself Gutium. The Hittite monarch, Shubbilukuma (1370 B.C.), refers to them as Gurda and to their god Gir. As the chief constituent elements of the Nairi confederation they fought all the great Assyrian monarchs from Salmanasor I. onwards until they helped Cyaxares and Cyrus to overthrow both Nineveh and Babylon. Viewed from an historical angle, it appears that the Assyrian empire, even at the height of its power, felt secure only in the plain of Nineveh and westwards; whereas the Kurdish tribes in the north, north-east, and on the borders of Elam caused increasing trouble to Assyria by their unvanquished self-assertion. On the downfall of the Median empire, the Kurds seem to have absorbed the remnants of Mede warriors as they absorbed later Assyrians, Armenians and the Turkomans; just in the same way as they have themselves been absorbed by their neighbours. Under Cyrus and Darius, the Kurdish tribes were completely Aryanized and their national characteristics were formed. On a more or less equal footing with the great satraps of Achaemian Persia, they not only supplied troops but they became the privileged guardians of Zoroastrian temples (the Ravandi tribe). They fought the Greeks of Xenophon on their retreat through Bohtan, as well as the Seleucids who tried to dominate them, and they were prominent under the Sassanians.

Many Invasions.—The Kurds were not subdued by Arab occupation of their land (7th–9th century). They knew the Aryans, but the Arabs anticipated the later ruthless destruction of Kurdish cities by Mongols. Ruins of these destructions can be seen from Hamadan and Kermanshah to the Tigris. This region formed the Kurdish independent kingdom of Shahrizor (11th to 16th century). The ruins of Yassin Tepe represent the site of the capital city and castle of Shahrizor.

Another independent Kurdish kingdom, the Mervan family, ruled at Diarbekr in the first half of the 11th century, succumbing to the Seljuks. When Salaheddin the Great (Saladin) fought the Crusaders and united most of the Kurdish tribes under his rule in Syria (12th century) Kurdish power was at its height.

When the Mongol Great Khan Mangu sent his brother Hulagu (1252) to conquer Western Asia, he was to suppress those Kurdish "robbers" of Kurd-i-kuh (Shahrizor) who hampered the free movements of the Mongol armies. The Kurds massacred 20,000 Mongols in 1257 before the castle of Arbil.

When the Turks occupied Armenia and Kurdistan in 1514–36, during their wars with Persia, Sultan Selim I. entrusted the organization of these practically independent countries to Mullah Idris, a Kurd of Bitlis. Idris transferred many Kurdish clans into the Arax valley, and Arab Sheikh families into the Kurdish tribes, to convert them to the Sunni faith. Although the Turks conferred honours on Kurdish chiefs the sympathy of the Kurds remained always with Persia, and by close co-operation with their Christian neighbours the Kurds waged unceasing warfare against the Turks for the maintenance of their independence. Led by Bedzkhan Bey of Bohtan, the Yezidi chief of Revanduz and of Hakkiari, the tribes rose against the Turkish reforms, and from 1832 to 1847 the Turks sent army after army to overcome those courageous tribes and destroy their castles. Many of the Kurdish *Derebeys* (Lords of Valleys) were replaced by Turkish governors.

In order to disrupt the unwritten pact of friendship between the Kurds and their Christian neighbours, Abdul Hamid organized in 1890, in his own name, cavalry divisions from the Kurds, which became a scourge to all indiscriminately. This privileged Kurdish force considerably retarded the growth of national self-consciousness among the Kurds and produced hostile feeling between them and the Armenians. (*See* ARMENIA.)

With the downfall of Abdul Hamid, the Kurdish cavalry was suppressed in 1909, and more enlightened Kurds came forward to lead their people. Several Kurdish deputies in the Ottoman chamber and senate took up the national cause. Kurdish newspapers and party clubs were established in Constantinople, Baghdad and Mosul to cultivate a common language for the use of all Kurds. The Young Turks waged war against Ibrahim Pasha of the Millis, the Sheikh Barzani near Mosul, the Hamavends and the tribes of Dersim.

World War I.—None of the Kurdish tribes had any interest in World War I; yet from the beginning they were involved both on Caucasian and the Mesopotamian fronts and suffered heavy losses.

At the Peace Conference in Paris in 1919 Sherif Pasha, a Kurd, represented the claims of the Kurdish race, demanding independence from Turkey. In the Treaty of Sèvres, Kurdistan was defined as a narrow strip of territory lying between the southern frontier of Armenia and Northern 'Iraq. The Treaty of Lausanne did not mention Kurdistan; it left the delimitation of the northern boundary of 'Iraq to a friendly agreement between Great Britain and Turkey; failing this, the dispute was to be solved by the Council of the League of Nations. (*See* MOSUL.)

While the Council of the League was discussing this essentially Kurdish problem a Kurdish rebellion broke out in Turkey in Feb. 1925, having Ginj and other middle Taurus heights as its centre. Sheikh Said, followed by some well-known tribal chiefs, had initial successes. The Turks collected regular troops and, after short and decisive assaults, broke the Kurdish rebellion and captured the ringleaders. A Turkish court martial was set up at Diarbekr, which condemned to death Sheikh Said, Dr. Fuad and 46 other Kurdish nationalist leaders. They were all executed in Aug. 1925. The President of the Turkish court martial stated later that the rebellion had a purely nationalist motive. Later the Turkish Republican Government passed a law transferring the Kurdish leaders from their historic homes in Bohtan Sasun and Bayazid to the unhealthy coasts of Anatolia. Intermittent warfare still went on.

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KURGAN, a town in the Uralsk area of the Russian S.F.S.R., at the head of steam navigation on the Tobol river, in 55° 23′ N., 65° 27′ E. Pop. (1939) 53,224. Its position in the centre of a rich agricultural district and on the river and railway has made it a collecting centre for the butter industry, which started in 1893, and grew with such rapidity that Kurgan was exporting more than

8,000 tons of butter per annum before 1914. It also collects and exports tallow, soap, candles, grain, cattle, leather and hides, and has three annual fairs. Its industries include the making of agricultural machinery, leather goods, sausage making and flour milling and it has an electric turbine. Cherries are grown in the district. Settlements have existed here from remote antiquity and the town receives its name, which means tumulus, from the great number of prehistoric burial mounds. The Tobol is frozen from Nov. 16 to May 8, and the climate is extreme. Average January temperature—1·5° F, July 68·7° F, rainfall 16 to 20 in., mainly in the three summer months.

KURIA MURIA ISLANDS, a group of five islands off the coast of Arabia, British since 1854, formerly attached to Aden but in 1931 transferred to the Persian Gulf Residency. Lofty and rocky, composed principally of granite with Cretaceous and Tertiary limestones resting on it, their total area is 28 sq.m., the largest, Hallaniya, being 22 sq.m. They are probably the ancient *Insulae Zenobii,* and were ceded by the sultan of Muscat to Britain in 1854 as a cable station. They are inhabited by Arabs, who speak a dialect. The islands yield some guano.

KURILES, a chain of small islands belonging to Japan, stretching in a north-easterly direction from Nemuro bay, on the extreme east of the island of Yezo, to Chishima-kaikyo (Kuriles strait), which separates them from the southernmost point of Kamchatka. They extend from 44° 45′ to 50° 56′ N. and from 145° 25′ to 156° 32′ E. Their coasts measure 1,496 m.; their area is 6,159 sq.m.; their total number is 32, and the names of the eight principal islands counting from the south, are Kunashiri, Shikotan, Etorofu (generally called Etorop, and known formerly to Europe as Staten island), Urup, Simusir, Onnekotan, Paramoshiri (Paramusir) and Shumshiri. From Noshapzaki (Notsu-no-saki or Notsu cape), the most easterly point of Nemuro province, to Tomari, the most westerly point in Kunashiri, the distance is 7⅓ m., and the Kuriles strait separating Shumshiri from Kamchatka is about the same width. The name "Kurile" is derived from the Russian *kurit* (to smoke), in allusion to the active volcanic character of the group. The islands lie entangled in a vast net of sea-weed; are the resort of innumerable birds, and used to be largely frequented by seals and sea-otters, which, however, have been almost completely driven away by unregulated hunting.

Near the south-eastern coast of Kunashiri stands a mountain called Rausunobori (3,005 ft. high), round whose base sulphur bubbles up in large quantities, and hot springs as well as a hot stream are found. On the west coast of the same island is a boiling lake, called Ponto, which deposits on its bed and round its shores black sand, consisting almost entirely of pure sulphur. This island has several lofty peaks; Ponnobori-yama near the east coast, and Chachanobori and Rurindake in the north. Chachanobori (about 7,382 ft.) is described by Chamberlain and Mason as "a cone within a cone, the inner and higher of the two being—so the natives say—surrounded by a lake." The island has extensive forests of conifers with an undergrowth of ferns and flowering plants, and bears are numerous. The chief port of Kunashiri is Tomari on the south coast. The island of Shikotan is remarkable for the growth of a species of bamboo (called Shikotan-chiku), having dark brown spots on the cane. Etorofu has a coast-line broken by deep bays, of which the principal are Naibo-wan, Rubetsu-wan and Bettobuwan on the northern shore and Shitokap-wan on the southern. It is covered almost completely with dense forest, and has a number of streams abounding with salmon. Shana, the chief port, is in Rubetsu bay. This island, the principal of the group, is divided into four provinces for administrative purposes, namely, Etorofu, Furubetsu, Shana and Shibetoro. Its mountains are Atosha-nobori (4,035 ft.) in Etorofu; Chiripnupari (5,009 ft.) in Shana; and Mokoro-nobori (3,930 ft.) and Atuiyadake (3,932 ft.) in Shibetoro. Among the other islands three only call for notice on account of their altitudes, namely, Ketoi-jima, Rashua-jima and Matua-jima, which rise to heights of 3,944, 3,304 and 5,240 ft. respectively.

Not much is known about the aborigines. By some authorities Ainu colonists are supposed to have been the first settlers, and to have arrived there via Yezo; by others, the earliest comers are believed to have been a hyperborean tribe travelling southwards by way of Kamchatka. The present population aggregates about 4,400, or 0·7 per sq.m., of whom about 600 are Ainu (*q.v.*).

History.—The Kurile islands were discovered in 1634 by the Dutch navigator Martin de Vries. The three southern islands, Kunashiri, Etorofu, and Shikotan, are believed to have belonged to Japan from a remote date, but at the beginning of the 18th century the Russians, having conquered Kamchatka, found their way to the northern part of the Kuriles in pursuit of fur-bearing animals, with which the islands then abounded. Gradually these encroachments were pushed farther south, simultaneously with aggressions imperilling the Japanese settlements in the southern half of Sakhalin. Japan's occupation was far from effective in either region, and in 1875 she was not unwilling to conclude a convention by which she agreed to withdraw altogether from Sakhalin provided that Russia withdrew from the Kuriles.

See Capt. H. J. Snow, *Notes on the Kurile Islands* (London, 1896).

KURISCHES HAFF, a lagoon, on the coast of the Baltic, stretching from Labiau to Memel, a distance of 60 m., having an area of nearly 680 sq.m. It is shallow and only close to Memel attains a depth of 23 ft. It is thus unnavigable except for small coasting and fishing boats, and sea-going vessels proceed through the Memeler Tief (Memel Deep), which connects the Baltic with Memel and has a depth of 19 ft. and a breadth of 800 to 1,900 ft. The Kurisches Haff is separated from the Baltic by a long spit (Kurische Nehrung), 72 m. long and 1 to 2 m. wide. The latter is fringed throughout its whole length by a chain of dunes, which rise in places to a height of nearly 200 ft. and threaten, unless checked, to be pressed farther inland and silt up the whole Haff.

KURNOOL, town and district, British India, in the Madras presidency. The town is built on a rocky soil at the junction of the Hindri and Tungabhadra rivers at a branch-railway terminus. The old Hindu fort was levelled in 1865, with the exception of a gate, some bastions, etc. The town is a trade centre, cotton cloth and carpets are manufactured. There are industrial and training schools. Pop. (1941) 45,250, of whom half are Mohammedans.

The District of Kurnool has an area of 7,634 sq.mi.; pop.(1941) 1,146,250. Two long mountain ranges, the Nallamalais (highest point 3,149 ft.) and the Yellamalais, extend in parallel lines, north and south, through its centre. The Yellamalai (highest point about 2,000 ft.) is a low range, generally flat-topped with scarped sides. Several low ridges run parallel to the Nallamalais, broken here and there by gorges, with mountain streams, several of which were dammed across to form irrigation tanks under native rule. The principal rivers are the Tungabhadra and Kistna, which bound the district on the north. The Kistna here flows chiefly through uninhabited jungles, sometimes in long smooth reaches, with intervening shingly rapids. The Bhavanasi rises on the Nallamalais, and falls into the Kistna at Sungameswaram, a place of pilgrimage. During the 18th century Kurnool formed the *jagir* of a semi-independent Pathan nawab, whose descendant was dispossessed by the British government for treason in 1838. The principal crops are millets, cotton, pulses, oil-seeds, and rice, with a little indigo and tobacco. Many minerals occur, and barytes, iron and steatite are worked. Kurnool suffers severely in time of drought. The canal of the Madras Irrigation Company (taken over by government in 1882) starts from the Tungabhadra river near Kurnool town. Apart from the weaving of coarse cotton cloth, the chief industrial establishments are cotton presses, an oil-mill, and saltpetre refineries. The district is served by the Madras and Southern Mahratta railway.

KUROKI, TAMESADA, Count (1844–1923), Japanese general, was born in Satsuma. He distinguished himself in the Chino-Japanese War of 1894–95. He commanded the I. Army in the Russo-Japanese War (1904–5), when he won the opening battle of the war at the Yalu river, and afterwards advanced through the mountains and took part with the other armies in the battles of Liao-Yang, Shaho and Mukden. (*See* Russo-Japanese War.) He was created baron for his services in the former war, and count for his services in the latter.

KUROPATKIN, ALEXEI NIKOLAIEVICH (1848–1921), Russian general, entered the army in 1864. In 1875 he was employed in diplomatic work in Kashgaria and in 1876 took part in military operations in Turkistan, Kokan and Samarkand. In the war of 1877–78 against Turkey he earned a great reputation as chief of staff to the younger Skobelev, and after the war he wrote a detailed and critical history—Lovcha and Plevna (1885)—of the operations, which is still regarded as the classical work on the subject. After the war he served again on the S.E. borders in command of the Turkistan Rifle Brigade, and in 1881 won further fame by a march of 500 m. from Tashkent to Geok-Tēpē, taking part in the storming of the latter place. In 1882 he was promoted major-general, at the early age of 34, and was henceforth regarded by the army as the natural successor of Skobelev. In 1903 he took command of the Russian army then gathering in Manchuria for the contest with Japan. His ill-success in 1904–05 was largely attributable to his subjection to the superior command of Adm. Alexeiev, the tsar's viceroy in the Far East, and to internal friction amongst the generals, though in his history of the war (Eng. tr., 1909) he frankly admitted his own mistakes. After the defeat of Mukden and the retirement of the whole army to Tieling he resigned the command to General Linievich, taking the latter officer's place at the head of one of the three armies in Manchuria. (*See* RUSSO-JAPANESE WAR.)

In the World War Kuropatkin fought at first on the west front, and in 1916 became governor-general of Turkistan. In 1917 he was teaching in a village school. He died at Shemshurino (Pskov) in Feb., 1921.

See D. Story, *The campaign with Kuropatkin* (1904).

KURO SHIWO, a warm current of the north Pacific ocean easily distinguishable by the darker colour of its waters (Jap. *kuro,* black or dark, *shiwo,* a stream). It flows north-eastwards from the east coast of Hondo, the main island of Japan. The current persists as a stream as far as 43° N. and 160° E., when it merges into the West Wind Drift.

KURRAM, a river and agency on the Kohat border of the North-West Frontier province of India. The Kurram river drains the southern flanks of the Safed Koh, enters the plains a few miles above Bannu, and joins the Indus near Isa-Khel after a course of more than 200 miles. The agency has an area of 1,278 sq.m.; pop. (1921), 103,142. It lies between the Miranzai valley and the Afghan border, and is inhabited by the Turis, a tribe of Turki origin who are supposed to have subjugated the Bangash Pathans five hundred years ago. It is highly irrigated, well peopled, and crowded with small fortified villages, orchards and groves. The beauty and climate of the valley attracted some of the Mogul emperors of Delhi, and the remains exist of a garden planted by Shah Jahan.

History and Military Operations.—Formerly the Kurram valley was under the government of Kabul, and every five or six years a military expedition was sent to collect the revenue, the soldiers living meanwhile at free quarters on the people. It was not until about 1848 that the Turis were brought directly under the control of Kabul, when a governor was appointed, who established himself in Kurram. The Turis, being Shiah Mohammedans, never liked the Afghan rule. During the second Afghan War, when Sir Frederick Roberts advanced by way of the Kurram valley and the Peiwar Kotal to Kabul, the Turis lent him every assistance in their power, and in consequence their independence was granted them in 1880. The administration of the Kurram valley was finally undertaken by the British government, at the request of the Turis themselves, in 1890. Two expeditions in the Kurram valley also require mention: (1) The Kurram expedition of 1856 under Brig. Gen. Chamberlain. The Turis on the first annexation of the Kohat district by the British had given much trouble. They had repeatedly leagued with other tribes to harry the Miranzai valley, harbouring fugitives, encouraging resistance, and frequently attacking Bangash and Khattak villages in the Kohat district. Accordingly in 1856 a British force of 4,896 troops traversed their country, and the tribe entered into engagements for future good conduct. (2) The Kohat-Kurram expedition of 1897 under Colonel W. Hill. During the frontier risings of 1897 the inhabitants of the Kurram valley, chiefly the Massozai section of the Orakzais, were infected by the general excitement, and attacked the British camp at Sadda and other posts. A force of 14,230 British troops traversed the country, and the tribesmen were severely punished. In Lord Curzon's reorganization of the frontier in 1900–1901 the British troops were withdrawn from the forts in the Kurram valley, and were replaced by the Kurram militia, reorganized in two battalions, and chiefly drawn from the Turi tribe.

KURSEONG, a subdivisional town of northern India, in the Darjeeling district of Bengal, 20 mi. S. of Darjeeling and 4,860 ft. above sea-level; pop. (1941) 8,495. It has a station on the Darjeeling-Himalayan railway, and is a centre of the tea trade. It also contains boys' and girls' schools for Europeans and Eurasians. Its pleasant climate and educational facilities make it a popular place of residence.

KURSK, a province of the Russian S.F.S.R., lying north of the Ukrainian S.S.R. and bounded by the provinces of Bryansk and Orel on the north and Voronezh on the east. Area 21,120 sq.mi. Pop. (1939) 3,196,814 (rural 2,910,599, urban 286,215). It forms part of the recently created Black Earth area (Central) (*q.v.*). It occupies the southern slopes of the central Russian plateau (700–1,100 ft.) and is deeply entrenched by numerous river and stream valleys. Cretaceous and Eocene rocks prevail and chalk, ironstone, potter's clay and phosphates are worked. The magnetic anomaly extending in a broad belt running south-eastwards from the north of the province and extending into the southwest corner of Voronezh province, was observed many years ago.

Recent investigations have resulted in the location near Shchigry at a depth of 525 ft. of valuable iron deposits, which may lead to the industrialization of the province. For climate, difficulties of agriculture and social conditions *see* VORONEZH, which it closely resembles.

A famine (1891) due to the lack of spring rain resulted in a better railway net being constructed, while a heavy July rainfall in 1882, in which a quarter of the usual annual rainfall fell within an hour, resulted in the destruction of part of the Moscow-Kursk railway built in 1867.

The whole province is covered with loess black earth, though in the northern part, forest spread on the black earth with moister conditions. This forest has been cut, and the region is now "lyessosteppe," the soil having a humus content of 4–6% only.

The province forms an interesting transition region between Great and Little Russia. As Byelgorod, lying in a valley that opens towards the southern plain is approached, cloud, sunshine, scenery and people more and more closely approximate to the Little Russian (Ukrainian) type. Byelgorod still enjoys autumn when Kursk is under winter snow, and the picturesque thatched white huts, surrounded by cherry orchards, dotting the area to the south of it, are unknown in the north. The chief crops of Kursk are rye and oats. Millet, potatoes, sugar beet, hemp, wheat and sunflower seed are also grown. The number of sheep, cattle, horses and pigs was markedly diminished during the civil war of 1917–20 and the famine following it. Numbers rose again until 1924, but diminished again to a marked degree between 1924 and 1926, a serious situation in view of the need for manure, and of the value of horses and cattle as draught animals. Sugar beet, fruits, melon, pumpkin and sunflower seed cultivation are the most intense in the south and diminish towards the north, being replaced by oats, buckwheat, potato and hemp cultivation.

Factory industries include flour-milling, oil-pressing, tobacco-manufacture, sugar refining, brewing and distilling, the production of chalk, and the manufacture of rope. Iron mining and smelting is beginning in the Shchigry district, which is also noted for horse-breeding. Kustar (peasant) products to supply local needs are common, and toys, caps, vehicles, baskets and pottery are made. A peasant boot and shoe artel in the Miropol-Sudzhansk region has 1,000 members, and there are artels for carpet weavers.

The population is mainly Great Russian, with Little Russians

(Ukrainians) in the south. The literacy rate is one of the lowest in the U.S.S.R.; in 1924 only 16% of the inhabitants of Byelgorod could read and write, and the poor school guarantee for children in rural districts means that the problem of liquidating illiteracy will not be solved in the next generation. The railway and road net is inadequate and many of the streams and rivers are not available for navigation. The general poverty led to the emigration of thousands of peasants to Siberia and the south between 1896 and 1914. The outbreak of war was followed by reckless mobilisation of agricultural labourers and commandeering of horses, and this was followed by civil war and by the formation of troops of bandits. The 1921 famine supervening on these conditions still further undermined agriculture and left the survivors weakened in stamina as well as reduced to a poverty even lower than the general pre-1914 level.

KURSK, the chief town of the above province, is 51° 42′ N., 36° 11′ E. Pop. (1939) 119,972. It is built on two hills (750 ft.), the slopes of which are covered with orchards. The woods around are famous for their nightingales. It is an important railway junction with a grain elevator and is a centre for the agricultural region around; its yearly Korennaya fair was very important in pre-1914 times. It manufactures machinery, confectionery, tobacco, soap, bricks, cartridges and alcoholic drinks. It is essentially a provincial town, and is revered as the birthplace of Theodosius, one of the most venerated of Russian saints.

KURUBA, a pastoral tribe or caste found in Mysore and adjacent parts of southern India. Though backward and timid it is higher in type than the Kurumba (*q.v.*).

KURUMA or **NIONIOSSE,** a people resembling the Mossi, living in the upper Volta province of Yatenga, in the Yako and Kipersi districts. They are cultivators, iron and wood-workers, and are held by their neighbours to be magic-workers. They are animist in religion.

See Tauxier, *Le Noir du Yatenga* (1917).

KURUMAN, a town in British Bechuanaland, 120 m. N.W. of Kimberley. The station was founded by the London Missionary Society in 1818. From 1821 to 1870 it was the scene of the labours of Robert Moffat, who here translated the Bible into Sechuana. In the middle of the 19th century Kuruman was the rendezvous of travellers going north or south. The railway now passes to the east and Kuruman is served by a weekly post cart from Postmasburg. It is named after the son of Mosilikatse, the founder of the Matabele nation. The Kuruman spring, which rises in a dolomite cave, has a yield of 5,000,000 gal. a day.

KURUMBA, the name of a stunted, conspicuously flat-nosed tribe of southern India. It is divided into two groups, one on the Nīlgiri plateau, speaking its own dialect, the other in the plains, more civilized and speaking Kanarese. The former practise adelphogamy, and have no marriage rites. Like the Kurubas, they have many primitive usages of great interest.

See E. Thurston, *Castes and Tribes of Southern India,* iv. (1909).

KURUNDWAD, native state of India: *see* KURANDVAD.

KURUNEGALA, a town in the northwestern province of Ceylon; the residence of the kings from A.D. 1319 to 1347. Pop. (1931) 10,467. It is finely situated under the shade of Adagalla (the rock of the Tusked Elephant), which is 600 ft. high. Kurunegala is the centre of rice, coco-nut and tea cultivation.

KURZ, HERMANN (1813–1873), German poet and novelist, was born at Reutlingen on Nov. 30, 1813, and died at Tübingen, where he was university librarian, on Oct. 10, 1873. Kurz wrote the poems, *Gedichte* (1836) and *Dichtungen* (1839); historical novels, *Schillers Heimatjahre* (1843, 3rd ed., 1899) and *Der Sonnenwirt* (1854, 2nd ed., 1862); and excellent translations from English, Italian and Spanish. *See* I. Kurz, *Hermann Kurz* (1906).

His daughter, ISOLDE KURZ, born Dec. 21, 1853 at Stuttgart, took a high place among 19th century lyric poets in Germany with her *Gedichte* (Stuttgart, 1888, 3rd ed. 1898) and *Neue Gedichte* (1903). Her short stories, *Florentinische Novellen* (1890, 2nd ed. 1895), *Phantasien und Märchen* (1890), *Italienische Erzählungen* (1895) and *Von Dazumal* (1900) are distinguished by a fine sense of form and clear-cut style. *See* her *Gesammelte Werke* (6 vols., 1925).

KUSHALGARH, a village in the Kohat district of the North-West Frontier province of India, notable as the point at which the Indus is bridged to permit of the extension of the strategic frontier railway from Rawalpindi to the Miranzai and Kurram valleys.

KUSHK, a river of Afghanistan, which also gives its name to the chief town in the Afghan province of Badghis, and to a military post on the border of Russian Turkistan. The river Kushk, during a portion of its course, forms the boundary between Afghan and Russian territory; but the town is some 20 m. from the border. Kushk, or Kushkinski Post, is now a fourth-class Russian fortress, on a Russian branch railway from Merv, the terminus of which is 12 m. to the south, at Chahil Dukteran. It is served by both the Transcaspian and the Orenburg-Tashkent railways. The terminus is only 66 m. from Herat.

KUSMANEK VON BURGNEUSTÄTTEN, HERMANN (1860–1934), Austro-Hungarian general, was born at Hermannstadt. He was in command of the fortress of Przemysl in the first Russian campaign of World War I when, after six months' investment and the exhaustion of the food supply, it was compelled to surrender on March 22, 1915.

KUSTANAISK or **KUSTANAI,** a town of the Kazakstan A.S.S.R., on the Tobol river in 53° 24′ N., 63° 40′ E., in the centre of a fertile grain-growing black earth area. Pop. 25,405. It is the terminus of a branch railway from Troitsk. Since its establishment in 1871, is has grown rapidly, and has an electric plant, flour mills, millet-stripping mills, breweries and small leather and tallow industries. An annual cattle fair is held. The population is mainly Russian and it is the centre for one of the numerous patches of Russian colonization in the north of the Kirghiz-Kazak steppe. Gold is found in the Kustanaisk steppe.

KUTAIAH, KUTAYA or KÜTAHYA, the chief town of a vilayet in Turkey, is situated on the Pursak Su, an affluent of the Sakaria (anc. *Sangarius*). The town lies at an important point of the great road across Asia Minor from Constantinople to Aleppo, and is connected by a branch line with the main line from Eski-shehr to Afium Kara-Hissar, of the Anatolian railway. It has a busy trade; pop. (1940) 18,297. Kutaiah represents the ancient Cotiaeum.

KUTAIS (Georgian: *Kutaisi,* formerly *Kutatisi*), a town of the Georgian S.S.R. on the Rion river in 42° 19′ N., 42° 44′ E. Pop. (1939) 81,479. It is on both banks of the Rion river, which is navigable, and which is spanned by three bridges. It is linked by a short branch line to the Trans-Caucasian railway, and also has a branch line to the Tkvibuli coal mines. It is in the midst of a fruit and vine growing district. The chief trade of the town is in these products and in silks and cloth. Until 1924 the cloth was the product of handicraft industries, but in that year a cloth factory was opened in the town. It is also a market for coal from the Tkvibuli and Gelati mines.

Kutais (Aea or Kutaea) was the ancient capital of Western Georgia, which was known first as Egrisi or Colchis, later as Apkhazeti or Abasgia, and finally as Imereti or Imeretia. It is the Kotatision of Procopius; the fort which he mentions was destroyed by the Russians in 1770.

Persians, Mongols, Turks and Russians have repeatedly laid waste the town and its fortress (*see* GEORGIA).

KUT-AL-AMARA (kōōt′ĕl ăm-ah′ra), Iraq, a small town on the left bank of the Tigris in 32° N. 45° E., of importance during World War I; the eastern terminus of the metre gauge railway. It lies at the mouth of the Shatt al Hai and was formerly the centre of the grain traffic, corn being brought up the Shatt al Hai from the Euphrates region. It possesses large grain stores and is also a centre for the making of carpets. Even at low water the river has a depth of 5 ft. but the town, whose estimated population is about 6,000, has no means of handling goods, other than purely local trade.

Siege of Kut-al-Amara, Dec. 8, 1915–April 29, 1916.—This historic siege, which ended in the surrender of General Townshend and his force, after the failure of costly and ill-managed efforts to relieve them, is described under MESOPOTAMIA, OPERATIONS IN. The place also gives its name to a successful battle which Town-

shend fought on Sept. 28, 1915, during his advance up the Tigris towards Baghdad. The actual site of this battle was at Es Sinn, just below Kut. In 1916 Kut was the pivot of the methodical operations by which General Maude (*q.v.*) dislodged the Turkish force holding the place, as a preliminary to his successful advance to, and capture of, Baghdad.

KUTNA HORA or KUTTENBERG, a town in Bohemia, 45 mi. E. by S. of Prague, that has lost much of its early importance. It owes its origin to the occurrence in the vicinity of silver which was first worked in the 13th century. Rapid development of the town followed and early in the 14th century it ranked next to Prague and was a mint and a royal residence. With the outbreak of the Hussite Wars its population, mainly German and fanatically Catholic, carried out atrocious reprisals for the Hussite outrages in Czech and utraquist Prague. After much fighting and destruction it fell under Hussite control and entered upon a new era of prosperity but, ravaged by plague and the horrors of the Thirty Years' War, together with flooding of the mines, it fell into a state of impoverishment from which it did not recover. It was occupied by Germany in 1939. Pop. (1930) 13,900.

KUTTALAM, a sanatorium, of southern India, in the Tinnevelly district of Madras 3 m. from a station on the Tinnevelly-Travancore line. Though situated only 450 ft. above sea-level, it possesses the climate of a much higher elevation, owing to the breezes that reach it through a gap in the Ghats. It has long been a favourite resort for European and Indian visitors, the season lasting from July to September. The scenery is most picturesque, including a famous waterfall.

KUTTENBERG: *see* KUTNA HORA.

KUTUSOV, MIKHAIL LARIONOVICH, PRINCE OF SMOLENSK (1745–1813), Russian field marshal, was born on Sept. 16, 1745 at St. Petersburg (Leningrad), and entered the Russian army in 1759 or 1760. He saw active service in Poland, 1764–69, and against the Turks, 1770–74; lost an eye in action in the latter year; and after that travelled for some years in central and western Europe. In 1784 he became major-general, in 1787 governor-general of the Crimea; and under Suvorov, whose constant companion he became, he won considerable distinction in the Turkish War of 1788–91, at the taking of Ochakov, Odessa, Benda and Ismail, and the battles of Rimnik and Mashin. He was now (1791) a lieutenant-general, and successively occupied the positions of ambassador at Constantinople, governor-general of Finland, commandant of the corps of cadets at St. Petersburg, ambassador at Berlin, and governor-general of St. Petersburg. In 1805 he commanded the Russian corps which opposed Napoleon's advance on Vienna (*see* NAPOLEONIC CAMPAIGNS), and won the hard-fought action of Dürrenstein on Nov. 18–19.

On the eve of Austerlitz (*q.v.*) he tried to prevent the Allied generals from fighting a battle, and, when he was overruled, is said to have taken so little interest in the event that he fell asleep during the reading of the orders. He was wounded in the battle. From 1806 to 1811 Kutusov was governor-general of Lithuania and Kiev, and in 1811, being then commander-in-chief in the war against the Turks, he was made a prince. He was called by the unanimous voice of the army and the people to command the army that was retreating before Napoleon's advance. He gave battle at Borodino (*q.v.*), and was defeated, but not decisively, and after retreating to the south-west of Moscow, he forced Napoleon to begin the celebrated retreat. The old general's cautious pursuit evoked much criticism, but at any rate he allowed only a remnant of the Grand Army to regain Prussian soil. He was now field marshal and prince of Smolensk—this title having been given him for a victory over part of the French army at that place in November 1812. Early in the following year he carried the war into Germany, took command of the allied Russians and Prussians, and prepared to raise all central Europe in arms against Napoleon's domination, but before the opening of the campaign he fell ill and died on March 25, 1813, at Bunzlau. Memorials have been erected to him at that place and at Leningrad.

Mikhailovsky-Danilevski's life of Kutusov (St. Petersburg, 1850) was translated into French by A. Fizelier (Paris, 1850). There is a classic picture of Kutusov's personality in Tolstoy's *War and Peace.*

KUWAIT, an Arabian port at the N.W. angle of the Persian Gulf, 29° 20′ N. and 40° 00′ E., lying on S. side of a bay 20 mi. long and 5 mi. wide, the mouth of which is protected by two islands forming a fine natural harbour. It is the capital of the sheikhdom of Kuwait, under British protection, with an area of 1,950 sq.mi. and a settled population of 50,000. Its name is a diminutive form of Kūt, *i.e.,* fort, and it has an alternative name in Qurain (the Grane or Grain of some maps). The country round it being unrelieved desert for 200 miles, its population depends entirely on the sea and trade and its sailors and boat-builders have a high reputation.

In 1934 an oil concession was granted to a company, owned half by the Anglo-Iranian Oil Co. and half by the Gulf Oil Co. (a U.S. concern).

Horses for the Bombay market, sheep, wool, *samn* and other Arab products came hither from the interior to be exchanged for piece-goods, rice, sugar, tea, etc. Later, however, political reasons gave impetus to the development of the Hasa ports and the decline of the horse-trade further prejudiced Kuwait. British political influence on several occasions after 1925 intervened to prevent its passing into the possession of the Wahhabi state. In 1850 Kuwait was recommended by General F. R. Chesney as the terminus of his proposed Euphrates valley railway; and 50 years later it attracted much attention as a desirable site for the terminus of the Berlin-Baghdad railway. In fact Turkey made an attempt to occupy Kuwait in 1898 only to be met with a British protest against any infringement of the *status quo,* and in 1899 Sheikh Mubarak Ibn-Sabah, who died in 1915 after a reign of 20 years which stamped him as an outstanding Arab personality, placed his interests under British protection.

World War I put a temporary end to the Berlin railway scheme and British military units were stationed there in connection with the blockade of the Turks, with whom the sympathies of Salim, son of Mubarak, were engaged. During Salim's reign relations with Nejd were unsatisfactory and in 1919 a Wahhabi attack was repulsed by British aeroplanes. Another Wahhabi attack took place in 1927–28 without success. Sir Ahmad Ibn-Jabir, a grandson of Mubarak, became ruler of Kuwait in 1921 on the death of Salim. The boundaries of Kuwait and Nejd were fixed by the treaty of Mohammerah in 1921. A small neutral zone was later established. (H. ST. J. B. P.; P. K. H.)

KUYPER, ABRAHAM (1837–1920), Dutch theologian and politician, was born on Oct. 29, 1837, at Maassluis, and educated at the university of Leyden. He became pastor of the Dutch Reformed Church at Beesd in 1863, and in 1876 leader in Amsterdam of the anti-revolutionary party which aimed at the restoration of Calvinistic doctrine in the guidance of State affairs.

In 1879 Kuyper expounded the principles of his party in *Ons Program* (Our Programme). He founded a Calvinistic university at Amsterdam, where he became professor of theology, and in 1886 established the strictly orthodox Calvinistic Reformed Church Community.

In 1903, as minister of the interior (1901–05), he crushed a railway strike by rushing through a bill making illegal a stoppage of work by those engaged in the public services, thus rousing the enmity of the Dutch Socialists.

During the South African War Kuyper took a prominent part in the attempts to get Holland to mediate between Great Britain and the Boers. In 1913 he entered the Upper Chamber, where he led the anti-revolutionary party.

Kuyper died at The Hague on Nov. 8, 1920.

See W. F. A. Winckel, *Leven en Arbeid van Dr. Kuyper* (1921); Dr. A. Kuyper, *Gedenkboek* (1921); and A. S. S. and J. H. Kuyper, *De Levensavond van Dr. A. Kuyper* (1921).

KUZNETSK, (1) a town in the Penza region of the Russian S.F.S.R. in 52° 54′ N., 46° 18′ E. Population 29,647. The town has grown since the railway linked it with Penza and Kuibyshev. Its manufactures include agricultural machinery, the preparation of leather and sheepskins, rope and brick making. It is a trade centre for grain, salt, and the products of *kustar* industries, especially wooden and leather goods.

(2) A town on a coal field in the Siberian area of the Russian S.F.S.R. in 53° 52′ N., 87° 28′ E., at the head of navigation, on the right bank of the Tom river. The Kuznetsk coal beds extend from Sudzhenka on the railway to 40 mi. south of Kuznetsk, and on the west in places to the Ob river, covering an area of about 5,000 sq.mi. The coal varies in quality and accessibility and flooding often occurs in the mines. The total output of coal from the Kuznetsk district in 1926–27 was 1,950 tons. In 1938 the district produced 16,800,000 tons of coal, or 13% of the total output in the soviet union.

The population of the town of Kuznetsk in 1926 was 3,894; in 1939, 169,538. It is renamed Stalinsk.

KVASS or **KWASS** (a Russian word for "leaven"), one of the national alcoholic drinks of Russia, and popular also in eastern Europe. It is made, by a simultaneous acid and alcoholic fermentation, of wheat, rye, barley and buckwheat meal or of rye bread, with the addition of sugar or fruit. It has been a universal drink in Russia since the 16th century. Though in the large towns it is made commercially, elsewhere it is frequently an article of domestic production. Kvass is of very low alcoholic content (0.7 to 2.2%). There are, besides the ordinary kind, superior forms of the drink, such as apple or raspberry kvass.

KWAKIUTL. This important group of natives on Vancouver Island and the mainland of British Columbia forms, together with the Nutka, the Wakashan linguistic stock. Originally the name applied only to the settlements about Fort Rupert; it is now used in ethnological literature for the entire aggregate of Haisla, Heiltsuk, Bellabella, Koskimo, Quatsino, Nimkish, Lekwiltok and other bands which popularly and officially pass under local names. They are important scientifically because of the intensive and critical study devoted to them for many years by F. Boas (*Rep. U.S. Nat. Mus.* for 1895, 1897; *Bur. Am. Ethn. Rep.* xxxv, 1921; *Am. Mus. Natur. Hist. Mem.,* vol. v [Jesup Exped., vol. iii], 1902–05). They form a transition between the matrilineal Tsimshian, Haida and Tlingit of the northern North Pacific coast and the patrilineal Nutka, Salish and Chinook of the south. Descent, for instance, is a curious compromise, by which rank goes to the daughter's son via the son-in-law as trustee. In art and ceremonies they likewise affiliate both ways. The original population may have numbered 10,000–20,000; by 1904 it had shrunk to 2,100. (A. L. K.)

KWANGCHOWWAN (21° N. and 110° 25′ E.), a bay, in a strong strategic position on the coast of Kwangtung province, South China, acquired with adjoining territory by France in 1898. This territory is low lying and situated on the east side of the Luichow peninsula which projects southwards towards the island of Hainan. The whole represents one of four cessions on lease made in the period of European aggrandizement in China immediately following the Sino-Japanese War. It was leased to France for 99 years by the Convention of 1898, with full territorial jurisdiction during that period. The inland limits of the cession comprise a strip of land on each bank of the Ma Ts'e river, and also included are two islands in the bay (added in 1899), which enclose a roadstead of 18 mi. long and six miles broad, affording excellent anchorage. The total area of the leased territory is about 309 sq.mi. The French government acquired the right to construct a railway across the peninsula to Ompon, and also the exclusive mining rights in the three adjacent prefectures.

There are three administrative districts and two municipalities, namely Fort Bayard, the administrative centre (population 12,000) and Tchekam, the commercial centre (population 50,000). The port was free. In 1940 the value of imports was St.$22,606,367, and of exports was St.$27,416,453. The former consisted mainly of cotton yarns, petroleum, refined sugar and matches, and the latter of swine and cattle, straw sacks, ground-nuts and brown sugar. The number of steamers using the port in 1940 was 316, with a tonnage of 390,704. Fort Bayard was served by the Hong Kong-Haiphong mail steamer, and there were frequent commercial sailings to Macao, Hong Kong and Canton. This leased territory was administered by a governor, and had been under the authority of the governor-general of Indo-China after 1900. In the administration of justice there was a French magistrate who had the assistance of two Chinese assessors and a local Chinese judge. About 500 Chinese policemen maintained order. The 1940 budget was balanced at St.$914,200.

Fort Bayard and Tchekam have electric light, and are connected by telephone, while districts in the interior were linked with these two towns by telegraph or wireless telegraph. There were 168 mi. of roads. At Port Beaumont was a hydroplane base, and an aerodrome 4 mi. from Fort Bayard. Fort Bayard and Tchekam each had a hospital. In Fort Bayard were a post office, an Indo-China bank agency, and the Collège Chinoise and other schools. The population in 1940 was estimated at 250,000. This territory was affected by the Vichy-Tokyo agreements of 1940 and 1941 giving Japan control over French Indo-China, and it was occupied by the Japanese in Feb. 1943.

KWANGSI, a province of southern China. The basin of the Si Kiang, the southernmost of the three great rivers of China, falls almost entirely within the two provinces of Kwangsi and Kwangtung, long governed together as the single vice-royalty of Liang-kwang. Kwangsi consists essentially of the upper part of this basin in which the numerous headstreams and tributaries converge to form a single, broad river. These headstreams rising in the amphitheatre of high plateaus just beyond the borders of the province cut deep trenches within Kwangsi, leaving between them flat-topped hills, and widening only at intervals into valley-plains of appreciable width. Such valley lines form the main routes within the province and with the rest of China. The two forks of the Si Kiang both lead into Yunnan, the Liu-kiang into east Kweichow, the Kwei-kiang to the upper Siang valley in Hunan and the Tso tributary into east Tongking. The more important towns stand at critical points along the valley routes. Kwei-Lin, the former capital, commands the Kwei route into Hunan which once competed with the Mei-ling and Che-ling routes from the Si Kiang to the Yangtze. Nanning, the present capital, guards the easier of the two approaches to Yunnan and furthermore the route by way of Lungchow into Tongking which connects with a railway to Hanoi just over the frontier. Wuchow, the natural commercial focus for the whole of Kwangsi, stands at the eastern gate of the province after the Si Kiang has gathered up the last of its tributaries.

Southwest China was the last part of the country to be colonized by the Chinese and is the least penetrated by Chinese culture. Kwangsi, on its eastern borderland, has somewhat similar racial and cultural characteristics but was easier of approach from both east and north. The Chinese have entered Kwangsi up the Si Kiang from Canton and down its northern tributaries from Hunan, leaving on the hills in between and especially in western Kwangsi a very considerable aboriginal population, which until recently was governed by its own headmen subject only to Chinese supervision. The Chinese of the northern tributaries and of the northern fork of the Si Kiang who came in from Hunan are Mandarin-speaking, but those who moved up the main river and its southern fork speak Cantonese. The whole population, Chinese and aboriginal alike, is essentially rural and the province is one of the most sparsely settled in all China with an estimated pop. of 14,254,609 (1940), area 84,526 sq.mi., density of 169 per sq.mi.

As the province is bisected by the tropic, the agriculture of its valleys has a definitely sub-tropical character. Rice is the staple product of the Chinese valley population and, as this is sparse, there is a surplus to spare for the much more densely peopled Kwangtung. In the upper valleys and on the hills the natural vegetation of woodland still in places persists, although vast areas have been deforested. Over the border in Kweichow this consists chiefly of temperate species, but in Kwangsi partly of valuable tropical woods such as the cinnamon tree, the camphor tree and the wood oil tree. These wood products from Kweichow as well as Kwangsi are gathered up by Wuchow.

The provincial government enjoyed until 1937 a practical autonomy and was opposed to the national government, but the provincial administration and the militia organization of its army were famous. The leaders of the so-called Kwangsi Group were generals Pei Chung-hsi and Li Tsung-jen. After the outbreak of war in 1937, they supported the national government fully and

contributed largely to the successful resistance. The Pao-Chia administration became the prototype of China's new county system. The Japanese occupied Nanning, 1941, but were soon forced out.

KWANGTUNG, the southernmost coastal province of China. In common with the other coastal provinces of the southeast (Fu-kien and Chekiang), Kwangtung is characterized by alternating long ranges and troughs running parallel to the coast. The coastal ranges proper are bare granitic hills which are broken through completely by the interior drainage only at two points, by the Han-kiang in the extreme east and by the Si Kiang in the centre. The basin of the Han, whose outlet is at Swatow, forms a little world apart and its linguistic affinities are rather with Fu-kien than Kwangtung. The valleys of the Si Kiang and its affluents, the Pei-kiang and Tung-kiang are the core of the province and the Canton delta, on which these three rivers converge, is its inevitable focus. The same river valleys form the avenues of communication with the rest of China, the Si Kiang with the southwest and the Pei-kiang with the Yangtze valley and the north. The Canton delta, ringed round on the north by highland and facing southward over a tropical sea, has an orientation distinct from the rest of China and has always been the first part of the country to receive external influences. Kwangtung also includes a long coastal strip west of the Canton Delta, stretching almost as far as the Red river delta in Tongking, and the large island of Hainan, opposite the Lui-chow peninsula projecting from this southern coast, is administratively attached to it.

Population is concentrated on the alluvium of the valleys and deltaic lowlands, whose fertility contrasts sharply with the bare granitic hills of the coast and the sandstone uplands of the interior. The density in the Canton delta must be fully equal to that of the Yangtze delta or the congested districts of the north China plain. But the highlands are relatively thinly peopled and the total population (32,338,795 in 1939) ranks it seventh in order of density among the provinces of China. The dominant element in this population are the Cantonese who occupy the whole of the deltaic and valley lowlands focussing on Canton and the whole western coastal strip. But the Swatow delta and the eastern coastal strip are peopled by the Hoklos (*i.e.*, people of Fu-kien) who speak a Fu-kienese dialect, and the whole upper basins of the Han, Tung and Pei rivers by the Hakkas, a vigorous mountain people with a marked group consciousness of its own and distinct social characteristics. There are in addition some much smaller tribal groups scattered along the western border and akin to the Miao of southwest China. The area of the province is 85,447 sq.mi.

Kwangtung has been one of the main scenes of European contact with China. Canton was the centre of early European trade with China and for almost a century the only port through which foreign trade was permitted. From Kwangtung and neighbouring Fu-kien have come most Chinese emigrants to S.E. Asia and other parts of the world. There are three foreign enclaves along its coast: the British Hong Kong and the Portuguese Macao on either side of the entrance to the Canton river, and the French Kuang-Chou-Wan, an "outlier" of French Tongking, in the south.

Kwangtung under the imperial regime had always a reputation for disaffection. Since the beginning of the present century it has taken the lead in most of the movements of revolt against the Peking government and European domination and to a large extent originated the Nationalist program. Sun Yat-sen, who was a native of a village near Canton, started his revolutionary activities here, and during the war-lord period Canton became the centre of the reorganized Kuomintang, which started its march north from here in 1926. The Kwangtung lowlands are the only part of China with a truly tropical climate. The uniformly high temperatures and the fairly well-distributed rainfall permit cultivation throughout the year enabling the production on the same plot of land of two crops of rice and one of fruit or vegetables. These are the staple subsistence crops. Rice is grown on the terraced hillsides as well as in the irrigated lowlands but here there are no means of conserving sufficient moisture for a second crop. But the rice production of 3,000,000 tons was insufficient to feed the 33,000,000 living in the province and another 1,000,000 were imported, chiefly from Siam and Annam but also from Wuhu, Chinkiang and Wuchow. Among the other food crops the oranges of the Canton delta, the bananas of the lower Tung valley and the sugar cane of the Swatow delta are the most prominent. The same luxuriance of growth is shown by the mulberry which yields six or seven crops a year, giving a greater total production than in any other silk-producing region of China. It had a larger production of reeled silk, the output of the filatures, than even the Yangtze delta but, probably because the tropical climate allows of so many crops, this was of rather poorer quality. The natural woodland has been stripped off the coastal hills and remains only along the northern border of the province. Firs from these interior hillsides are floated down the rivers to Fatshan, the timber emporium of the delta. The bamboo is cultivated throughout but especially along the Bamboo river close to Samshui.

Before the outbreak of the war in 1937 Canton, the provincial capital, was China's third largest port. Great harbour works were under construction to open the port for ocean-going vessels and to enable Canton to compete successfully with Hong Kong. With the fall of the city in Oct. 1938, the loss of oversea trade, the severance of connections with Chinese emigrants, and the interruption of the fishing industry, the main problem has been one of feeding the population through a provincial program of raising agricultural production. The Canton-Hankow railway connected the province before the war with the central Yangtze region. (*See* CANTON.)

KWANTUNG, an important territory in South Manchuria, at the southern end of the Liao-tung peninsula, leased by China to Japan and in statistical works on the Japanese empire usually described as Kwantung province. The territory, which includes adjacent islands, covers an area of 1,338 sq.mi. The great strategic significance of this southern apex of the peninsula, containing a magnificent ice-free, deep-water harbour, destined to be transformed into the naval base of Port Arthur, and commanding the sea-approaches to Peking through the Strait of Pe-chi-li, made it one of the chief objectives of the southward advance of Russia through Manchuria at the end of the 19th century; and in 1898 China was forced to lease it for a period of 25 years. The construction by the Russians of the railway line from Changchun to Dairen had begun in 1896, and the branch line to Port Arthur was opened in 1908. After the Russo-Japanese War, by the treaty of Portsmouth (1905), the lease was transferred to Japan, together with the cession of the South Manchuria railway. As part of the Japanese demands on China in 1915, the lease, which was to expire in 1923, was extended to 1997. The Kwantung government-general was, by imperial ordinance (1919), constituted a civil government (Kwantung office) to take over the civil administration and policing of the leased territory and the South Manchuria Railway zone. The administration is centred in two districts, Dairen and Port Arthur.

From 1907 to 1932 the leased territory was included in the Chinese maritime customs service. But with the establishment of "Manchukuo" the Japanese eliminated all Chinese control. After that time there were no separate returns for Kwantung. The total trade for Manchuria which went largely through the leased territory was given in 1938 as slightly more than 2,000,000,000 yuan ($569,000,000 U.S.) of which the Japanese trade made up 70.6%. The largest export item was in bean products, the greatest import item was machinery. Among the chief agricultural products of Kwantung and the Railway Zone are beans, millet, maize, wheat, hemp, groundnuts, tobacco and vegetables. The fishing industry on the coast is very important; the total value of the major sea products in 1938 was $2,630,295. Salt is abundant, and one of the chief manufactured products. The combination of valuable natural resources, abundant fuel and cheap labour has led to the great expansion of industry in Kwantung and the Railway Zone. The manufacture of bean oil and bean cake (exported mainly to Europe and Japan through Dairen and Newchwang) and flour milling, are the principal industries, together with iron founding, brewing and the manufacture of leather, cement, paper, glassware,

soap and bricks. There is an elaborate educational system, including technical and commercial colleges.

The population was given in 1938 as follows: Kwantung leased territory: Manchukuoan 1,038,613, Japanese 180,689, Koreans 4,496, others 1,772, total 1,225,570; South Manchuria Railway zone: total 524,430. It has been estimated that whereas in Manchuria generally the Chinese population has doubled in the past 20 years, in the Railway zone it has increased sixteenfold.

KWANZA, COANZA or **QUANZA,** a river of west Africa, 700 mi. long, entirely in the Portuguese territory of Angola. The source lies in about 13° 40′ S., 17° 30′ E. on the Bihe plateau, at an altitude of over 5,000 ft. It flows northward and by a wide arc enters the Atlantic ocean 40 mi. S. of Loanda. At about 12° S. it is 60 yd. wide and 13 to 16 ft. deep. In about 10°, and at intervals during its westerly passage through the outer plateau escarpments, its course is broken by rapids, the river flowing in a well-defined valley flanked by higher ground. The lowest fall is that of Kambamba, or Livingstone, with a drop of 70 ft. Thence to the sea, a distance of some 160 mi., it is navigable by small steamers, though very shallow in the dry season, and is little used because the fertile district of the middle basin is served by railway. There is a shifting bar at its mouth, difficult to cross. (*See* ANGOLA.)

KWEICHOW (Kwā-chō), an upland province in southwest China. It consists of a lofty plateau country lying between and thrusting apart the upper courses of the Yangtze and of the Si Kiang, and continuous with the still loftier plateau of Yunnan farther to the southwest. It is thus part of a large highland region distinct from the river plains which characterize so much of China. Kweichow, however, much more than Yunnan, is dissected by winding river courses tributary to the arterial Yangtze and Si Kiang. These are most deeply cut around the margins of the province and the greatest extent of undissected plateau remains in the centre. But the surface even of this is broken by sunken plains, let down below the general level of the plateau surface, and these offer the most fertile land in the whole of the province. While the tortuous river courses form the main lines of approach, the bulk of the population is settled on the upland plateau of which Kwei-yang, the capital, is the focus. The more important ways of approach into the province, in addition to the easy routes from Yunnan, are by the Wu-kiang from the Red Basin of Szechwan, by the Liu-kiang from Kwangsi, and by the Yüan valley from Hunan, this being the most frequented of all the trading routes. The contrast between the central upland and the peripheral valleys is heightened by the composition of the population. The aboriginal peoples, though once spread over the whole of south China, remain in bulk, unabsorbed by the Chinese, only in the southwest. They are divided into a great variety of peoples of which the largest in Kweichow is the Miao. These still form the majority of the village population of the plateau away from the trading centres. Of all the aboriginal peoples the Miao are physically the least distinguishable from the Chinese, but they retain their language and the women, at any rate, their distinctive dress. Into this upland the Chinese have penetrated by way of the valley approaches to which the rural Chinese population, as distinct from the traders of the towns, is still largely confined. The longer settled among the Chinese are descendants of soldier colonists planted in the province as early as the 8th century, but the majority of the immigrants have entered only during the last two centuries, since the constitution of Kweichow as a province of China. It was formed primarily out of the Miao territory with the addition of the basin of the Wu-kiang, formerly included with Szechwan. Apart from valley lines and scattered commercial centres, the Wu-kiang basin is the only district of Kweichow where Mandarin is the chief spoken language. Pop. (1940 est.), 10,487,367; area, 69,296 sq.mi.; density, 151 per sq.mi.

The plateau of Kweichow has a cooler, more healthful climate than the foggy Red Basin to the north or the tropical valleys of the Si Kiang basin to the south. Its southward-facing valley ravines, in which the natural woodland is still to some extent preserved, harbour many tropical species such as the camphor tree, the varnish tree and the *tung* or wood-oil tree. But the bulk of the Kweichow woods and especially those in the southeast of the province, drained by the Liu into Kwangsi and the Yüan into Hunan, consist principally of conifers scattered with oak and chestnut. These woods are being actively exploited and their reserves are becoming depleted. The timber floated down the Yüan, which is greater than that down any other Chinese river outside Manchuria, is, however, cut from plantations when about 15 years old. Agriculture is almost solely of a subsistence type and export trade in vegetable and animal products is almost entirely confined to timber, wood oil, hides. Rice is the staple crop of the valley Chinese, but up on the plateau cereals adapted to cooler and less moist conditions such as maize, wheat and beans are also extensively grown. Of the minerals, mercury, mined on the plateau to the north of Kwei-yang, contributes a considerable proportion of the world's supply, but the rich mineral and coal reserves have much greater possibilities of development.

The war has brought great changes to the formerly backward, opium-growing province. The communication system has been developed with highways connecting Kwei-yang with Kunming and Chungking and with the provinces of Kwangsi and Honan. In 1941 the railway from Kwangsi reached the Kweichow border, and in 1944 construction had been completed for about half the route to Kwei-yang. Tingfan has been made an administrative model county.

KWEIHWA (now Kweisui, formerly Kuku Khoto), a city in the borderland between northwest China and Inner Mongolia. Since the 11th century it has been a frontier mart where Chinese tea and manufactures have been exchanged for Mongolian horses, skins and wool. It was the eastern terminus of a caravan route from Kobdo in western Outer Mongolia and was linked also with Sinkiang. Of the tea traffic along these routes 70% was with Mongolia, 30% with Sinkiang. Though its trade was much smaller in volume, Kweihwa served therefore essentially the same function as Kalgan, the major gateway from China into Mongolia. It has for long been a Mongol rather than a Chinese city and prior to 1664 was the residence of the Mongolian Grand Lama. But it was linked by the Suiyuan railway more closely to the main centres of Chinese population, and being itself one of the foci of the Chinese agricultural colonization of Inner Mongolia hitherto pastoral, it was becoming increasingly Chinese and a local focus and seat of manufacture as well as a point of exchange. Manufacture was concerned solely with the wools, skins and furs brought in exchange for tea from pastoral Mongolia. The city has been included within the newly formed province of Suiyuan, the creation of which registered the permanence of the Chinese colonization of this part of Inner Mongolia. The city, now named Kweisui, was occupied by the Japanese after 1937.

For early notice of Kuku Khoto *see* Astley's *Collection* (vol. iv).

KWEI-LIN, the capital of the province of Kwangsi, China, situated in the north of the province, on the Kweikiang, at about 650 ft. It is a road centre and linked by river with Canton and by rail with Hengyang on the Hankow-Canton line. The limestone rocks of the river side often have striking forms. The earliest recorded building dates from the Sui dynasty (A.D. 589 onwards), but the connection of the city and region with the Chinese empire has been intermittent. The population has been variously estimated at 80,000–120,000.

KWEI-YANG, the capital and route centre of the province of Kweichow, China. It developed under the Ming dynasty and became the capital under the Manchus, who encouraged Chinese immigration into this region, previously inhabited mainly by Miao. The city stands at over 3,400 ft. above sea level, and is a vital road centre between Kunming, Chungking, Changsha and Kwangsi province.

The population of Kwei-yang is estimated at 100,000.

KWENI, a dark-skinned, robust, strongly built people of medium stature called Gouro by the Baoule, and Lo by the Mandinga, living in the valleys of the middle Bandama and the Upper Davo of the French Ivory Coast. Their language belongs to the *Mande-fu* group. Each village consists of several extended family groups comprising a number of households, under a polit-

ico-religious chief (*firazan*), who is succeeded by his brother and then by his eldest son, and a war chief (*ninazan*). They practise communal labour, and also individual husbandry. The property of the family group and household property is inherited by the brother of the deceased and then by his sons. The dowry is paid by instalments, and a dower is customary. The Kweni engage in cultivation, cattle-raising and arboriculture (kola and palm). They are animists, have secret societies (*Die, Gori*), age classes and sacerdotal classes. There are many tribal, family and personal tabus; and traces of totemism exist.

See Tauxier, *Négres Gouro et Gagou* (*Centre de la Côte d'Ivoire*) (1924).

KYANITE, a rock-forming mineral of the composition Al_2SiO_5, crystallizing in the triclinic system, and named in allusion to its most common colour (Gr. κυάνεος, blue). The mineral has the same percentage chemical composition as andalusite (*q.v.*) and sillimanite (*q.v.*), but differs from these in crystal form and physical properties. It is the densest of the three minerals of the composition Al_2SiO_5, G=3·6. (Andalusite G=3·1, sillimanite G=3·25.) The habit of kyanite crystals is usually that of blades or elongated tables with prominent (100) faces. Pure kyanite is colourless, but the mineral is usually a pale sky-blue, though greenish and yellowish tints occur. It has a perfect (100) and a good (010) cleavage, with usually a parting parallel to the base, which is a glide plane along which secondary twinning is developed. The mineral is distinguished by having a variable hardness on different faces, and in different directions on the same face. On (100) the hardness is 7 parallel to *b* (the edge 100:001) and 4·5 parallel to *c* (the edge 100:010); the name disthene (Gr. δίς and σθένος, "double strength") is given in allusion to this property. When heated to 1,200° C, kyanite slowly dissociates into mullite (*q.v.*) and silica, the alteration taking place on the surface of the crystal and advancing inwards. This decomposition is accompanied by an absorption of heat. Kyanite is a stress mineral, almost wholly confined to crystalline schists, particularly those of argillaceous composition. Its common associates are almandine garnet, staurolite and muscovite. It is almost unknown as a product of pure thermal metamorphism. In metamorphosed igneous rocks it is found in some eclogites (*q.v.*), such as those of the Fichtelgebirge and in the acid granulites of Saxony and Austria. The finest examples of kyanite occur in a paragonite-schist of Pizzo Forno, near St. Gotthard, in Switzerland, where blue crystals occur united in regular position with brown staurolite. In the crystalline schists large crystals are not infrequently associated with quartz in lenses and veins in kyanite-bearing schists. (C. E. T.)

KYAUKPYU, a district in the Arakan division of Lower Burma, on the eastern coast of the Bay of Bengal. It consists of, first, a strip of mainland along the Bay of Bengal, extending from Hunter's bay to the Ma-ī river, and, secondly, the large islands of Ramree and Cheduba, with many others to the north. The mainland in the north and east is highly mountainous and forest-clad, and the lower portion is cut up into numerous islands by a network of tidal creeks. Between the mainland and Ramree lies a group of islands separated by deep, narrow, salt-water inlets, forming the north-eastern shore of Kyaukpyu harbour. The principal mountains are the Arakan Yomas, which send out spurs and sub-spurs almost to the sea-coast. The An pass, allowing access by bullock cart with the heart of Burma, rises to a height of 4,664 ft. above sea-level. The Da-let and the An rivers are navigable by native boats for 25 and 45 mi. respectively. Above these distances they are mere mountain torrents. Considerable evergreen forests of hardwood trees occur on the hills, but large areas are occupied by useless bamboo "brake" and there are only small tracts of cultivated land. Kyaukpyu contains numerous "mud volcanoes," caused by the disruption of mud charged with inflammable gas. From time to time evanescent islands have been formed along the coast by the mud volcanoes which are also numerous in the heart of Cheduba. Mud volcanoes are usually indicative of the presence of oil. Petroleum does occur in small quantities in Kyaukpyu, but the production, despite exploration by modern methods, is very small. Area 4,767 sq.mi.; pop. (1941) 252,281, showing an increase in the decade of 31,989.

The chief town, Kyaukpyu, had a population in 1931 of 4,232. It is a municipality and is a port under the Indian Ports Act (X. of 1889), and the steamers of the British India Navigation company call there once a week going and coming between Rangoon and Calcutta.

KYAUKSĒ, a district in the Mandalay division of Burma, with an area of 1,245 sq.mi., and a population in 1941 of 152,506. It consists of a generally level strip running north and south at the foot of the Shan hills, and of a hilly region rising up these hills to the east, and including the Yeyaman tract, which lies between 21° 30′ and 21° 40′ N. and 96° 15′ and 96° 45′ E., with peaks rising to between 4,500 and 5,000 ft. This tract is rugged and scored by ravines, and is very sparsely inhabited. The Panlaung and Zawgyi rivers from the Shan States flow through the district and are utilized for the numerous irrigation canals. Notwithstanding this, much timber is floated down, and the Panlaung is navigable for small boats all the year round. Rain is scarce, the average for the district is about 30 inches, but the canals supply ample water for cultivation and all other purposes. They are said to have been dug by King Anawrahta in 1092. He is alleged to have completed the system of nine canals and weirs in three years' time. Others have been constructed since the annexation of Upper Burma. At that time many were in serious disrepair, but most of them have been greatly improved by the construction of proper regulators and sluices. Two-thirds of the population are dependent entirely on cultivation for their support, and this is mainly rice on irrigated land. The great majority of the population is pure Burmese, but in the hills there are a good many Danus, a cross between Shans and Burmese. The railway runs through the centre of the rice-producing area, and feeder roads open up the country as far as the Shan foot-hills.

KYAUKSE town is situated on the Zawgyi river and on the Rangoon-Mandalay railway line, and is well laid out in regular streets, covering an area of about a square mile. It has a population (1931) of 7,353, mostly Burmese, with a colony of Indian traders. Above it are some bare rocky hillocks, picturesquely studded with pagodas.

KYD, THOMAS (1558–1594), one of the most important of the English Elizabethan dramatists who preceded Shakespeare. Kyd remained until the last decade of the 19th century in what appeared likely to be impenetrable obscurity. Even his name was forgotten until Thomas Hawkins about 1773 discovered it in connection with *The Spanish Tragedy* in Thomas Heywood's *Apologie for Actors*. But by the industry of English and German scholars a great deal of light has since been thrown on his life and writings. He was the son of Francis Kyd, citizen and scrivener of London, and was baptized in the church of St. Mary Woolnoth, Lombard street, on Nov. 6, 1558. His mother, who survived her son, was named Agnes, or Anna. In Oct. 1565 Kyd entered the newly founded Merchant Taylors' school. He apparently followed, soon after leaving school, his father's business as a scrivener. But Nashe describes him as a "shifting companion that ran through every art and throve by none." He showed a fairly wide range of reading in Latin. The author on whom he draws most freely is Seneca, but there are many reminiscences, and occasionally mistranslations of other authors. Nashe contemptuously said that "English Seneca read by candlelight yeeldes many good sentences," no doubt exaggerating his indebtedness to Thomas Newton's translation. John Lyly had a more marked influence on his manner than any of his contemporaries.

It is believed that Kyd produced his famous play, *The Spanish Tragedy,* between 1584 and 1589; the quarto in the British Museum (which is probably earlier than the Göttingen and Ellesmere quartos, dated 1594 and 1599) is undated, and the play was licensed for the press in 1592. The full title runs, *The Spanish Tragedie containing the Lamentable End of Don Horatio and Belimperia; with the Pitiful Death of Old Hieronimo,* and the play is commonly referred to by Henslowe and other contemporaries as *Hieronimo*. This melodrama, in which the means of inspiring horror were unsparingly and skillfully applied, enjoyed all through the age of Elizabeth and even of James I. and Charles I. so

unflagging a success that it has been styled the most popular of all old English plays. Certain expressions in Nashe's preface to the 1589 edition of Robert Greene's *Menaphon* may be said to have started a whole world of speculation with regard to Kyd's activity. Much of this is still very puzzling; nor is it really understood why Ben Jonson called him "sporting Kyd." In 1592 there was added a sort of prologue to *The Spanish Tragedy,* called *The First Part of Jeronimo, or The Warres of Portugal,* not printed till 1605. Prof. Boas concludes that Kyd had nothing to do with this melodramatic production, which gives a different version of the story and presents Jeronimo as little more than a buffoon. Kyd's name has been connected with what German criticism calls the *Ur-Hamlet,* the original draft of the tragedy of the prince of Denmark. (*See* HAMLET.) His next work was in all probability the tragedy of *Soliman and Perseda,* written perhaps in 1588 and licensed for the press in 1592, which, although anonymous, is assigned to him on strong internal evidence by Boas. It was reprinted, after Kyd's death, in 1599.

Towards the close of his life Kyd came into close connection with Marlowe. In 1590–93 both dramatists were in the service of the same "noble lord," perhaps Lord Pembroke or Lord Strange or the earl of Sussex, to whose countess Kyd dedicated his *Cornelia* (1593–94), an adaptation of Garnier's tragedy. When, in May 1593, the "lewd libels" and "blasphemies" of Marlowe came before the notice of the Star Chamber, Kyd was immediately arrested, papers of his having been found "shuffled" with some of Marlowe's who was imprisoned a week later. A visitation on Kyd's papers was made in consequence of a seditious libel attached to the wall of the Dutch churchyard in Austin Friars. Of this he was innocent, but there was found in his chamber a paper of "vile heretical conceits denying the deity of Jesus Christ." Kyd was arrested and put to the torture in Bridewell. He asserted that he knew nothing of this document, and tried to shift the responsibility of it upon Marlowe, but he was kept in prison until after the death of that poet (June 1, 1593). When he was at length dismissed, his patron refused to take him back into his service. He fell into utter destitution, and sank under the weight of "bitter times and privy broken passions" ("Dedication" to *Cornelia*). He must have died late in 1594, and on Dec. 30, of that year his parents renounced their administration of the goods of their deceased son. To Kyd are ascribed two prose pamphlets: *The Householder's Tragedy* (1588), translated from Tasso, and *The Most Wicked and Secret Murdering of John Brewer, Goldsmith* (1592).

The Spanish Tragedy held its own right through the careers of Shakespeare, Ben Jonson and Fletcher. It was not any shortcoming in its harrowing and exciting plot, but the tameness of its archaic versification, which probably led in 1602 to its receiving "additions," which have been a great stumbling-block to the critics. It is known that Ben Jonson was paid for "additions," but the new scenes are unlike all other known writings of his, and several scholars have independently conjectured that John Webster wrote them. The influence of Kyd is marked on all the immediate predecessors of Shakespeare, and the bold way in which scenes of violent crime were treated on the Elizabethan stage appears to be directly owing to the example of Kyd's innovating genius. His possible relation to *Hamlet* has already been noted, and *Titus Andronicus* presents and exaggerates many of his characteristics. German critics have pushed too far their attempt to find indications of Kyd's influence on later plays of Shakespeare. The extraordinary interest felt for Kyd in Germany is explained by the fact that *The Spanish Tragedy* was long the best known of all Elizabethan plays abroad. It was acted at Frankfort in 1601, and published soon afterwards at Nuremberg. It continued to be a stock piece in Germany until the beginning of the 18th century; it was equally popular in Holland, and potent in its effect upon Dutch dramatic literature. (E. G.; X.)

Kyd's works were first collected and his life written by Prof. F. S. Boas in 1901. Of modern editions of *The Spanish Tragedy* may be mentioned that by Prof. J. M. Manly in *Specimens of the Pre-Shakespearean Drama,* vol. ii. (Boston, 1897), and by J. Schick in the *Temple Dramatists* (1898). *See* also *Cornelia* (ed. H. Gassner, 1894); C. Markscheffel, *T. Kyd's Tragödien* (1885); Gregor Sarrazin, *Thomas Kyd und sein Kreis* (1892); G. O. Fleischer, "Bemerkungen über Thomas Kyd's Spanish Tragedy" (*Jahresbericht der Drei-Königschule zu Dresden-Neustadt*) (1896); J. Schick, "T. Kyd's Spanish Tragedy" (*Literarhistorische Forschungen,* vol. 19, 1901); R. Koppel, in Prölss, *Altengl. Theater* (vol. i., 1904); O. Michael, *Der Stil in Thomas Kyd's Originaldramen* (1905); C. Crawford, *Concordance to the Work of Thomas Kyd* (1906–10); J. Schick, *Die Entstehung des Hamlet* (1902); W. Creizenach, *Die Vorshakespearesche Hamlettragödie* (1906); J. Fitzgerald, *The Sources of the Hamlet Tragedy* (1909); M. J. Wolff, *Zum Ur-Hamlet* (1912); J. M. Robertson, *The Problem of Hamlet* (1919).

KYFFHÄUSER, a double line of hills in Thuringia, Germany. The northern part looks steeply down upon the valley of the Goldene Aue, and is crowned by two ruined castles, Rothenburg (1,440 ft.) on the west, and Kyffhäuser (1,542 ft.) on the east. The latter, built probably in the 10th century, was frequently the residence of the Hohenstaufen emperors, and was finally destroyed in the 16th century. The existing ruins are those of the Oberburg with its tower, and of the Unterburg with its chapel. The hill is surmounted by an imposing monument to the emperor William I., the equestrian statue (erected in 1896) of the emperor being 31 ft. high and the height of the whole 210 ft. There is an interesting legend associating the emperor Frederick Barbarossa with the mountain. The legend states that he is asleep within the mountain but he will one day awaken and lead the united peoples of Germany to victory against her enemies. But G. Vogt has advanced cogent reasons for believing that the real hero of the legend is Frederick II., not Frederick I. Around him gradually crystallized the hopes of the German peoples, and to him they looked for help in the hour of their sorest need. But this is not the only legend of a slumbering future deliverer which lives on in Germany. Similar hopes cling to the memory of Charlemagne, sleeping in a hill near Paderborn; to that of the Saxon hero Widukind, in a hill in Westphalia; to Siegfried, in the hill of Geroldseck; and to Henry I., in a hill near Goslar.

KYNASTON, EDWARD (*c.* 1640–1706), English actor, was born in London and first appeared in Rhodes's company, having been, like Betterton, a clerk in Rhodes's book-shop before he set up a company in the Cockpit in Drury Lane. Kynaston was probably the last and certainly the best of the male actors of female parts, for which his personal beauty admirably fitted him.

Kynaston's last female part was Evadne in *The Maid's Tragedy* in 1661 with Killigrew's company. In 1665 he was playing important male parts at Covent Garden. He joined Betterton at Lincoln's Inn Fields in 1695, after which he received less important rôles, retiring in 1699. He died in 1706, and was buried on Jan. 18.

KYŌSAI, SHO-FU (1831–1889), Japanese painter, was born at Koga in the province of Shimotsuke, Japan, in 1831. After working for a short time, as a boy, with Kuniyoshi, he received his artistic training in the studio of Kanō Dōhaku, but soon abandoned the formal traditions of his master for the greater freedom of the popular school. During the political ferment which produced and followed the revolution of 1867, Kyōsai attained a considerable reputation as a caricaturist. He was three times arrested and imprisoned by the authorities of the shogunate. Soon after the assumption of effective power by the mikado, a great congress of painters and men of letters was held, at which Kyōsai was present. He again expressed his opinion of the new movement in a caricature, which had a great popular success, but also brought him into the hands of the police—this time of the opposite party. Kyōsai must be considered the greatest successor of Hokusai (of whom, however, he was not a pupil), and as the first political caricaturist of Japan. His work—like his life—is somewhat wild and undisciplined, and "occasionally smacks of the *sakē* cup." But if he did not possess Hokusai's dignity, power and reticence, he substituted an exuberant fancy, which always lends interest to draughtsmanship of very great technical excellence. In addition to his caricatures, Kyōsai painted a large number of pictures and sketches, often choosing subjects from the folk-lore of his country. A fine collection of these works is preserved in the British Museum; and there are also good examples in the National Art Library

at South Kensington, and the Musée Guimet at Paris. Among his illustrated books may be mentioned *Yehon Taka-kagami,* Illustrations of Hawks (5 vols., 1870, etc.); *Kyōsai Gwafu* (1880); *Kyōsai Dongwa; Kyōsai Raku-gwa; Kyōsai Riaku-gwa; Kyōsai Mangwa* (1881); *Kyōsai Suigwa* (1882); and *Kyōsai Gwaden* (1887). The latter is illustrated by him under the name of Kawanabe Tōyoku, and two of its four volumes are devoted to an account of his own art and life. He died in 1889.

See Guimet (É.) and Regamey (F.), *Promenades japonaises* (Paris, 1880); Anderson (W.), *Catalogue of Japanese Painting in the British Museum* (1886); Mortimer Menpes, "A Personal View of Japanese Art: A Lesson from Kyōsai," *Magazine of Art* (1888). (E. F. S.)

KYOTO, the former capital of Japan, in the province of Yamashiro, in 35° 1′ N., 135° 46′ E. Pop. (1940) 1,089,726. The Kamo-gawa, upon which it stands, is a mere rivulet in ordinary times, trickling through a wide bed of pebbles; but the city is traversed by several aqueducts, and was connected with Lake Biwa in 1890 by a canal 6⅞ m. long, which carries an abundance of water for manufacturing purposes, brings the great lake and the city into navigable communication, and forms with the Kamo-gawa canal and the Kamo-gawa itself a through route to Osaka, from which Kyoto is 25 m. distant by rail. Founded in the year 793, Kyoto remained the capital of the empire during nearly eleven centuries. In its days of greatest prosperity Kyoto contained only half a million inhabitants and the emperor Kwammu called it Heian-jo, or the "city of peace," when he made it the seat of government; but the people knew it as Miyako, or Kyoto, both terms signifying "capital," and in modern times it is often spoken of as Saikyo, or western capital, in opposition to Tokyo, or eastern capital. Magnificent temples and shrines, grand monuments of architectural and artistic skill, beautiful gardens, gorgeous festivals, and numerous *ateliers* where the traditions of Japanese art are obeyed with attractive results, offer to the foreign visitor a fund of interest. The city is still the Buddhist stronghold of Japan and the main products are porcelain, embroidery, brocades, bronzes, enamel ware and fans.

KYRIE, a petition used at the beginning of the Mass and in other offices of the Eastern and Roman Churches, in full, *Kyrie eleison* ("Lord, have mercy"). In the Anglican Book of Common Prayer, the Kyrie is introduced into the orders for Morning and Evening Prayer, and also, with an additional petition, as a response made by the congregation after the reading of each of the Ten Commandments at the opening of the Communion Service.

KYRLE, JOHN (1637–1724), English philanthropist, was born at Dymock, Gloucestershire, on May 22, 1637. On completing his studies at Balliol college, Oxford, he settled on the family property at Ross, and devoted himself to the improvement of the town. He died on Nov. 7, 1724, and was buried in the chancel of Ross church. His memory is preserved in the Kyrle Society, founded in 1877, to improve the lot of the working people by laying out parks, encouraging house decoration, and gardening.

See A. Pope, The Third *Moral Epistle* (1732).

KYSHTYM, Upper and Lower, copper mining settlements two miles apart on the Kyshtym river, in 55° 40′ N., 60° 40′ E., in the Sverdlovsk district of the Uralsk area of the Russian S.F.S.R., on the Chelyabinsk to Sverdlovsk railway.

Population 15,973.

KYUSTENDIL, a town in S.W. Bulgaria, capital of the department of the same name, 43 mi. S. W. of Sofia by rail. Pop. (1934) 16,241. The town is chiefly notable for its hot mineral springs, in connection with which there are nine modern bathing establishments.

Vines, tobacco and fruit are cultivated. There is a mixed secondary school, and a vintners' and fruitery school. In Roman times it was known as Pautalia, Ulpia Pautalia and Pautalia Aurelii, in the 10th century as Velbuzhd. In the 14th century it was the seat of an independent principality of Northern Macedonia, its despot, Constantine Dragash, being overthrown and killed by the Turks in 1394.

LANCESTORS of this letter were Semitic 𐤋 (*lamedh*) and Greek Λ, Λ (*lambda*). The form appearing on the Moabite stone was rounded. Other Greek forms were ⅃, ⅄ in early inscriptions from Attica and Corinth. The former was also usual in the Chalcidic alphabet and the Etruscan form was similar ⅂ or ⅃. Thus the Latin and Faliscan alphabets derived their form L with the oblique stroke becoming horizontal. Another Faliscan form was ⅂. In the Lydian alphabet the form of the letter was ⅂. The modern form L derives from the Latin.

In the uncial writing of the 7th century or earlier the vertical stroke was raised above the line, the shape of the letter being ⌊. In Latin cursive of the 6th century appears a rounded form ℓ,

NAME OF FORM	APPROXIMATE DATE	FORM OF LETTER
PHOENICIAN	B.C. 1.200	𐤋
CRETAN	1,100-900	𐌋
THERAEAN	700-600	𐌋
ARCHAIC LATIN	700-500	𐌋
ATTIC	600	𐌋 ⅂
CORINTHIAN	600	𐌋
CHALCIDIAN	600	𐌋
IONIC	403	𐌋
ROMAN COLONIAL	PRE-CLASSICAL AND CLASSICAL TIMES	𐌋
URBAN ROMAN		L
FALISCAN		⅂
OSCAN		⅂
UMBRIAN		⅂
CLASSICAL LATIN AND ONWARDS		L

THE DEVELOPMENT OF THE LETTER "L" FROM THE PHOENICIAN, THROUGH THE CLASSICAL, DOWN TO MODERN TIMES

and this is the parent of the Carolingian ⌊ from which derive our own rounded minuscule ℓ or the straight form ⌊.

The sound consistently represented by the letter throughout its history has been the liquid for which it at present stands. This is not made like the sound of R by twirling the tip of the tongue, but by allowing the air to escape at the side of the tongue and between the tongue and the palate. Though several varieties of liquid may be distinguished, the sound has not undergone appreciable change from the earliest period of the existence of the Indo-European languages. (B. F. C. A.)

LAACHER SEE, a lake of Germany, in the Prussian Rhine Province, 23 m. north-west of Coblenz. It occupies what is probably a crater of the Eifel volcanic formation, and pumice stone and basalt are found in great quantities around it. It lies 850 ft. above the sea, is 5 m. in circumference and 160 ft. deep, and is surrounded by an amphitheatre of high hills. The water is sky-blue in colour, very cold and bitter to the taste. The lake has no outlet and consequently is subjected to a considerable rise and fall. On the western side lies the Benedictine abbey of St. Maria Laach (*Abbatia Lacensis*) founded in 1093 by Henry II., count palatine of the Rhine. The monastery was abolished in 1802 and after the Napoleonic wars it became a Prussian state demesne. In 1863 it passed into the hands of the Jesuits, who, down to their expulsion in 1873, published here a periodical, entitled *Stimmen aus Maria Laach,* which they continued to issue long after their departure from the monastery.

LA BADIE, JEAN DE (1610–1674), French divine, founder of the school known as the Labadists, was born at Bourg, near Bordeaux, on Feb. 13, 1610, the son of Jean Charles de la Badie, governor of Guienne. He held pastorates in Geneva and London, Middelburg and Amsterdam, where he preached in a Separatist church. He had enthusiastic disciples, Pierre Yvon (1646–1707) at Montauban, Pierre Dulignon (d. 1679), François Menuret (d. 1670), Theodor Untereyk (d. 1693), F. Spanheim (1632–1701), and, more important than any, Anna Maria v. Schürman (1607–78), whose book *Eucleria* is perhaps the best exposition of his ideas, which included community of goods within the church, the continuance of prophecy, the sanctity of marriage between two believers, the continuous sabbath, etc. The life and separatism of the community brought them into frequent collision with their neighbours and with the magistrates, and in 1670 they accepted the invitation of the princess Elizabeth, abbess of Herford in Westphalia, to Herford. They migrated to Bremen in 1672, and afterwards to Altona, where they were dispersed on the death of the leaders. There were also small communities in the Rhineland, and a missionary settlement in New York. Jean de la Badie died in Feb. 1674.

La Badie's works include *La Prophétie* (1668), *Manuel de piété* (1669), *Protestation de bonne foi et saine doctrine* (1670), *Briève déclaration de nos sentiments touchant l'Église* (1670). *See* H. van Berkum, *De Labadie en de Labadisten* (Sneek, 1851); M. Göbel, *Gesch. d. christl. Lebens in der rheinisch-westphälischen Kirche* (Coblenz, 3 vols., 1849–60); H. Heppe, *Geschichte des Pietismus* (Leiden, 1879); A. Ritschl, *Geschichte des Pietismus,* vol. i. (Bonn, 1880); W. Goeters, *Die Vorbereitung des Pietismus* (1911); and especially Peter Yvon, *Abrégé précis de la vie et de la conduite et des vrais sentiments de feu Mgr. de Labadie,* and Anna Maria v. Schürman, *Eucleria* (Altona, 1673, 1678).

LABARUM, the sacred military standard of the Christian Roman emperors, first adopted by Constantine the Great in 312. The name seems to have been known before, and the banner was simply a Christianized form of the Roman cavalry standard. The first labarum consisted of a long gilded spear, crossed at the top by a bar, from which hung a square purple cloth, richly jewelled. At the upper extremity of the spear was a golden wreath encircling the sacred monogram, formed of the first letters of the name of Christ. In later banners the monogram was sometimes

embroidered on the cloth. (*See* FLAG.)

LABÉ, LOUISE CHARLIN PERRIN (d. 1566), French poet, called *La Belle Cordière,* was born at Lyons, probably between 1510 and 1520, the daughter of a rich ropemaker, named Charley or Charlin. At the siege of Perpignan she is said to have fought on horseback in the ranks of the Dauphin, afterwards Henry II. Some time before 1551 she married Ennemond Perrin, a ropemaker. She formed a library and gathered round her a society which included many of the learned ladies of Lyons—Pernette du Guillet, Claudine and Sibylle Scève and Clémence de Bourges, and the poets Maurice Scève, Charles Fontaine, Pontus de Tyard; and among the occasional visitors were Clément Marot and his friend Melin de Saint-Gelais, with probably Bonaventure des Périers and Rabelais. About 1550 the poet Olivier de Magny passed through Lyons on his way to Italy in the suite of Jean d'Avanson, the French envoy to the Holy See. As the friend of Ronsard, "Prince of Poets," he met with an enthusiastic reception from Louise. It is said that her passion for Magny inspired her eager, sincere verse, and the elegies probably express her grief at his first absence. A second short visit to Lyons was followed by a second longer absence. Magny's influence is shown more decisively in the sonnets in her *Oeuvres,* which, printed in 1555, attained great popularity. They were in private circulation before this time and are dedicated to Clémence de Bourges. During his second visit to Italy Magny had apparently consoled himself, and Louise, despairing of his return, encouraged another admirer, Claude Rubys, when her lover returned unexpectedly. Louise dismissed Rubys, but Magny's jealousy found vent in an ode addressed to the Sire Aymon (Ennemond), which ruined her reputation; while Rubys, angry at his dismissal, avenged himself later in his *Histoire véritable de Lyons* (1573). This scandal struck a fatal blow at Louise's position. Shortly afterwards her husband died, and she returned to her country house at Parcieu, where she died on April 25, 1566, leaving the greater part of her inherited fortune to the poor. Such is the usual account of Louise Labé's life. But the accounts of it vary. The importance of Louise lies in the reality of her passion, whatever its object, and in the new vehemence and frankness of its expression. Her works include, besides the *Elegies* and *Sonnets* mentioned, a prose *Débat de folie et d'amour* (translated into English by Robert Greene in 1608).

See editions of her *Oeuvres* by P. Blanchemain (1875), and by C. Boy (2 vols., 1887). A sketch of Louise Labé and of the Lyonnese Society is in Edith Sichel's *Women and Men of the French Renaissance* (1901). *See* also J. Favre, *Olivier de Magny* (1885).

LABEL, a slip, ticket or card of paper, metal or other material, attached to an object, such as a parcel or a bottle, and containing a name, address, description or other information, for the purpose of identification. Originally the word meant a band or ribbon of linen or other material, and was thus applied to the fillets (*infulae*) attached to a bishop's mitre. In heraldry the "label" is a mark of "cadency." In architecture, the term is applied to a projecting moulding over doors, windows or arches; sometimes known as a drip mould or hood mould (*q.v.*).

LABEO, MARCUS ANTISTIUS (*c.* 50 B.C.–A.D. 18), Roman jurist, was the son of Pacuvius Antistius Labeo, also a jurist. A member of the plebeian nobility, and in easy circumstances, the younger Labeo early entered public life, and soon rose to the praetorship; but his undisguised republican sympathies, somewhat brusquely confessed, led to the promotion of his rival Capito to the consulate over his head by Augustus. Labeo thereupon declined the office when subsequently offered to him and devoted himself to jurisprudence. His training in the science had been derived principally from Trebatius Testa. To his knowledge of the law he added a wide general culture, devoting his attention specially to dialectics, philology (*grammatica*), and antiquities, as valuable aids in the exposition, expansion, and application of legal doctrine (Gell. xiii. 10). Down to the time of Hadrian his was probably the name of greatest authority; and several of his works were abridged and annotated by later hands. While Capito is hardly ever referred to, the dicta of Labeo are of constant recurrence in the writings of the classical jurists, such as Gaius, Ulpian and Paul and many of them are preserved in Justinian's *Digest.* Labeo gets the credit of being the founder of the Proculian sect or school, while Capito is spoken of as the founder of the rival Sabinian one (Pomponius in fr. 47, *Dig.* i. 2); but it is probable that the real founders of the two *scholae* were Proculus and Sabinus, followers respectively of the methods of Labeo and Capito.

Labeo's most important literary work was the *Libri Posteriorum.* It contained a systematic exposition of the common law. His *Libri ad Edictum* was a commentary on the edicts of both praetors and the curule aediles. His *Probabilium* (*πιθανῶν*) *lib. VIII.,* a collection of definitions and axiomatic legal propositions, seems to have been one of his most characteristic productions.

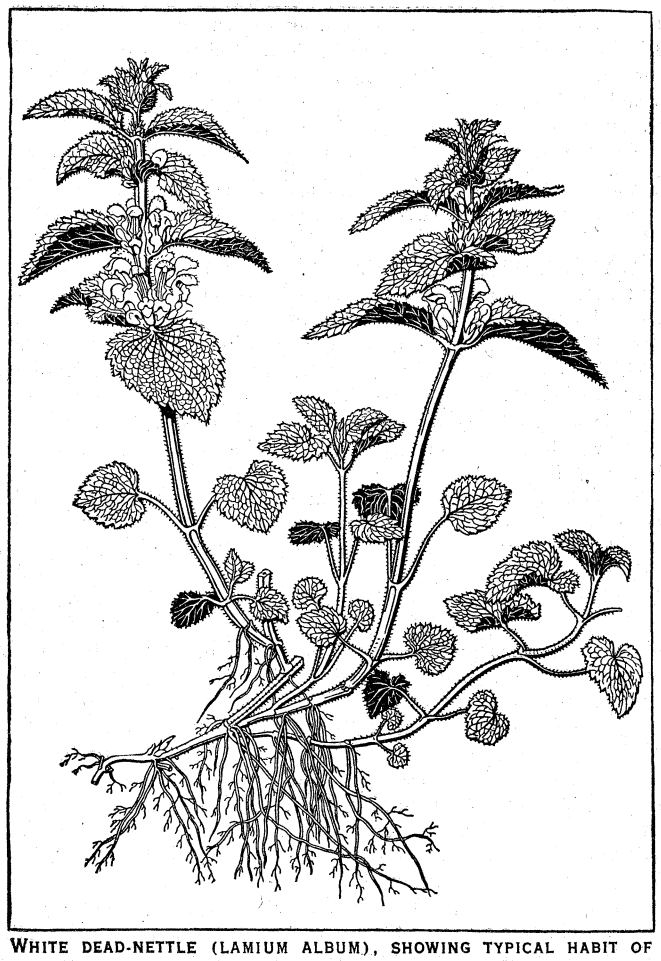
See van Eck, "De vita, moribus, et studiis M. Ant. Labeonis" (Franeker, 1692), in Oelrichs's *Thes. nov.,* vol. i.; Mascovius, *De sectis Sabinianor. et Proculianor.* (1728); Pernice, *M. Antistius Labeo. Das röm. Privatrecht im ersten Jahrhunderte der Kaizerzeit* (Halle, 1873–92).

LABERIUS, DECIMUS (*c.* 105–43 B.C.), Roman knight and writer of mimes. He seems to have been a man of caustic wit, who wrote for his own pleasure. In 45 Julius Caesar ordered him to appear in one of his own mimes in a public contest with the actor Publilius Syrus. Laberius pronounced a dignified prologue on the degradation inflicted on him. Caesar awarded the victory to Publilius, but restored Laberius to his equestrian rank, which he had forfeited by appearing as a mimus (Macrobius, *Sat.* ii. 7).

In addition to the prologue (in Macrobius), the titles of 44 of his mimi have been preserved; the fragments have been collected by O. Ribbeck in his *Comicorum Latinorum reliquiae* (1873).

LABIATAE, a family of seed-plants belonging to the series of Tubiflorae of the dicotyledons, and containing about 200 genera with 3,000 species. The majority of them are annual or perennial herbs inhabiting the temperate zone, becoming shrubby in warmer climates. The stem is generally square in section and the simple exstipulate leaves are arranged in decussating pairs (*i.e.,* each pair is in a plane at right angles to that of the pairs immediately above and below it); the blade is entire, or toothed, lobed or more or less deeply cut. The plant is often hairy, and the hairs are frequently glandular, the secretion containing a scent characteristic of the genus or species. The flowers are borne in the axils of the leaves or bracts; they are rarely solitary as in *Scutellaria* (skull-cap), and generally form an apparent whorl (*verticillaster*) at the node, consisting of a pair of cymose inflorescences each of which is a simple three-flowered dichasium as in *Brunella, Salvia,* etc., or more generally a dichasium passing over into a pair of monochasial cymes as in *Lamium, Ballota,* and *Nepeta.* A number of whorls may be crowded at the apex of the stem and the subtending leaves reduced to small bracts, the whole forming a raceme- or spike-like inflorescence as in *Mentha, Brunella,* etc. The plan of the flower is remarkably uniform; it is bisexual and zygomorphic in the median plane, with 5 sepals united to form a persistent cup-like calyx, 5 petals united to form a two-lipped gaping corolla, 4 stamens inserted on the corolla-tube, two of which, generally the anterior pair, are longer than the other two (didynamous arrangement)—sometimes as in *Salvia,* the posterior pair is aborted—and two superior median carpels, each very early divided by a constriction in a vertical plane, the pistil consisting of four cells each containing one erect anatropous ovule attached to the base of an axile placenta; the style springs from the centre of the pistil between the four segments (*gynobasic*), and is simple with a bifid apex. The fruit comprises four one-seeded nutlets included in the persistent calyx; the seed has a thin testa and the embryo almost or completely fills it. Although the general form and plan of arrangement of the flower is very uniform, there are wide variations in detail. Thus the calyx may be tubular, bell-shaped, or almost spherical, or straight or bent, and the length and form of the teeth or lobes varies also; it may be equally toothed as in mint (*Mentha*) and marjoram (*Origanum*), or two-lipped as in thyme (*Thymus*), *Lamium, Monarda* and *Salvia;* the number of nerves affords useful characters for distinction of genera; there are normally five main nerves between which simple or forked secondary nerves are more or less developed. The

shape of the corolla varies widely, the differences being doubtless intimately associated with the pollination of the flowers by insect-agency. The tube is straight or variously bent and often widens towards the mouth. Occasionally the limb is equally five-toothed, or forms, as in *Mentha* an almost regular four-toothed corolla by union of the two posterior teeth. Usually it is two-lipped with an upper lip and lower lip; the median lobe of the lower lip is gener-



WHITE DEAD-NETTLE (LAMIUM ALBUM), SHOWING TYPICAL HABIT OF GROWTH AND THE SQUARE HAIRY STEM. CROSS-POLLINATION IS ASSURED BY BEES VISITING THE FLOWERS

ally most developed and forms a resting-place for the bee or other insect when probing the flower for honey. The upper lip shows great variety in form, often, as in *Lamium* and *Stachys,* it is arched, forming a protection from rain for the stamens, or it may be flat as in thyme. In the tribe *Ocimoideae* the four upper petals form the upper lip, and the single anterior one the lower lip, and in *Teucrium* the upper lip is absent, all five lobes being pushed forward to form the lower. The posterior stamen is sometimes present as a staminode, but generally suppressed; the upper pair are often reduced to staminodes or more or less completely suppressed as in *Salvia,* rarely are these developed and the anterior pair reduced. In *Nepeta* and allied genera the posterior pair are the longer, but this is rare, the didynamous character being generally the result of the anterior pair being the longer. The anthers are two-celled, each cell splitting lengthwise; the connective may be more or less developed between the cells. An extreme case is seen in *Salvia,* where the connective is filiform and jointed to the filament, while the anterior anther-cell is reduced to a sterile appendage. Honey is secreted by a hypogynous disk. In the more general type of flower the anthers and stigmas are protected by the arching upper lip as in dead-nettle and many other British genera; the lower lip affords a resting-place for the insect which in probing the flower for the honey, secreted on the lower side of the disk, collects pollen on its back. Numerous variations in detail are found in the different genera; in *Salvia,* for instance, there is a lever mechanism, the barren half of each anther forming a knob at the end of a short arm which when touched by the head of an insect causes the anther at the end of the longer arm to descend on the insect's back (*see* POLLINATION). Brightly-coloured flowers with longer tubes adapted to the visits of butterflies and moths, as species of *Salvia, Stachys, Monarda,* are also found; some South American species of *Salvia* are pollinated by humming-birds. In mint (*Mentha*), thyme (*Thymus*), marjoram (*Origanum*), and allied genera, the flowers are nearly regular and the stamens spread beyond the corolla.

The persistent calyx encloses the ripe nutlets, and aids in their distribution in various ways, by means of winged spiny or hairy lobes or teeth; sometimes it forms a swollen bladder. A scanty endosperm is sometimes present in the seed; the embryo is generally parallel to the fruit axis with a short inferior radicle and generally flat cotyledons.

The family occurs in all warm and temperate districts; its chief centre is the Mediterranean region, where some genera such as *Lavandula, Thymus, Rosmarinus* and others form an important feature in the vegetation. The tribe *Ocimoideae* is exclusively tropical and subtropical and occurs in both hemispheres. The family is well represented in Britain by nineteen native genera; *Mentha* (mint) including also *M. piperita* (peppermint) and *M. Pulegium* (pennyroyal); *Origanum vulgare* (marjoram); *Thymus Serpyllum* (thyme); *Calamintha* (calamint), including also *C. Clinopodium* (wild basil) and *C. Acinos* (basil thyme); *Salvia* (sage), including *S. pratensis* (clary); *Nepeta Cataria* (catnip or catmint); *N. Glechoma* (ground-ivy); *Brunella* (self-heal); *Scutellaria* (skull-cap); *Stachys* (woundwort); *S. Betonica* (wood betony); *Galeopsis* (hemp-nettle); *Lamium* (dead-nettle); *Ballota* (black horehound); *Teucrium* (germander); and *Ajuga* (bugle).

Labiatae are readily distinguished from all other families of the series excepting Verbenaceae, in which, however, the style is terminal; but several genera, e.g., *Ajuga, Teucrium* and *Rosmarinus,* approach Verbenaceae in this respect, and in some genera of that order the style is more or less sunk between the ovary lobes. The fruit-character indicates an affinity with Boraginaceae from which, however, they differ in habit and by characters of ovule and embryo. The presence of volatile oil renders many genera of economic use, such as thyme (*Thymus*), marjoram (*Origanum*), sage (*Salvia*), lavender (*Lavandula*), rosemary (*Rosmarinus*), patchouli (*Pogostemon*). The tubers of *Stachys Sieboldi* are eaten in China, Japan and France.

The family is represented in North America by about 40 genera the largest being *Teucrium* (germander), *Scutellaria* (skullcap) *Marrubium* (horehound), *Nepeta* (catnip), *Physostegia* (dragon-head), *Leonurus* (motherwort), *Stachys* (hedge nettle), *Salvia* (sage), *Monarda* (horsemint), *Hedeoma* (pennyroyal), *Thymus* (Thyme), and *Mentha* (mint).

LABICANA, VIA, ancient highroad, leading east-southeast from Rome. It seems possible that the road at first led to Tusculum, that it was then prolonged to Labici, the modern Monte Compatri, on the northern slopes of the Alban Hills, and later still became a road for through traffic; it may even have superseded the Via Latina as a route to the southeast for, while the distance from Rome to their main junction at Ad Bivium (or to another junction at Compitum Anagninum) is practically identical, the summit level of the former is 725 ft. lower than that of the latter, a little to the west of the pass of Algidus. After their junction it is probable that the road bore the name Via Latina rather than Via Labicana. The course of the road after the first six miles from Rome is not identical with that of any modern road, but can be traced by remains of pavement and buildings

See T. Ashby in *Papers of the British School at Rome,* i. 215 *sqq.*

LABICHE, EUGÈNE MARIN (1815–1888), French dramatist, was born in Paris of *bourgeois* parentage. Up till 1852 he was only a successful *vaudevilliste* among a crowd of others; but in that year he made a new departure in *Le Misanthrope et l'Auvergnat.* All the plays given for the next 25 years, although constructed on the old plan, contained a more or less appreciable dose of that comic observation and good sense which gradually raised the French farce almost to the level of the comedy of char-

acter and manners. During the second period of his career Labiche had the collaboration of Delacour, Choler and others. A more useful and more important collaborator he found in Jean Marie Michel Geoffroy (1813–83) whom he had known as a *débutant* in his younger days, and who remained his faithful interpreter to the last. Geoffroy impersonated the *bourgeois* not only to the public, but to the author himself; and it may be assumed that Labiche, when writing, could see and hear Geoffroy acting the character and uttering, in his pompous, fussy way, the words that he had just written. *Célimare le bien-aimé* (1863), *Le Voyage de M. Perrichon* (1860), *La Grammaire, Un Pied dans le crime, La Cagnotte* (1864), are the happiest productions of Labiche.

In 1877 he retired to his rural property in Sologne. Labiche's comic plays, in ten volumes, were issued during 1878 and 1879. The success was even greater than had been expected by the author's most sanguine friends. In 1880 Labiche was elected to the French Academy. He died in Paris on Jan. 23, 1888.

His *Théâtre complet* (10 vols., 1878–79) contains a preface by Emile Augier.

LABIENUS, the name of a Roman family, said (without authority) to belong to the gens Atia. The most important member was TITUS LABIENUS. In 63 B.C., at Caesar's instigation, he prosecuted Gaius Rabirius for treason; in the same year, as tribune of the plebs, he carried a plebiscite which indirectly secured for Caesar the dignity of *pontifex maximus* (Dio Cassius xxxvii. 37). He served as a legatus throughout Caesar's Gallic campaigns and took Caesar's place whenever he went to Rome. His chief exploits in Gaul were the defeat of the Treviri under Indutiomarus in 54, his expedition against Lutetia (Paris) in 52, and his victory over Camulogenus and the Aedui in the same year. On the outbreak of the civil war, however, he was one of the first to desert Caesar. He was welcomed on the Pompeian side, but he brought no great strength with him. From the defeat at Pharsalus he fled to Corcyra, and thence to Africa. There he inflicted a slight check upon Caesar at Ruspina in 46. After Thapsus he joined the younger Pompey in Spain, and was killed at Munda (March 17, 45).

LABLACHE, LUIGI (1794–1858), Franco-Italian singer, was born at Naples on Dec. 6, 1794, the son of a merchant of Marseilles who had married an Irish lady. In 1806 he entered the Conservatorio della Pietà de' Turchini, where he studied music under Gentili and singing under Valesi, besides learning to play the violin and violoncello. As a boy he had a beautiful alto voice, and by the age of twenty he had developed a magnificent bass with a compass of two octaves from E♭ below to E♭ above the bass stave. In England he took part in many provincial musical festivals, and taught singing to Queen Victoria. On the operatic stage he was equally successful in comic or tragic parts. He was one of the thirty-two torch-bearers chosen to surround the coffin at Beethoven's funeral in 1827. He died at Naples on Jan. 23, 1858, and was buried at Maisons-Lafitte, Paris.

LABOR, DEPARTMENT OF: *see* GOVERNMENT DEPARTMENTS.

LABORI, FERNAND (1860–1917), French lawyer, was born at Reims on April 18, 1860. Educated at Reims and Paris, he spent several years in England and Germany. He was called to the bar in 1884, and rapidly made a reputation as a brilliant lawyer and advocate, being counsel for the defence in most of the important political trials of the day during a period of nearly 30 years. His conduct of the Dreyfus case placed him at the top of his profession. He fought with unremitting energy for his client during both the first and second revisions of the trial, in 1898 and 1899. Labori was shot at and wounded at Rennes on the eve of his cross-examination of the witnesses for the prosecution. Dreyfus was not finally declared innocent until 1906, and Labori never once relaxed his efforts on behalf of the unfortunate officer. Other notable trials in which Maître Labori was concerned were the prosecution of Émile Zola for libel (1898) which arose out of the Dreyfus case; the Humbert affair (1902); and the trial of Madame Caillaux for the murder of M. Calmette, editor of *Le Figaro* (1914), when he secured her acquittal. He died in Paris on March 14, 1917.

His works include: *Le mal politique et les parties* (1902); *Les Idées morales et la politique* (1903).

LABOUCHERE, HENRY DU PRE (1831–1912), British politician, was born in London on Nov. 9, 1831. He was educated at Eton, and, after spending a short time at Trinity college, Cambridge, entered the diplomatic service in 1854, becoming in 1863 second secretary to the British embassy at Constantinople. In 1864 he abandoned diplomacy for politics, and in 1866 was elected Liberal member for Windsor, but was unseated on petition. In 1867 he won a by-election for Middlesex, but failed to be re-elected in 1868. In 1880 he again entered the House of Commons as Radical member for Northampton, and this seat he retained until his retirement in 1906. He began his journalistic career with *The Daily News,* of which he became part proprietor just before the Franco-German War. In 1874 he became associated with Edmund Yates on *The World,* but three years later he started *Truth,* which had a remarkable record in the exposure of shams and organized impostures, especially frauds on the charitable. Labouchere was a strenuous advocate of the abolition of the House of Lords; at the time of the Parnell Commission he had much to do with the unmasking of Pigott; and he was a member of the inquiry into the Jameson Raid, his hostility to Chamberlain being as pronounced as against Lord Rosebery when the latter became leader of the Liberal party. After 1903 he lived mainly in Italy, at a villa near Florence, where he died on Jan. 15, 1912.

See A. L. Thorold, *Life of Henry Labouchere* (1913).

LABOUR. In economics, as in ordinary discourse, the word labour is used as a name for the general body of wage-earners. It is in this sense, for example, that one speaks of "organized labour." In a more special and technical sense, however, labour means, in economics, any valuable service rendered by a human agent in the production of wealth, other than the accumulating and providing of capital or the assuming of the risks which are inseparable from the responsible planning and direction of business undertakings. It includes the services of manual labourers, but it covers many other kinds of services as well. It is not synonymous with toil or exertion, and it has only a remote relation to "work done" in the physical or physiological senses. The application of the physical energies of men to the work of production is, of course, an element in labour, but skill and self-direction, within a larger or smaller sphere, are also elements. A characteristic of all labour is that it uses time, in the specific sense that it consumes some part of the short days and years of human life. Another common characteristic is that, unlike play, it is not generally a sufficient end in itself, but is performed for the sake of its product or, in modern economic life, for the sake of a claim to a share of the aggregate product of the community's industry. Even the labourer who finds his chief pleasure in his work commonly tries to sell services or products for the best price he can get.

If labour could be measured adequately in simple homogeneous units of time, such as labour-hours, the problems of economics would be simplified. But labourers differ and tasks differ also, as, for example, in respect of the amount and character of training and the degree of skill, intelligence, capacity to direct one's own work or the work of others, and the other special aptitudes which they require. They differ, furthermore, in respect of their irksomeness, the prospects which they offer for permanent employment and advancement, the social status generally associated with them, and in respect of other characteristics which make one task more attractive than another. Quite apart, therefore, from the circumstance that the mobility of labour is imperfect, that it cannot be transferred easily and quickly to the employments in which its products have the highest value, there is the further circumstance that the wages of different kinds of labour cannot be taken to be payments for larger or smaller "quantities of labour." The price per unit of time which a particular kind of labour commands in the market depends not only upon the technical efficiency of the labourer but upon the demand for the particular services which he is able to furnish, upon their relative scarcity, and upon the supply of other productive agents. The attempts of the older economists and of some of the Socialists to find a simple and

direct relation between the value of a product and the quantity of labour which it embodies were fruitless.

Different uses of the available supply of labour, however, whatever its composition, can be compared with reference to the quantity and the value of the products which they yield, and such comparisons are being made continuously in the ordinary course of the planning and management of competitive business undertakings. By means of economic analysis, moreover, it is often possible to know whether a proposed change in the organization of the community's labour or of the uses to which it is put (as, for example, by encouraging certain types of industries at the expense of others) would be more likely to increase or to decrease the annual production of wealth. For the individual worker, as well as for the community as a whole, the practicable way of measuring the "labour costs" of production is by reference to the other possible products which might have been secured by means of the same labour, or to possible alternative uses of the time given to labour. Thus the fact that in most countries both the number of hours per day and the part of the average worker's life which are given to labour are less than they were 100 years ago, means, not that labour has become intrinsically more arduous or more painful, but that it has become more costly, in the sense that, with the increase of the general level of incomes, the alternative uses of the worker's time have become relatively more valuable. (*See* also ECONOMICS; WAGES.) (A. Yo.)

LABOUR, HOURS OF: *see* HOURS OF LABOUR.

LABOUR, MINISTRY OF: *see* GOVERNMENT DEPARTMENTS.

LABOUR, PRIMITIVE. It is often thought that all native peoples are naturally indolent, and that only by the pressure of white authority can they be induced to perform hard and consistent work. As regards normal tribal conditions this idea is quite erroneous. Even in the primitive agriculture of the Pacific long hours are spent for days at a time in steady toil, embracing a series of operations, from the arduous clearing and breaking up of the ground to the careful monotonous weeding, which cover a cycle of weeks or even months of work. In the hewing-out, carving, launching and sailing of a canoe, again, extraordinary patience and effort are displayed. Such facts can be paralleled from the economic life of any native folk who have not been too greatly changed by civilization.

The secret of such arduous and consistent labour lies in the nature of the motives behind it. The desire to utilize a share of the product, or to reap some other material reward is a constant inducement to work. The real scheme of motivation, however, is much more complex. Other incentives are often equally strong. In primitive society great emphasis becomes attached to the personal relation between a man and his work; the absence of any widespread system of delegated employment renders the product peculiarly his own, and allows scope for the development of the spirit of craftsmanship and delight in the task for its own sake. This largely accounts for the extra finish and decoration so often applied to weapons and tools beyond the corresponding increase in utility. Social factors also are of the greatest importance: vanity in seeing his handiwork admired, an intense spirit of rivalry, rooted in the desire to attract public attention, coupled with obedience to tribal usage and traditional teaching, are responsible for much of the exacting labour of the primitive workman. The production of food is often not dictated by pressure of immediate physical wants, but by social considerations, as the need of supplies for a marriage or a mourning feast, or by the wish to gain prestige by the accumulation of stocks of surplus wealth.

Organization of Work.—In general the primitive economic system is not marked by any complex division of labour. The work of the community is normally split up between men and women, the separation being enforced by custom and taboo. Men usually perform the heavier, though more interesting and even dangerous work, women that which involves less physical strain but is more regular and monotonous. The savage woman is thus no drudge for an idle husband; a certain economic equality is observed within the family. Other broad divisions of employment are made on the basis of age and rank. Specialist craftsmen occur to a limited degree, as canoe-builders and carvers in Polynesia, or the caste of smiths in central Africa. Specialization in work is closely associated with the knowledge of technique and magic.

The large scale on which some native enterprises are conducted, as house-building, gardening and fishing, demands for them to be effective, that there must be strong forces of organization to ensure that the contribution of each person is adequate, and, more important, that it is harmoniously welded into the whole scheme of work. In general, the bonds which secure co-operation in labour are represented by the ties of kinship between members of the working group, by the authority of chief and elders, by the obedience to magical rules, and by the prestige of the local magician. In such tasks, competent leadership is of the greatest importance. To relieve the fatigue of labour and beguile its monotony, primitive man adopts a number of devices, as music, work-songs and choruses, or in some communities, narcotics. Working in company also has in itself a cheering effect. A powerful factor in assisting to keep the activity of individual workers up to full pitch is the pressure of public opinion, often made explicit through traditional tales and proverbial sayings. Since care and skill in work usually bring reputation to a person and act as a distinct marriageable asset, young folk in a primitive community are provided with an additional incentive to industry.

The study of such problems of motive and organization in work has a practical as well as a theoretical interest, since it bears on certain aspects of native labour in Africa and the Pacific.

See B. Malinowski, *Argonauts of the Western Pacific* (1922), "Labour and Primitive Economics," *Nature* (Dec. 26, 1925); also K. Bücher, *Arbeit und Rhythmus* (6th ed., 1924); R. Thurnwald, "Die Gestaltung der Wirtschaftsentwickelung" in *Erinnerungsgabe für Max Weber*, i. (1923), L. H. D. Buxton, *Primitive Labour* (1924).
(R. F.)

LABOUR ARTICLES: *see* INDUSTRIAL ARTICLES.

LA BOURBOULE, a watering-place of central France, in the department of Puy-de-Dôme, S.W. of Clermont Ferrand. Pop. (1936) 2,742. La Bourboule is on the bank of the Dordogne at a height of 2,790 ft. Its waters, containing arsenic, are used in cases of diseases of the skin and respiratory organs, rheumatism, neuralgia, etc. Though known to the Romans, they were not in much repute till the end of the 19th century. The town has three thermal establishments.

LABOUR COLONY: *see* FARM COLONY.

LABOUR DAY. (1) May 1, the date generally selected by trade unions, Socialist parties and labour organizations in general for a public celebration. It is observed by a portion of the population in nearly every industrial country except the United States and Canada (*see* below) and except Italy, where its observance has been forbidden and the traditional date of the foundation of Rome substituted. In Russia it is an official holiday.

The connection which certain Socialist writers have attempted to make between "Labour Day" and the old May Day festivals appears imaginary. Robert Owen in 1833 appointed May 1 as the day for the commencement of the millennium, but apart from this mention the observance of the day cannot be dated earlier than 1889, in which year the first (Paris) congress of the Second Socialist International selected the date for annual international celebrations. By the movers of the motion it was originally intended that the workers should by direct action enforce a holiday on May 1 no matter what day of the week it might be. Attempts have been made to do this regularly upon the Continent; and frequently sanguinary conflicts have occurred with the police. In Britain the Labour Day celebration generally takes place on the first Sunday after May Day; in London the traditional meeting place is Hyde Park. The first Labour Day celebration was not held in Britain till 1892.

(2) Labour Day is celebrated on the first Monday in September in nearly all the States and Territories of the United States and in the provinces of Canada. Agitation for the celebration of the day was begun by the Knights of Labour who, in 1882, 1883 and 1884, paraded on that day in the city of New York. In 1884 the organization adopted a resolution that the first Monday in September should be considered Labour Day, and steps were taken to

have it recognized as a holiday. Workmen of all organizations aided in the movement. Oregon, on Feb. 21, 1887, passed the first law recognizing the day, and New York, New Jersey and Colorado soon followed. On June 28, 1894, a bill passed Congress making the day a legal holiday throughout the Union. Except for the District of Columbia and Federal workers in other States, further legislation was needed by the separate States to put the law into operation. All States and Territories in 1928 had enacted such laws except Wyoming and the Philippines. In the Philippines, Labour Day is celebrated on May 1st. In Canada, the provinces of Ontario, Nova Scotia, New Brunswick, Manitoba, Alberta Saskatchewan and Yukon Territory observe the day regularly by law, and in other provinces it may be observed upon the governor's proclamation. Celebration of the day in the United States differs from that in Europe in that it is participated in by all classes and marked by the closing of all factories and stores, and by meetings, picnics, parades, speeches, athletic events and other holiday activities.

LA BOURDONNAIS, BERTRAND FRANÇOIS, COUNT MAHÉ DE (1699–1753), French naval commander, was born at Saint Malo on Feb. 11, 1699. In 1718 he entered the service of the French India Company as a lieutenant. In 1724 he was promoted captain, and took his title from the capture of Mahé of the Malabar coast. For two years he was in the service of the Portuguese viceroy of Goa, but in 1735 he returned to French service as governor of the Île de France and the Île de Bourbon. At the outbreak of hostilities with Great Britain in 1740, La Bourdonnais was put at the head of a fleet in Indian waters. He saved Mahé, relieved General Dupleix at Pondicherry, defeated Lord Peyton, and in 1746 participated in the siege of Madras. He quarrelled with Dupleix over the conduct of affairs in India, and his anger was increased on his return to the Île de France at finding a successor installed there by his rival. He set sail on a Dutch vessel to present his case at court, and was captured by the British, but allowed to return to France on parole. He was arrested (1748) on a charge of peculation and maladministration, and imprisoned for over two years in the Bastille. He was tried in 1751 and acquitted. He died in Paris on Nov. 10, 1753.

La Bourdonnais left valuable memoirs which were published by his grandson (modern edition, Paris, 1890).

See G. B. Malleson, *Dupleix* (Oxford, 1895); Anandaranga Pillai, *Les Français dans l'Inde, Dupleix et Labourdonnais, extraits du journal d'Anandaran-gappoullé 1736–1748,* trans. in French by Vinsor in *École spéciale des langues orientales vivantes,* series 3, vol. xv. (Paris, 1894).

LABOUR EXCHANGE: *see* EMPLOYMENT EXCHANGE.

LABOUR LAW. This is a convenient term to include all those rules of law which govern the conditions under which persons may work under the control of other persons, their employers. The expression "industrial law" is often used to cover the same ground. But this is apt to be understood in too narrow a sense, as including only that part of the law which affects what are, in common parlance, called industrial undertakings. It is true that in the general principles on which the International Labour Organization of the League of Nations is founded (art. 427 of the Treaty of Versailles) and in the Constitution of the Organization itself (art. 396) the expression "industrial" was intended to cover a very wide field, and that the Permanent Court of International Justice has itself declared that agriculture for the purposes of the Organization is included in industry. But, on the other hand, we find "industry" contrasted with commerce and agriculture in some of the draft conventions adopted by the General Conference of the Organization. It seems therefore better to avoid the use of an expression which would tend to imply any limitation of the subject under consideration to certain branches of employment. The essence of the matter is the fact of dependent employment, of the relation of master and servant, not of employment in any particular kind of occupation. If a person is engaged by and works under the control of an employer, we have a relationship which becomes the necessary subject of legal regulation. It may be necessary also for the law to intervene to help a person who desires to be so engaged or an employer who desires to find a worker to work for him. Whenever the relationship of employer and dependent worker exists, either actually or potentially, we are within the sphere of labour law. It matters not whether the work to be done is manual labour or brain-work. The subordination of the worker to the employer is the only test to be applied, and the word "labour" seems convenient to convey this idea of subordination, provided it is clearly understood that labour does not mean only manual labour. It is not always an easy matter to draw exactly the line which divides a dependent worker from an independent contractor or from a professional expert. The rules of English common law relating to an employer's responsibility for the acts of, or for injuries to, a servant, have laid it down that, in order to be an "employer," a person must control the worker as regards the manner in which he does his work, as well as controlling the kind and amount of work to be done (*see,* for instance, *Rourke* v. *White Moss Colliery Co.,* 1876, 2 C.P.D. 205, and *Quarman* v. *Bennett,* 1840, 6 M. and W. 499). Various British statutes have defined a "workman" and "employment." Thus, the Workmen's Compensation Act (now s. 3 of the Consolidating Act of 1925) defines a "workman" as "any person who has entered into or works under a contract of service or apprenticeship with an employer"; the National Health Insurance Act 1924 applies to all "employment . . . under any contract of service or apprenticeship." There are numerous legal decisions interpreting these definitions according to the differing facts of the various cases, but they all turn on the question of the kind of control exercised by the employer upon the worker's activities in the employment. Where this rule is found inappropriate to the conditions of an employment, we sometimes find such employments expressly included in the statute. For instance, taxi-drivers, who had been held not to be "workmen" within the Workmen's Compensation Act, were brought under that Act by adding to the definition of "workman" a sentence covering the type of contract under which they work. The general definition suggested for the scope of English labour law must therefore be accepted with caution, as there are exceptions which spread outside it. But it can be taken as a rough working rule to define the branches of law included within the term "labour law."

The law considered in this article can be roughly divided into two branches: the law affecting the contractual relations of employer and employed, and the law expressly intended to protect the weaker party, the worker, from possible injury, by imposing duties on the employer enforceable, not by the worker as a civil right, but by governmental authorities in quasi-criminal proceedings. In other words, we may distinguish the law which regulates contracts of service from the law for the express protection of the workers, "protective" law, as it is convenient to call it. This distinction appears in the French Code of Labour (*Code du travail et de la prévoyance sociale*) book I. of which deals with contracts of labour, while book II. contains what may be called the protective part of labour law. It is convenient to consider labour law with this distinction in mind, but a strict line of division cannot be drawn. Laws often possess both characteristics at the same time. This is most often the case in connection with Acts affecting wages, where the civil right of the worker to sue for wages legally due to him under the Act is commonly combined with penalties imposable on the employer for breaking the law passed for the worker's protection. It is only with these two aspects of labour law that this article can deal, but these do not by any means exhaust the sphere of labour law. In making a general survey of the subject it would be logically impossible to rule out any law expressly affecting employers (or potential employers) or workers (or potential workers) as such. For instance, the law relating to the civil rights of workers and employers to organize in defence of their interests over against each other, is an immensely important branch of labour law, necessarily dealt with in a separate article (*see* TRADE UNIONS). Again, measures for the insurance of workers against accidents, sickness, or old age, form strictly speaking a branch of labour law. Even those types of social insurance which are not necessarily connected with employment (such as sickness and old age insurances) are commonly made conditional upon employment, and usually impose financial obligations and administra-

tive duties upon employers of labour. There is, too, the vast question of unemployment which involves much labour law, as regards the establishment and control of employment exchanges, the organization of unemployment insurance, and various other measures intended to prevent or relieve unemployment. Even emigration and immigration laws may or may not be labour law within our definition, according to their scope and intention.

Sources.—Labour law, covering the ground indicated above, cannot be found conveniently and completely codified in any country. It is to be sought for in rules of unwritten common law, where any such system exists, in legislative enactments of all kinds, Acts of parliament, decrees of autocratic Governments, codes of all sorts—civil, industrial, commercial, labour. Even in written constitutions we may find principles of labour law (*see*, for instance, the Polish constitution of 1921). The decisions of higher courts of law must also be considered wherever these are of a binding nature, as in England. These decisions may take the form of expositions or applications of common law principles, or they may be interpretations of the statute law. In some branches of English labour law the decisions interpreting the statute law are extremely important. In some countries, especially Australia, conditions of work are governed also by the terms of compulsory arbitration awards issued by special courts established for the purpose. Another point to be noted is that, in connection with labour law, very free use is made in practically all countries of the method of delegated legislation, that is to say, the delegation by the legislature to executive authorities of power to issue regulations in connection with the law itself. It may, indeed, almost be said that the most important part of the labour law of some countries is contained in administrative decrees. The quasi-legislative functions thus delegated may be of various kinds. Executive authorities may be empowered (i.) to bring a bare principle laid down by statute into practical operation, or (ii.) to supplement the general rules laid down by statute by more detailed and technical provisions; or (iii.) to issue rules relating to the administration and enforcement of the law. A striking example of the first of these three types of power may be found in the French law establishing an eight hour day. This measure (forming book II., ch. II. of the Code of Labour) merely lays down a theoretical principle of no effect whatever until a set of administrative regulations applies the rule of the eight hour day, with any appropriate exceptions, to any particular branch of industry or trade. Thus in examining the French law on this subject, the orders are of far greater practical importance than the Act itself. A more common form of quasi-legislative power in connection with labour law is the second given above. The power to issue detailed technical rules suited to widely differing conditions of machinery and industrial processes, has been found an effective and practical means of enforcing proper measures to prevent accidents and injury to health. These rules can be drawn up by expert administrators, engineers or medical men, in consultation with the employers and workers concerned, and it is possible for the rules to enter into minute technical and scientific detail, in a way which would be impossible in any measure debated in a parliament, the members of which could not be either sufficiently informed or sufficiently at leisure to produce the kind of regulations required. Powers of the third type, namely to make orders on details of administration or procedure, are common especially in connection with workers' compensation and insurance laws.

This article deals primarily with the law of England, which may be taken to include Wales. But a few points may be noted in connection with the corresponding law in other parts of the British commonwealth. In Scotland the English common law has no application. The law respecting contracts of service must there be sought for in the system of law known as Scots law (*q.v.*). But most of the statutory labour law of England applies also to Scotland. There are, however, a few important exceptions, especially as regards the employment of children, since Scotland has separate Education Acts and the Employment of Children Act 1903 is still in operation there, although in England now absorbed into the education law. In Northern Ireland and the Irish Free State, the labour law of England in operation there at the time of the constitutional changes of 1922 remained in force. The parliament of Northern Ireland can amend this law, subject to the possible intervention of the British parliament. The Irish Free State, like all other self-governing dominions, is free to legislate on this matter quite independently of the British parliament. The English common law relating to contracts of service applies (subject to statutory amendment) in all overseas British territory acquired by settlement. But in territories ceded or acquired by conquest when an established system of law already existed, any such system still takes the place of the English law. Thus we find Roman Dutch law in South Africa, French law in Quebec, Hindu and Mohammedan law in India. In all the overseas dominions (except New Zealand), labour legislation is complicated to some extent by the existence of both central and provincial legislatures between which powers are divided.

As regards the law of England, we find the whole of the strictly "protective" law in Acts of parliament and in orders issued in pursuance of those Acts. The Acts must be read in the light of judicial decisions of the High Court, the Court of Appeal and the House of Lords, interpreting them. For the law regulating the contractual relations of employer and employed, it is necessary to examine in the first place the English common law, the principles of which have to be deduced from the judicial decisions of many centuries. For certain purposes rules of equity also must be remembered, although it is no longer necessary in practice to distinguish whether any rule has its origin in common law or equity. But these unwritten rules of law and equity have been greatly developed and overlaid by statute law, which in its turn must be read in the light of judicial decisions interpreting it.

"Protective" Labour Law in England.—The "protective" labour law of England, *i.e.*, that part of the law which requires employers of labour, under penalty, to observe certain rules for the protection of the persons they employ, is to be found in a multitude of statutes and orders. The fundamental object of all these measures is to secure to the workers a minimum standard of safety, health and well-being in the various industries and occupations. They deal, in the first place, with industrial methods and processes and the construction and installation of workplaces affected (*e.g.*, by prescribing standards of sanitation and ventilation, measures for preventing accidents, the use of apparatus for drawing off injurious fumes or dust, or even by entirely prohibiting the use of certain materials or processes). In the second place, they regulate the hours of work of certain classes of workers considered to be specially in need of such protection or whose occupations involve special risks from long hours of work. In the third place, they exclude from work in all or certain employments persons who, by reason of age, sex or physical condition, are especially liable to suffer injury to health from industrial employment in general or from especially dangerous occupations. The enactments dealing with these matters fall into several more or less distinct groups, dealing respectively with (a) factories and workshops, (b) mines, (c) shops, (d) merchant ships and (e) railways. But it must be observed that there are also Acts which affect more than one of these groups. For instance, a new grouping of workplaces under the term "industrial undertaking," was introduced into English law in order to conform to certain conventions of the International Labour Organization. This expression is defined in the Employment of Women, Young Persons and Children Act 1920 in such a way as to include (although not exclusively) all factories and workshops, mines and railways (as defined in the English law on those subjects), but not shops. The Act also applies expressly to ships. Then there are other Acts cutting across these divisions in so far as they affect the employment of children in any gainful employment whatever, and the Public Health Acts have to be remembered in connection with hygiene in various kinds of workplace.

It will be observed that there is no mention in this classification of measures for the protection of agricultural workers or of persons employed in office work of any kind. There is in England no legislation for the benefit of office workers as such. They benefit merely incidentally from any provisions of the Public Health Acts or local bye-laws which may affect the buildings in which

they work. Even the Bank Holiday Acts (1871 and 1875), requiring certain days to be kept close holidays, only apply to banks, the customs, inland revenue offices and bonding warehouses, and (optionally) to docks, though the practical effect of these Acts is very much more far-reaching. There is likewise no legislation expressly for the protection of regular agricultural workers, apart from the Agricultural Wages Act (*see* below). But here again, the Public Health Acts intervene as regards the accommodation to be provided for occasional workers brought from the towns, whole families together, for such work as picking hops and fruit. There still exists also an Act of 1867 requiring gang-masters, who hire children, young persons or women with a view to their being employed in agricultural labour, to be licensed and thus subjected to a certain amount of control. It is necessary also to mention the Act of 1677, "for the better observation of the Lord's Day." But this Act is not strictly part of labour law, since it merely prohibits persons, under penalty, from working in their ordinary callings on Sundays, and does not impose any penalty upon employers for employing persons on that day. It is now practically obsolete. Provided these points are borne in mind, it will be most convenient to follow the main divisions into which English labour legislation falls, and to consider appropriate parts of our subject under the headings (a) to (e) given above.

Special Enactments.—(a) The law relating to "factories and workshops," commonly referred to as the Factory Acts, covers the whole of manufacturing industry. The consolidating Factory and Workshop Act of 1901 still forms the basis of English factory law. It has, however, frequently been both directly amended and also supplemented by Acts which do not fit in to the general scheme of Factory and Workshop Acts, so that it is now no simple matter to collect together the law affecting conditions in workplaces regulated primarily by the principal Act of 1901.

Places to which the English Factory and Workshop Acts apply are either "factories" (*i.e.*, places where mechanical power is used, together with certain specified kinds of undertaking always treated as "factories") or "workshops" (*i.e.*, workplaces other than "factories"). In either case, in order to bring a place under the Acts, it is essential that in them manual labour shall be exercised either in the making of any article, or in the altering, repairing, ornamenting or finishing of any article or in the adapting for sale of any article. Under the Act of 1901 it was further invariably essential that the labour should be exercised "by way of trade or for purposes of gain." But the Factory and Workshop Act of 1907 extended that law, with permissive modifications, to work done for outsiders in the workrooms of charitable or reformatory institutions, notwithstanding that it is not carried on by way of trade or for purposes of gain. The definition of "factory" and "workshop" does not exclude homeworkers' premises. But where only the family living on the premises is employed without the use of mechanical power, a special name "domestic factory or workshop" is used, and such places are expressly exempted from many of the provisions of the law. It should be noted that the employment of a single person outside the family living on the premises converts even a dwelling place into an ordinary factory or workshop, as the case may be. And, moreover, if any mechanical power is used, even a family group working in their own home are subject to the ordinary law. Thus even the smallest undertakings come under the general provisions of the Acts, contrary to the practice in some countries where the employment of a certain minimum number of workers is necessary in order to bring a workplace under regulation. The principal difference for practical purposes between a "factory" and a "workshop" is one of administration, workshops being left as far as sanitary conditions are concerned to some extent to the operation of the Public Health Acts and subjected in consequence to inspection by the officials of the local authorities, while sanitary conditions in factories are controlled by provisions contained in the Act of 1901 itself, enforced by the factory inspectors under that Act. "Factories" are differently regulated according to whether they are "textile" or "non-textile," as regards hours of work and such matters as artificial humidification of the air special to the textile industry. The Act of 1901 also deals with accident prevention and health in docks, building works, and railway sidings used in connection with a factory or workshop. Laundries were expressly brought under the general provisions of the law with certain modifications by the Act of 1907.

(b) The law relating to mines is in two divisions, applying respectively to coal mines (including all mines of coal, stratified ironstone, shale and fireclay), and to metalliferous mines (with which for some purposes quarries are included). The Acts in question are the important consolidating Coal Mines Act of 1911, together with unrepealed parts of the Coal Mines Regulation Acts 1887–1908, and the Coal Mines Acts 1919 and 1926; and for metalliferous mines, the Metalliferous Mines Regulation Acts 1872 and 1875 and the Mines Accidents (Rescue and Aid) Act 1910. The Quarries Act 1894 divides the regulation of quarries between the Metalliferous Mines Regulation Acts and the Factory and Workshop Acts.

(c) The Shops Acts 1912, 1913 and 1928 only apply to retail shops, including places for the sale of food and drink for consumption on the premises. It must be noted that any operation coming under the definition quoted above in the Factory and Workshop Act of 1901, will bring the place where it is carried on under the factory and workshop law although it is part of the business of a place that is, in the main, a shop. For instance, the making up of wreaths in a florist's shop was held to bring the girls so employed under the Factory Act, although they also served in the shop (*Hoare* v. *Robert Green Ltd.* [1907] 2 K.B. 315).

(d) The principal Merchant Shipping Acts containing provisions for the express protection of seamen are the consolidating Act of 1894, the amending Act of 1906 and the Merchant Shipping (International Conventions) Act 1925.

(e) The Acts concerned with employment on railways are the Railway Regulation Act 1893, the Railway Employment (Prevention of Accidents) Act 1900, and the Railways Act 1921.

The protective regulations affecting factories, mines, shops, merchant ships and railways can be most conveniently considered under four heads, viz., A. Health and Safety; B. Conditions for admission to work; C. Hours of work and holidays; and D. Administration.

Health and Safety. (a) **Factories and Workshops.**—Measures to prevent injury to health from industrial conditions usually take the form of regulating the internal arrangements of the workplace. But where the use or handling of very dangerous substances is in question such measures may prove ineffective, and occasionally the drastic method of entirely excluding the dangerous element is adopted. Thus the White Phosphorus Matches Prohibition Act 1908, in compliance with the Berne Convention of 1906, absolutely prohibits the use of the poisonous white phosphorus in the manufacture of matches. The Anthrax Prevention Act of 1919 should also be noted.

General provisions for protecting the health of workers in factories and workshops and for the prevention of accidents are contained in parts I. and IV. of the Act of 1901. By virtue of part I. factories and workshops are required to be kept clean, free from effluvia, well-ventilated, not overcrowded and at a reasonable temperature. The inside walls of all workrooms, passages and stairways in a factory must as a general rule either be painted at least every seven years (and the paint washed every 14 months) or lime-washed every 14 months. Workshops need only be lime-washed when required by the local authority. In both factories and workshops overcrowding means, as a rule, the employment of more than one person to every 250 cu.ft. of air space, or 400 cu.ft. during overtime. The prescribed space per person may be increased by order and has been increased for certain bakehouses and for workshops used at night for sleeping purposes. A reasonable temperature must be maintained in all workrooms and the measures taken to this end must not be such as to interfere with the purity of the air. Sufficient means of ventilation must be provided and maintained. Arrangements must be made to drain the water off wherever a process is carried on which wets the floor. Sufficient and suitable sanitary accommodation must be provided, separate for the two sexes. The standard of what is "sufficient and suitable" is fixed by order. The sections relating to safety

in factories provide for the fencing of certain specified parts of machinery, and in general all dangerous parts; they deal with the construction and regular examination of steam boilers, and contain special provisions to prevent accidents from the traversing carriages of self-acting machines. There are also restrictions on the cleaning of machinery by women and young persons (*i.e.*, under 18). The question of safety in case of fire is referred largely to the local authorities, whose powers under the Public Health Act 1875 were extended to include the making of bye-laws respecting means of escape from factories and workshops. The rules requiring employers to give notice to certain officials of accidents occurring in their works, so as to enable the circumstances to be investigated, formerly in part I. of the Act of 1901, have been amended by the Notice of Accidents Act 1906, the Police, Factories, etc., Act 1916, and the Workmen's Compensation Act 1923. As the law now stands, any accident occurring in a factory or workshop causing death or disabling a worker from earning his full wages for three days must be notified to the inspectors of factories. The home secretary may, by order, require certain kinds of dangerous occurrence to be reported even though no physical injury is caused to any person. An order has been issued under this power requiring notification in all cases of the bursting of any revolving vessel, wheel or grindstone moved by mechanical power, the breaking of rope or chain used for hoisting purposes by mechanical power, and outbreaks of fire affecting any room in which persons are employed, serious enough to necessitate suspension of work in it for 24 hours. A formal investigation into the circumstances of any accident whatever in a factory or workshop may be directed by the home secretary, and the procedure for such investigations and the powers of the court of investigators are laid down in the Act of 1901 (s. 22). Explosives in factories must also be notified under the Explosives Act 1875.

Dangerous Trades.—In addition to the general provisions given above concerning health and safety, far more detailed rules are imposed wherever any special risk or danger to those employed is involved, or where it seems desirable to make special provision for the welfare of the workers. Part IV. of the Act of 1901 deals with specially dangerous and unhealthy industries. In the first place all medical practitioners are required (s. 73) to notify the chief inspector of factories of the names and addresses of all persons they find to be suffering from lead, phosphorus, arsenical or mercurial poisoning or anthrax, believed to be contracted in a factory or workshop. This list of notifiable diseases has been extended, by order, to toxic jaundice, epitheliomatous and chrome ulceration, poisoning from carbon bisulphide and aniline, and chronic benzene poisoning. It should be noted, in this connection, that the compulsory notification of cases of lead-poisoning was extended by the Women and Young Persons (Employment in Lead Processes) Act 1920 to all cases affecting any woman or young person employed in a lead process, even where the work is not carried on in a "factory or workshop." Part IV. of the Act of 1901 contains also a few general provisions as to mechanical means for drawing off injurious dust, gases, etc.; requiring facilities to be provided for washing and for taking meals in factories and workshops where lead, arsenic or other poisonous substances are used; and prohibiting women and young persons from taking meals or remaining during meal-times in parts of factories or workshops used for certain purposes, the list of which has been extended by order so as to include a large number of dusty or dirty occupations.

A very important section of this part of the Act is s. 79, which empowers the home secretary to certify any particular process as dangerous and thereupon to issue regulations to obviate the dangers involved. Great progress has been made during the last 20 years with regulations under this section. There are now codes of regulations for the following industries:—Manufacture of aerated water; casting of brass; bronzing; building; manufacture, manipulation and storage of celluloid; chemical works; manufacture of cinematograph film; stripping of cinematograph film; loading or unloading, etc., at docks; manufacture or repair of electric accumulators; generation, transformation, distribution or use of electricity; vitreous enamelling of metal or glass; manufacture of felt hats, with aid of inflammable solvent; file-cutting by hand; spinning and weaving of flax and tow; grinding of cutlery and edge tools; grinding of metals (miscellaneous industries); spinning and weaving of hemp, jute, and hemp or jute tow; handling of hides and skins; use of horsehair from China, Siberia or Russia; manufacture of india rubber; smelting of materials containing lead, manufacture of red or orange lead and of flaked litharge; manufacture of certain compounds of lead; use of locomotives and wagons on lines and sidings; spinning by means of self-acting mules; painting of vehicles with lead paints; manufacture of paints and colours; manufacture and decoration of pottery, making of lithographic transfers, frits or glazes; crushing, grinding, etc. of refractory material, and the manufacture of silica bricks; construction and repair of ships in shipbuilding yards; tinning of metal hollowware, iron drums, and harness furniture; use of wood-working machinery; use of East Indian wool; sorting, willeying, washing, combing and carding wool, goat hair and camel hair; lifting of heavy weights in woollen and worsted textiles; heading of yarn dyed by means of a lead compound. Most of these regulations are very detailed and highly technical. They are aimed at every kind of special industrial risk,—risk of poisoning, risk of infection, risk from injurious fumes and from excessive or injurious dust, risk of accident, risk of overstrain. Duties are expressly laid upon workers as well as upon employers, requiring them, under penalty, to do their share in carrying out the regulations. One of the more recent sets of regulations, the Woollen and Worsted (Lifting of Heavy Weights) Regulations of 1925, controls especially the acts of the workers concerned. These regulations expressly prohibit persons employed in the processes concerned from lifting any yarn, cloth, etc., exceeding a certain weight, though they make the employer likewise responsible in so far as he carries on the processes in question by his agents or workmen.

One of the most interesting sets of regulations and quite the most elaborate is the code for the pottery industry drawn up in 1913 after that trade had been subjected to an exhaustive investigation by a departmental committee. Every process and branch of this complicated industry is dealt with in detail, and the rules applicable to each process vary according to whether lead is used in the glaze or not, and to the quantity of lead used. Nor is it only from lead-poisoning that pottery workers are protected. The potter's traditional enemy, dust, is also combated by regulations prescribing exhaust draught for dusty operations and for preventing the dispersion of dust in the air in conveying dusty substances about the factory. Women and young persons are protected from overstrain in carrying and lifting heavy weights and other heavy work in potteries, either by the exclusion of some or all such persons from certain processes, or by requiring medical certificates giving permission to work in them. Hours of work in certain dangerous processes are restricted, even in some cases for adult men. These regulations also require one or more persons to be entrusted by the occupier of the factory with the special duty of seeing that the regulations are observed in all departments. In connection with the regulation of specially unhealthy trades, the Women and Young Persons (Employment in Lead Processes) Act of 1920 must also be mentioned. This Act contains, amongst others, some general rules to be observed whenever any woman or young person is employed in contact with lead compounds, whether the place is a "factory or workshop" or not. Regulations have also been issued under the Act prescribing the cloak-room, mess-room and washing accommodation to be provided. It must be noted that this Act overlaps with the dangerous trades orders under the Factory and Workshop Act, and in some ways extends outside it. It is chiefly important in having been adopted in order that British law might conform to a recommendation of the International Labour Organization. It is contrary to the spirit of the British method of regulating dangerous trades, which had always aimed at protecting the health of all workers not only that of women and young persons.

Another Act to be mentioned in this connection is the Lead Paint (Protection against Poisoning) Act 1926, which was adopted in partial satisfaction of a draft convention of the International

Labour Organization intended to prohibit the use of lead paint in the interior of buildings and to regulate the use of lead for outside painting work. In this Act merely the regulative scheme of the Convention was adopted and made to apply to painting work both inside and outside buildings. Under it the home secretary is empowered to make regulations for the protection from lead-poisoning of persons employed in or in connection with the painting of buildings. A number of provisions of the Factory and Workshop Act 1901 as regards procedure for making regulations, the notification of cases of lead-poisoning and certain administrative matters, are made to apply to persons employed in painting buildings as if they were employed in factories.

Welfare Orders.—Trades not so ostensibly dangerous or unhealthy as to be suitable for scheduling and regulating under s. 79 of the Act of 1901 may yet be regulated by powers given to the home secretary by s. 7 of the Police, Factories, etc., Act of 1916. This Act authorizes the issue of orders, commonly called "welfare orders," where it appears "that the conditions and circumstances of employment or the nature of the processes . . . are such as to require special provision to be made . . . for securing the welfare of the workers." Welfare orders may deal with the following matters:—the supply of facilities for preparing and taking meals, drinking water, protective clothing, ambulances and appliances for first aid, seats in workrooms, washing facilities, accommodation for clothing, and supervision of the workers. Under powers given by the Act, the home secretary has extended the statutory list of subjects permissible for welfare orders to the provision of rest-rooms. The orders may also provide for the workers concerned being associated in the management of the welfare arrangements if some part of the cost is contributed by them. Welfare orders have been issued for the following undertakings:—bakehouses, biscuit factories; blast furnaces, copper mills, iron mills, foundries and metal works (ambulance arrangements); saw mills and woodworking factories (ambulance arrangements); use of bichromate of potassium or sodium in dyeing; fruit preserving; glass bevelling; manufacture of glass bottles and pressed glass articles; gut-scraping, etc.; herring curing (Norfolk and Suffolk, the rest of England and Wales, and Scotland); hollow-ware and galvanizing; laundries; oil cake mills; the cleaning and repairing of sacks; shell factories (provision of seats); use of bichromate of potassium or sodium in tanning; manufacture of tin or terne plates. There is also an order requiring drinking water to be supplied in all factories in which 25 or more persons are employed.

Arrangements for first-aid boxes or cupboards (or alternatively for ambulance rooms) were prescribed for all "factories" by s. 29 of the Workmen's Compensation Act 1923, thus rendering welfare orders on this matter unnecessary except as far as "workshops" are concerned. This section also gave the home secretary wider powers in the matter of accident prevention. In the first place it enables him to make orders in relation to first-aid and ambulance arrangements applicable to any works or premises (*i.e.*, even those not suitable for welfare orders) to which any of the provisions of the Factory and Workshop Acts apply, and to such building and engineering operations (outside the factory and workshop law) as may be prescribed. In the second place, it enables the home secretary where necessary to require the occupiers of any factories to make reasonable provision to secure the safety of persons employed "by arrangements for special supervision in regard to safety, investigation of the circumstances and causes of accidents and otherwise." The importance of this subsection lies in the fact that under it the home secretary may oblige employers to put into operation the modern safety methods, inspired largely by American practice, which have been voluntarily adopted and developed by many British firms without legal intervention. These methods include the appointment of "safety engineers" or representative "safety committees" whose business it is, amongst other things, to educate the workers themselves in "safety-first" habits and thus check the human as well as the mechanical element in accidents.

To complete a survey of the law affecting safety in factories and workshops, it is necessary to refer also to part V. of the Act of 1901, which contains special divisions relating to hygiene in bakehouses, and to temperature and humidity in weaving sheds. The provisions relating to bakehouses are concerned with the public health rather than with the interests of the workers, and are now administered by the public health authorities under the Ministry of Health. The provisions regulating the temperature and humidity in weaving sheds, as far as they related to cotton weaving, were in effect repealed by the Factory and Workshop (Cotton Cloth Factories) Act of 1911, which enabled the home secretary to issue in their place more up-to-date regulations based on the recommendations of a committee which had investigated the question. A third division of part V. relating to laundries was entirely repealed by the Factory and Workshop Act of 1907, which brought laundries in general under the main provisions of the Act of 1901 and contains some special requirements as to temperature and prevention of fumes, and the drainage of floors in laundries.

Among the measures affecting industrial hygiene, it is necessary to mention also those regulating work given out from a manufacturing firm or middleman to be done by outworkers in their own homes or workshops. Especially where the work is done in the worker's own dwelling, this is largely a question of protecting the public health. This aspect of the question is not, strictly speaking, a part of labour law, but it is introduced in part VI. of the Act of 1901 by provisions purporting to prevent homework from being carried on in infectious premises. This part provides also to some extent for the regulation of conditions of work in "domestic factories and workshops" (*see* p. 539). The sanitary condition of such places, like that in ordinary workshops, is left to the operation of the Public Health Acts. Though homeworkers' premises may thus in theory be subject to a certain amount of regulation, in practice the difficulty of tracing them and of adequately enforcing any rules of hygiene in them, make it essential to hold the person who gives out the work to be done in such places, responsible for their freedom from infection and for supplying the inspectors with lists of outworkers employed, and requirements to this effect are accordingly included in part VI.

(b) **Mines.**—Health and safety in mines is the subject of much detailed regulation, especially in connection with the prevention of accidents. It is impossible to reproduce in any detail these technical provisions, some of which are contained in the statutes themselves and others in regulations issued by order. Under the Coal Mines Act 1911, there must be a responsible manager, in charge of every mine, duly qualified and officially certificated. The manager must appoint a suitable number of officially certified firemen, examiners and deputies, devoting their whole time to examining systematically the state of the mine. In addition to this, the workmen may appoint two representatives who are or have been practical working miners to inspect the mine at least once a month. Part II. of the Act contains provisions as to safety on such matters as ventilation, the use of safety lamps, the arrangement of shafts, the safety of winding apparatus, the state, arrangement and use of haulage roads, the support of roofs and sides, the fencing of machinery, the safety of boilers, the use of electricity and explosives, the prevention of coal dust, the inspection of the mine before work commences and during shifts, and the withdrawal of the workmen when the conditions are dangerous. To prevent accidents arising from lack of attention on the part of winding-engine men, the Act limits the hours of these workers to eight per day. Part III. contains provisions as to health. Sanitary conveniences must be provided above and below ground. Accommodation for drying clothes and taking baths need only be provided where a majority ascertained by a ballot of two-thirds of the workmen so desire, and then only on condition that the workmen undertake to pay half the cost of maintaining the accommodation. There are also provisions to safeguard the men from developing fibroid phthisis from the use of drills on silicious rock, and requiring the notification to the inspectors of any disease occurring in a mine and occasioned by the nature of the employment. Part IV. of the Act requires immediate notice to be sent to the inspector of any accident causing loss of life, or fracture or dislocation or any other serious personal injury, or caused by

explosion or by electricity or by overwinding or any special cause specified by order. These rules as to notification of accidents must be read in conjunction with s. 18 of the Act (as amended by the Workmen's Compensation Act 1923) which requires annual returns to be made by mine-owners giving (amongst other things) particulars of all accidents occurring during the year disabling any worker from earning full wages for more than three days. This is the same condition as that fixed for the notification of accidents occurring in factories, so that uniform statistics of accidents in factories, workshops and mines can be kept, although it is only the more serious accidents that must be immediately reported from mines. There are also provisions in the Coal Mines Act, similar to those of the Factory and Workshop Act, as to formal investigations into the cause of any accident. Part V. of the Act gives powers for the issue of general regulations for the prevention of accidents and to provide for the "safety, health, convenience and proper discipline" of persons employed in mines. In addition, special regulations may be put into operation in any particular mine at the instigation of the owner or a majority of the workmen. General regulations of a detailed nature are in force under these powers. Only special regulations could be issued for metalliferous mines until the Mining Industry Act 1920, expressly applied to those mines the sections of part V. of the Coal Mines Act 1911, providing for the issue of general as well as special regulations. The Mines (Rescue and Aid) Act 1910, which originally applied to all mines, still exists for the purposes of metalliferous mines but is repealed in respect of coal mines, as the necessary powers to make regulations for the maintenance of rescue and ambulance appliances and the training of rescue brigades and ambulance men, are now contained in s. 85 of the Coal Mines Act 1911, and the regulations in question form part of the general regulations under that Act.

(c) **Shops.**—There is only one provision in the Shops Acts intended to protect the health of shop assistants, namely s. 3 of the Act of 1912 which requires seats to be provided for female shop assistants employed in the serving of customers, in the proportion of one seat to every three such persons employed. The sanitary condition of shops and safety in case of fire in them are regulated only by provisions of more general application contained in the Public Health Acts and local bye-laws.

(d) **Ships.**—The safety of merchant ships and the health and well-being of the crew are subjects of detailed regulation under the Merchant Shipping Acts. The safety of ships is the main concern of shipping legislation and the safety of the seamen is part of this question, for particulars of which *see* SHIPPING: REGISTRATION, CLASSIFICATION AND STATE REGULATION. A few provisions for the welfare of the seamen as such may be noted here. For instance, the quantity and quality of water and provisions on board ship is an element essential to the health of seamen. The Merchant Shipping Act of 1894 consequently deals with the handling of complaints as to deficiencies in these respects, and the Act of 1906 contains precise details as to the scale of provisions to be allowed, and deals with the inspection of provisions and water for the crew. Another vital matter is the provision of medicines on board. Scales of medicines and medical stores suitable for different classes of ships and voyages are issued by the Board of Trade. Every foreign-going ship having at least 100 persons on board must carry a ship's doctor. The minimum accommodation to be appropriated for the seamen is also prescribed by law. Under the Act of 1906, this must amount to at least 120 cu.ft. of air space and 15 sq.ft. of floor space per man.

(e) **Railways.**—The Railway Employment (Prevention of Accidents) Act 1900 empowers the Board of Trade (now Ministry of Transport) to make rules "with the object of reducing or removing the dangers and risks incidental to railway service." Railway companies are bound by the Notice of Accidents Act 1894 (as amended in 1906) to give notice of accidents resulting in loss of life or bodily injury such as to cause an employee to be absent throughout at least one whole day from his ordinary work. This rule as to notification of accidents applies to various other types of employment in addition to railway service, namely any employment in the "Construction, use, working or repair of any railway, tramroad, tramway, gas work, canal, bridge, tunnel, or other work authorized by any local or personal Act of parliament" and also to the "use or working of any traction engine or other engine or machine worked by steam in the open air."

Conditions for Admission to Work.—The most important part of the law excluding certain classes of person from all or specified occupations is that fixing the minimum age at which young people may first enter upon employment. In addition to this there are legal provisions excluding women of all ages or below a certain age or male young persons under 18 from particularly dangerous or unhealthy processes, and also provisions excluding persons from work by reason of their physical state.

The age limit for starting work at all is now regulated in the first place by the Education Act 1921 (superseding the Employment of Children Act 1903) which absolutely prohibits the employment of any child under the age of 12 years. For this purpose the expression "employment" includes "employment in any labour exercised by way of trade or for purposes of gain, whether the gain be to the child or young person or to any other person." In addition to this general restriction, the local education authorities for elementary education may make bye-laws prescribing some age between 12 and 14 below which employment shall be illegal either for both sexes or for boys and girls separately, and with respect to all or any specified occupations. This Act further absolutely prohibits the employment of children under 14 in street trading, or in any work that involves too heavy lifting, carrying, etc., or is likely to be injurious to life, limb, health or education. When a boy or girl reaches the age of 14 and is free to leave school, he or she ceases to be protected by the Education Act and comes under the Employment of Women, Young Persons and Children Act 1920, which now governs the admission of young workers to work in all "industrial undertakings" and also on board sea-going ships. This Act purports to bring British law into exact and full conformity with two draft conventions adopted by the general conference of the International Labour Organization fixing at 14 years the minimum age for admission of children to "industrial undertakings" and to employment at sea respectively. For the definition of "industrial undertaking," the Act merely refers to the text of the first-named convention, which is given as a schedule to the Act. Owing to the international purpose of this measure, no attempt was made to draft a rigid definition of the undertakings covered, but these are expressly declared to include: (a) mines; (b) "industries in which articles are manufactured, altered, cleaned, repaired, ornamented, finished, adapted for sale, broken up or demolished, or in which materials are transformed, including ship-building and the generation, transformation, and transmission of electricity and motive power of any kind"; (c) works of construction and maintenance of all sorts, *e.g.*, of buildings, railways, docks; and (d) transport of passengers and goods by road or rail or inland waterway, including the handling of goods at docks, etc. This would appear to cover the whole ground of the British Factory and Workshop Acts and Mines Acts and a good deal besides. It is not clear whether the Act applies to "domestic factories and workshops"; but if this is not so, a still remaining section (s. 14) of the Education Act of 1918 would prevent employment in such places below the age of 14. The other draft convention, fixing the minimum age for admission of children to employment at sea, excludes children under 14 from employment on vessels, other than those upon which only members of the same family are employed. "Vessel" includes "all ships and boats of any nature whatsoever engaged in maritime navigation, whether publicly or privately owned." The Act provides that no child shall be employed in any ship except in accordance with the convention.

Having reached the age of 14, a child, now grown to be a "young person," still cannot, up to the age of 16, start employment in a factory (or certain kinds of workshop specified by order) without procuring a certificate of fitness issued by a certifying surgeon (*i.e.*, a medical man appointed for this purpose by the chief inspector of factories), who must examine the young person at the factory or workshop where the employment is to be carried on. The certifying surgeon may grant the certificate absolutely or qualified by conditions as to the work for which he is suitable.

Young persons under 18 must be provided with medical certificates of fitness also for employment in any capacity in any seagoing ship registered as a British ship, including fishing boats. This rule is laid down in the Merchant Shipping (International Conventions) Act 1925, which also prohibits the employment of young persons under 18 as trimmers or stokers in any ship. There are also a certain number of unhealthy occupations from which young persons are expressly excluded by regulations under s. 79 of the Factory and Workshop Act of 1901 (*see* p. 539). From some of these, adult women are excluded as well as young persons. In some cases the exclusion lasts only until the age of 16, instead of 18; in others girls are excluded and not boys, or until a higher age than boys. Examples of the exclusion of adult women from specially unhealthy processes are to be found in the regulations for the manufacture of paints and colours, the casting of brass, the smelting of materials containing lead, potteries, the manufacture of india-rubber, and the manufacture and repair of electric accumulators. Women of all ages are also excluded as well as young persons from a number of lead processes by the Women and Young Persons (Employment in Lead Processes) Act 1920. This Act overlaps with some of the regulations referred to above. Women and young persons are further debarred from painting any part of a building with lead paint, under the Lead Paint (Protection against Poisoning) Act 1926 (*see* p. 540), except in such special decorative work as may be exempted from the prohibition by order. Young persons employed as apprentices in the painting trade may also be allowed to work with lead paint in certain circumstances.

In addition to the absolute exclusions from dangerous processes mentioned above, there are various regulations under the Factory and Workshop Act which make physical fitness a condition either for starting work or for continuing in the dangerous process. For instance, in certain heavy processes in potteries women and young persons need to be provided with medical certificates of permission to work; the regulations for chemical works require all newly engaged workers in a chrome or nitro or amido process to be provided with certificates of fitness within 14 days of beginning such work. In lead processes in the manufacture of electric accumulators likewise all workers must be examined within seven days preceding or following their entering the employment. Periodical medical examination and suspension from work of the unfit is prescribed by the regulations in all cases where the risk involved is that of poisoning from lead or other industrial poisons, and this applies usually to male as well as female workers. The intervals at which the examinations must take place is either three months or one month or, in the manufacture of certain lead compounds, once a week. Regulations have been issued under the Women and Young Persons (Employment in Lead Processes) Act 1920 concerning the periodical medical examination of women and young persons working in lead processes but not coming under any similar regulations in pursuance of the Factory Act. Another statutory exclusion from employment on the ground of physical unfitness, is the prohibition to employ any woman in a factory or workshop for four weeks following her confinement (Act of 1901, s. 61). Women are also excluded entirely from underground work in mines, both coal mines and metalliferous mines. There is another provision in the Coal Mines Act 1911 which may be noted in this connection, namely, the prohibition of the employment of any woman or girl or of any boy under 16 in moving railway wagons or in lifting, carrying or moving anything so heavy as to be likely to cause them injury.

Hours of Work.—In the regulation of hours of work, English law has not yet passed beyond the stage of regulating the hours of those persons only who are considered to be in special need of protection from overwork, viz. women and young workers. The only instances of the regulation by law of the hours of adult men are to be found in coal mines legislation and in a few very dangerous occupations, where the object of the limitation of hours is protection of health from too long exposure to the dangerous element. In other countries the regulation of the hours of women and children was only a step towards the limitation of hours in general, on which subject laws are now to be found in practically every European country. This state of affairs may perhaps be accounted for by the fact that the English worker has been more successful than his foreign colleagues in procuring the privileges of a short working day by his own organized efforts, without legal intervention. The English worker, in most of the well-organized trades of the country, has as part of his contract of employment a standard day of eight hours or a standard week of 48 hours or thereabouts. This means that his normal rate of wages is payable in respect of hours worked within that limit for ordinary work, and that if he works beyond the standard limits or on Sundays or holidays, a higher rate of pay will be paid to him. An arrangement of this sort naturally tends to make employers avoid excessive hours of work. In less well-organized trades there is the same restricting force at work wherever a trade board or an agricultural wages committee (*see* p. 550) fixes, as those bodies are empowered to do, overtime rates of wages as well as ordinary rates, and lays down the limit of hours to which the ordinary rate will apply. That these wage-regulating bodies, although they cannot regulate hours of work directly, are expected to have some influence on hours of employment, is shown by a provision in the Agricultural Wages (Regulation) Act 1924, which expressly requires the agricultural wages committees, in the exercise of their powers under the subsection allowing them to fix differential rates for overtime, to secure a weekly half-holiday for agricultural workers as far as is reasonably practicable. But this method of fixing standard times for work must not be confused with legal provisions absolutely prohibiting work to be continued beyond certain limits.

In considering the law restricting hours of work it must be remembered that children under 14 are now excluded from employment in "industrial undertakings" (*see* p. 542), so that any existing regulation of hours of work of "children," as opposed to "young persons," is now obsolete. For instance, the complicated arrangements of the Factory Act of 1901 for employing "children" as half-timers in factories have ceased to be of any effect whatever. But it remains necessary to protect children under 14 from overwork or injury to health in the many jobs of one sort or another which they are liable to be put to do while still of school age. This is now in England a matter for the law relating to education. Under the Education Act 1921, the local education authorities for elementary education may make bye-laws prescribing the hours between which, and the number of daily or weekly hours during which, employment of school children is to be permitted. The Act also contains some express restrictions on the hours of children, namely, that no child between 12 and 14 years of age may work on any Sunday for more than two hours, or before the close of school hours on any day on which he is required to attend school. Nor may a child be employed on any day before 6 A.M. or after 8 P.M. To these general rules, however, the local authority may allow exceptions by bye-law, permitting the employment of children of at least 12 years of age in specified occupations before school hours and the employment of children by their own parents. All such bye-laws, however, are subject to the restriction that no child may be employed before 9 A.M. on a school-day for more than one hour, and that no child who has been so employed before 9 A.M. shall work again for more than one hour in the afternoon.

(a) **Factories and Workshops.**—The provisions of the Factory and Workshop Acts relating to hours of work, breaks for rest and holidays (part II. of the Act of 1901 and for laundries the Act of 1907) are now out of date, and in practice largely (but not completely) obsolete. Although practically all other countries in Europe and many overseas States have of recent years adopted legislation limiting hours of work to something approaching an eight hour day, the British factory law remains in 1928 in its pre-War condition. It still lays down as the limit of hours for women and for young persons under 18 a maximum day of 10 hours actual work in textile factories, and 10½ hours in other factories and workshops, making 12 hours in both cases from the beginning to the end of the working day, if the statutory meal times are included. As in both cases a short day on Saturday is prescribed, the total weekly hours permitted are 55 in textile

factories and 60 in other factories and workshops. In various cases overtime may be worked by women in excess of these long hours. Apart from the cases in which overtime is allowed, the Act of 1901 fixed rigidly the hours permissible for beginning and ending the day's work, by requiring employers to adopt and adhere to one of certain alternative "periods of employment," namely 6 A.M. to 6 P.M., or 7 A.M. to 7 P.M. in textile factories, and a third alternative of 8 A.M. to 8 P.M. in addition to these in all other factories and workshops. This strict delimitation of the period of employment prevented employers who used an eight hour day from employing women and young persons on any system of two eight hour shifts. A section was consequently included in the Employment of Women, Young Persons and Children Act 1920 to enable employers to arrange a system of two day shifts for women and young persons over 16. This first recognition by British factory and workshop law of anything short of a 12-hour "period of employment" for women and young persons necessitated breaking into the more strict limits placed upon night work for such persons in the old law. For it was necessary, in order to fit in two eight hour shifts, to allow these persons to continue at work up to 10 o'clock at night, which had never been allowed for young persons (except in certain trades allowed for special reasons to employ male young persons at night) and which had only been permissible for women when working overtime on a strictly limited number of days in the year.

Under the Act of 1920 it is made possible to employ women and young persons of the age of 16 years and upwards in two eight hour shifts at any time between the hours of 6 A.M. and 10 P.M. on any week-day except Saturday (when the hours are limited to 6 A.M.–2 P.M.). This arrangement is carefully guarded from possible abuse. In the first place it is of only temporary operation, and from 1926 has needed to be annually extended (and has been so extended) by the Expiring Laws Continuance Acts. In the second place, this two-shift system may only be allowed in any factory or workshop on the joint application of the employer and a majority of the workers affected. On receiving the application, the home secretary may issue the necessary permit, and he may attach to it whatever conditions he may consider necessary for the purpose of safeguarding the welfare of the persons affected. Thus it has been possible not only to apply "welfare" provisions of the kind which may form the subject of welfare orders (*see* p. 541), but also to require, for instance, special transport arrangements to be provided for the convenience of women and young persons having to travel to or from their work at an unusually early or late hour. The Act contains a further safeguard enabling organized trades to resist the introduction of the two-shift system altogether in any factory or workshop in their particular industry by means of a kind of veto given to "organizations representing a majority of the employers and workers in the industry concerned." If such organizations make a joint representation to the home secretary to the effect that no such orders should be made in their industry, he is precluded from making any such orders and any order already made ceases to have effect. This Act left unchanged the rules as to intervals for meals. These are that at least one and a half hours altogether must be allowed (or two hours in textile factories), at least one hour being given before 3 P.M. On Saturdays a break of half an hour suffices.

One of the objects of the Employment of Women, Young Persons and Children Act was to put expressly into operation the terms of the draft convention of 1919 to prohibit the night work of women and young persons in "industrial undertakings" (for the definition of this expression, *see* p. 542). The Act provides that no young person or woman shall be employed at night in any industrial undertaking except to the extent to which such employment is permitted in the conventions set out in the schedule to the Act. The two conventions, concerned respectively with the night work of women and of young persons, both define night as "a period of at least 11 consecutive hours, including the interval between ten o'clock in the evening and five o'clock in the morning" and the employment of women and young persons is, in general, prohibited at night so defined. The British Factory and Workshop Act with its normal interval of 12 hours between one day's work and the next, was well within these limits. The exceptions allowed under the women's convention, too, are liberal and elastic enough to cover all the exceptions in use in practice under the Act of 1901. But the convention concerned with the night work of young persons made some important changes in the existing law as to the night work of male young persons. In the first place it threw out of operation all the exceptions allowing the night work of boys to begin at the age of 14, as the convention, where exceptions are allowed, never applies these to boys below the age of 16. In the second place it had the effect of restricting the power given to the home secretary by s. 54 (4) of the Act of 1901 to allow exceptions to the prohibition of the night work of young persons in certain circumstances. These exceptions must now be limited to those of the convention, namely to work which by reason of the nature of the process is required to be carried on continuously day and night, in (i.) the manufacture of iron and steel: processes in which reverberatory or regenerative furnaces are used, and galvanizing of sheet metal or wire (except the pickling process); (ii.) glass works; (iii.) manufacture of paper; (iv.) manufacture of raw sugar; (v.) gold mining reduction work. The hours of work of young persons working with their own families in domestic factories and workshops are regulated under s. 111 of the Act of 1901, but only in the sense that they are supposed not to begin work earlier than 6 A.M. or continue at work later than 9 P.M., with four and a half hours' rest during the day, thus making a working day of ten and a half hours as in ordinary workshops. The hours of work of women and young persons in laundries are dealt with by the Factory and Workshop Act of 1907, which allows certain variations in the daily periods of employment.

It may be noted in addition, that in a few cases the regulations for dangerous trades impose restrictions on hours of work in particular processes. In some of these, however, the restriction is not intended to put any actual limit to the length of the day's work as a whole. For instance, under the regulations for the manufacture of india-rubber, no person may be employed in a room in which carbon bisulphide is used for more than five hours in all in any one day, but this does not prevent him from working in safer processes for the rest of the day. But in the regulations for potteries there are limits put to the actual hours of work. For instance, no woman or young person employed in a lead process may work in a pottery in any capacity for more than 48 hours a week, and adult male workers employed as dippers, dippers' assistants, or ware-cleaners may not work in any capacity in the pottery as a rule for more than 48 hours a week, and in no circumstances for more than 54 hours a week, even where part of the work is a non-lead process. Adult male glost-placers again may not, as a rule, be employed in the pottery in any capacity for more than 54 hours a week. However, the adult men whose hours are thus restricted are allowed to work a certain amount of overtime. There is also a restriction, under these regulations, to nine and a half hours a day (six and a half hours on Saturday), of the hours of work of women and young persons in potters' shops or where other dusty processes are carried on in potteries.

It will be observed that the Factory and Workshop Acts, in regulating the hours of work of women and young persons, make provision throughout for a half-holiday on Saturdays. They also require women and young persons to be allowed certain whole days off in the course of the year, and prohibit work on Sundays for those workers. The holidays prescribed for England are Christmas Day, Good Friday and the four bank holidays. The employer may on certain conditions, arrange to give another day or two half days in place of any of these. There are exceptions to the general prohibition of Sunday employment in the case of Jewish workshops (where Saturday may be substituted for Sunday). It should be noted, too, that none of the provisions of the Act of 1901 relating to hours of work and holidays apply in fish and fruit preserving as regards certain work which must be carried out immediately. The home secretary has, however, imposed conditions, by order, on the use of this exception for fruit preserving.

In addition to the outside limits of hours of work, there are restrictions on the length of the spells after which a break must

be allowed for meals and rest. The general rule is that no woman or young person shall be employed continuously in a textile factory for more than four and a half hours without an interval of at least half an hour, the corresponding limit in other factories and workshops being five hours. Under the regulations for potteries, in addition, no person (including men as well as women and young persons) may be employed in certain lead processes for more than four hours without an interval of at least half an hour for a meal, and for certain other processes a limit of four and a half hours or five hours is set to any person's spell of continuous employment. In the regulations for india-rubber, no person may work in a room where carbon bisulphide is used for more than two and a half hours at a time without a rest of at least one hour from any employment.

(b) **Mines.**—The hours of work of all underground workers in mines coming under the Coal Mines Acts are regulated by the Coal Mines Regulation Act of 1908, as amended in 1919 and 1926, and those of women and boys employed above ground are regulated by the Coal Mines Act 1911. Where that Act does not apply, the provisions of the Factory and Workshop Act 1901 as to hours are in operation, since among the places included in the list of "non-textile factories and workshops," in the sixth schedule to that Act, are " 'pit banks,' that is to say any place above ground adjacent to a shaft of a mine" in which the employment of women is not regulated by the various Acts relating to mines. The hours of work of boys below ground in metalliferous mines to which the Act of 1908 does not apply are regulated by the Metalliferous Mines Regulation Act 1872. The Coal Mines Regulation Act 1908 is still the principal Act restricting the hours of underground workers, but the original limits of eight hours for "workmen" and nine and a half hours for firemen, examiners or deputies, onsetters, pump-minders, fanmen or furnacemen, were reduced to seven hours and eight hours respectively by the Act of 1919. The rule established by these Acts was that no workman shall be below ground in a mine (*i.e.*, one coming under the definition now in the Coal Mines Act 1911) for the purpose of his work, or of going to and from his work, for more than seven hours during any consecutive 24 hours. The difficulty of allowing for the time taken in lowering a shift of men to the bottom and of raising them again to the surface is met by a provision that the limit of hours may be reckoned from the period between the moment when the first workman of the shift leaves the surface till the first workman to return up the shaft reaches the surface. In order that the lowering and raising of each shift may be effected within a reasonable time, the mine-owners are expressly required so to arrange the times for beginning to lower and raise the men that every workman shall have the opportunity of returning to the surface within the prescribed limit of hours, and the intervals between the times fixed for beginning and completing the lowering or raising of a shift must be approved by the inspector as the time reasonably required for the purpose. The workmen may, moreover, appoint persons at their own cost to observe the times of lowering and raising, in the same way as they may appoint check-weighers (*see* p. 550). In addition to making provision for exemptions in cases of emergency, the Act of 1908 provided that the prescribed limit of hours below ground might be extended in any mine on not more than 60 days in any calendar year, by not more than one hour a day. In order to revert to the eight hour day in coal mines, the simple method was adopted in the Coal Mines Act 1926 of repealing the words "on not more than 60 days in any calendar year" in this section, intended originally only to allow occasional overtime, so that, although the seven hour rule appears in the statutes, as if it were still in operation, the mine-owners may require the men to work eight hours a day throughout the year. The operation of the Act of 1926 is limited to five years. Boys under 16 working underground in metalliferous mines not coming under the Act of 1908 may not work more than 54 hours a week or ten hours in any one day. Their period of employment begins at the time of leaving the surface and ends at the time of returning to the surface. The hours of women and girls and boys under 16 on the surface in connection with mines coming under the Coal Mines Act 1911 are limited to 54 a week and ten a day, and such persons may not be employed continuously for more than five hours without an interval of at least half an hour for a meal, nor for more than eight hours in any day without intervals amounting to one and a half hours altogether. The provisions of the Act of 1911 as to night work prohibit the employment of women, girls and boys under 16 between 9 P.M. and 5 A.M. and after 2 P.M. on Saturdays, and there must be an interval of at least 12 hours between the termination of employment on one day and its commencement on the next. These provisions must now be read in conjunction with those of the Employment of Women, Young Persons and Children Act 1920, which are outlined above. The convention on the night work of young persons which that Act put into operation contains a special exception allowing young persons under 18 to be employed in coal and lignite mines within the defined limits of night work (*i.e.*, 10 P.M. and 5 A.M.) provided "an interval of ordinarily 15 hours and in no case less than 13 hours separates two periods of work."

(c) **Shops.**—In shops the only rigid restriction of hours is a limit of 74 hours (inclusive of meal times) set to the weekly hours of young persons under 18 by the Shops Acts 1912. But some check is put upon the hours worked by all shop workers, men and women alike, by the Shops Acts 1912, 1913 and 1928, as follows: (i.) The Act of 1912 requires work to cease about the business of a shop not later than half past one o'clock in the afternoon of one day a week; prescribes certain intervals for meals; and empowers the local authorities to issue closing orders fixing the hours for closing all or specified kinds of shops on each day of the week (but these orders may not now fix closing hours inconsistent with those prescribed by the Act of 1928); (ii.) The Act of 1913, amending the Act of 1912 in its application to premises for the sale of refreshments, limits the week's work to 65 hours and imposes a certain standard of holidays and mealtimes for shop assistants employed on any premises for the sale of refreshments, where the occupier voluntarily elects to accept that limitation instead of applying the provisions of s. 1 of the Act of 1912 relating to the compulsory half-holiday for shop assistants; (iii.) The Shops (Hours of Closing) Act 1928 provides that shops must as a rule be closed not later than 9 o'clock in the evening of one day in the week, and 8 o'clock on the other evenings of the week. The late day must be Saturday unless the local authority fixes some other day either for all or certain shops, or for certain districts or certain periods of the year. In various cases the local authorities may allow later closing hours (up to 10 P.M.) than those stated. Where exemptions are allowed for exhibitions or during the busy seasons in holiday resorts, the local authority has power to attach to its order conditions limiting the hours of employment of the shop assistants affected, and in the case of seasonal exemptions in holiday resorts, may require the assistants to be given a holiday, on full pay, corresponding to the extra hours worked. For special occasions, a local authority may suspend the operation of the statutory closing hours and its own closing orders on not more than seven days in the year. The home secretary also has power to suspend the provisions of the Act and orders at Christmas and other special occasions. The schedule to the Act contains a list of transactions not to be prevented by the Act or closing orders. These are connected with the sale of refreshments and tobacco in certain places, medicines, motor accessories, and the like.

(d) **Ships.**—There are no restrictions on the hours of duty on board ship in English law.

(e) **Railways.**—Some attempt was made to keep the hours of work of railway workers within reasonable limits by the Railway Regulation Act of 1893, but this Act is now in practice superseded by the provisions of part IV. of the Railways Act 1921, under which Boards are set up to settle all questions relating to rates of pay, hours of duty and other conditions in the railway service.

Administration.—The various measures considered above, whether dealing with factories, mines, ships, railways or workplaces of various kinds under the Public Health Acts, and also certain of those which will be described in the following section, in so far as they are "protective" in character, all provide for means to be taken to enforce and administer the law. The ap-

propriate authorities are given power by the Acts to appoint the necessary inspecting officers and those officers are endowed with power to enter and inspect places affected, examine registers, and so forth. Provision is also commonly made for instructing the workers in the terms of the law for their protection, by requiring abstracts of the law, copies of regulations, or information of various other kinds to be posted up for all to see. Employers are also required to keep registers (for instance, of persons employed, of medical examinations, of accidents or cases of ill-health) in order to facilitate inspection. Some of the Acts contain interesting rules of procedure for such matters as enquiries into the causes of accidents and the issuing of regulations or orders. Provision is also made, in some cases, for proposed regulations to which exception is taken by interested persons, to be submitted to arbitration. It must be remembered that provisions of this kind form an essential part of all "protective" labour law, but it is not possible to discuss them in detail within the confines of this article.

Contractual Relations in English Labour Law.—The contractual relations of master and servant, or, in modern parlance, of employer and employed, are governed by the rules of common law and equity concerning the creation and validity of contracts in general. The essential point is, therefore, that in return for whatever the one party undertakes to do under the contract, the other must undertake to give "valuable consideration." If there is no consideration the contract must take the form of a deed. Contracts by deed may, however, be disregarded for practical purposes in connection with contracts of service, in which the consideration normally consists in some sort of remuneration on the one hand and services to be rendered on the other. Thus to create a valid contract of service it is only necessary for two parties, intending to create a legal relationship, to agree upon the services to be rendered and the remuneration to be received. The terms of the agreement need not be stated expressly. They may be merely implied by conduct. Neither writing nor even words are essential at common law, though there are statutory exceptions, which are given below. As far as common law is concerned, if one person does work for another without that other rejecting his services, there may be an implied contract of service with an implied undertaking to give "consideration" for the services rendered. "Consideration" is a very wide term. It may consist "either in some right, interest, profit, or benefit accruing to the one party, or in some forbearance, detriment, loss or responsibility given, suffered or undertaken by the other" (*Currie* v. *Misa,* 1875, L.R. 10 Ex. 162). Thus at common law (apart from statutory exceptions) the consideration in a contract of service need not necessarily take the form of wages. Nor need the consideration be adequate. So long as there is something of some value in the eye of the law to represent the consideration for the other party's undertaking, the contract will be enforceable (except in the circumstances rendering a contract illegal, which will be dealt with below). As regards a lawful contract, the courts have refused to enquire into the adequacy of the consideration or whether the agreement is too much to the advantage of one of the parties (*Hitchcock* v. *Coker,* 1837, 6 A. and E. 438).

Apart, then, from statutory provisions, a contract of service may be entirely informal. Where disputes arise over merely implied terms in such a contract, the litigants must produce what evidence they can as to what those terms should be taken to be. It may be that a custom in the trade can be established which may be presumed to have been tacitly adopted in the absence of any express agreement to the contrary. There may be some rules of the works or establishment to which reference may be made. The law on this subject was stated in *Carus* v. *Eastwood* (1875, 32 L.T. 855) by Mr. Justice Blackburn who said that "it would be very cogent evidence of a contract" based upon certain works rules which were in question "if a copy of them were proved to be posted in a prominent place" and brought to the workman's knowledge; and also that "a well-known custom in the district might also be sufficient to establish a contract." Still more usual is it in England for the individual contracts of large numbers of workmen to be based on the terms of a national or district agreement drawn up by representatives of employers' and workers' organizations. Such collective agreements, in strict law, are of no effect, in the sense that any individual employer could legally engage a workman on express terms differing from those of the agreement (cf. *Hilton* v. *Eckersley* referred to below). But in actual practice such collective agreements establish the terms of all the individual contracts of workers employed in the undertakings concerned. Any dispute between an individual worker and his employer is settled by reference to the trade union agreement impliedly included in the contract.

Termination of Contract.—There are no rules of English common law restricting the duration of a contract of service or the conditions of giving notice to bring it to an end, such as are to be found in the codes of some countries. The parties are free to make whatever arrangements they will on these points, and if no definite arrangement is made, the implied terms must be sought for as best may be. The fact that wages are paid at certain intervals, such as weekly or monthly, is in itself strong evidence, though not necessarily conclusive evidence, of a corresponding hiring by the week or the month. "If the reservation of weekly wages be the only circumstance from which the duration of the contract can be collected, the presumption is that it is to continue for a week only" (*R.* v. *St. Andrews,* 1828, 8 B. and C. 679). There seems still to exist a legal presumption (curiously out of harmony with present-day facts) that domestic servants are employed by the year, although wages are paid monthly and the engagement is subject to a month's notice on either side. An alleged custom permitting either party to a domestic servant's contract to give notice, a fortnight before the end of the first month to terminate the engagement at the end of the month, was judicially noticed (*i.e.,* accepted without direct evidence of it being produced at the trial) by the county court judge in the case of *George* v. *Davies* ([1911], 2 K.B. 445) and on appeal the High Court held that he was entitled to do so. Apart from special circumstances, such as misconduct, and in the absence of any express terms to the contrary in the contract, a contract of service can only be terminated after reasonable notice (*in re African Association Ltd.* v. *Allen* [1910], 1 K.B. 396). If the term of notice required cannot be ascertained either from the contract itself or from any custom, rules, etc., it is for the jury to say what is reasonable in the circumstances (*Lowe* v. *Walter,* 1892, 8 T.L.R. 358). There is thus a presumption that reasonable notice of dismissal must be given, and if an employer dismisses his employee without notice or without awaiting the normal termination of the contract, it is for him to prove that there were circumstances justifying instant dismissal. These circumstances are either certain voluntary acts or behaviour on the part of the servant, or his incompetence. The servant may be dismissed for any act or behaviour which falls within the general rule of law stated by Lord Esher M.R. in the following words: "Where a person has entered into the position of a servant, if he does anything incompatible with the due or faithful discharge of his duty to his master, the latter has a right to dismiss him" (*Pearce* v. *Foster,* 1886, 17 Q.B.D. at p. 539). Consequently a servant may be dismissed for wilful disobedience to his master's lawful orders (*Turner* v. *Mason,* 1845, 14 M. and W. 112), but not for refusing to do work or take risks not contemplated in his contract (*Burton* v. *Pinkerton,* 1867, L.R. 2 Ex. 340). He may also be dismissed for habitual neglect of his duties. The amount of neglect necessary to justify dismissal depends upon circumstances. The head of a school was held not justified in dismissing a master for absenting himself for four days (*Fillieul* v. *Armstrong,* 1837, 7 A. and E. 557), and a newspaper correspondent who has undertaken to send news by every mail may not be dismissed for failing to do so on two occasions (*Gould* v. *Webb,* 1855, 4 E. and B. 933). But the failure of a singer to sing on the opening nights of an opera may justify the complete rescission of the contract (*Poussard* v. *Spiers,* 1876, 1 Q.B.D. 410). The betrayal of the employer's secrets is a good ground for dismissal (*per* Best C.J. in *Beeston* v. *Collyer,* 1827, 2 C. and P. 607). A servant may even be dismissed for misconduct not necessarily connected directly with his employment, if he "is guilty of such a crime outside his service as to make it unsafe for a master to keep him in his em-

ploy," or "if the servant's conduct is so grossly immoral that all reasonable men would say he cannot be trusted" (*per* Lord Esher M.R. in *Pearce* v. *Foster,* where a firm of merchants was held justified in dismissing a highly paid and trusted employee when they found he had been for years gambling in differences on the stock exchange). Drunkenness will not necessarily justify dismissal; it depends upon the facts of each case (*Clouston* v. *Corry,* [1906], A.C. 122). A servant may be dismissed at once for gross incompetence in performing the work he has undertaken to do (*Harmer* v. *Cornelius,* 1858, 5 C.B.N.S. 236). The question of when a servant is entitled to leave without notice has not received much attention in the courts. For obvious reasons, it is not usually worth the employer's while to sue a servant for damages for leaving without notice. There is one clear case in which a servant may leave on the instant, and that is where he has been misled as to the dangers involved in the employment (*see* Cockburn C.J. in *Woodley* v. *Metropolitan District Railway,* 1877, 2 Ex. D. at p. 388). The question is of more importance in connection with seamen. It has been held that it does not amount to desertion (involving forfeiture of wages) if a seaman leaves the ship on account of inhuman treatment (*Edwards* v. *Trevellick,* 1854, 4 E. and B. 59), or on account of insufficiency of provisions (*The Castilia,* 1822, 1 Hag. 59).

In the absence of any express or implied terms in the contract as to the effect of the servant's illness and his right to wages during illness, an employer cannot instantly dismiss a worker for absence through illness or injury, nor is the contract brought to an end automatically when the worker for such reason ceases to carry out his part. But in the case of a contract of some length, permanent incapacity or illness for an unreasonably long time will entitle the employer to rescind the contract. If the employer does not do so, the servant is entitled to his wages during the time he cannot serve. In *Cuckson* v. *Stones* (1858, 1 E. and E. 248), where there had been no question of rescinding the contract, and it was admitted that wages would be payable for any short illness, the employee engaged on a ten years' contract was held entitled to his wages during an illness lasting many months. Even very short contracts or contracts at will are not automatically brought to an end by the servant's absence through illness. Thus in *Warburton* v. *Co-operative Wholesale Society Ltd.* ([1917], 1 K.B. 663), an employee, who was incapacitated by an accident and receiving compensation for it, was held to be still in the service of the society though he could have been dismissed at a moment's notice. In *Niblett* v. *Midland Railway* (1907, 23 T.L.R. 240), a railwayman failed in an endeavour to recover wages for some weeks of absence through illness when he was still admittedly in the company's service and receiving sick pay from their own sick fund; it was held that the decision in *Cuckson* v. *Stones* did not govern such cases. A contract of service is dissolved by the death of either party (*Farrow* v. *Wilson,* 1869, L.R. 4 C.P. 744). The death of one partner likewise, as a general rule, brings a contract of service with the firm to an end; but if the contract was made without regard to the personnel of the partners or the nature of the partnership business, this may not be so (*Phillips* v. *Alhambra Palace Co.* [1901], 1 K.B. 59). The bankruptcy of the master does not bring to an end any contract of service to which he is a party. The question may arise, where a worker is to be paid according to the amount of work he does, whether the employer is bound to give him a sufficient amount of work to enable him to earn suitable wages. It was held in *Devonald* v. *Rosser* ([1906], 2 K.B. 728) that if the worker in such a case is bound for a specified time to work exclusively for the employer, then there is an implied obligation on the employer to find him work by which he may earn his wages.

Remedies for Breach of Contract.—For breach of contract, English law provides two remedies. The most usual one is a claim against the offending party for damages to make good the loss sustained. For cases where pecuniary compensation does not provide an adequate remedy, the court of chancery invented the equitable remedy of "specific performance," *i.e.,* an order to the offending party requiring him actually to perform what he has undertaken to do. It is important to note that the courts refuse to apply this remedy for a breach of a contract of personal service, although the other equitable remedy of "injunction" is sometimes applied to restrain a person from infringing a negative clause in a contract of service or to prevent him from committing a breach of faith such as is an implied term in all contracts of service (*Robb* v. *Green* [1895], 2 Q.B. 315). Thus no servant will be compelled to carry out a contract to serve a master, and no master will be compelled to take into or retain in his service a servant he has engaged, though either party may, in suitable circumstances, be restrained by injunction from doing something he has contracted, expressly or by implication, not to do. The usual remedy for breach of a contract of service is therefore a claim for a sum of money as damages. In assessing the amount to be awarded, the courts aim at placing the injured party as nearly as possible in the position he would have been in if no breach had been committed. If a servant is engaged on terms making him liable to be dismissed on a week's or a month's notice (or whatever period of notice may be agreed upon), the measure of his loss if he is discharged on the instant is clearly the wages he would have received had he been allowed to work out the agreed term of notice. It is consequently understood that wages may be paid in lieu of notice in such cases, instead of the notice itself being given, and that amount will be awarded by the courts if the employer refuses to pay it. In the case of a contract to employ a person for a definite time the measure of damage is not so easy to ascertain, since it is necessary to take into consideration the possibility that the servant may procure other employment before the end of the term during which his employer ought to have retained him (*Hartland* v. *The General Exchange Bank,* 1866, 14 L.T.N.S. 863). The servant is bound to endeavour to get work. The amount recoverable in damages will therefore be the wages he ought to have received under the broken contract less what he will receive in a new situation which he has either already obtained (*Reid* v. *Explosives Co.* [1887], 19 Q.B.D. 264), or which he has been offered (*Brace* v. *Calder,* 1895, 2 Q.B. 253), or which he may be expected to get after allowing a reasonable time for finding the new employment (*Addis* v. *Gramophone Co.* [1909], A.C. 488, *per* Lord Atkinson at p. 493). Thus if the servant could at once have procured a similar position, only nominal damages will be awarded (*Brace* v. *Calder*). It must be noted that a wrongfully dismissed servant cannot be awarded any vindictive or exemplary damages in respect of his wounded feelings for the harsh manner of his dismissal, in an action for breach of the contract of service (*Addis* v. *Gramophone Co.*), though, of course, if the circumstances warranted it, he could bring an action for defamation of character against his employer. A servant can recover a sum in respect of any tips or commission which he might expect to have earned in addition to the wages if he had been allowed to complete the proper term of the contract or of notice, provided that it is an implied term of the contract that he should receive payments of that kind (*Manubens* v. *Leon* [1919], 1 K.B. 208). If the master after engaging a servant rescinds the contract before the service has actually begun, the servant may institute proceedings at once, without awaiting the day when the service was due to begin (*Hochster* v. *de la Tour,* 1853, 2 E. and B. 678).

If it is the servant who unlawfully throws up the employment, the master is likewise entitled to bring an action for damages for any loss he sustains, though naturally such an action is rare. The employer cannot retain any wages actually due to be paid when the servant breaks off the contract, but the servant cannot claim wages for a broken period in respect of which wages would have been due if it had been completed. For instance, if a servant subject to, and liable to give, a month's notice on the first of each month, leaves in the middle of the month, he cannot claim any wages due since the last monthly pay day (*George* v. *Davies* [1911], 2 K.B. 445). If the contract is quite definitely to serve for a specified time and be paid a specified sum at the end of it, the servant cannot recover any wages at all if he does not complete the contract, and his representatives cannot even recover any part of the wage in respect of the time he actually served, if he dies in the course of the service, because nothing has accrued due (*Cutter*

v. *Powell,* 1795, 6 T.R. 320). Where it is the employer who breaks off the contract it must be noted that the servant, whatever the terms of payment may be, can always recover wages in respect of the service actually accomplished, by ignoring the broken contract and suing on a *quantum meruit, i.e.,* on an implied contract to be paid for work actually done, if for any reason he prefers this course.

There is no obligation on a master, in English common law, to give a servant anything of the nature of a certificate of employment or of character, when the engagement comes to an end (note, however, certain statutory provisions on this subject in the Merchant Shipping Act 1894).

Illegal Contracts.—It has, so far, been assumed that the contract of service is a legal one. We must now turn to the circumstances in which English law regards a contract as illegal and consequently either wholly or partly void. A contract of service, like any other contract, is illegal if it involves the doing of something which the law either expressly forbids (such as the employment of children below a statutory age limit) or merely discourages as being contrary to public policy (such as one too greatly infringing a man's liberty of action or "in restraint of trade"). The illegality may go to the root of the contract rendering it wholly void. Or, on the other hand, one or more illegal terms may be held not to vitiate the whole of the contract. Thus where a miner was working under an agreement by which he was paid in a manner contrary to the Coal Mines Regulation Act 1887, it was held that the contract as a whole held good in spite of this illegal stipulation, and the miner was not entitled to leave his employment without giving the fortnight's notice required by the contract (*Kearney* v. *Whitehaven Colliery Co.* [1893], 1 Q.B. 700). For an example of a contract involving a direct and punishable infringement of the law which wholly vitiated it, we may note the case of *Pountney* v. *Turton* (1917, 10 B.W.C.C. 601), where a boy was employed before reaching the age of 14 contrary to the Employment of Children Act 1903. His contract being in consequence wholly illegal and void, it was held that he could not recover compensation for an accident under the Workmen's Compensation Act, and to remedy this unjust result of the illegality of the contract the Workmen's Compensation Act had to be amended (*see* s. 3 [3] of the consolidating Act of 1925). The most important type of contract of service contrary to public policy but not involving the doing of any punishable offence, is where undue restraint is placed upon personal liberty of action, especially any "restraint of trade." "The law of England allows a man to contract for his labour, or allows him to place himself in the service of a master, but it does not allow him to attach to his contract of service any servile incidents" (*Davies* v. *Davies,* 1887, 36 Ch. D. at p. 393). Thus a man cannot contract to submit to imprisonment at the hands of his master if he should be guilty of misconduct (*Clarke* v. *Gape,* 1596, 5 Rep. 129). Moreover, although, as we have seen, the courts will not refuse to enforce a contract merely for the reason that it appears to be unfair to one party or that the consideration is inadequate, they will interfere where a party is unduly fettered in his right to dispose of his labour as he will or his liberty of action in other respects so that he is reduced to an almost servile condition (*see Horwood* v. *Millar's Timber Co. Ltd.* [1917], K.B. 305). In the absence of servile incidents a contract to serve another for life is not necessarily void (*Wallis* v. *Day,* 1837, 2 M. and W. 273); but the common law will not allow an agreement to be enforced by which workmen bind themselves to work or masters bind themselves to employ workers, only on terms decided by a majority of those affected (*Hilton* v. *Eckersley,* 1856, 6 E. and B. 47). Thus it is impossible for members of workers' or employers' associations to bind themselves under penalty to abide by the decisions of the majority, and no collective agreement made by such associations can ever be enforced by process of law.

The doctrine of restraint of trade is especially important in connection with contracts purporting to restrict the activities of an employee after he leaves his employment. It is, as we have seen, an implied term in all contracts of service that the servant shall keep faith with his master and not divulge his trade secrets or take an unfair advantage of his position and knowledge either during the service or after it has come to an end (*Amber Size Co.* v. *Menzel* [1913], 2 Ch. 239). But it is not unusual to insert in the contracts of employees in positions of some responsibility or requiring special skill, or in which they acquire special knowledge, provisions binding them not to exercise their skill or use their knowledge in competition against their former masters either in particular districts or for a certain number of years after the employment comes to an end. There have been many important decisions on this subject. These were summed up in *Attwood* v. *Lamont* ([1920], 3 K.B. 571). The chief points to notice are: firstly, that any such contract is *prima facie* bad, as being in restraint of trade, so that the onus is on the party trying to enforce it to show that it is reasonable in the circumstances; secondly, that it must be reasonable from the point of view of both parties; thirdly, that as a master is not entitled to bar the competition, as such, of a servant who has quitted his employ, no restraint can be justified except in so far as it may be required for the purpose of preventing the servant from making improper use of his acquaintance with his master's customers or knowledge of his trade secrets. The remedy where such terms have been proved to be reasonable is usually the recovery of damages. In some cases the courts have granted injunctions to restrain an ex-servant from breaking a restrictive agreement of this sort. But they will only do this with great caution (see *Rely-A-Bell Burglar and Fire Alarm Co.* v. *Eisler* [1920], Ch. 609).

Capacity to Contract.—In considering whether a contract is enforceable, it is necessary also to enquire into the capacity of the parties to bind themselves by contract. As regards contracts of service the only case of incapacity we need consider here is where one of the parties is an infant (*i.e.,* under 21 years of age). Married women have not suffered any incapacity to bind themselves by contracts of service or freely to dispose of their wages since the passing of the Married Women's Property Acts 1882 and 1893. Where an infant enters into a contract of service it is necessary to see whether it satisfies the general rule of law that no contract will be enforced against an infant unless it is for his benefit. Contracts to learn a trade or serve for wages are *prima facie* for an infant's benefit and consequently will be enforced unless they are wholly disadvantageous to him (*Corn* v. *Matthews* [1893], 1 Q.B. 310). The mere fact that some of the terms are unfavourable does not necessarily vitiate the whole contract. It is necessary to consider whether the contract as a whole was for the advantage of the infant (*Clements* v. *London and North Western Railway Co.* [1894], 2 Q.B. 482).

A few rules relating to apprenticeship may be noted here. Since the repeal of the Elizabethan Statute of Apprentices apprenticeship has been purely a voluntary matter in England and no particular formality is required for making a contract of apprenticeship. But since the term of apprenticeship is commonly for more than a year such a contract must as a rule be in writing (*see* below). A parent cannot bind his child an apprentice without the child's consent and the indenture (if any) must be signed by the apprentice, not merely by the parent or guardian (*Rex* v. *Arnesby* [1820], 3 B. and Ald. 584). An apprentice cannot be dismissed for misconduct as a general rule, unless this is expressly allowed by the contract. But a master may correct his apprentice's faults by moderate chastisement (*Penn* v. *Ward,* 1835, 2 C.M. and R. 338). The apprentice may quit his master's service if he has reasonable apprehension of grievous bodily harm at the master's hands (*Halliwell* v. *Counsell,* 1878, 38 L.T. [N.S.] 176). The sickness or incapacity of the apprentice does not relieve the master of his obligations under the contract, *e.g.,* to provide for the apprentice and pay him wages (*Patten* v. *Wood,* 1887, 51 J.P. 549). A contract of apprenticeship expires on the death of the master except where it is so drawn as to require the apprentice to continue to serve the master's representatives carrying on the same trade (*Cooper* v. *Simmons,* 1862, 7 H. and N. 707). An apprentice cannot recover any part of the premium from the representatives of his deceased master unless there is an express stipulation in the contract enabling him to do so. Disputes between apprentices and their masters are regulated by the Employers and Workmen Act

1875 (*see* p. 551). The effect of bankruptcy on a contract of apprenticeship is dealt with by s. 34 of the Bankruptcy Act 1914.

Statute Law.—The general rule of common law that the parties to a contract of service are free to make what terms they will has been considerably modified by Acts of parliament. Some of these, adopted expressly in the interests of the worker, might be more properly included under the heading of "protective" labour law, in so far as contraventions render the employer liable to quasi-criminal prosecution. But in so far as they also give the worker a civil right of action or tend to strengthen his position as contracting party, they may conveniently be considered rather from the contractual point of view. The statutes in question either require certain contracts of service to be in writing or prescribe certain formalities for their execution, or they place restrictions on the nature of the consideration or on the place where wages are to be paid; or they provide means for fixing the minimum rate of wages to be paid, or require the employer to give the workers certain facilities for checking or calculating the amounts due to them. It will also be convenient to note in this connection the special procedure provided by statute for settling disputes arising out of the contractual relation between an employer and a worker. The statutes here in question are considered in the following paragraphs.

Statute of Frauds.—Section 4 of the Statute of Frauds (1677) provides that no action shall be brought to enforce certain contracts "unless the agreement upon which such action be brought or some memorandum or note thereof, shall be in writing and signed by the party to be charged therewith or some other person thereunto by him lawfully authorized." The only type of contract affected by this section which could possibly include a contract of service is "any agreement that is not to be performed within the space of one year from the making thereof." Any such contract of service if not in writing and signed will be unenforceable either against both parties or against whichever has not signed it. The contract is not, be it noted, entirely void like an illegal contract, but only unenforceable. This section of the Statute of Frauds has been held to apply where it is clear from the terms of a contract that complete performance within a year is impossible by both parties, or even by one party where the time for performance by the other is indefinite (*Reeve* v. *Jennings* [1910], 2 K.B. 522). Even an agreement to serve for two years subject to six months' notice on either side during that period, must be in writing although the service might be brought to an end within a year (*Hanau* v. *Ehrlich* [1912], A.C. 39). An agreement made one day to enter upon a year's service the same day or the next day does not come under the statute, as it will be performed within the space of one year. But if the year's service is to begin at any subsequent date the contract must be in writing (*Britain* v. *Rossiter,* 1879, 11 Q.B.D. 123; *Smith* v. *Gold Coast and Ashanti Explorers Ltd.* [1903], 1 K.B. 285).

Truck Acts.—The Truck Acts regulate the nature of the consideration for services in certain cases, and also require agreements for certain purposes to be in writing. These Acts were adopted owing to the abuses which arose, in the first place, from the so-called truck-shops, owned by employers, out of which wages were paid in the form of goods or where the workers were constrained to spend their nominally cash wages; and, in the second place, from the habit of making oppressive and arbitrary deductions from wages. The Truck Acts (1831, 1887 and 1896) apply to all workmen as defined in the Employers and Workmen Act 1875, s. 10 of which is as follows: "The expression 'workman' does not include any domestic or menial servant, but save as aforesaid, means any person who, being a labourer, servant in husbandry, journeyman, artificer, handicraftsman, miner, or otherwise engaged in manual labour . . . has entered into or works under a contract with an employer, whether the contract . . . be express or implied, oral or in writing, and be a contract of service or a contract personally to execute any work or labour." There have been many decisions as to the meaning of "manual labour" in this section. By one of these, a shop assistant who serves in the shop and ties up parcels was held not to be engaged in manual labour (*Bound* v. *Lawrence* [1892], 1 Q.B. 226). Consequently the Act of 1896, which deals with disciplinary fines and deductions from wages for damaged goods or materials, was so drafted as to apply expressly to shop assistants as well as to the "workmen" coming under the earlier Acts. The Act of 1887 also expressly extended the benefit of the Acts to homeworkers in certain trades, working alone or with other members of the family (s. 10). In the first place, the Truck Acts make all payment of wages otherwise than in current coin of the realm illegal, null and void. If any wages are paid in a manner contravening this rule, the transaction is entirely void and the workmen can sue for the money value of the wages due without the employer being able to recover any goods supplied instead of wages.

In the second place, the Truck Acts render illegal any contract requiring the workman, directly or indirectly, to spend any part of his wages in any particular manner or at any particular shop. A workman may not be dismissed for spending or failing to spend his wages at any particular place. The value of goods supplied to a workman by the employer or under his orders cannot be set off against the workman's wages or sued for independently of any claim for wages (1831, s. 6; 1887, ss. 5, 6). Thus the Acts do not actually prevent a workman from buying goods at a store kept by, or by arrangement with, the employer, but their effect is that such purchases must be freely made on a cash basis. Certain exceptions are allowed, some absolute and others on condition there is a written contract. For instance, the Act of 1887 (s. 4) expressly states that it shall be legal to provide a servant in husbandry with food, non-intoxicating drink, a cottage and other allowances in addition to money wages. Moreover it is permissible for an employer to contract with any workman to supply him with certain commodities specified in s. 23 of the Act of 1831, provided that the contract is in writing and signed by the workman.

In the third place, the Truck Act of 1896 regulates deductions from wages. It requires the terms of any contract authorizing the employer to impose disciplinary fines and deduct the amount from wages to be posted up where they can be easily seen and copied by the workers affected, or else to be contained in a written contract signed by the workman. Particulars of the acts or omissions for which a fine may be imposed and the amount of the fines must be stated in the contract; and the offence for which the fine is to be imposed must be likely to cause damage or loss to the employer or interruption to his business. A contract to make deductions for bad or negligent work must likewise be posted up or in writing and signed, and the deduction must not exceed the actual or estimated loss occasioned to the employer. The amount deducted, whether as a disciplinary fine or in respect of bad work must, moreover, be "fair and reasonable, having regard to all the circumstances of the case." Particulars of deductions or payments for materials, tools, machinery, etc., used by the workman must also be posted up or contained in a written and signed contract. They may not exceed the cost to the employer or what is a fair and reasonable rent or charge. On each occasion whenever a disciplinary fine is to be imposed or a deduction made for bad work or for the use of materials, etc., the workman must be given written particulars of the reason for the deduction and its amount. The enforcement of the Truck Acts is not left to the unaided efforts of the workers affected. They may sue for wages paid in an illegal manner or for the recovery of amounts illegally deducted from wages. But, in addition to this, employers who fail to observe the Acts are liable to prosecution and fine. Besides the Acts already mentioned, there is a special Act prohibiting entirely deductions from wages in the manufacture of hosiery, except deductions for bad workmanship (Hosiery Manufacture [Wages] Act 1874). It is necessary to note in addition, that the cotton-weaving industry in the north of England, preferring to regulate deductions from wages in its own way, was granted exemption from the Act of 1896 by an order issued in 1897, under powers given by s. 9 of that Act. Akin to the Truck Acts, as measures to protect the workers from being under any pressure to spend their wages to their disadvantage, are the Payment of Wages in Public Houses Prohibition Act 1883 and certain provisions to the same end contained in the Metalliferous Mines

Regulation Act 1872 (s. 9), and the Coal Mines Act 1911 (s. 96).

Merchant Shipping Acts.—The Merchant Shipping Acts, 1894 and 1906, contain a number of sections regulating seamen's contracts and the payment of their wages. The master of any ship (except one of less than 80 tons registered tonnage exclusively employed in trading between different ports on the coast of the United Kingdom) is liable to a penalty if he puts to sea without having entered into an agreement with the crew made in the prescribed manner (s. 113). The form of the agreement must be one approved by the Board of Trade, and the master must sign it before the seamen do so. In all cases an agreement with the crew must deal with certain matters specified in s. 114. An agreement with the crew of a foreign-going ship must be signed by each seaman in the presence of the superintendent of the mercantile marine office of the port. This official must see that the agreement is read over and explained to each seaman or otherwise ascertain that he understands it before he signs it (s. 115). For the crew of a home-trade ship, the agreement need not be signed before a superintendent; but, if it is not, the master must cause it to be read and explained to the seaman (s. 116). The Act of 1894 also requires all seamen serving in British foreign-going ships to be formally discharged before a superintendent at the termination of the engagement (s. 127), and to be given a certificate of discharge (s. 128), and in some cases also a report as to conduct, character and qualifications (s. 129). Where a seaman is discharged before a superintendent, his wages must be paid in the presence of that officer (s. 131), and before a seaman is paid off the master must have given either to him or to the superintendent, at least 24 hours before, an account of the wages due and of all deductions therefrom (s. 132). A book must be kept recording any deductions as the occasions for them arise during the voyage (s. 133). When the seaman leaves a foreign-going ship at the end of his engagement, he must at once be paid one-fourth of any wages due to him (or £2, whichever is the least) and the remainder must be paid within two days, or the final settlement may, with the seaman's consent, be referred to the superintendent. If the wages are not thus paid or settled, the seaman's wages continue to run and continue due until he is paid (s. 134). In the case of home-trade ships, the wages must be paid within two days, otherwise the seaman will become entitled to two days' pay for each day's delay, up to a maximum of ten days' double pay (s. 135). Dispute over a seaman's wages may in some cases be settled by the superintendent (s. 137). A seaman's contract may not contain any term forfeiting any remedy he would otherwise have for the recovery of wages or his right to wages in case of the loss of the ship, or any right he may have in the nature of salvage (s. 156). The Merchant Shipping (International Conventions) Act gives a seaman the right to wages for not more than two months if he is unemployed before the termination of his engagement owing to his ship being wrecked. A seaman is not entitled to wages for any time during which he unlawfully refuses or neglects to work, or while he is lawfully imprisoned for an offence (s. 159). He does not, however, forfeit his right to wages during incapacity by illness, unless the illness is proved to have been caused by his own wilful act or default (s. 160). If a seaman is discharged contrary to his agreement and without fault on his part justifying discharge, either before the commencement of the voyage or before he has earned a month's wages, he may claim compensation not exceeding one month's wages (s. 162). The Act of 1906 provides that where a seaman has been fined for misconduct, the fine can only be deducted from his wages on his discharge after being proved to the satisfaction of the superintendent, to whom the amount so deducted must be paid (s. 44).

Minimum Wage Laws.—Machinery for fixing legal minimum rates of wages exists in England (i.) under the Trade Boards Acts; (ii.) for workers in agriculture; (iii.) for underground workers in mines. Under the Trade Boards Acts, 1909 and 1918, trade boards may be set up for any trade in which "no adequate machinery exists for the effective regulation of wages throughout the trade" and to which it is expedient to apply the Act "having regard to the rate of wages prevailing in the trade or any part of the trade." This gives to the Acts a wider basis than that of the Act of 1909, which was of an experimental nature, being the first attempt to regulate wages known to English law, although similar measures had for many years been operating in some of the Australian States. The Act of 1909 had been adopted as a result of a popular agitation against the so-called "sweating system." Trade Board Acts are thus fundamentally "protective" in intent. To give the workers of the type in contemplation merely a civil right to sue their employers for any deficiency in the wages they received below the minimum fixed by the appropriate trade board, would have been of little use to them. Consequently provision is made for the prosecution of employers who are guilty of paying less than the rates fixed. But the Acts also necessarily provide for the enforcement of the worker's contractual right to receive the minimum fixed for his trade. Not only can the worker himself sue his employer for any deficiency in the amount paid to him, but the officials of the Ministry of Labour, whose duty it is to enforce the law and if necessary to prosecute defaulting employers, may themselves institute civil proceedings on behalf of the worker, if he fails to do so himself; and, moreover, when an employer is prosecuted for an offence under the Acts, the Court adjudicating on the prosecution may, in addition to imposing the appropriate fine on a convicted employer, order him, on the same occasion, to pay whatever sum is civilly due to the worker. For details of these measures *see* TRADE BOARD. Here it is only necessary to mention this legislation in order to show how parliament has intervened to overreach the common law principle as to the freedom of the parties to fix whatever consideration they will.

The Agricultural Wages (Regulation) Act 1924 is also intended to assist a poorly organized class of worker to secure a reasonable consideration in his contract of service. In this Act it is expressly provided that the agricultural wages committees established for each county, in fixing a minimum rate must, "so far as practicable, secure for able-bodied men such wages as in the opinion of the committee are adequate to promote efficiency and to enable a man . . . to maintain himself and his family in accordance with such a standard of comfort as may be reasonable in relation to the nature of his occupation." The agricultural wages committees have the duty of fixing minimum time rates of wages for the agricultural workers in their district, and they may also fix minimum piece-work rates, and higher rates for overtime worked beyond some specified limit. The rates fixed by the local committees have to go to the Agricultural Wages Board (covering the whole of England and Wales) for an order to be made to put them into operation. Like the Trade Boards Acts, this act provides for both penalties on the employers who pay less than the minimum fixed, and for enforcing the worker's civil claim to have any deficiency made good in the amount paid to him. Here again the court may make an order for the amount of wages owing to a worker to be paid to him, at the same time as it imposes a fine upon the employer.

The Coal Mines (Minimum Wage) Act 1912 is on a different footing. It secures to the workers affected a minimum wage per day below which their earnings, primarily based on output, may not fall, by providing that "it shall be an implied term in every contract for the employment of a workman underground in a coal mine that the employer shall pay to that workman wages at not less than the minimum rate settled under this Act." Here there is no question of imposing a fine upon the employer for paying less than the minimum rate to a more or less helpless worker. The Act is merely concerned with the terms of the contracts of employment of the workers affected. It establishes their right to a minimum wage fixed in a certain way, and leaves them to enforce it themselves by civil proceedings, if necessary. The joint district boards by which these rates are to be determined, are "a body of persons recognized by the Board of Trade as the joint district board of that district," which means that any existing joint committee representative of trade unions and mine-owners may be declared to be the joint district board for this purpose. The Act assumes that as a general rule the parties will be capable of themselves organizing a joint district board, and thus differs profoundly from the other two types of minimum wage law here considered.

Check-weighing.—Coal-miners whose wages depend on the

amount of mineral hewn by them, are bound to be paid by weight, and the mineral must be weighed as near to the pit-mouth as is reasonably practicable (Coal Mines Regulation Act, 1887, s.12). All such workers have, in addition, the statutory right to appoint their own representatives (check-weighers) to check the weighing of the mineral (*see* the Coal Mines Regulation Act 1887, s.13; the Coal Mines [Check Weigher] Act 1894, and the Coal Mines [Weighing of Minerals] Act 1905). A similar right was given by the Checkweighing in Various Industries Act 1919 to workers engaged in the manufacture of iron and steel, in loading and unloading goods at docks, in quarrying chalk and limestone, in the manufacture of cement and lime, and in any other industry to which the Act may be applied by regulations of the secretary of State. This act provides for the checking by a representative of the workers of the measuring as well as the weighing of material produced, handled or gotten, where the wages are paid according to measure instead of by weight.

Particulars.—To enable workers paid by the piece to know if the correct amount of wages is paid out to them, the Factory and Workshop Act 1901 (s. 116) requires employers to give all workers in textile factories particulars of the rate of wages applicable to the work in question, and of the work given them to do. These particulars must either be given in writing to each individual worker, or exhibited on a placard in the workroom (or, in some cases, both methods must be used). These provisions have been extended, with appropriate modifications, to a large number of other trades, under powers given to the home secretary in the same section.

Employers and Workmen Act.—The chief purpose of the Employers and Workmen Act 1875 was to provide a simple procedure for the settlement of disputes between a workman and his employer, or an apprentice and his master. In the first place, the powers of the county courts in such matters were extended in various ways, for instance by giving them a wider discretion to adjust and set off one against the other the respective claims of employer and workman arising out of the contract, and by authorizing them to rescind any contract of service upon such terms as to the apportionment of wages or payment of damages as may appear just. A still more important change made by the Act was to give to courts of summary jurisdiction, whose normal function is to deal with offences of a criminal or quasi-criminal nature, power to hear and determine with the same powers as a county court purely civil disputes between an employer and a workman arising out of the contract of service, where the amount claimed does not exceed £10. This arrangement gives the workman very quick and cheap facilities for suing his employer for small amounts of wages. The Act also gives the courts of summary jurisdiction wide powers in dealing with disputes between masters and apprentices. They may even make an order directing an apprentice to perform his duties and order him to be imprisoned for a term not exceeding 14 days if he fails to comply; or the court may rescind the instrument of apprenticeship altogether, and, in suitable circumstances, may order the whole or any part of the premium paid by the apprentice to be repaid. The definition of "workmen" to whom this Act applies is given above. It should be noted that seamen, originally expressly excluded from the scope of the Act, are now included, the section excluding them having been repealed to that extent. It may be observed too that workers under 21 have the special right to sue for wages up to £100 in their own name, as if they were of full age (County Courts Act 1888, s. 96, as amended by the County Courts Act, 1903).

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(2) *International Sources:* Most of the statutory labour law now in operation in the different countries of the world can be found in one or other of the following collections of translations of labour laws: 1, *Bulletin of the International Labor Office (of Basle)* (English edition, 1906–1919, vols. i. to xiv.; German and French editions, *Bulletin des internationalen Arbeitersamtes* and *Bulletin de l'office International du Travail,* 1919–20, vols. i. to xviii.). 2, The *Legislative Series of the International Labour Office* (Geneva; German ed. *Gesetzreihe;* French ed. *Série Legislative*) appearing annually, the laws being issued first in a series of advance brochures, referred to by abbreviated names of countries and numbered under each country. The brochure edition began in English for the year 1919, and covers the same ground as the Bulletin of Basle for that year, the annual volumes began with the year 1920. 3, The *Annuaire de la Législation du Travail* (in French only, but giving the original texts also in some years), published annually by the Belgian Government (1897–1913) and closing with a collection of labour laws covering the war period. The *International Labour Review* (Monthly, Geneva, 1921 etc.) contains articles on labour laws of different countries. (S. S.)

UNITED STATES

Despite the rapid industrialization of the United States in the last half of the 19th century, it was not until the second quarter of the 20th that the need for public regulation which had marked the advanced phases of the industrial revolution in European countries, was reflected to any parallel degree in the course of American legislation. Towards the end of the 19th century many of the seaboard states, where the impact of the industrial revolution was most pronounced, passed laws limiting hours of labour, protecting the health and safety of the workers, and regulating the employment of women and children. As industry developed and spread westward, laws of this nature became more widespread and frequent.

Under the dual system established by the Constitution, legislation concerning the employer-employee relationship, normally originated in the states. The Federal Government, however, still retained important powers in this respect. Some of these powers were: To regulate interstate and foreign commerce, under which Congress legislated concerning railroad employees, seamen and maritime workers; to make appropriations and levy taxes for the general welfare; to make treaties; to exercise admiralty and bankruptcy jurisdiction; to create Federal courts, in which cases involving the rights of labour were decided; and to regulate the working conditions of employees of the Federal Government and persons engaged on the public works of the United States. But when in response to years of widespread public debate, Congress in the second decade of the century, ventured into the general field by passing a national child labour law the Supreme Court held the act void as an unauthorized invasion of the domain reserved by the Constitution to the states.

It is largely because of the dual character of the American Government that the United States for many years lagged far behind other industrial societies in social legislation. As the trend towards mass production increased and mining and interstate industry flourished the states found themselves by no means the master of their economic destinies. Legislatures hesitated to pass regulatory statutes when confronted by the possibility that many of their manufacturers producing goods for interstate markets, would move into other states. Moreover states which had adopted advanced labour standards were powerless to preserve the local market for the manufacturer whose labour costs were increased by reason thereof, for under the Constitution a state may levy no impost upon goods shipped from a sister state regardless of how relatively backward its labour statutes may be. Then, states, passing labour laws in the face of these hazards, encountered further obstacles. As an aftermath of the Civil War, the states had been forbidden by a constitutional amendment to deprive persons of life, liberty, or property, without "due process of law." By the end of the 19th century, the courts tended to iden-

tify "due process" with liberty of contract so that with increasing frequency they inclined to find state legislation regulating employment in conflict with the fundamental law of the land.

Public opinion with respect to these matters, however, was completely changed by the industrial depression, beginning in America with the collapse of the stock market in 1929, and rapidly becoming so aggravated that within three years it was estimated that more than 12,000,000 wage earners were unemployed. This resulted in widespread agitation for legislation establishing maximum hours, minimum wages, and social insurance. Since unemployment was nationwide and since the states had failed to cope with the problem this agitation had its focal point in the Federal Government. In the early part of the 1930's the axis of labour legislation shifted from the states to the central government.

Hours and Wages.—The gravity of the unemployment problem had attracted the attention of Congress increasingly from the years 1929–1933. In that latter year the Senate passed a bill imposing a thirty hour week upon American industry. That would have meant a drastic change from the normal working week which at that period was approximately 44 hours. Before the bill was acted upon by the House of Representatives, however, there was introduced in Congress one of the most comprehensive and elaborately executed pieces of legislation in American economic history. This bill, known as the National Industrial Recovery Act, gave the President authority to promulgate codes of fair competition for industries, for the purpose of achieving economic recovery. The bill was passed as emergency legislation and limited to two years. Although by its terms its operation was confined to industries engaged in or affecting interstate commerce, the administrative body created under its terms popularly known as the NRA, construed the commerce clause in a broad sense which brought within the ambit of the code-making power virtually every industry in the country. Since the volume of interstate commerce depends in part upon the purchasing power in the several states, which in turn fluctuates with the volume of employment and the local wage level, the NRA took the view that the conduct of even retail industries or small factories producing goods for intrastate consumption, bore a direct relationship to interstate commerce. During the fall of 1933 and the spring of 1934 nearly every type of industry was covered by a code of fair competition, promulgated by the NRA.

From an employment standpoint the most important features of these codes were the child labour, minimum wage, and maximum hours provisions. These varied with the particular code but in general the normal code limited the hours of labour each week to forty. Another important feature, a provision common to all codes and known as Section 7 (a), will be considered separately.

Just as the two year period was almost over and Congress was considering legislation extending the life of the Act and the codes promulgated thereunder, a decision was handed down by the United States Supreme Court in the case of Schechter Poultry Corp. *v.* United States. In this case the Supreme Court held that the code-making section of the act was invalid as it was so vaguely worded that it amounted to an improper delegation of legislative authority by Congress to the executive branch of the government. The court also added that a code, when applied, as in the case at bar, to a firm which sold no goods outside the state in which it did business, was also unconstitutional as an attempt to deal with purely intrastate transactions. The decision with respect to the first point was so sweeping that all the codes were suspended, even those applying to industries doing an interstate business.

Congress was still in session when this opinion was handed down. Proponents of further Federal legislation, emphasizing the fact that the court had been silent with respect to industries producing goods for interstate sale or shipment, argued that the employer-employee relationship in such industries was not beyond the pale of Federal jurisdiction. This view prevailed to some extent for Congress immediately passed legislation applying the code principle to the bituminous coal industry. Meanwhile movements were started for reviving the thirty hour bill and for passage of another bill which would have exacted code compliance from all employers contracting with the Government, supplying goods to Government contractors, or receiving loans and grants. Also before Congress was a resolution calling for the submission to the states of a constitutional amendment granting legislative control over all industrial employment. The session was adjourned late in the summer of 1935 without final action on any of these measures.

During the same summer an interstate compact conference was held in the United States Department of Labor at Washington and attended by labour commissioners of many of the major industrial states of the East and South, at which resolutions were passed favouring wage and hour legislation in the various states pursuant to compacts which would be sanctioned by Congress. Through this device advocates of labour legislation hoped to overcome the fear on the part of many states that statutes of this character would place their local manufacturers at a disadvantage in competing with those in other states. Two states, which had adopted minimum wage laws pursuant to the compact, applied to Congress for ratification.

Another event which may have great legal significance in the evolution of Federal labour law was the adherence in 1934 of the United States to the International Labor Organization. Since that time the United States has participated in international labour conferences which have adopted "conventions" with respect to labour regulation in certain industries. By virtue of their membership in the organization, the nations incur an obligation to submit such conventions to their competent legislative authorities for ratification. Since the Constitution vests the treaty-making power exclusively in the Federal Government, many students of constitutional law believe that in America the only "competent legislative authority" is Congress. In support of that view, there has been cited a Supreme Court decision upholding a treaty with Canada as the law of the land, although in conflict with a state law on a topic conceded in the absence of international agreement, to be a matter exclusively of state concern.

Some form of hour regulation is found in the statute books of most American states. The original position of the Supreme Court, however, was that compulsory general limitation of hours was repugnant to the Constitution. Subsequent decisions established an exception where a showing was made justifying legislative action on the score of safety, health or public morals. As a result the type of statute most frequently enacted has dealt with the hours or time of factory employment for women and children, or with occupations for men regarded as unhealthy, like mining or compressed air work, or with occupations like the operation of trains, street cars, and buses where the possibility of fatigue was a source of danger to the travelling public. Eventually the courts conceded that even a general limitation fixing the hours of employment for men might fall within the scope of the police power. In one case the Supreme Court upheld a factory law placing a ten hour daily limitation with respect to all employees.

Owing to the narrow ground upon which these statutes rested, however, few, even of those acts relating to women, proposed anything more drastic than an eight hour day or a forty-eight hour week. Actually the average working week is considerably shorter than these statutes indicate.

As yet there has been little recognition by the courts of the principal reason advanced in recent years by advocates of a compulsory shorter working week—the desirability of spreading work so as to absorb the unemployed into industry. The reluctance of state legislatures to place their industries at a competitive disadvantage has halted the passage of legislation designed to attain this object, so that of late years the higher courts have never been squarely faced with the question.

Minimum wage legislation in the states has been less frequent. The development of this kind of regulation was retarded considerably by a decision of the Supreme Court in 1923 holding void a minimum wage law for women. A few states, however, recently sought to meet the constitutional objections voiced in that case by enacting the so-called standard statutes. These acts create minimum wage boards to fix wages in certain industries in accordance with specified criteria for the determination of fair compensation.

There is a large amount of valid regulatory legislation with re-

spect to wages in different states however. Included in this category are statutes fixing the time or frequency of wage payments, prohibiting payment in scrip, providing that wages shall be a lien on the property of the employer, recognizing the priority of wage claims in bankruptcy proceedings, and creating exemptions from assignments or garnishee process. Small claims courts have been created in many states to reduce the cost of actions for the recovery of unpaid wages. Authority has often been given to state labour bureaus to assist employees in such litigation.

In public employment, legislation with respect to both wages and hours has been more general. Statutes requiring contractors to conform to an eight hour day and pay the "prevailing local rates of wages" to labourers and mechanics on public works, exist in a majority of states. The Federal Government has recognized this principle in the Eight Hour Law and the Davis-Bacon Act. The latter was recently amended so as to require the Secretary of Labor to predetermine minimum rates on construction contracts. The Public Works Administration, an emergency agency, has gone even further by putting a thirty hour week into effect.

Child Labour.—The employment of children below a certain age is forbidden in nearly every state, but the permissible age limit varies from twelve to sixteen. For a while the codes of fair competition which fixed the minimum age at sixteen virtually abolished the employment of children except in street trades, but with their abandonment in 1935 the states were again faced with the problem. The Federal Child Labor Amendment conferring power on Congress to regulate the employment of persons under eighteen has been before state legislatures for many years but ten years after its original submission only twenty-four of the thirty-six states necessary for ratification had signified their approval.

Prison Labour.—The competition of prison-made goods with the products of free labour has been viewed in recent years with increasing disfavour by both organized labour and trade associations. Several states have enacted laws forbidding the employment of prisoners on goods destined for sale in the open market. The Federal Government lent its encouragement to such efforts in 1929 by the Hawes-Cooper Act. This provided that prison-made commodities shipped into another state shall, upon arrival, become subject to local law notwithstanding their interstate character.

Social Insurance.—One of the most striking phenomena of recent American labour history has been the sudden development of social insurance legislation. It was in this particular field that the disparity between the legislation in America and that in other industrial countries, which has already been noted, had been most conspicuous. Stability of employment in America had become undermined with the rapid technological advances in industry in the 1920's. While new industries absorbed many of the workers displaced, even in prosperous times employment opportunities for industrial workers discharged in middle life were meagre. Yet, up until 1930 only one state had passed an unemployment insurance law and old age pension legislation was in effect in only one quarter of the states. In the next year Congress recognized labour's increasing interest in unemployment insurance by authorizing the appointment of a special Senate committee to study the subject. The report of the majority of this committee, however, was adverse to any Federal intervention in this field, so the advocates of social insurance again focused their efforts upon the states and succeeded in several instances in having one branch of a state legislature take favourable action.

Two types of statutes have marked the course of unemployment insurance legislation in the states. The first type, known as the Wisconsin plan, because it was in this state that it was first adopted, sets up individual unemployment reserve accounts for each employer who is subject to a special payroll tax. After the account reaches a certain level, the employer need pay no further tax until his account is depleted by the payment of benefits to unemployed workers in his plant. The theory behind this act was that stability of employment depends to a large extent on the policy of the employer. Therefore it encouraged the employer by a promise of tax exemption to stabilize conditions in his own enterprise. Several industrial states, including New York, have adopted another type of law called the "pooled fund plan" which subjects all employers to an annual payroll tax and places the receipts in a central fund from which all of the employees within the scope of the Act can draw. By 1934, however, no state, except Wisconsin, had actually put either type of law into effect. In that year the Wagner-Lewis bill was introduced in Congress for the purpose of encouraging the states to adopt legislation. This bill imposed a Federal payroll tax upon employers but permitted an offset based upon the amount that such employers were compelled to pay pursuant to any unemployment insurance tax in effect in their respective states. The bill was so framed that it left the states free to decide which type of unemployment insurance they preferred. Although this bill received a favourable report from the Sub-Committee which passed on it, Congress took no action that year.

Congress did pass a bill that year providing for old age pensions for retired railroad employees and placed the expense of the system upon the carriers. This Act was held unconstitutional a year later. In the meantime the growing burden of unemployment relief had largely been transferred from local units of government to the Federal Treasury. To the rising tide of literature advocating social insurance was added the demand of a powerful section of industrial opinion, which had hitherto regarded such legislation as paternalistic, for a more orderly and self-sustaining system of administering relief.

In 1934 the President appointed the Committee on Economic Security, a Cabinet commission headed by the Secretary of Labor. Calling to its assistance many of the technical experts on social insurance in the country, the committee formulated a comprehensive program of social insurance covering the subjects of unemployment, public health, old age, child welfare, and aid to dependent mothers, the blind and the crippled. An omnibus bill embodying the committee's recommendations was drafted and introduced early in the first session of the 74th Congress, and was enacted into law seven months later as the Social Security Act of 1935.

The titles of the bill relating to assistance for the aged, dependent mothers, children, the blind and the crippled, were designed to encourage the states to appropriate money for these purposes as they offered to match state expenditures with Federal grants in varying percentages. More controversial were those portions of the bill relating to unemployment insurance and old age annuities. The feature of both of these plans was an excise tax on payrolls. Unlike the ill-fated Railroad Retirement Bill which had rested on the commerce power, these portions of the bill depend for their constitutional validity upon the authority granted Congress to tax and appropriate money for the general welfare. The old age annuity tax fell upon both employers and employees and was to be completely administered by the Federal Government, benefit payments being scheduled to begin in 1942.

The unemployment insurance tax, however, was based upon the device of the Wagner-Lewis Bill. It imposed a payroll tax upon employers of eight or more people but allowed the tax payer to credit against the tax as much as 90% of the contributions paid into state unemployment funds, provided that the Social Security Board certified that the state law met certain specified standards.

Outside the scope of the unemployment tax were charitable corporations, governmental agencies, and employers of agricultural labour, domestics, and seamen. The response of the states to this Federal legislation was almost instantaneous. During the pendency of the bill the number of states with unemployment insurance laws was increased to eight and the total number of states with old age assistance statutes mounted to 37. Others soon fell into line.

Immigration and Aliens.—Since 1921 unrestricted immigration has ceased. An Act of Congress in that year limited by annual quotas the number of immigrants. This was superseded by the Immigration Act of 1924, which except with respect to the states in the Western Hemisphere, allotted to the nations a quota based upon the number of persons in each nationality in the United States at certain dates. In the case of several far eastern countries immigration is prohibited by law. State legislation relating to private employment does not discriminate against

aliens but in a few instances laws require that preference be given to citizens or local residents in public employment or employment on public works.

Collective Bargaining.—Since the case of Commonwealth *v.* Hunt in 1842, organizations of workingmen formed for the purpose of benefiting themselves by endeavouring to secure higher wages, shorter hours of labour, or better working conditions have been lawful throughout the United States. The application of the Federal anti-trust Act to labour, particularly in the Danbury Hatters' case created some fear that the Act might be construed as rendering unlawful labour unions and all their activities. But in 1914, Congress passed the Clayton Act which declared that "nothing contained in the anti-trust laws shall be construed to forbid the existence of labor . . . organizations." Although American law recognized that labourers had a right to organize, until recently employers were conceded the privilege of discouraging union organization by discharging or refusing to employ workers with union affiliations. This prerogative was recognized as a constitutional right in the case of Adair *v.* U.S. in which the Supreme Court held Congress without power to abridge the freedom of the carriers to discriminate against organized railroad workers. With the trend towards unionization in the mass production industries many employers even went so far as to require prospective employees to sign as a condition of employment an agreement not to become connected with any labour organization. Such agreements, often referred to by labour organizers as "yellow dog contracts" were bitterly denounced by organized labour. In many instances the courts, however, enjoined unions from interfering with the performance of such pacts and one state Supreme Court declared in an advisory opinion that a proposed statute invalidating such contracts would be unconstitutional. Such decisions long thwarted efforts to protect workingmen's organizations by legislation from employer interference.

In 1926 Congress passed the Railway Labor Act creating the National Mediation Board. In this act were provisions insuring freedom of choice to the workers in selecting representatives for the purpose of collective bargaining. The new Act was tested in the courts the next year when a railway labour organization applied for an injunction against a carrier which was attempting to defeat these provisions by interfering in the selection of representatives and counteracting union activity with the formation of a company union. This time the reception of the courts was more hospitable. The injunction was granted and the Supreme Court affirmed the decree in a decision which virtually overruled the Adair case. This case, Texas and New Orleans Railroad Company et al. *v.* Brotherhood of Railway and Steamship Clerks et al., by extending the scope of permissible legislation, paved the way for the inclusion of similar provisions in the National Industrial Recovery Act. In Section 7(a) of this measure it was directed that every code should contain provisions guaranteeing to employees the right to bargain collectively through representatives of their own choosing and to be free from the interference of employers in their self-organizations.

In the early history of the Recovery Act an agency known as the National Labor Board, made up for the most part of prominent industrialists and officials of the American Federation of Labor, was created to deal with labour disputes arising under the codes. Such disputes were numerous for union labour had taken advantage of the protection promised by Section 7(a) to organize workers in industries which hitherto had been largely open shop. Moreover the technique of framing the codes tended to stimulate the desire for organization. The labour provisions were drafted after hearings at which employer and employee representatives appeared—thus making it to the advantage of both parties to foster organization.

The employer's associations which had largely acquiesced in wage, hour and child labour provisions of the codes, were opposed in general, however, to craft, or industrial unions organizing their employees under the aegis of Section 7(a). As a result the Board which had no power over either the code members or the code administrators made little headway in resolving the ensuing welter of industrial disputes. Congress replaced it in 1934 with an agency created in connection with the Department of Labor consisting of three impartial members and known as the National Labor Relations Board. The Board had final administrative jurisdiction over disputes under Section 7(a) and power to order and conduct elections of employee representatives. Its decisions were not subject to review by any other agency in the executive branch of government.

Upon the principles contained in Section 7(a) the new Board created a body of law to define rights and duties arising from the employer-employee relationship. It was held that employers could not discharge or discriminate against employees because of union activity, but the employer was obligated to bargain collectively with the representatives of his employees and to reach a collective agreement. Company unions were not *per se* illegal. But it was interference for an employer to impose a company union or to sponsor and finance such an association. Employees were not compelled to organize. They were not constrained to join any particular form of organization. The choice was for them to make. To give content to the right of organization the Board affirmed the principle that representatives elected by the majority of a bargaining unit, were the exclusive bargaining agency of all the employees in that unit.

Various organizations of employers attacked this line of decision as imposing a closed-shop on American industry and interfering with the constitutional rights of American employers. Many of them refused to comply with the orders of the Board, or even to respond to a citation. Since the Board lacked power to issue subpoenas, except in connection with ordering of an employee election, the Board was unable to send complete records of its cases to the courts. This meant that an employer defying the Board could obtain a trial *de novo* if prosecuted in the courts.

In order to strengthen the powers of the Board and to prevent review of its decisions in the courts, except upon questions of law, the Senate passed a bill, the National Labor Relations Act of 1935 which gave the Board power to issue subpoenas, to make orders for the reinstatement of the discharged workers and to hold elections. The Circuit Courts of Appeal were given the power of review but this was restricted to the record. The principles enunciated by the old Board were embodied in the substantive provisions of the bill. The majority rule was stated. The bill defined as unfair labour practices, the financing and domination of company unions, the refusal to bargain collectively, and anti-union discrimination. Before the House acted on this bill, the suspension of the codes following the Schechter case deprived the Board of all jurisdiction over the litigation then pending. The bill was amended so as to limit the jurisdiction of the new Board to disputes affecting Interstate Commerce. In this form the bill was finally enacted into law.

The courts, however, have frequently passed upon the legality of labour's traditional weapons, the strike, the boycott, and the picket line. The injunction has been the remedy most widely used to resolve the rights of adversaries in industrial conflict. Rooted in equity, the labour injunction first assumed importance as a result of its use in the Debs case in 1895. Since then it has become the most important of the many legal devices employed to define the permissible scope of collective labour activity. Two tests determine the issuance of an injunction in a labour dispute—the character of the purpose to which the concerted action is directed and the legality of the means used to attain that purpose. All courts agree that a strike to increase wages, shorten hours or better working conditions is a strike for a legal purpose. The courts, however, have not unanimously declared the strike for the closed shop or preferential shop legal and several states have held illegal a strike for union recognition. The picket line, like the strike, may be enjoined where its purpose is unlawful. But apart from the legality of the purpose the conduct itself is illegal in many states. Some courts ban all picketing on the ground that it necessarily involves coercion. Others permit picketing when reasonably conducted. The use of the boycott has similarly resulted in contradictory decisions. The primary boycott is legal but the courts have not shown a similar hospitality to the secondary boycott. Thus several leading cases have declared illegal the exercise of economic pressure by a trade union to compel the third parties to refrain from patronizing an employer who refuses

to accede to union demands. The refusal to work on non-union goods has also been enjoined.

Inasmuch as equitable relief has in so many cases been obtained by employers organized labour has denounced the use of the injunction. And certain abuses have appeared in the granting of injunction relief. Frequently the courts have hastily and erroneously enjoined conduct which on subsequent examination was found not to threaten irreparable injury to complainant's property. Orders have been expressed in ambiguous language. Moreover the findings have not always justified the sweeping and inclusive character of the restraints. Orders have often been issued on the basis of *ex parte* affidavits without giving notice and opportunity to be heard. To correct some of these abuses Congress enacted the Clayton Act in 1914. But in a series of cases the courts interpreted the Act to be merely declaratory of previous law. Thus, few significant changes in practice occurred.

Finally in 1932 the Norris-LaGuardia Act received Congressional approval. The Act withdraws equity jurisdiction from the Federal courts in cases involving labour disputes under stated circumstances. Injunctions may not issue to prevent persons from obtaining work, paying strike benefits, giving publicity to the facts of a labour dispute by any method not involving fraud or violence or advising others to do the acts specified. Both equitable and legal protection is withheld from the "yellow dog contract." Exemptions from legal restraint are no longer confined to disputes between persons standing in the direct relationship of employer and employees. Procedural safeguards are established. In those courts where injunctions may issue, the Act requires Equity courts to make findings that unlawful acts are threatened, that irreparable injury will result to complainants' property unless relief is granted, that complainant has no adequate remedy at law and as to each item of relief granted greater injury will be inflicted upon complainant by the denial of relief than will be inflicted upon defendant by the granting of relief. Moreover it must be shown that the local police force is unwilling or unable to furnish adequate protection. The passage of the Norris-La Guardia Act has diminished the number of injunctions issued by Federal courts. To mitigate similar abuses in the exercise of equitable jurisdiction in state courts, several states have passed similar statutes.

For the purpose of encouraging the making of trade agreements, which is the aim of all collective bargaining, both the Federal Government and the states have legislatively provided for voluntary arbitration or conciliation or mediation. Within the United States Department of Labor, a conciliation service which is authorized to mediate whenever in the judgment of the Secretary of Labor "the interest of industrial peace may so require" has existed since the inception of the Department; and it is reported by the Conciliation Service that from 1930 to 1934 disputes and differences which either directly or indirectly affected approximately 2,230,000 workers were amicably adjusted through its good offices, either on its own volition or with the cooperation of the State Departments of Labor and local agencies. In one state, compulsory investigation of labour disputes, accompanied by a prohibition of strikes pending the completion of investigation, exists. But, most state laws provide for government intervention on a basis of conciliation and voluntary arbitration.

Employment Exchanges.—Both the Federal Government and many states have, for a number of years, maintained public employment agencies. In 1933 Congress through the Wagner-Peyser Act, created a U.S. Employment Service in the Department of Labor, which supplanted a former Federal employment system. Funds are made available to the states on an equal matching basis to assist them financially in establishing and operating state employment agencies. It is the duty of the national service to coordinate public employment offices throughout the country and to prescribe minimum standards of efficiency. In those states which have not yet accepted the terms of the Federal grant, a National Reemployment Service under the direct administration of the U.S. Employment Service is maintained.

Most states have passed legislation to regulate private employment exchanges and to mitigate certain abuses, such as the charging of exorbitant fees and fee splitting.

Workmen's Compensation.—The old common law liability of employers to employees injured while engaged in the duties of their employment has been largely replaced by workmen's compensation laws. Under these, industry, on an insurance basis, bears the cost of injury arising out of and in the course of employment. All questions as to the fault or negligence of the employer are eliminated. The state laws vary in the extent of their coverage. Farmers, domestic servants, casual workers, are universally excluded from the beneficial application of the state acts, but harbour workers are covered by Federal Act. The compensation awards are based upon a percentage of the wages earned by the employee, with minimum and maximum limits. In most states a commission is charged with their administration, but in some, the courts still administer the provisions of these statutes. A recent tendency has been the extension of the compensation principle to occupational diseases.

Safety and Health.—Legislation protecting the safety and health of workers bulks large on the statute books. The old type of law specifies in detail the statutory duties imposed. More recently, legislation has given the state departments of labour or similar public agencies, the power to make reasonable rules and regulations for the health and safety of employees and, thus, to define the general standards established by the legislature. In most states, statutes exist which prohibit certain persons from engaging in particular employments unless qualified by age, physique or ability. The employment of children in certain dangerous occupations is usually prohibited. Other legislation regulates lighting, heating and ventilation in places of employment.

Labour Departments.—In most states there are special departments or bureaus created for the purpose of collecting and publishing labour statistics and administering the factory inspection, child labour, workmen's compensation and other labour laws.

Since 1913 the Federal Government has had a Department of Labor, the head of which is a member of the President's cabinet. The Department administers the Immigration and Naturalization laws, the Federal Prevailing Wage Law, the Labor Provisions of the Bituminous Coal Act, the Employment Exchange or Wagner-Peyser Act, certain sections of the Social Security Act, and the laws relating to America's participation in the International Labour office. Through the Bureau of Labour Statistics, the Women's Bureau, and the Children's Bureau, it collects facts and publishes bulletins with respect to prices, industrial trends, wages, hours of labour as well as a periodical called the *Monthly Labor Review*.

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(F. PE.)

LABOUR PARTY, THE, was founded by a conference of trade union and socialist bodies held in the Memorial hall, London, on Feb. 27, 1900, in consequence of a resolution passed by the Trades Union Congress in the previous September. The organisation, named the Labour Representation Committee (L.R.C.), and not known as the Labour Party until 1906, was a federation of trade unions and socialist bodies, and had no individual members until 1918. The purpose of the party was declared by the London conference to be "to establish a distinct Labour Group in Parliament, who shall have their own whips and agree upon their own

policy which must embrace a readiness to co-operate with any party which for the time being may be engaged in promoting legislation in the direct interest of labour."

Origins and History.—The roots of the party are dug deep down in our national politics. The Chartists and Owenites were precursors, so were the working-class wings of the Radicals and their intellectual supporters like John Stuart Mill and the Positivists. The first definite attempt to nominate a Labour candidate for the House of Commons was made in 1857 when George Jacob Holyoake issued an address to the Tower Hamlets' electors, but he subsequently withdrew. In 1866, in order to advance the agitation for the new Reform bill, the London Working-men's Association was formed, and by the end of the next year it committed itself to working-class representation and can therefore be regarded as the pioneer organisation for that purpose. When the election of 1868 came, however, the society had neither money nor machinery, and the half-dozen Labour candidates were being run as Radicals. Three went to the poll (their aggregate vote was 4,012) and all were defeated. They too were pioneers—W. R. Cremer, George Howell (both afterwards M.P.'s) and E. O. Greening. Undeterred by these failures the Labour Representation League was formed in 1869, and it was responsible for George Odger being run as candidate in the Southwark by-election in 1870. It was a period of hesitation, of running candidates and withdrawing them, of negotiation with Liberals, of contesting local elections, and of agitations for democratic changes in parliamentary polls. In the election of 1874, 12 working-men candidates appeared, and Alexander Macdonald and Thomas Burt were elected. Thereafter the movement gradually merged into the Liberal Party.

The 20 years between 1886 and 1906 were marked by a bitter struggle between independent Labour and Labour-Liberalism, the nine workmen M.P.'s being supporters of the latter, as was the once influential Labour Electoral Association (1886–96). The new factor was the Socialist movement which, though coming immediately from the Continent, was in this country but a revival of the English Socialist movement of the early years of the 19th century. The Social Democratic Federation was founded in 1881, but as its inspiration was Marxian and continental, it failed to be the rallying point of British Labour. In 1883 the Fabian Society appeared; in 1889 the Scottish Labour Party was started as the result of Keir Hardie's candidature for Mid-Lanark the previous year; in various places local Labour parties were formed and, in the election of 1892, eight Labour candidates were run in Scotland and others in England and Ireland. Two independent Labour men were returned (John Burns and Keir Hardie) and 13, including J. Havelock Wilson, who were in the Liberal and Nationalist ranks. Hardie, however, failed to get the others to co-operate with him. He then initiated the conference held in Bradford in 1893 which originated the Independent Labour Party by uniting the scattered societies in the country, and it began to work for the trade union alliance from which sprang the Memorial hall conference of 1900. Defeated in 1895, Hardie was one of the first team of candidates (15 in all) run by the L.R.C. in 1900. He was returned with Richard Bell. By-elections added to their numbers and in 1906, 50 candidates were run, and 29 returned. The adhesion of the miners in 1908 ended the Liberal-Labour phase, and since then the party has been quite independent. The Osborne judgment (1908) temporarily debarred trade unions from subscribing to political purposes, and the party's 78 candidates at the January election of 1910 had to be reduced to 56 at the December election that year. Successes, however, increased from 40 to 42.

The Party before the War.—The question of discipline within the party distracted its attention and reduced its efficiency, and the annual report for 1914 drew attention to the grave effect that certain sections were having upon party fortunes. Nevertheless, bye-elections showed a steady strengthening of the grip of the party in the country, the first approaches to a political understanding with the co-operators were made, and the *Daily Citizen*, the first official Labour newspaper, appeared. Meanwhile, the party had settled down to face seriously the question of organization, and 1912 and 1913 showed a great improvement. The first disappointment with parliamentary methods was still vocal, but was working itself out. The state of the country, owing to the Ulster agitation, was over-shadowing everything else. Civil war seemed to be imminent. Obviously a general election had first of all to be held so as to get a vote of confidence for the Government's Home Rule policy. Overtures were being made to ascertain how the party would stand in the conflict, and offers made to its leaders to join the Government. But another cloud was hurrying up to blacken the sky. The annual conference records are blank between Feb. 1914 and Jan. 1916. The World War had come.

Labour in the War.—The party hesitated. It had steadily opposed Sir Edward Grey's European policy, and it associated itself at first with the neutrality committee. On Aug. 2, 1914, it resolved to oppose Britain's entry into the War, but on Aug. 6, by a majority, it decided to make no statement when the first war credits were to be voted. Some of its leaders, including J. Ramsay Macdonald, its chairman, resigned, and thenceforth the activities of the party were those of the nation. Throughout the war, however, it never ceased to discuss the best form of peace. It joined in an international conference of the socialist parties of the Allied countries in Feb. 1915, and issued a declaration of war aims; in May 1915 by a majority it joined the Coalition Government; in Jan. 1916 it was instructed by a special national conference to oppose conscription and the Labour ministers resigned, but withdrew their resignation pending the annual conference which was about to meet. This condemned conscription, but refused by a narrow majority to ask for the repeal of the Act that had just been passed. The ministers remained. When, in Dec. 1916, the new coalition was formed, the party by a majority agreed to remain in it with added representation.

Meanwhile, the party was pursuing its discussion of peace terms, and in May 1917 decided to be represented at the abortive Stockholm Conference, to which delegates from the enemy States had been invited. This led to Mr. Henderson's severance from the Cabinet in August. At the annual conference held in Nottingham in Jan. 1918 a war-aims programme was agreed upon. The party also took its first stand against Bolshevism and in favour of constitutional democracy. At a special national conference held in London in June, the declaration of the policy and principles of the party known as *The New Social Order* was launched, the truce had already been broken in the Salford bye-election won by Labour (Nov. 2, 1917), and in Nov. 1918 the party withdrew its members from the Government, and once more stood independent.

The election of that year saw 361 candidates of the party, but only 61 were successful. This election marks the emergence of the party as a truly national one. Four years afterwards 142 were returned, and the party was for the first time the sole possessor of the Front Opposition Bench. At the election of 1923, 191 Labour members were returned, outnumbering the Liberals, and when the Conservative Government was defeated by a united Labour-Liberal vote on Jan. 21, 1924, the first Labour Government was formed on the 24th.

Labour in Office.—The Labour Government could rely upon the support of less than one-third of the House of Commons and legislation was difficult. It directed its attention to unemployment, housing and the preparation of national schemes for internal development. It had also to face a dangerous development in the Irish boundary problem and take legislative action to enable it to set up the Irish Boundary Commission.

Its foreign policy was devised to secure international co-operation and to pacify Europe, and it was successful in settling outstanding reparation difficulties at the London Conference (Aug. 1924) and was responsible for the Protocol which was drafted at the Assembly of the League of Nations that year. It was also bent upon creating good diplomatic relations with Russia, for both economic and political reasons, and negotiated two treaties which were not ratified by its successor. The Government was defeated (Oct. 8) by a combination of the Liberal and Conservative parties on its handling of a Communist prosecution, but really fell on its Russian policy. When the election came next month, the eleventh-hour publication of a letter, known as the Zinovieff letter, had

a notorious effect on the results, and, though the party vote increased to 5,551,549, its elected members fell to 151. The Government at once resigned and the party became the official Opposition.

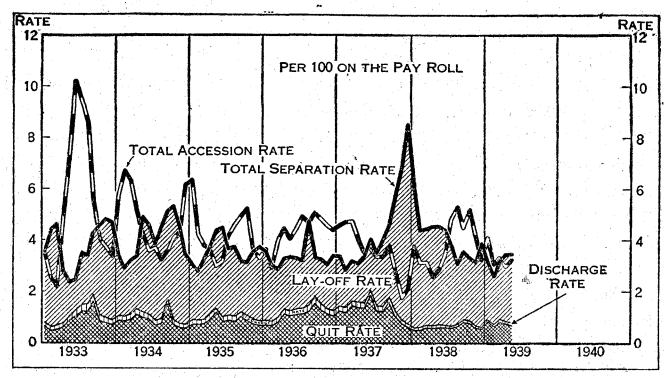
At the General Election in May 1929 the Labour Party was again returned to office, Mr. MacDonald being invited to form a ministry on June 5, but this time its position was very much stronger than in 1924. While not in an actual majority, it was for the first time the largest party in the House (287 members).

Constitutional Position.—Opinion in the industrial and political movements of Labour has always shown a pendulum swing between one side and another. Before the War syndicalism was growing in Great Britain. In France, its country of origin, its doctrines were laid down by G. Sorel in his *Réflexions sur la Violence* (1912), and elaborated in a series of books and pamphlets written by members of the *Confédération Général du Travail;* in America, De Leon, a disciple of Marx, preached a similar doctrine, and the *Industrial Workers of the World,* a rival to the American Federation of Labor, was founded to enforce it. The influence of these doctrines was felt in Great Britain, and was reflected in the literature of the time, which consisted largely in defences of the parliamentary position and of political as against direct industrial action. Looking back upon those years, one finds the beginnings of what later on has become known as Bolshevism. Upon the philosophy of "the inevitable revolution" the Russian Social Democratic Party split (1903) into two schools which were to make history by the two revolutions of March and Nov. 1917. In the year preceding the outbreak of war, the pendulum had begun to swing back towards a belief in political action, and syndicalism had evidently gone beyond its zenith.

Post-war conditions gave rise to much communist agitation which caused internal trouble to the party. At its annual conference at Liverpool in 1925, Communism was signally defeated. Since then the trouble has diminished, though the General Strike and the dispute in the mining industry (1926) added to the internal ferment; but at Blackpool (1927) the Liverpool policy was supported by overwhelming majorities. In 1931 the Labour opposition in parliament numbered only 52, but this was increased to 154 in 1935. (J. R. M.)

LABOUR TURNOVER. Students of labour turnover differ as to its definition. A committee on management terminology of the American Management Association has defined it as "(1) The extent of shift and replacement of labour occurring in the maintenance of the working force. (2) The condition involved in the hiring, loss and replacement of labour."

In the United States the attention of employers was first called to the importance of labour turnover when Magnus Alexander, of the General Electric Company, and W. H. Grieves, of the Jeffrey Manufacturing Company, made estimates of its cost to industry in 1912 and 1913. With the increase in the number of centralized employment and personnel departments, the organization of a national association of employment managers a few years later, and the need for war-time economies in the handling of labour, labour turnover came to be regarded as a serious problem. Various authorities have figured the average cost of replacing an employee to be from $5 to $500; in the case of executives and supervisory officials it is often much higher. Its amount depends upon the method of estimating costs which is followed and such factors as: The industry and occupation considered, and the degree of skill which newly hired employees bring to the jobs in which they are placed. In making such estimates the principal items considered as costs to the employer are the cost of hiring; training; extra labour, power, lubrication and materials caused by reduced rate of output; loss of profits due to impossibility of filling orders because of smaller productive capacity during the breaking in period and the vacancy which preceded it; interest, depreciation, insurance, taxes and repairs on additional plant investment necessary because of the lessened output caused by turnover; spoiled work by new operatives in excess of the normal rate of experienced workmen; greater wear and tear on machinery; increased cost of accidents due to their greater frequency during the learning period; the loss of business and good will caused by the greater number of mistakes and less satisfactory service rendered by inexperienced employees; and the limitation placed by turnover upon the training which can profitably be given workmen. These estimates do not, of course, take into account the cost of turnover to employees; neither are they strictly accurate because they include so many intangible



BY COURTESY OF "MONTHLY LABOR REVIEW"

LABOUR TURNOVER RATES IN MANUFACTURING, 1933 TO MAY 1939, U.S.A.

items of cost which can only roughly be estimated. Their chief value is that they have made employers realize the importance of turnover control.

The standard formulae for computing labour turnover in the United States are

$$T=\frac{S}{F \text{ or } P} \text{ and } T=\frac{R}{F \text{ or } P}$$

when T = turnover rate, S = separations, R = replacements, F = force report (the average number actually working during the period), and P = average number on payroll. The United States Bureau of Labor Statistics has published monthly turnover figures for years in the *Monthly Labor Review.* They are gathered from a selected, representative body of employers. Much of their turnover data is published by industries, such as the automobile, meat packing, and sawmilling industries. In the *Review* for July 1937, is a summary for the period 1930–36. These figures, since they apply to a serious depression period, show a lower quit rate and a higher lay off rate than would obtain in a period of prosperity or over a long period of years. The accompanying chart, from the *Monthly Labor Review,* Aug. 1939, shows the trend of separations, classified by types, from 1933 to 1939.

In the main all activities in the general classification of personnel work are directed at labour turnover. Some of these activities seek to improve health, others to promote safety or to encourage thrift. Whatever the direct objective of the plan, its ultimate goal is to stabilize the working force. To control labour turnover it is essential that all directly responsible for handling labour have a good understanding of human nature, of the various jobs, and of the proper adjustment between employees and their jobs. Frequently, the causes of labour turnover are studied and such corrective measures as seem practicable are adopted. A common method of learning these causes is by interviewing all employees at the time of leaving. Grievances and misunderstandings are frequently brought to light and the reputation of the company for fair dealing is maintained. Because business conditions affect the supply of and demand for labour, turnover has both cyclical and seasonal fluctuations. Employers are able to take account of such economic influences on turnover by comparing their experience with national, State, local and industrial indexes when such are available.

See M. Alexander, *Hiring and Firing—Its Economic Waste and How to Avoid It* (address at convention of National Association of Manufacturers, 1915); W. H. Grieves, *The Handling of Men* (address before Detroit Executives Club, 1914); S. H. Slichter, *The Turnover of Factory Labor* (1919). (L. R. M.; X.)

LABOUR UNIONS: *see* TRADE UNIONS.

LABRADOR. Labrador is the large peninsula of high land that forms the north-east corner of North America. It lies

between 50° N. in the Gulf of St. Lawrence, and 63° N. in the Hudson strait, and between 55° and 80° W. For centuries after the Norsemen visited it in A.D. 986, it was supposed to be part of Greenland (that country is labelled Labrador in all the maps of the time), until Henry Hudson followed its east coast into Hudson's Bay, and completed the true picture of the great peninsula. At the same time the great straits passing north between Baffin Land and Greenland were discovered. The area of Labrador is considerably over half-a-million square miles. It has wrongly been considered part of the northern terminus of the great Appalachian range of mountains that forms the backbone of the eastern North American continent. These, running in a north-easterly direction, terminate on the south side of the Gulf of St. Lawrence.

Mountains.—The lofty cliffs that flank the seaboard from 56° to 60° N. Lat. form three ranges, beginning from the south. They are called the Kiglapaits, or dog-toothed mountains, which tower 2,500 ft. over the fjord called Port Manvers, which winds away for hundreds of miles through narrow, but deep channels, that permit of navigation without again touching the open sea for fully two degrees of latitude. The second range is called the Kaumajets, or "Shining Tops," that at Cape Mugford rise perpendicularly from the Polar Current to 3,250 ft., whence again a long winding fjord runs into the hinterland for 60 to 80 miles. The northern range is called the Tongaks, or "Devils," a name given to them because of the sharp peaks, of the Matterhorn type, that have never suffered the rounding-off process of an ice cap, this part of Labrador not having been totally submerged in the glacial age. The heights of the actual cliffs rise well over 2,000 feet, but there are visible from the northern summits, a group known as the four peaks, which many miles back from the sea have been variously estimated at between 5,000 and 10,000 feet. A very high mountain, snow capped, and with an inverted sugar bowl summit, somewhat suggesting Mt. Fujiyama, was reported by a Buffalo, N.Y. man, John Thomas, as visible to the south-west from a peak 20 m. S. of the Grand falls. The large triangular piece, that thus remains between the height of land and the south-east corner of the country, slopes gradually to the seaboard. Hamilton inlet, into which tidal waters run for 135 m., is bounded on the south side by the Mealy mountains that rise to about 2,000 ft., and there is a great sandy beach between it and a similar bay known as Sandwich bay 50 m. further south. There are 30 rivers in this inlet.

Geology.—When the whole of North America was one huge ice basin, an enormous load of ice piled up over everything except the tops of the Rockies, and the White and Green mountains of the East, and its fringes pushed far out into the seas on each side of the American continent; the north-east fringe failed to cover the northern end of Labrador. This is shown by such valleys as that of the Tallek running into Nakvak fjord. Here the ice stream between the lofty cliffs on each side poured out as a river into the Atlantic sea bed. But those rivers of ice failed to cover the tops of the Tongak mountains that reared their hoary heads far above its stream. As a playground for the tourist, as a laboratory for the geologist, as a demonstration by which to solve problems of this earth's configuration in other parts, Labrador, with its freedom from disguise of overlying soils and vegetations, offers an unlimited field of opportunity. So far only few places have revealed above sea-level any detritus of ages during which the ice cap further south was scrubbing away the ranges of sedimentary rock deposited during the aeons of submergence under the sea, and which, when once again the land emerged, covered the whole of the basal, ancient Laurentian crust which is nearly all that is left of Labrador. Above the height of land is a vast plateau, with an average altitude of some 2,000 ft., which fades away by gentle slopes to the shores of Hudson's bay. The main character of the plateau is that there is hardly a difference of more than 300 ft. anywhere over the entire surface, but that endless shallow valleys crossing over it, connect the beds of huge lakes, that are estimated as covering one quarter of its whole extent, some, like Mishikamau, being over 100 m. in length. The north-west table land between Ungava bay and Hudson's bay and strait is almost level, and approximately 500 ft. above the sea level. This is the only part of the interior that is left by the Indians to the Eskimo.

Rivers.—Labrador has many fine rivers, such as the George river, Whale river and Payne river that enter Ungava bay, the Koksoak river being 500 m. long. Into Hudson's bay fall the East Main river, Rupert river, and the Great Whale river, also 500 m. in length. Most of these rivers freeze solid in winter. On the south coast are the Moisie, Romaine, St. Paul's, Natasquhan and St. Augustine, about 300 m. long, while the main rivers on the east coast are the Frazer, the Eagle, the North-west river, the Hamilton, and fair-sized rivers at the heads of all the endless fjords. Canoe journeys across the whole peninsula are thus easily made, and, it is said, with less effort and portages, and greater safety than in almost any country. There are many noticeable waterfalls in Labrador, especially on the Eagle river, the White Bear river, and Okpatik river, the finest being that of the Grand or Hamilton river. This stream drains the plateau from 1,000 lakes, cuts through the height of land, and after falling 750 ft. in 12 m., takes one stupendous leap of 316 ft. about 300 m. from its mouth, and about 150 m. N. of the shore of the Gulf of St. Lawrence. This fall has been always known to the Indians, who, hearing its thunder, and seeing its clouds of spray with their eternal rainbows ever hovering high over them in the air, have considered the chasm always to be the home of the Manitou, or their chief omnipotent spirit, on which account they never venture near it. It has now been mapped and photographed. The actual fall, over 300 ft. in height, is almost as high as one Niagara on the top of another. Its canyon below is 11 m. long, and its cliffs average 500 ft. in height. The cliffs are topped by abundant forests, and over a million horse power is eternally running to waste over the fall, as no attempt to harness it has yet been made. Two other rivers, some 20 to 25 m. to the southward leap over the same fault in the rocks. The larger is the farthest south. It was discovered by John Thomas of Buffalo, on an expedition by dogs from North-west river, and was called by him the Grenfell falls. It drains the Ossokmanuan lake, and possibly Attikonak lake also, and ends in the Hamilton near Lake Winakopau. The other, about 5 m. to the north, probably part of the upper Hamilton, was located and photographed by Varrick Frissell of Yale, and was named the Yale falls. For more detailed accounts of the hinterland of Labrador, other works must be consulted. Commander MacMillan's expedition of 1927 in 56° N., expeditions of the International Paper company, and many explorers flying in on planes and landing in the large lakes, have added much knowledge to the excellent descriptions given by A. P. Lowe of the Canadian survey. But so far not many of their results are published. Exploration of the ice in Hudson strait is being carried on in 1928 by a flying corps stationed at the north end of Labrador with a view of determining the feasibility of the Hudson's bay route for freight from Western Canada to Europe, via the Hudson's bay railway. The ice blowing out of Fox channel in the autumn has at times made navigation of the strait difficult in September and October.

Minerals.—The main Labrador rocks are the oldest in the world; alongside its mountains the Rockies and the Andes are new-born babies. Up and down, they have been, like all the rest, probably many times beneath the sea, as the marvellous section of the very ribs of mother earth displayed in all their nakedness at Mugford Tickle clearly show. It is rising now from the sea, which its raised sea caves 300 ft. above sea level, its endless great beaches of boulders high up on the hillsides, show perhaps more plainly than anywhere in the world. The minerals of Labrador, beyond mica and hornblende, iron ores, and the semi-precious crystalline feldspar formation known as labradorite, were said to be about all that could ever be expected in the ancient formations of which the majority of its rocks consist. But the discovery of gold and silver, nickel and cobalt, lead, zinc and copper in the same Archaean complex of which Labrador's vast table land is known to be formed, just further west in Ontario, and now in Manitoba, and now in Newfoundland, give reason to try and re-read the story of the earth in terms of more modern experience. Included in the crumples of

the ancient surface, when the earth's oldest crust was yielding to untold pressure from the north-east, are now known to be remnants of the younger rocks, sometimes called algomin, in which all across the great Canadian shield vast deposits of valuable minerals are being found. Thus there is every likelihood of similar valuable deposits being found in Labrador, when they can be prospected. Iron in the interior in the form of magnetite is known to exist over vast areas. It has been located and mapped by such experts as those of the Canadian Geological Survey, while travellers and trappers have often complained that their compasses would not work along the higher reaches of the Hamilton river. This has been suggested as a possible cause for the errors of the aeroplanes bound west across the Atlantic. Veins of iron outcrop along the face of the cliffs around Rowsell's Harbour. These have been located and worked experimentally. Gold has been found north of Sandwich bay, antimony in traces in the Mealy mountains, and copper near Cape Mugford. But until 1927 no firm titles could be given to encourage prospectors, as the ownership of Labrador was always in dispute, moreover, communication during months of the year was impossible, and transport in winter equally so.

History.—In A.D. 986 Bjarni Herjulfson, attempting to reach Greenland found Labrador instead. In A.D. 1000, Leif, son of Eric the Red, followed him, and declared it to be worthless, containing only rocks and ice. In 1534 Jacques Cartier corroborated this, and called it the Land of Cain. John Cabot visited it in 1498, and in 1500 Corte Real from Portugal cruised all along the east coast. He captured some 60 Nascopee Indians, whom he carried back for slaves, and he reported timber in great abundance, from both of which facts it is evident that he was the first to sail up the fjords, as neither forests nor Indians affect the outside coast line that is kept barren by the Polar current. In later times, many famous names have been associated with Labrador. Thither went Frobisher, and Davis and Bourdon, and Joliet, discoverer of the Mississippi, who made the first rough chart of the whole coast, which is still preserved in Paris. In the 16th century, Basque fishermen frequented the coast, and were followed by Portuguese, and French who have left remains in Brest, La Bradore, Chateau and other places, together with French names and French seignorial rights, such as those of the Chevalier family at Bonne Esperance. In the 17th century, great fishing firms from the Channel Islands made settlements on the south coast, and at its close Maj. George Cartwright, from England, opened stations as far north as Sandwich bay. To him we owe the first history we have of any value, his diary being a close rival of Pepys's for human interest. But Labrador may be said to have never had any historian till W. G. Gosling published his most excellent and reliable researches in 1906.

People.—Till comparatively recently Eskimos occupied the whole coast of Labrador, so late as 1750 there being many hundreds of them even along the south coast. Their high cheek bone, almond eyes, jet black straight hair, and diminutive size have led most men to regard them as Mongolians who reached Labrador via the Polar sea. But some few contend that they are a branch of the Central Indian tribes of northern Canada. Exclusively a seaboard people, they have never, however, been on friendly terms with the Indians of the interior in historic times, and they are never known to inter-marry. They were ruthlessly shot down and murdered by New England fishermen, who in the early 18th century fished along the Labrador coast from Boston. This was the chief reason why the governor of Boston, under whose jurisdiction Labrador had been placed by the king, asked to be relieved of that responsibility, being utterly unable to control his seamen. It was claimed they "preferred shooting an Eskimo to any other kind of game." These raw meat eaters (Eskimos) called themselves "Innuit" (the men). They speak a language similar to, and understood by, the Eskimo of Alaska, and their circumpolar congeners, with whose manners, customs, methods of living and hunting theirs closely correspond. The governor of Boston was at length relieved of his responsibility, which was handed over to the governor of Newfoundland, who in turn handed it on to Canada. It was apparently, however, so thankless a task that that country returned it later to Newfoundland, and the Eskimo seem to have fared somewhat better for a time. But contact with white men indirectly, if not directly, is always fatal to aboriginal peoples, and by competition, by liquor, and by disease, the little people have been steadily diminishing in number and receding towards the north. Numerous stations of Moravian missionaries that were for 150 years carrying on helpful trade and teaching religion at the same time, aided in holding them together north of Hopedale, which lies in Lat. 55°. But social diseases brought back by exhibits of the people carried south to the World Fairs at Chicago and Buffalo, hastened greatly the process of their elimination. The great scourge of Spanish influenza in 1914 made still further rapid inroads on their numbers, and to-day not more than 1,000 remain south of Cape Chidley on the Atlantic side. Tuberculosis takes a terrible toll of starch-eating Eskimo. The writer finds the meat eaters of the north far more healthy. Possibly this is partly because they get more vitamines by using practically raw foods. The rapid spread northward in the 19th century of the fisheries and fishing stations of the Newfoundlanders reached its climax about 1900; the fish competition of Europe in the salt cod market and since the World War various other well recognized reasons, caused their annual migrations to Labrador to decline, until there is now only 50% of 25 years ago.

Indians.—The Indians are Algonquins, and speak a Cree language. They are still wanderers, and live by hunting, only coming out to the coasts to trade for ammunition, arms and a few rudimentary needs. They go to the north shore of the Gulf once a year to meet the Catholic priests, and then ascending the rivers to the high table land, make that their real hunting and living grounds. Forest fires, that have followed the incoming of white men, have driven the deer and game on which their lives depend from whole belts of land that they have to cross, and often they have very hard times, and it is not at all uncommon for families to starve to death. In 1927–28 many, both Eskimos and Indians, were reported as dying of starvation on the Labrador side of Hudson's bay, and during the previous quarter century W. G. Walton, resident missionary on that coast, reported many such instances; yet there is good reason to believe that their country will yet prove valuable. The Government of Canada is endeavouring to relieve these natives.

Whites.—The white population of Labrador has slightly increased in late years. It is mostly of Scotch and south English origin on the east side, and French on the south. The once universal truck system of trade, that was little better than an economic peonage, and which impoverished and degraded the people, has passed away. Better schools are growing up and three hospitals, with nursing stations in between and a regular medical and public health service, has been established by the International Grenfell Association with head offices in St. John's, Newfoundland. Beautiful industrial work is done by the people, their hooked mats being famous as the best made anywhere.

Moravians.—The Moravian Missionary Society, that for over a century and a half has worked for the Eskimo of the north-east, have four stations on the coast. Of late years they have abandoned their trade, in favour of the Hudson's Bay company. The Hudson's Bay company is the chief trading company of Labrador. It has ten or more stations in Labrador, is progressive in its policy, and at its stores excellent supplies can be obtained by visitors and tourists. It sends one or more large steamers every year from England with supplies, and it also will carry passengers in a trip round the whole coast and round Hudson's Bay by arrangements. Its office is at Hudson's Bay House, Bishopgate, London, E.C.

Birds.—The birds of Labrador are far more numerous than most people have understood. Immense quantities of sea birds go north to nest, the golden plover, and one of the small terns, flying 21,000 m. from Patagonia each year. Few birds remain in winter, but the willow grouse, spruce partridges, large owls, ptarmigan, and a few other land birds afford an invaluable source of food. The red-pole, the chickadee and the Canada jay remain in the woods. Canada geese and eider ducks breed along the

Labrador coast, but king eider ducks and blue geese go to Baffin's land for that purpose.

Animal Life.—The Fauna is very varied, though only well adapted vigorous animals can live at all, and nearly all being animals of prey they live largely on one another. Squirrel, mice, caribou, lemming, rabbits and hares are the easiest victims; the porcupine can protect himself better. Lynx have been known to eat foxes. The protection is largely that of colour, as is that of the ermine and the white fox. The latter also keeps out on the drift ice. Almost all provide themselves with specially thick, long-haired winter coats, which make them desired of the trappers and the public in the south. The water animals, the seals and bears, put on extra coats of fat in winter, so that they float when dead. Their sight, like that of the owl and eagle, their scent, like that of the wolf and beaver, their hearing, like that of the fox and rabbit are their chief lines of defence. Labrador boasts timber wolves, arctic caribous, Canadian otters, two black bears, white bears, lynx, beaver, martins or sables, mink, lemmings and innumerable mice of many varieties. These furs form the second great source of income of the Labrador people.

The Fisheries.—The chief industry of Labrador is its cod fishery. Cod in enormous quantities and of the fattest and firmest kind for eating are taken all along its coast, between May and October. The inshore fishery is open to English, Canadian, Newfoundland and American fisheries, and as many as 30,000 people have engaged in the industry in the season. Now some 10,000 only prosecute it, because while other food products have been increasingly better preserved for human use, cod is still treated by salt mainly. The fishery is bound to come to its own again for no better, more easily digested, cheaper proteid food supply is obtainable anywhere in the world. It is mostly taken in large nets called traps, occasionally in seines and gill nets or on lance. The best bait is capelin, a fish like a sardine, which abound on the sandy beaches. Squid is also used. Bankers using long lines, or trawls, have increased in numbers in late years. Leaden jiggers are much used to replace bait on hand lines. The main markets are the Mediterranean, the West Indies and Brazil. Salmon, fat, pink, and the best possible for eating, are now obtainable fresh in European markets and America. The Hudson Bay company, by a new process of rapid chilling, has increased its value 100% to the catcher, and 1,000% to the eater. Unrestricted netting of rivers has greatly decreased the quantity of salmon since 1780, when endless quantities ran up the rivers, as they do still in Kamchatka. Salmon are mostly taken by gill nets in the sea. Labrador herring, the largest and fattest in the world, are seriously diminished, though it is possible they only have failed to visit their old haunts during their migrations, for they have never been pursued like the European herring, and the latter have been able to maintain their numbers. Mackerel have almost entirely left Labrador. Whales afford the next fishery in value, and great numbers frequent the coast from Battle Harbour north. Norwegians manage this industry, and appear to be able to make money, though a factory must average over a whale a day to make it pay. Sharks are numerous, of the sleepy variety however, and are no danger except to nets. The Polar current sweeps the whole coast with water seldom as warm as 45° F on the surface, and getting colder as it goes down. It is warmer in the heads of bays, and in the long fjords, but the deep water, so characteristic of all Labrador inlets, allows the bottom waters to warm but very little during the summer season.

Flora.—The flora of Labrador is naturally subarctic, but it also is singularly profuse. Thus the land is far from being barren and uncovered as the face of the cliffs and hillsides standing out into the Polar current might have suggested. On the contrary, all valleys and low hillsides are entirely covered by dense woods of tapering conifers, birches and poplars. There are no pines, and all timber ranks as spruce. Owing to the scarcity of actual earth, the winter storms leave many windfalls, and travelling through the woods is difficult unless a trail has been cut. Innumerable berry bearing plants cover the surface of both mainland and islands right down to the landwash, while exquisite lichens and mosses, growing over the cliff faces themselves, often give the appearance of elaborate carpet gardens. Great showy beds of red azalias, blue gentians, white orchids and bunch berries, lend a wonderful setting to the scenery, the colours, like those of the Alpine flora, generally being exceedingly brilliant.

Dr. M. L. Fernald of the Gray Herbarium of Harvard college has published some most interesting monographs on botanizing along the north Newfoundland coast. His deductions have been accepted both by geologists and botanists. In these much information can be obtained relative to plant life in the North. Dr. E. B. Delabarre, of Brown university, published a long list of Labrador flora in a book entitled *Labrador and Its People*—a symposium by the writer and others, in which other branches of natural history are also described by experts. The story of the ages as told by the rocks is well seconded by these studies in plant distribution and most compelling suggestions as to the true history of geologic times on this north-east portion of the American continent are made by Dr. Fernald's researches. But so far as the actual botany of Labrador itself is concerned it has hardly yet been touched at all. Dr. A. P. Coleman of Ottawa, Canada, has published valuable reports on northern Labrador natural history, through the Canadian Government at Ottawa.

LIVING CONDITIONS AND GOVERNMENT

The poor survey of the coastline, the absence of artificial aids to navigation and the difficulty of travelling by land where no railways and no roads exist, make travel difficult, and yet there is no question that Labrador could be made an invaluable holiday camp for North America in summer, exactly as Florida is its winter playground. The mosquito, blackfly and sandfly are very numerous, and without protection would make existence intolerable for two months in summer. But simple remedies and precautions can be taken, and so far sportsmen once coming to the country, invariably return. The mosquitoes carry no malaria, and no endemic diseases are known to exist in the whole country. There is no great rise and fall of tide, and by the eastern Labrador sea-board it nowhere exceeds 8 ft. in spring tides, and so navigation in small boats is easy and safe. Most of the coast being sheltered by innumerable islands enables small open boats to get easily from place to place. To facilitate sportsmen visiting the rivers, a sportsmen's exchange has been formed in Montreal, of which Dr. George Fisk, 1506 Drummond street, is now secretary, where information about when, where, and how to go for sport can be obtained. The bureau expects to maintain simple club houses on the principal rivers for visitors. As no salmon rivers are leased a $10 licence per rod paid to the Newfoundland Government opens all rivers to fishermen for one year. Laws against netting rivers are sufficient, and are easily enforced, poaching being very rare. Access to Labrador has been chiefly by fortnightly boats from St. John's along the east coast of Newfoundland, and the same along the north shore and west coast by steamers connecting with the railway at Bay of Islands, whence connections with Canada at Sydney, Cape Breton, are made every second day. Experience has shown that far the best way for sportsmen in Labrador is to use power boats of 35 to 70 ft. long, of shallow draught—so that every fjord, even unexplored ones, becomes accessible, and no time is wasted waiting for mail steamers. Such boats can be built on the coast, and left there in care of one of the local stations throughout the winter. A fine service of steamers from Quebec, called the "North Shore coastal boats" is an excellent way to reach Labrador.

The plan of bringing one's own large yacht from Boston or New York, or even Halifax, has been abandoned generally as causing much loss of time—unnecessary danger and much discomfort. A new haul-up slip and marine railway at St. Anthony, in the extreme north end of Newfoundland, is specially provided for the care of just such boats, as are far the best in the winding uncharted fjords of Labrador. Boats with keels up to 125 ft. long can be hauled up and docked there and taken care of during winter for a nominal price. Information is obtainable from manager, Haul-Up-Slip, St. Anthony, Newfoundland, or medical officer, Grenfell Mission, St. Anthony, Newfoundland.

The temperature in summer is quite moderate, while the water

outside the bays is never over 45° to 48° F on the surface, in the bays it rises to 60° and 65° F, while 70° to 80° F is common on the land and especially on the rivers and bays. Fog is scarce north of the Straits of Belle Isle, which is one more cogent reason for visitors to join their yachts north of that somewhat treacherous inlet. The velocity of tides on the east coast is almost negligible, being generally 1 to 2 m. per hour to the southward. In the straits it runs three knots outside Point Amour, the narrowest part of the inlet. But with strong breezes from the south, it may even run to the northward. In Hudson's Bay, and more so in Hudson's Straits, faster and much greater range of tides occur. For tidal studies, a monograph by Dr. William Bell Dawson can be obtained from the hydrographer's office in Ottawa. There is no excessive amount of rain in summer, and storms are cyclonic in nature, by no means unusually frequent, and nothing like tornadoes or typhoons are ever known on the coast. Even thunderstorms are so scarce, except in the northern mountains, as to be said to be almost non-existent. Magnetic storms, on the other hand, are violent and common. Compasses of a magnetic type are apt to be seriously deflected, and need constant watching. The phenomena known as aurora borealis are very common, and the exquisite northern lights are to be seen to some extent on almost every clear night. Sometimes they are of unusual beauty, completely covering the sky from the zenith to the horizon.

Labrador, by decision of the privy council of England, made in 1927, after litigation between Canada and Newfoundland, was granted to Newfoundland, all the land drained by rivers flowing out into the Atlantic ocean being granted to that country. This, owing to the fact that the Hamilton drains the whole of the high plateau into the Atlantic by cutting its huge canyon through the height of land, has given vast forests and mineral veins and untold water powers to the island colony, an asset that has gone a long way to re-establish its credit with the outside world. This was unexpected by Canada and has greatly embittered Quebec, which has thus lost much valuable hinterland, and was far more than Newfoundland expected. It involves a very grave responsibility, for no one familiar with it in any expert way except as regards its fisheries is domesticated there.

The country is governed by the laws of Newfoundland—but owing to its isolated and scattered population, it has never had any representative in the Assembly. No law courts exist in Labrador and her ports; crime is very rare, and justice is dispensed by unpaid justices of the peace, with appeals to St. John's if desired, but seldom known. The visits of the surrogate courts and a proper magistrate were long ago discontinued, the expense not being justified by the work accomplished. There is practically no drunkenness, and there are no open saloons, but liquor and intoxicants can be purchased from Newfoundland.

The Labrador hinterland could graze untold quantities of domestic reindeer, as Alaska is doing under American management. This is shown by the fact that numerous wild caribou once roamed the whole shore. The eider duck, now fast diminishing, could be made as valuable an industry as in Iceland. The hair seals, which mean food, clothing and almost life to the people are fast receding, before the annual attack on the herds by powerful steamers just when the females are having their (one) young. Labrador berries have never been farmed and improved. No survey of its coast exists. As an asset of raw materials for sport, tourist traffic, food supplies, timber, power, minerals, Labrador is invaluable. But it needs specially skilled workers to protect and develop it, and until it gets that it cannot possibly yield its quota to the human race.

There are now three hospitals on the Labrador coast, and three nursing stations in between, built and supported by the International Grenfell Association. There are six wireless stations, so that a visitor can communicate with the outside world in case of need. A fortnightly mail steamer visits all along the east coast as far north as Cape Chidley, and a weekly steamer from Battle Harbour to Bay of Islands unites the end of the railway with the whole coast. The Newfoundland Government has also provided bay boats on the east coast of north Newfoundland, which meet the railway at Lewisporte, and then communicate with the northern boat. So far as sea service goes there are thus frequent chances to get in and out of the country, though the boats are none of them over 1,500 tons.

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LABRADORITE, a common rock-forming mineral of the plagioclase (*q.v.*) group of felspars. The name which comes from its occurrence on the coast of Labrador is usually reserved for those solid solutions of albite and anorthite over a range from $Ab_{50}An_{50}$ to $Ab_{30}An_{70}$. In many examples a remarkable iridescence is produced by the occurrence of fine lamellar inclusions of haematite or ilmenite arranged along definite crystallographic directions or planes, the play of colours resulting from optical interference.

Common labradorite without iridescence is an important constituent of many basic igneous rocks as gabbro, dolerite and basalt, while it is practically the sole constituent of the plutonic igneous rock known as anorthosite. (C. E. T.)

LABRADOR TEA (*Ledum groenlandicum*), the popular name for a small evergreen shrub of the heath family (Ericaceae) growing in bogs and swamps in Greenland, Canada and the more northern parts of the United States. The leaves are tough, densely covered with brown wool on the under face, fragrant when crushed and have been used as a substitute for tea.

LABRUM, a large basin for hot water in the *calidarium,* or hot room, of a Roman bath. Occasional examples were of great size and cut out of a single piece of marble or granite; one of porphyry in the Vatican, is over 12 ft. in diameter. (*See* BATHS.)

LA BRUYÈRE, JEAN DE (1645–1696), French essayist and moralist, was born in Paris on Aug. 16, 1645. He himself signed the name Delabruyère in one word. His father was controller-general of finance to the Hôtel de Ville. The son was educated by the Oratorians and at the university of Orleans; he was called to the bar, and in 1673 bought a post in the revenue department at Caen, which gave the status of noblesse and a certain income. In 1687 he sold this office. Bossuet introduced him in 1684 to the household of the great Condé, to whose grandson Henri Jules de Bourbon as well as to that prince's girl-bride Mlle. de Nantes, one of Louis XIV.'s children, La Bruyère became tutor.

His *Caractères* appeared in 1688, and at once brought him many enemies. At the head of these were Thomas Corneille, Fontenelle and Benserade, who were pretty clearly aimed at in the book, as well as other persons, men and women of letters as well as of society, on whom the cap of La Bruyère's fancy-portraits was fitted by manuscript "keys" compiled by the scribblers of the day. The friendship of Bossuet and the protection of the Condés sufficiently defended the author, and he continued to insert fresh portraits of his contemporaries in each new edition of his book, especially in the 4th (1689). Those whom he had attacked were powerful in the Academy, and numerous defeats awaited La Bruyère before he could make his way into that guarded hold. He was defeated thrice in 1691, and on one memorable occasion he had but seven votes, five of which were those of Bossuet, Boileau, Racine, Pellisson and Bussy-Rabutin. It was not till 1693 that he was elected, and even then an epigram, which, considering his admitted insignificance in conversation, was not of the worst, *haesit lateri*:—

Quand la Bruyère se présente
Pourquoi faut il crier haro?
Pour faire un nombre de quarante
Ne falloit il pas un zéro?

His unpopularity was, however, chiefly confined to the subjects of his sarcastic portraiture, and to the hack writers of the time, of whom he was wont to speak with a disdain only surpassed by that of Pope. His description of the *Mercure galant* as *"immédiatement au dessous de rien"* is the best-remembered specimen of these unwise attacks; and would of itself account for the enmity of the editors, Fontenelle and the younger Corneille. La Bruyère's discourse of admission at the Academy, one of the best of

its kind, was, like his admission itself, severely criticized, especially by the partisans of the "Moderns" in the "Ancient and Modern" quarrel. With the *Caractères,* the translation of Theophrastus, and a few letters, most of them addressed to the prince de Condé, it completes the list of his literary work, with the exception of a curious and much-disputed posthumous treatise. La Bruyère died very suddenly on May 10, 1696. Two years after his death appeared certain *Dialogues sur le Quiétisme,* alleged to have been found among his papers incomplete, and to have been completed by the editor.

The plan of the *Caractères* is thoroughly original, if that term may be accorded to a novel and skilful combination of existing elements. The treatise of Theophrastus may have furnished the first idea, but it gave little more. With the ethical generalizations and social Dutch painting of his original La Bruyère combined the peculiarities of the Montaigne essay, of the *Pensées* and *Maximes* of which Pascal and La Rochefoucauld are the masters respectively, and lastly of that peculiar 17th-century product, the "portrait" or elaborate literary picture of the personal and mental characteristics of an individual.

But La Bruyère has neither, like Molière, embodied abstract peculiarities in a single life-like type, nor has he, like Shakespeare, made the individual pass *sub speciem aeternitatis,* and serve as a type while retaining his individuality. He is a photographer rather than an artist in his portraiture. With Racine and Massillon he is probably the very best writer of what is somewhat arbitrarily styled classical French.

The editions of La Bruyère, both partial and complete, have been extremely numerous. *Les Caractères de Théophraste traduits du Grec, avec les caractères et les moeurs de ce siècle,* appeared for the first time in 1688, being published by Michallet, to whose little daughter, according to tradition, La Bruyère gave the profits of the book as a dowry. In the eight new editions published during his lifetime much new matter was incorporated. In recent times numerous editions of the complete works have appeared, notably those of Walckenaer (1845), Servois (1867, in the series of *Grands écrivains de la France*), Asselineau (a scholarly reprint of the last original edition, 1872) and Chassang (1876). *See* also E. Fournier, *Comédie de La Bruyère* (1866); M. Paul Morillot, *La Bruyère* (1904), in the series of *Grands écrivains français;* E. Gosse, *Three French Moralists* (1918).

LABUAN, an island 6 mi. off the N.W. coast of Borneo, in 5° 16′ N., 115° 15′ E., 725 mi. from Singapore; area, 35 sq.mi. In 1941 the estimated population was 8,883, of whom 5,342 were Malays, 3,319 Chinese and 34 Europeans. Politically, it is a settlement of the Straits Settlements. The settlement comprises seven smaller islands, some of them cultivated. Victoria harbour is a safe port, easy of access, and the town of Victoria is the headquarters of the administration. A weekly mail steamer links Labuan with Singapore and British North Borneo, and there is a wireless station on the island. On the small island of Pappan at the entrance to Victoria is an important lighthouse. While the rainfall is heavy, averaging 134 in. a year, and the climate is hot and moist, Labuan is not unhealthful for Europeans. A new meteorological station and electric power plant were completed in 1938. There are 41 mi. of roads. A few snakes and lizards are found, but there are no wild animals. The most interesting birds are the megapodes, which lay their eggs in a mound constructed by themselves, and the beautiful black and white pigeon which though, like the megapode, common to these islands, does not frequent the mainland. A small breed of native cattle thrives on an extensive plain. Originally Labuan was covered by thick forest, but the heavy timber was almost completely cleared, either by the lumbermen or fire, and succeeded by secondary growth. In 1938 the area under coco-nuts was 3,422 ac., under rubber 1,834 ac. and under rice 710 ac. Sago and other palms thrive, as do oranges, mangoes, bananas and pineapples. Coal deposits on the island were worked for many years. There are two schools in Labuan, one of them maintained by the government.

History.—The East India company in 1775, after expulsion from Balambangan by Sulu pirates, sought to make Labuan a trading station. The attempt failed and the island became wholly uninhabited and rarely visited except by the pirates. It came into prominence when in 1846 on the initiative of James Brooke, afterwards first rajah of Sarawak and Admiral Sir Henry Keppel, it was ceded by the sultan of Brunei to Great Britain. It was taken over as a naval station where British ships might careen and refit, where crews might be exercised in rifle range practice, and where stores and merchandise, necessary for carrying on trade with Brunei, might be kept. Great Britain undertook to suppress piracy and unlawful traffic. In 1848 it was made a crown colony and continued as such for forty years. A garrison of imperial troops was maintained till 1871. The colony was assisted by grants in aid till 1869, when it became nominally self-supporting, but year by year it got deeper into financial difficulties and in 1889 its administration was handed over to the British North Borneo company, whose chief officer became governor. The scheme, however, did not work satisfactorily and in 1905 the governor of the Straits Settlements was appointed also governor of Labuan, the island still remaining a separate colony. In 1907 it was annexed to the Straits Settlements and declared part of the settlement of Singapore; and in 1912 it was constituted a separate settlement. Administration is conducted by a "resident," appointed by the governor of the Straits Settlements. In 1942, during World War II, Labuan was occupied by Japanese forces. (C.H.; E.S.; X.)

FROM GROOM, "TREES AND THEIR LIFE HISTORY" (TRUSTEES OF THE BRITISH MUSEUM—NATURAL HISTORY)

LABURNUM (LABURNUM VULGARE), SHOWING INFLORESCENCE

LABURNUM, any plant of the genus *Laburnum,* familiar trees of the pea family (Leguminosae).

The best known is the "golden rain," better called golden chain or bean tree (*L. anagyroides*). It is a native of the mountains of France, Switzerland, southern Germany, northern Italy, etc., has long been cultivated as an ornamental tree throughout Europe, and was introduced into northeast America by the European colonists. Gerard records it as growing in his garden in 1597 under the names of anagyris, laburnum or beane trefoyle.

Several varieties of this tree are cultivated, differing in the size of the flowers, in the form of the foliage, etc., such as the "oak-leafed" (*quercifolium*), *pendulum, crispum,* etc.; var. *aureum* has golden yellow leaves.

FROM GROOM, "TREES AND THEIR LIFE HISTORY" (TRUSTEES OF THE BRITISH MUSEUM—NATURAL HISTORY)

LABURNUM (LABURNUM VULGARE), SHOWING THE FRUITS (LEGUMES)

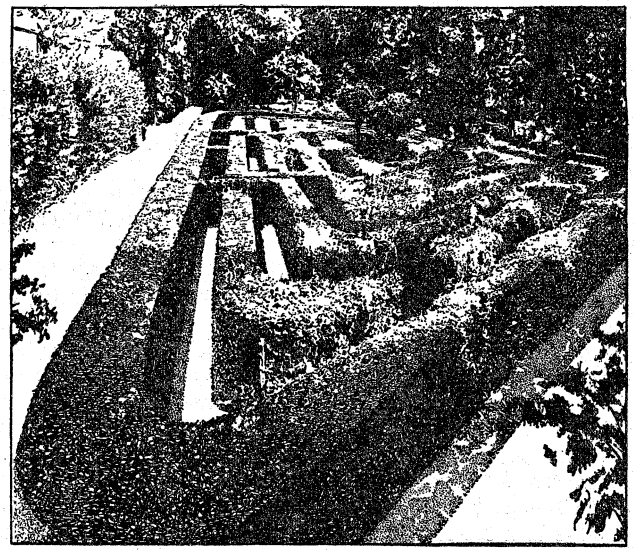
One of the most remarkable forms is *Laburnum adami,* which bears three kinds of blossoms, viz., racemes of pure yellow flowers, others of a purple colour and others of an intermediate brick-red tint. The last are sterile, with malformed ovules, though the pollen appears to be good. The yellow and purple "reversions" are fertile. It was originated in Paris in 1828 by M. Adam, and is a true bi-generic hybrid, derived from crossing *Cytisus* and *Laburnum.*

The laburnum has highly poisonous properties. The roots taste like liquorice, which is a member of the same family as the laburnum. It has proved fatal to cattle, though hares and rabbits eat the bark of it with avidity. The seeds also are highly poisonous.

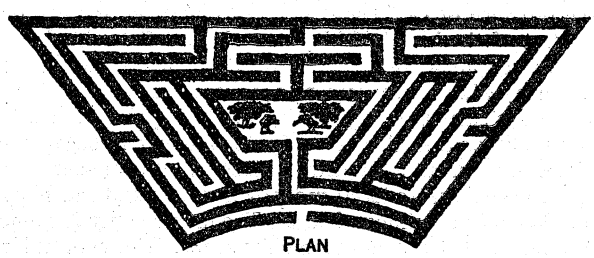
The heart wood of the laburnum is of a dark reddish-brown colour, hard and durable, and takes a good polish. Hence it

is much prized by turners, and used with other coloured woods for inlaying purposes.

LABYRINTH, the name given by the Greeks and Romans to buildings, entirely or partly subterranean, containing a number of chambers and intricate passages, which rendered egress difficult. The word is considered by some to be of Egyptian origin, others connect it with the Gr. λαῦρα, the passage of a mine or with



VIEW FROM ABOVE



PLAN

MAZE IN THE GARDENS AT HAMPTON COURT PALACE

λάβρυς, a Lydian or Carian word meaning a "double-edged axe" (*Journal of Hellenic Studies,* xxi. 109, 268).

Pliny (*Nat. Hist.* xxxvi. 19, 91) mentions the following as the four famous labyrinths of antiquity.

1. The Egyptian, of which a description is given by Herodotus (ii. 148) and Strabo (xvii. 811). It was situated to the east of Lake Moeris, opposite the ancient site of Arsinoë or Crocodilopolis. According to Egyptologists, the word means "the temple at the entrance of the lake." According to Herodotus, the entire building, surrounded by a single wall, contained twelve courts and 3,000 chambers, 1,500 above and 1,500 below ground. The roofs were wholly of stone, and the walls covered with sculpture. On one side stood a pyramid 40 orgyiae, or about 243 ft. high. Herodotus himself went through the upper chambers, but was not permitted to visit those underground, which he was told contained the tombs of the kings who had built the labyrinth, and of the sacred crocodiles. Other ancient authorities considered that it was built as a place of meeting for the Egyptian nomes or political divisions; but it is more likely that it was intended for sepulchral purposes. It was the work of Amenemhē III., of the 12th dynasty, who lived about 2300 B.C. It was first located by the Egyptologist Lepsius to the north of Hawara in the Fayum, and (in 1888) Flinders Petrie discovered its foundation, the extent of which is about 1,000ft. long by 800ft. wide. (*See* W. M. Flinders Petrie, *Hawara, Biahmu and Arsinoë,* 1889.)

2. The Cretan, said to have been built by Daedalus on the plan of the Egyptian, and famous for its connection with the legend of the Minotaur. It is doubtful whether it ever had any real existence. By the older writers it was placed near Knossos, and it is represented on coins, but nothing corresponding to it has been found during recent excavations, unless the royal palace was intended. Later writers (*e.g.,* Claudian, *De sexto Cons. Honorii,* 634) place it near Gortyna, but some winding passages and chambers close to that place are, in reality, ancient quarries.

3. The Lemnian, similar in construction to the Egyptian with 150 columns.

4. The Italian, a highly intricate series of chambers in the lower part of the tomb of Porsena at Clusium. This tomb is said to be recognizable in the mound named Poggio Gajella, near Chiusi.

Lastly, Pliny (xxxvi. 19) applies the word to a rude drawing on the ground or pavement.

During the middle ages a maze or labyrinth was frequently indicated on the floors of French cathedrals, and the names of the architects were often incorporated in its design. That at Amiens (destroyed in the 19th century and now replaced by a copy) contained a verse in which the name of the builders appeared. In the centre were placed figures of the bishop and the three architects, inlaid in white marble. No satisfactory explanation of the existence of these mediaeval mazes has yet (1943) been given.

In gardening, a labyrinth or *maze* means an intricate network of pathways enclosed by hedges or plantations of which it is difficult to find the centre or exit. It is a remnant of the old geometrical style of gardening. The more common kind consists of walks, formerly called alleys, kept to an equal width by parallel hedges, which should be too close and thick for the eye readily to penetrate them. The task is to get to the centre, marked in some conspicuous way, then to return; but even those who know the key are apt to be perplexed. Sometimes the design consists of alleys only, such as one published in 1706 by London and Wise. Of a more pretentious character was a design published by Switzer in 1742 showing "six different entrances, whereof there is but one that leads to the centre, and that is attended with some difficulties and a great many stops."

The maze in the gardens at Hampton Court palace which is considered one of the finest examples in England, was planted in the reign of William III. It is constructed on the hedge and alley system, and was, it is believed, planted with hornbeam, replaced by hollies, yews, etc. The key to the centre is to go left on entering, then, on the first two occasions when there is an option, go right, but thereafter go left.

The maze in the gardens at Somerleyton hall, near Lowestoft, was designed by John Thomas; the yew hedges have been planted about 60 years.

There was a labyrinth at Theobald's park, near Cheshunt, when this place passed from the earl of Salisbury into the possession of James I. An 18th century one is said to have existed at Wimbledon house, the seat of Earl Spencer.

On the Egyptian labyrinth, *see* A. Wievemann, *Agyptische Geschichte* (1884), and his edition of the second book of Herodotus (1890); on the Cretan, C. Hock, *Kreta* (1823–29), and A. J. Evans in *Journal of Hellenic Studies;* on the subject generally, articles in Roscher's *Lexikon der Mythologie* and Daremberg and Saglio's *Dictionnaire des Antiquités.*

LABYRINTHODONTIA, a major group of extinct Amphibia, of ordinal or supra-ordinal rank. They were the dominant amphibians of the late Paleozoic and Triassic; the earliest forms appeared in the late Devonian. The labyrinthodonts may well have included the ancestors of all land vertebrates, and certain of them closely approached the reptiles in structure. The body was newtlike, with limbs of normal pattern. Many were of considerable size—as large as alligators—but some were as small as salamanders. Certain of the Permian genera had become terrestrial, but both early members of the group and late degenerate forms were aquatic. (*See* AMPHIBIA.) (A. S. RR.)

LABYRINTH ORGAN: *see* EQUILIBRIUM, ANIMAL.

LAC, a resinous incrustation formed on the twigs and young branches of trees by an insect, *Laccifer lacca,* which infests them. The term lac is the same as the numeral lakh—a hundred thousand—and is indicative of the countless hosts of the insect. Lac is a product of the East Indies, especially Bengal, Pegu, Siam and Assam, and is produced on a number of trees, particularly *Ficus religiosa.* The insect which yields it is closely allied to the cochineal insect, *Coccus cacti;* kermes, *C. ilicis;* and Polish grains, *C. polonicus,* all of which, like the lac insect, yield a red colouring matter. The minute larvae fasten in myriads on the young shoots, and, inserting their long proboscides into the bark, draw their nutriment from the sap. The insects exude the resinous secretion over their entire bodies; and, the separate exudations coalescing,

a continuous, hard, resinous layer honeycombed with small cavities is deposited over the twig. From this the females, which form the bulk, never escape. After impregnation, which takes place on the liberation of the males, about three months from their first appearance, each female develops into an amorphous organism consisting in its main features of a large, smooth, shining crimson sac with a beak stuck into the bark, and a few papillary processes above the resinous surface. The red fluid in the sac forms the lac dye of commerce. To obtain the largest amount of both resin and dye the twigs with their living inhabitants must be gathered in June and November. Lac as gathered is known as "stick lac"; the resin, crushed to small fragments, washed in hot water to free it from colouring matter, melted, strained through thick canvas, and spread out into thin layers, is the "shellac" of commerce. Shellac varies in colour from dark amber to almost black; the palest, "orange-lac," is the most valuable. Shellac may be bleached, the product being known as white shellac. Bleached lac takes delicate shades of colour, and dyed yellow it is used in the East Indies for ornaments. Lac is a principal ingredient in sealing wax, and forms the basis of valuable varnishes and polishes of various kinds for finishing both wood and metal articles. This wax is also used as an ingredient in many types of waxy substances which are used extensively in the trades. It is an essential ingredient in phonographic records, in artificial fruit and flowers and various other articles. The extent of its use may be inferred from the fact that more than 50,000,000 lb. of this material are collected and used every year.

LACAILLE, NICOLAS LOUIS DE (1713–1762), French astronomer, was born at Rumigny, in the Ardennes, on March 15, 1713. Through the patronage of J. Cassini, he obtained employment, first in surveying the coast from Nantes to Bayonne, then, in 1739, in remeasuring the French arc of the meridian. After two years' work he succeeded in correcting the anomalous result published by J. Cassini in 1718. He was admitted to the academy, and became mathematical professor in Mazarin college, where he worked in a small observatory. He proposed, in 1750, an astronomical expedition to the Cape of Good Hope, which was officially sanctioned. Among its results were determinations of the lunar and of the solar parallax (Mars serving as an intermediary), the first measurement of a South African arc of the meridian, and the observation of 10,000 southern stars. Lacaille returned to Paris in 1754, and withdrew to Mazarin college where he died on March 21, 1762. Lalande said of him that, during a comparatively short life, he had made more observations and calculations than all the astronomers of his time put together.

See J. S. Bailly, *Hist. de l'astr. moderne,* tomes ii., iii., *passim;* J. C. Poggendorff, *Biog. Lit. Handwörterbuch;* R. Grant, *Hist. of Physical Astronomy,* pp. 486, etc.; R. Wolf, *Geschichte der Astronomie.*

LACAITA, SIR JAMES [GIACOMO] (1813–1895), Anglo-Italian politician and writer. Born at Manduria in southern Italy, he practised law in Naples. In 1851 after the restoration of Bourbon autocracy he was arrested for having supplied Gladstone with information on Bourbon misrule. Through the intervention of the British and Russian ministers he was liberated, but on the publication of Gladstone's famous letters to Lord Aberdeen he left Naples. He first settled in Edinburgh, where he married Maria Carmichael, and then in London where he was professor of Italian at Queen's college (1853–56). In the latter year he accompanied Lord Minto to Italy and met Cavour.

In 1860 Francis II of Naples had implored Napoleon III to send a squadron to prevent Garibaldi from crossing over from Sicily to Calabria; the emperor agreed, if Great Britain would co-operate. Cavour entrusted Lacaita with the task of inducing Russell to refuse co-operation. Lacaita, who was an intimate friend both of Russell and his wife, succeeded in winning over the British statesman just as he was about to accept the Franco-Neapolitan proposal, which was in consequence abandoned. He returned to Naples late in 1860, and in 1861 entered the chamber as deputy for Bitonto. In 1876 he was created senator. He died in 1895 at Posilipo near Naples.

Lacaita co-operated with Lord Vernon in the latter's edition of Dante's *Inferno* (1858–65).

LA CALLE, a minor seaport of Algeria, in the arrondissement of Bona, department of Constantine, 56 mi. by rail E. of Bona and 10 mi. W. of the Tunisian frontier. Pop. 3,876 (2,277 Europeans). La Calle from the 10th century has been the residence of coral merchants. In the 16th century exclusive privileges of fishing for coral were granted by the dey of Algiers to the French, who first established themselves on a bay to the westward of La Calle, naming their settlement Bastion de France. In 1677 they moved their headquarters to La Calle. The concessionary company—*Compagnie d'Afrique*—was suppressed in 1798 on the outbreak of war between France and Algeria. The French regained possession in 1817, were expelled during the wars of 1827, when La Calle was burnt, but returned and rebuilt the place in 1836. In World War II it was occupied by U.S. troops in early Nov. 1942.

See Abbé Poiret, *Voyage en Barbarie . . .* (1789); Sir R. L. Playfair, *Travels in the Footsteps of Bruce* (1877); and Paul Masson, *Les Compagnies du Corail* (1908).

LA CALPRENÈDE, GAUTHIER DE COSTES, SEIGNEUR DE (*c.* 1610–1663), French novelist and dramatist, was born at the Château of Tolgou, near Sarlat (Dordogne), in 1609 or 1610. After studying at Toulouse, he came to Paris and entered the regiment of the guards, becoming in 1650 gentleman-in-ordinary of the royal household. He was the author of several long heroic romances ridiculed by Boileau. They are: *Cassandre* (10 vols., 1642–50); *Cléopatre* (1648); *Faramond* (1661); and *Les Nouvelles, ou les Divertissements de la princesse Alcidiane* (1661), published under his wife's name, but generally attributed to him. His plays lack the spirit and force that occasionally redeem the novels. The best is *Le Comte d'Essex,* presented in 1638.

LA CARLOTA, a municipality (with administration centre) of the province of Occidental Negros, Philippine islands, on the west coast of the island of Negros and the left bank of the San Enrique river, about 18 mi. S. of Bacolod, the provincial capital. Pop. (1939) 26,084, of whom 14,141 were males and 116 whites. La Carlota is surrounded by a sugar-producing region. The Spaniards established a station there for experiment in sugar culture. The U.S. government expanded this station into a general agricultural station and introduced modern methods and machinery in the production and milling of sugar. The municipality is connected with other towns by good automobile roads. The vernacular is a dialect of Bisayan.

Of the inhabitants aged 6 to 19 inclusive, 32.2% were reported in 1939 as attending school. Of the total population 10 years old and over, 49.9% were reported as literate.

LACAZE-DUTHIERS, HENRI DE (1821–1901), French zoologist, was born on May 15, 1821, at Montpezat and studied medicine in Paris. He was successively professor of zoology at Lille (1854), at the Natural History museum of Paris (1865) and at the Sorbonne (1869). In 1872 he founded the marine zoological station at Roscoff and in 1881 at Banyuls-sur-Mer. From 1883 until his death on July 21, 1901, he edited the *Archives de la zoologie expérimentale.* Lacaze-Duthiers aimed to inspire young research workers both by his own example and by his works.

Of these the chief are: *Histoire de l'organisation et du développement du dentale* (1858), *Le Monde de la mer* (1889), *Histoire naturelle du corail* (1863).

LACCADIVE (lăk'ą-dēv) **ISLANDS,** a group of coral reefs and islands in the Indian ocean, between 10° and 12° 20′ N. and 71° 40′ and 74° E. The name Laccadives (*laksha dwipa,* "hundred thousand isles") is that given by the people of the Malabar coast, and was probably meant to include the Maldives. There are 17 separate reefs but only 14 islands, and five of these are uninhabited. For administrative purposes the group is attached to the Madras provinces of British India, the northern portion, known as the Amindivis, within the collectorate of South Kanara, and the remainder within the Malabar district. Minikoi lies between the Laccadives and Maldives. Munyal, Coradive and Sesostris are submerged banks lying north of the islands. Most of the latter have emerged from the eastern and protected side of the reef, the western being completely exposed to the S.W. monsoon. The

islands are small, none exceeding a mile in breadth, while the total area is only about 80 sq.m. The soil is light coral sand, beneath which, a few feet down, lies a stratum of coral stretching over the whole of the islands. This coral, generally a foot to a foot and a half in thickness, has been in the principal islands wholly excavated, whereby the underlying damp sand is rendered available for cereals. These excavations—a work of vast labour—were made at a remote period, and according to the native tradition by giants. Coarse grain, pulse, bananas and vegetables are cultivated; coco-nuts grow abundantly in all parts of the islands. For rice the inhabitants are compelled to depend upon the mainland.

Population and Trade.—In 1941 the population was 18,393. The people are Moplas, *i.e.*, of mixed Hindu and Arab descent, and are Mohammedans. The language spoken is Malayalam (but written in the Arabic character), except in Minikoi, where Mahl is spoken. The chief industry is the manufacture of coir, the various processes in handling the coco-nut husk fibre being entrusted to the women. The men employ themselves with boatbuilding and transport of the produce of the islands to the Indian markets.

As the frequent coral reefs in the vicinity of these islands make navigation dangerous, commerce is carried on almost exclusively in native vessels, which are manned by the daring sailors of these islands.

History.—Albírúní (*c.* 1030) divides the whole archipelago (Díbajáṭ) into the *Dívah Kúzah* or Cowrie Islands (the Maldives), and the *Dívah Kanbar* or Coir Islands (the Laccadives). The islanders were converted to Islam by an Arab apostle named Mumba Mulyaka, whose grave at Androth still imparts a peculiar sanctity to that island. The kazee of Androth was in 1847 still a member of his family, and was said to be the twenty-second who had held the office in direct line from the saint. The Portuguese discovered the Laccadives in May 1498, and built forts upon them, but about 1545 the natives rose upon their oppressors. The islands subsequently became a suzerainty of the raja of Cannanore, and after the peace of Seringapatam, 1792, the southern group was permitted to remain under the management of the native chief at a yearly tribute. This was often in arrear, and on this account these islands were sequestrated by the British government in 1877.

LACCOLITH, in geology, the name given by G. K. Gilbert to intrusive masses of igneous rock possessing a cake-like form (from Gr. λάκκος, cistern, λίθος, stone), first described from the Henry Mts. of southern Utah. Their characteristic is that they have spread out along the bedding planes of the strata, but are not so broad and thin as the sheets or intrusive sills which, consisting usually of basic rocks, have spread over immense distances without attaining any great thickness. Laccoliths cover a comparatively small area and have greater thickness. Typically they have a domed upper surface while their base is flat. In the Henry Mts. they are from 1 to 5 m. in diameter and range to 5,000 ft. in thickness. The cause of their peculiar shape appears to be the viscosity of the rock injected, which is usually of intermediate character and comparatively rich in alkalis, belonging to the trachytes and similar lithological types. These are much less fluid than the basalts, and the latter in consequence spread out much more readily along the bedding planes, forming thin flat-topped sills. At each side the laccoliths thin out rapidly so that their upper surface slopes steeply to the margins. The strata above them which have been uplifted and bent are often cracked by extension, and as the igneous materials well into the fissures a large number of dikes is produced. At the base of the laccolith, on the other hand, the strata are flat and dikes are rare, though there may be a conduit up which the magma has flowed into it. The rocks around are often much affected by contact alteration, and great masses of them have sometimes sunk into the laccolith, where they may be partly melted and absorbed, with resulting changes in physical and chemical composition.

Gilbert found that these laccoliths were filled at depths of 7,000 to 10,000 ft. and did not reach the surface, giving rise to volcanoes. From the effects on the drainage of the country it seemed probable that above the laccoliths the strata swelled up in flattish eminences. Often they occur side by side in groups belonging to a single period, though all the members of each group are not strictly of the same age. One may be formed on the side of an earlier one, and compound laccoliths also occur. When exposed by erosion they give rise to hills, and their appearance varies somewhat with the stage of development.

In western South America similar laccoliths occur in considerable numbers and present some diversity of types. Occasionally they have one steep side while the other is gently inclined; some are split into a number of sheets spreading outwards through the rocks around.

In Britain and elsewhere the term is used of a variety of intrusive masses not strictly identical in character with those of the Henry Mts. Some of these rest on a curved floor, like the gabbro masses of the Cuillin Hills in Skye; others are injected along a flattish plane of unconformability where rock rests on the upturned and eroded edges of an older series, as in the felsite mass of the Black Hill in the Pentlands, which has followed the line between the Silurian and the Old Red Sandstone, forcing the rocks upwards without spreading laterally to any great extent.

(J. S. F.)

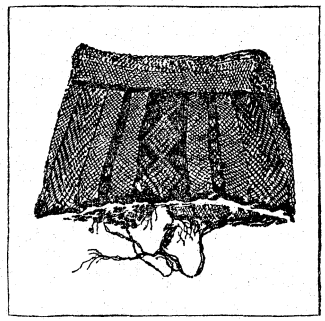
LAC DYE is derived from the lac insect (*Coccus lacca* or *ficus*) which lives on the peepul or bo-tree (*Ficus religiosa*), the jujube (*Zizyphus jujuba*) and the dak (*Butea frondosa*) and other trees native to Southern Asia. It is an extremely ancient dyestuff, and was employed in the East for many centuries before it was known in Europe. Its use in Great Britain dates from about 1790. The insects fasten themselves to the twigs during November, and become covered with a viscous fluid forming a cellule round the animal, which attains its full size in March. From this product, known as "stick lac," the dye is extracted with hot sodium carbonate, the solution evaporated, and the residue moulded into cakes. Lac dye was at one time of much importance, and shellac merely its by-product; now the position is reversed, the dye being but seldom employed. It yields shades similar to those of cochineal (*q.v.*), and was formerly used for dyeing in admixture with the latter. The colouring matter it contains, *laccaic acid,* $C_{20}H_{14}O_{10}$, is closely related to the carminic acid of cochineal.

(A. G. P.)

LACE. The word lace is applied to an ornamental openwork fabric formed by looping, interlacing, braiding or twisting threads of flax, cotton, silk, gold or silver, mohair or aloe fibre. Like the early English *lacez* and the old French *lassis* or *lacis,* it is derived from the Latin *laqueus.*

HISTORY

The cemeteries and tombs of Ancient Egypt have preserved fine linen weaves, spindles and loom weights dating from the early dynasties; but with the exception of the *buratto* weave which is said to have been in use in Babylon and (during the XXII. Dynasty) in Egypt it is not until the Coptic period, in the first decade of the Christian era, that we have in the plaited thread head-dresses of the native Egyptians any material that may properly be classed as lace. It is to this field that the student of to-day must turn for documents dealing with the beginning of lace history. In technique these caps, which in many instances resemble bags, are of what has been described as "Egyptian plaiting" although it is not known whether the technique is of Egyptian origin. In the curious twisting of the threads the fabric suggests bobbin work; but up to the present time, Egypt has failed to yield anything indicating that the art of bobbin lace-making was practised in its ancient civilization. In Italy, however, E. M. Bixio, director of the Etruscan museum at Bologna, working on the site of the ancient Roman settlement of Claterna, in 1892,



BY COURTESY OF METROPOLITAN MUSEUM OF ART

EGYPTIAN HEAD-DRESS OF PLAITED THREAD-WORK. COPTIC PERIOD

unearthed a series of small cylindrical objects which in size and form would seem to be identical with modern lace bobbins, and which were, moreover, found in pairs and groups similar to the arrangement of bobbins in the manufacture of bobbin lace.

In the 13th century the art of embroidery in England had attained a perfection that has never been surpassed, a needlecraft requiring a skill and dexterity equal to that of the Venetian lace-workers, and yet England never excelled in the production of needlepoint lace. An early reference to work with bobbins, however, is found in a Harlean manuscript dating from about 1471, which gives directions for making "lace Bascom, lace indented, lace bordered, lace covert, a brode lace, a round lace, a thynne lace, an open lace, lace for hattys' etc.," the illuminated capital letter with which the manuscript opens showing the figure of a woman making these articles. The process there described would seem to be allied to card-weaving, the fingers serving to carry the thread which was occasionally dropped to form a sort of indented lace or braid. Such openwork braid marked an advance in the evolution of gold and silver *passementerie* from the cords and lacings which many early writers on the subject freely translated as "lace." Fine bobbin lace, being dependent upon the supply of pins, could not of necessity have developed to any great extent prior to the manufacture of brass pins. Early pins were of box-wood, bone, bronze or silver. One of the earliest records is that found in a wardrobe account of 1347 in which a charge for 12,000 pins is made for the trousseau of Joanna, daughter of Edward III.

The history of lace-making, as it developed, records in its evolution various types of openwork thread fabrics: (1) Interlaced and knotted threads varying, of fringed linen, the origin of the *punto groppo* or *macramé* of northern Italy; (2) Network, of which there are several varieties: (a) the Coptic type in which a series of threads arranged vertically on a rectangular frame in such a way as to form a double warp are separated by a removable rod or "sword" as they are plaited from the centre of the frame, which process produces simultaneously a weave above and below the point where the fingers are plaiting the thread; (b) also made on a frame, in which the threads forming the net are knotted at the points of intersection (It. *punto a maglia quadra;* Fr. *réseau, rezel, rezeuil; filet brodé;* Ger. *Netzarbeit*); (c) woven net, made on a small hand loom or framework in which the warp threads are twisted at each passage of the weft, the *buratto* above referred to, a technique which is also found in textile fragments of the Swiss Lake-dwellers and in Peruvian weaves of the 9th century (It. *buratto.* Fr. *toile clere*); (d) net worked by needle over a card-board pattern or a spool, such as is found in the circular disc or "sol" pattern of the Spanish *punto de Cataluña* and in the South American *nanduti* or *toile d'arraignée.*

As finally evolved, however, lace-making comprised four different processes (1) with the needle: needlepoint (It. *punto in aco;* Fr. *point à l'aiguille;* Ger. *nähspitzen*) developed directly from drawnwork and cut-linenwork in which processes certain counted threads in a linen cloth are removed to provide open spaces for decorative lace stitchery. When the field for decoration is obtained by withdrawing threads of the linen, the work is termed drawnwork, of which there are several varieties: (It. *punto tirato; tela sfilata; fili tirati e ripresi* or *lacis; fili tirati tela lasciata.* Fr. *point tiré;* Ger. *Durchbrucharbeit;* Sp. *deshilado*). When groups of counted threads are removed by cutting, it is cut-linenwork (It. *punto tagliato;* Fr. *point coupé;* Ger. *Doppeldurchbrucharbeit*); (2) With bobbins, pins and pillow or cushion: bobbin or pillow lace (It. *merli a piombini;* Fr. *dentelle à fuseaux;* Ger. *Kloppelspitze;* Dutch, *gespelde-werkte kant;* Old Flem. *spelle werk*); (3) With a crochet hook; (4) With shuttles on a loom operated by hand or by power-driven machinery.

The classification of lace by the historical sequence of design according to centuries, can be roughly grouped as follows: 16th century, geometric type; 17th century, patterns of foliated scrolls supported by tie-bars with no background; 18th century, formal arrangement of symmetrically balanced scrolls reflecting contemporary silk patterns, stylistic floral forms, naturalistic floral motives with ribbons and festoons; development of the mesh background and elaborate *jours* or ornamental stitches; 19th century, the decadent period of design, ultra naturalistic floral patterns; introduction of machine net.

Italy.—In Renaissance portraits of the late 15th century, rare jewels are worn with costumes of sumptuous velvets heavily trimmed with gold and silver *passements.* In the early days of lace-making the lace trade was handled entirely by the Paris passementiers who made no distinction between passementerie and lace, applying the same name to both. The confusion of terms resulting therefrom persisted until the middle of the 17th century when in lace nomenclature *passement* and *dentelle* became two distinct fabrics, the former applying only to flat braid or guimp trimmings of gold or silver thread, the latter to needlepoint and bobbin lace. But lace had not yet become an accessory of dress. From the middle of the 16th century on, however, the history of lace, as recorded in contemporary portraiture, can be traced step by step as the gradual mastery of the art was acquired by the workers in meeting the mandates of fashion. It was this century that witnessed the evolution of needlepoint lace from embroidered and cut linenworks. When in 1542 a sumptuary edict prohibited the extravagant use of silk and gold in embroidery, the early geometric type was already well established. The process of this work was as follows: groups of counted warp and weft threads were drawn or cut out from a piece of linen cloth leaving at set intervals a certain number of warp threads, these with the cut edges of the linen cloth forming a series of rectangular openings; in such spaces added threads, diagonally placed, served to support star and circular motives worked in the simple loop or button-hole stitch (*point noué*), which is the foundation of all needlepoint lace. This lace—which the Italians styled *reticella* (from *rete,* net) and which has been variously described as "gothic point" and "Greek lace"—Venice exported in large quantities to the court of France during the reign of Louis XIII. where it enriched the collars, knee garters and shoe tops of the King's favourites.

The sumptuary edict of 1542 was an important date in lace history, for the needlecraft workers of Venice, obliged to abandon embroidery in colour, turned their attention to the elaboration of white work; and it was during this period when the finest linen-works were produced in her convents and in the families of nobility, that Italy's lace technique was established—a technique that owed its perfection to the meticulous accuracy with which in the preparation of a pattern each thread of the linen was carefully counted. But the Venetian workers who had long served their apprenticeship as embroiderers and were past masters in the art of reproducing with the needle patterns inspired by the delicate foliated scroll-work found on the borders of missals and in the arabesques of Near Eastern leather work and rug weaves, were not content with the geometric type of patterns, and as their technique developed they strove to abandon the linen foundation in order to reproduce in lace the same patterns that were used for embroidery. At this time, side by side with the already developed geometric type, two varieties of cut-work are found which seem to reflect this tendency on the part of the lace-workers. One of these is the *punto tagliato* (*punto,* stitch; *tagliare,* to cut) for which the Venetian, Mattheo Pagan, published a book of patterns in 1542, the year of the edict. In this work, which like *reticello* starts with a linen foundation, a sufficient number of counted warp and weft threads are withdrawn to form a simple rectangular framework; this reticulated background is then overworked, and superimposed upon it is a scrolling vine pattern worked in *punto in aria.* The fact that Paris Bordone appears to be the only Venetian painter whose works record this variety of cut-work would seem to indicate that the transitional period was of short duration. The second variety is what is known as *intagliatela,* another version of cut cloth. In this the pattern is elaborately designed with foliated arabesques and pomegranate motives, the occasional open spaces no longer adhering to the earlier quadrangular outline, the geometric stars and circles giving way to stylistic floral motives, figure and animal devices which occupy the irregular fields of openwork.

When the lace-makers realized that their perfected technique no longer required the support of the reticulated background with its linen foundation, they discarded the old process and used patterns

of cloth-backed parchment, on which an outlining thread was couched that served as a supporting framework for the pattern; and on this outlining thread the looped stitchery was worked on the surface but not through the parchment foundation. When the work was finished a sharp knife passed between the parchment, and the cloth-backing cut the couching threads and the lace worked on the surface was released. Thus at the beginning of the 17th century we find the geometric *reticello* type giving way to patterns of deep points—both in needlepoint and bobbin-made laces, which in time were supplanted by patterns of foliated scrolls combined with irregular tie-bars or *brides* that served to hold the edges of the pattern in place. With greater dexterity of workmanship and increasing demand for richer fabrics the simple *punto in aria* soon took on an accentuated cordonnet (Pl. IX., fig. 7) which in time was varied by the introduction of details worked in high relief and edged with *picots* (loops), the heavy Venetian point (It. *punto tagliato a fogliami,* or *punto a relievo;* Fr. *Gros point de Venise;* Ger. *Venezianer Reliefspitze*). The highest stage of its development, however, is found in the *punto roselline* or rose point of the early 18th century with its evenly distributed accentuation and its exquisitely delicate technique. It was thus that Italy's lace-workers, who supplied the world market during the greater part of the 17th century, laid the foundation on which the art of lace-making in other countries was based. Three other Venetian needlepoints should be mentioned before turning to Italian pillow-made lace: (1) *Punto avorio,* closely worked needlepoint bands of silk or linen, a peasant lace peculiar to the Valle Vogna district in northern Italy; (2) The grounded Venetian, which the French term *point de Venise à réseau,* the most delicate of all needle-wrought fabrics, and probably designed to compete with the exquisite Brussels pillow-made fabric; (3) Burano lace, identified by its vertically worked mesh of unevenly spun thread that gives a clouded effect to the ground. The patterns are usually composed of a simple coral spray or a floral disc motive outlined with a heavier thread overcast with a sparsely worked buttonhole stitch.

Of Italian pillow-made laces, those of Genoa and Milan, sometimes termed North Italian *guipure,* are the most important. In the 15th century (1411–20) Genoa was importing large quantities of gold thread from Cyprus, and later became the centre from which the luxurious courts of Europe obtained their gold and silver *passementeries* and laces. English wardrobe accounts of the 16th century record the purchase of Genoese silk lace for Queen Elizabeth, and a *mouchoir de point de Gennes frise* is mentioned among the effects of Marie de Medici.

Among the more important Italian bobbin laces are the following: (1) Pointed lace; Genoese and Venetian of the 16th and 17th centuries, used for neck-ruffs, handkerchiefs and aprons. The Genoese has a characteristic stitch resembling a grain of wheat throughout the pattern; the Venetian is more delicate in texture. (2) Point de Milan, although termed "point," is a pillow-made bobbin lace. The 17th century types are *guipure,* scroll and *bride* pattern without mesh; the 18th century scroll and figure motives in a field of mesh. (3) Tape and needlepoint lace, made to imitate heavy Venetian point has a pattern composed of narrow bobbin tape combined with needlepoint stitches. (4) Ligurian or Genoese types, a 17th century pointed lace of flat bobbin braid-like texture, and a *reticello* type, often termed *point de Gênes frisé,* Hispano-Moresque or Greek lace. (5) *Vermicelli,* a fine-meshed 18th century lace of the Mechlin type in which the pattern is outlined with a heavier thread.

The interrelation between Europe and the Far East during the middle ages and in the 15th century between Italy and the Levant is evidenced not only in the migration of patterns, but also in the transmission of various techniques; thus it is that the graceful arabesques of Persian rug weaves and tooled leather-work combined with the floral motives of Rhodian pottery reappear in Venetian points of the 17th century just as the *tela sfilata* type of Italian drawn-work is undoubtedly of Near Eastern origin.

The Orient.—In the Orient a lace technique similar to that of Italian needlepoint is found in occasional Chinese embroideries of the 18th century. This is a buttonhole stitch with an extra twist in the loop worked in an open pattern over a couched outline, the completed fabric resembling details in Venetian needlepoint and also early English Hollie point. Bobbin lace-making was first taught in China by missionaries settled at Chefoo in the latter part of the 19th century. In 1895 British missionaries commercialized the work which developed into a thriving industry in the Chefoo, Chi Hsia Hsien and Shantung districts where torchon, Maltese, French and Belgian patterns were copied first in silk and later in linen and cotton thread, the finest of which were made at Ching Chou, a town 30 m. W. of Weihsien. In 1920 filet was introduced in the Chefoo district which attained a highly perfected technique and which was exported in large quantities to America, while other laces were marketed in Australia.

The history of lace-work in Persia and Syria is confined to network embroidered in coloured silk, simple drawn-work used in edging embroideries, Greek *bibilia* or Turkish *oyah,* a needlepoint fabric peculiar to the eastern Mediterranean district.

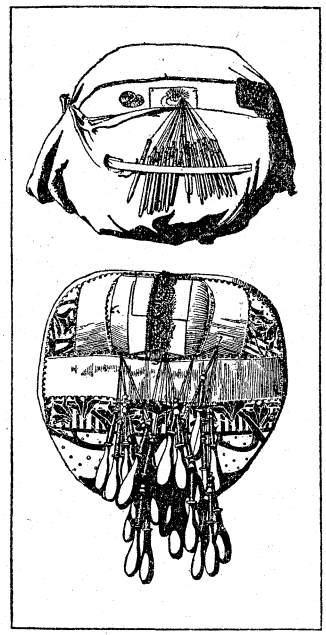
The Mediterranean Area.—In this should be included the islands of the Aegean where in Crete is found a simple type of bobbin lace in which the pattern is outlined in colour; this lace is closely allied to 18th century Spanish polychrome lace and also to a type found in central Europe. In Sicily technique and patterns follow Italian tradition both in network, drawn-work and bobbin laces which in the 19th century were abandoned for embroidered machine net, much of which was used in bridal veils and for trimming ecclesiastical vestments. The old work of Sardinia is described by Signora Ricci as a peculiar type of filet designed with confronted birds often worked in rather coarse blue and white thread, or again a finer quality of white thread is found in works more elaborately designed in which an angular type of scroll is combined with figure motives. The silk bobbin lace of Malta, in which the Maltese cross is a distinguishing mark, has been copied extensively in the Far East, both in China and India, where the work has been introduced by missionaries. Like the old Genoese it has in its pattern the stitch resembling an oat or wheat seed and is likewise of a *guipure* type. Turning to the Barbary States, Morocco is a field rich in embroidery which reflects both Indian and Italian influences, but its lace-work is confined to a very coarse heavily knotted filet designed with archaic animal motives, and a simple type of needlepoint worked in a stitch similar to the *punto avorio* of Italy often used as an *entre-deux.*

Spain.—In Spanish lace, network and drawn-work combine in their patterns in many instances the double eagle or the lions of Castile, alternating with turreted castles set in a field peopled with archaic figures and stylistic birds. These latter motives also occur in similar work throughout the Mediterranean area, Sicily, Aegean islands, Sardinia and in some Moroccan embroideries. In Spanish drawn-work, however, the method employed in overworking the field—where counted warp and weft threads of the linen have been drawn out, leaving an open-work mesh—differs from the Italian in which the remaining threads of the linen are covered with a winding stitch while the Spanish process loops the thread through the four sides of the mesh.

What may be termed typical Spanish network is the *punto de Cataluña* with its characteristic sun or "sol" pattern. Spanish copies of the Italian *reticello* have a much less compact technique and here again the geometric motives reflect the "sol" motive of the *punto de Cataluña* rather than the star and wheel patterns of the Italian models. Needlepoint corresponding to the *punto in aria* type on the other hand is much more closely worked; the vase form when it appears is more bulbous, while the leaves and flowers are inclined to be round and flat, edged with tightly worked *picots.* The most beautiful Spanish needlepoint of the 16th century is the *punto de España frisado en oro.* This has a foundation of gold thread that forms a series of small *picots* outlining the motives while in the body of the pattern the gold thread is overworked with polychrome silk in a weaving stitch. The *punto de España* of the late 16th and early 17th centuries, corresponding to contemporary *punto in aria* of the Italian workers, is also quite individual in character. The patterns, which show little variation, adhere closely to a gracefully curved leaf form which at times alternates with a diagonally set branch motive.

Spanish portraits of the 17th century record an extravagant use of pointed bobbin lace in the enormous neck-ruffs of the period, a type similar to the Italian but which is claimed to have been a native product. While the church treasuries of Spain are rich in Flemish laces, there are among these occasional variants of the "point de Milan" which are undoubtedly Spanish; in these the patterns are less carefully drawn and the scroll motives that terminate in pomegranate or disc-like flowers are as a rule set in a field of square, open mesh. Another form of bobbin lace from the district of Seville is of coarse thread rather loosely worked; this has a large quadrangular mesh with a pattern of archaic tree motives. To many, however, Spanish lace means the black and white silk blonde lace used for *mantillas;* quantities of these laces were produced at Catalonia, but those made in France at Chantilly, Bayeux and Caen were of much finer quality. Machine copies of these laces in which the pattern has a needle-run outline are often sold as hand-made fabrics.

France.—There were already many centres of lace-making in France when, under the royal patronage of Louis XIV., Venetian and Flemish lace-workers were imported to stimulate the industry. In the little museum of Alençon may be seen a few bits of needlework and *reticello* said to have been made by the women of the court of Marguerite de Valois. It was Catherine de Medici, the Italian queen of Henry II., however, whose interest in needlework may be said to have laid the foundations of the lace industry in France, and it was during her sojourn at the French court as wife of Francis II., that Mary Stuart became an adept in the art of the needle. The work of this period comprised embroidered filet (*reseuil*), shown in the Bronzino portrait of Eleanor of Toledo (Pl. I. fig. 2); simple cutwork such as is found in the portrait of Henry II. and in that of his daughter Claudia, and drawn-work like the cap of Holbein's portrait of Anne of Cleves (1540). It was during the reign of Henry III. (1574–89) that Venetian and Genoese laces became so important an accessory of male attire that enormous sums of French money poured into Italy while native industries languished. This continued during the extravagant reign of Louis XIII.; but with the advent of Colbert, the great minister of finance under Louis XIV., a new régime was effected and in 1665 the manufacture of *point de France* was established at Alençon, Argentan, Sedan, Rheims and other centres. Many of the lace-makers of Alençon already knew the technique of the *point de Venise,* a number having been trained by Mme. de La Perriere, who had discovered the process in 1661. Alençon lace of the early period had a large hexagonal, buttonholed, mesh like the *point de France* but without *picots;* later the fine hexagonal mesh became the accepted Alençon type, while the Argentan workers adopted the hexagonal mesh of twisted thread, the *bride tortillée* instead of the buttonholed mesh, the *bride bouclée.* It is difficult to say just when the laces of Alençon and Argentan ceased to be termed *points de France,* but according to Mrs. Palliser an inventory of 1723 is the last to mention *point de France,* while *point d'Argentan* appears in 1738 and *point d'Alençon* in 1741. Skilled workers from Venice were imported to perfect the technique of the native lace-maker in reproducing Venetian points, while others were brought over the border from Flanders to teach bobbin lace-making in order to enable the native industries to meet the demand of the court for *point d'Angleterre* which, though a pillow-made fabric, came to be known as *point de France façon d'Angleterre.* At the time of the reorganization of the industry there were a number of Flemish pillow-lace makers working at Rheims. The first needlepoint laces produced under royal patronage were close copies of the heavy Venetian point which, when made in France, was termed *point Colbert.* In time, however, the French evolved a distinct type by increasing the number of *brides* until they became a large hexagonal mesh, which served as a field or background to the exquisite patterns designed by Le Brun, Berain, Bailly and other skilled draughtsmen working under court patronage. Beautiful works of the great period may be seen in the collections of the Musée des arts décoratifs, Paris, the Victoria and Albert Museum, London, and the Metropolitan Museum of Art, New York. The history of lace as it developed in France during the 17th and 18th centuries is recorded in the engravings of Abraham Bosse and Le Paultre and the portraits of van Loo, Hyacinthe Rigaud, Nattier, Le Brun and other court painters. In the Department du Nord, where several important Flemish lace centres were transferred to France at the time of the Peace of Nimwegen, the lace produced under French surveillance took on all the charm and elegance peculiar to *points de France.* The extravagant uses to which priceless *points de France* were applied during the reigns of Louis XIV. and XV. included not only laces for the *steinkerque* (a long cravat worn alike by men and women), frills, cap crown and lappets for the towering *fontange* head-dress *engageantes* for the Louis XV. sleeve ruffles, and elaborate lace aprons; but these rich fabrics were also used in adorning the boudoir, the dressing-table, the bed and the bath.



BY COURTESY OF THE METROPOLITAN MUSEUM OF ART

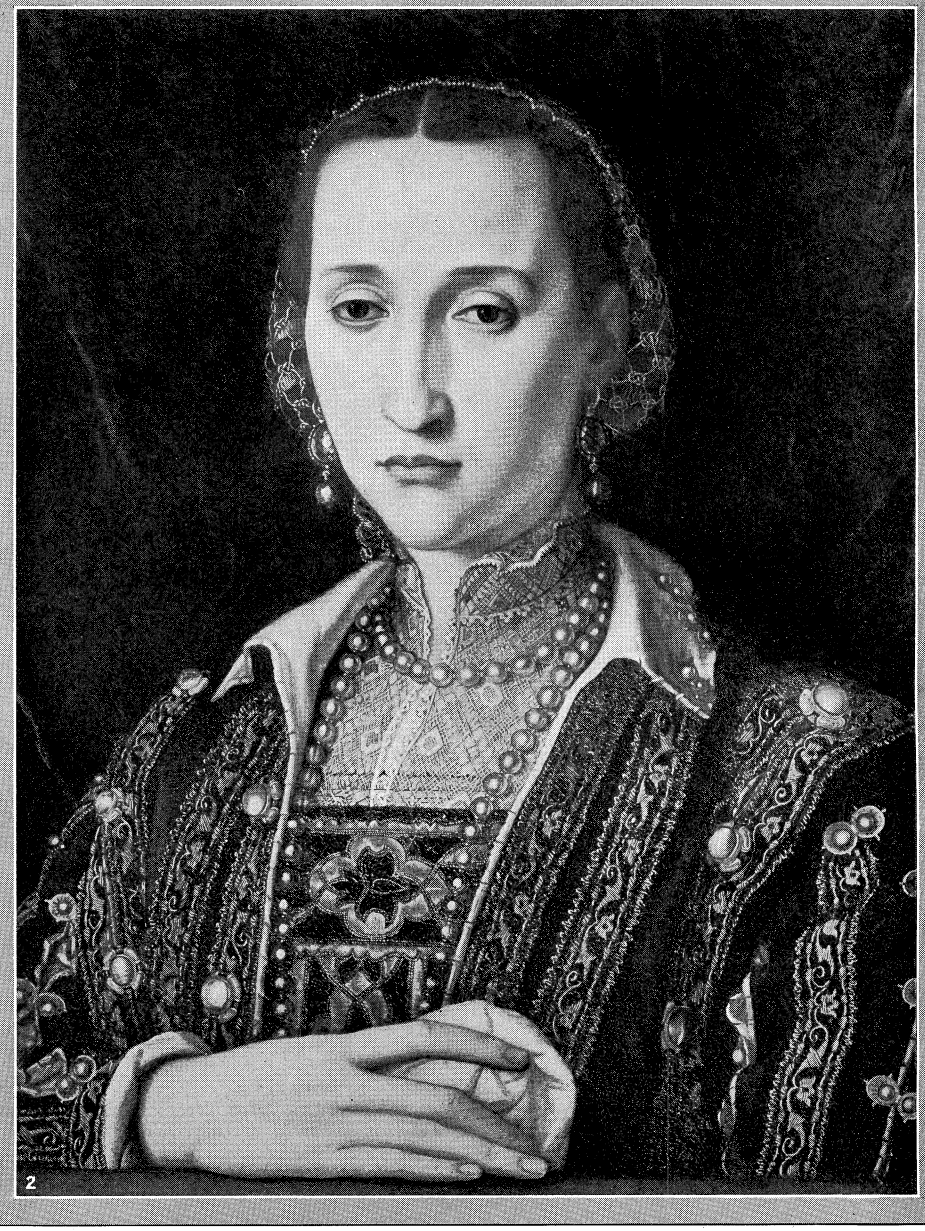
Above: Pillow used in making English Honiton bobbin lace
Below: Pillow used in making French bobbin lace

Smaller centres in the Mirecourt and the Haute Loire continued to produce the simpler bobbin laces such as were used in the headdresses of the peasant class while Chantilly, Caen, Bayeux and Le Puy specialized more particularly in black lace which became fashionable toward the middle of the 17th century at the time of the marriage of the young king (Louis XIV.) to the Infanta of Spain in 1660. While this vogue lapsed during the 18th century it was revived again during the Louis XVI. period and attained great popularity in the middle of the 19th century (*c.* 1851) when for 25 years or more fashion decreed that every lady's wardrobe should include a Kashmir or Paisley shawl for winter, and for the summer a black or white so-called Chantilly shawl, many of which were produced at Brussels and Ghent.

The fall of Napoleon brought to a close the brilliant era of lace-making in France, and while exquisite fabrics were still available during the Restoration period when the bishops officiating at the coronation of Charles X. were resplendent in lace-trimmed vestments, the revival was of short duration and, in spite of the attempt on the part of the Empress Eugenie to bring relief to the impoverished lace-makers by placing large orders, the industries were finally forced to the wall owing to the increasing popularity of machine-made fabrics.

Belgium.—Despite the fact that Italy disputes with Belgium the invention of bobbin lace, Belgium will always stand pre-eminent in the art as it was developed in that country in the 18th century at the height of its greatest period. While records fail to throw any light on the early history of lace-making in the Low Countries, save in occasional evidences discovered in paintings of the 15th century, existing documents prove that in Brussels the art was already a thriving industry in the second half of the 16th century. After that date, however, Belgium is rich in dated documents. The earliest of these is the bedspread preserved in the Brussels museum. The fabric, of unbleached linen thread, is designed in a series of compartments; in two of these appear the crowned monogram of Albert and Isabella, while in others are the arms of Brabant, of Spain and of England, the lily of France and the eagle of Austria. Among the personages represented are Philip II., Roman emperors, the legendary figure of Sainte Gudule and a number of figures associated with the celebrated Cortege de l'Ommegang du Sablon.

Of slightly later date is the splendid cover in the Victoria and Albert Museum said to have belonged to Philip IV. of Spain which bears in its design the crowned Austrian eagle surmounted by the collar of the Golden Fleece. From an historical point a



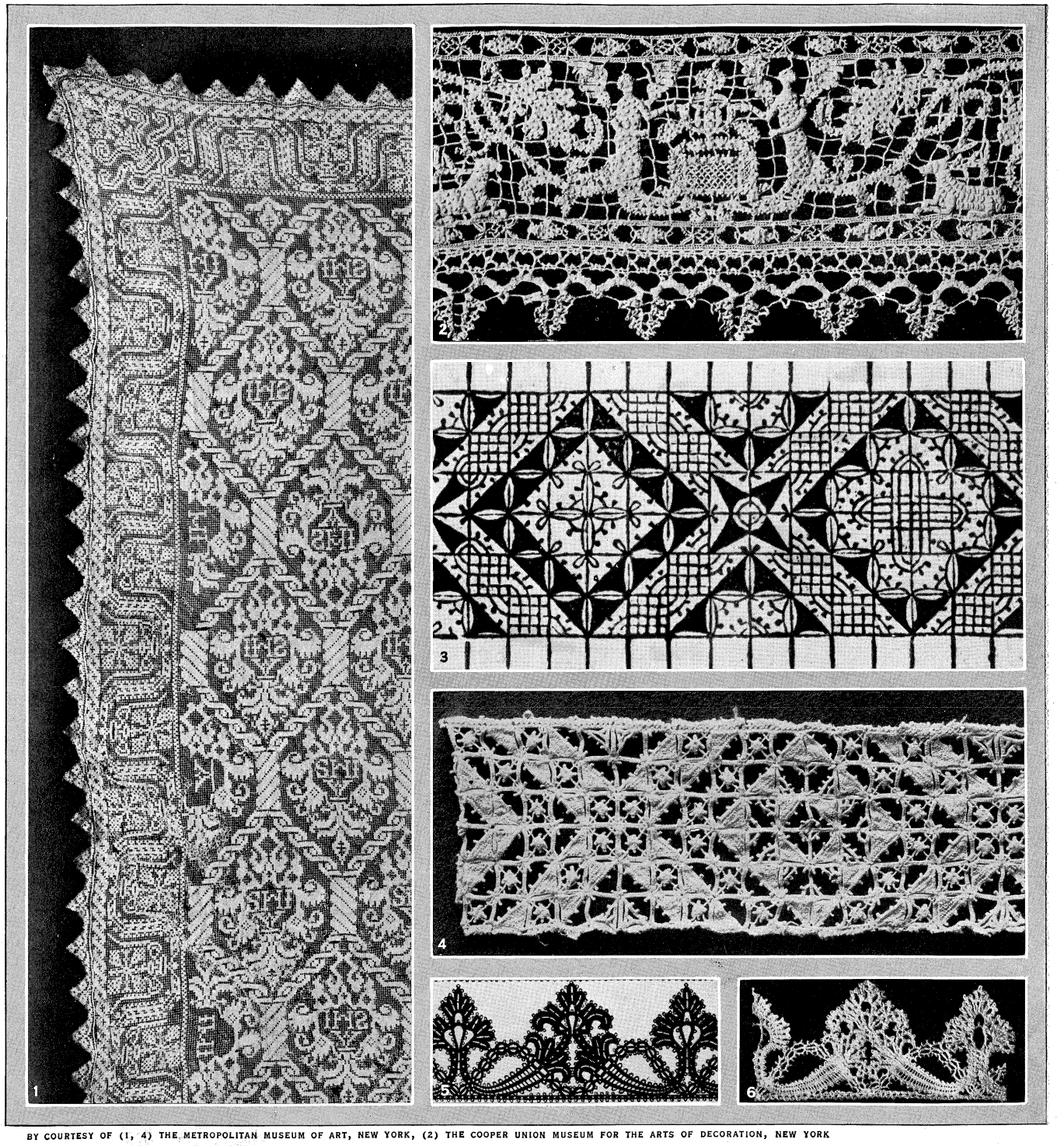
PHOTOGRAPHS, (1) ALINARI, (2) PHOTOGRAPHISCHE GESELLSCHAFT, BERLIN

ITALIAN LACE IN PORTRAITS OF THE 16TH AND 17TH CENTURIES

1. Portrait by Justus Sustermans (1597–1681) of Bartolommeo Corsini, Florence. The ruff is edged with the bobbin lace of the period, Italian 17th century, with five points and very open pattern

2. Portrait by Bronzino (Agnolo di Cosimo Tori, 1503–72) of Eleonora of Toledo. In the Uffizi Gallery, Florence. The neckpiece of net-work is Italian *punto mandilino*, 16th century

LACE



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ITALIAN 16TH CENTURY LACES AND PATTERNS

1. Altar cloth of embroidered net, Italian, 16th century. The central design, with the initials IHS, appears in the pattern book, *Opera Nova,* etc., published by Matthio Pagan in Venice, 1546
2. Needlepoint, *punto tagliato,* Italian, mid-16th cent. Patterns for this type of work were first published by Matthio Pagan in Venice, 1542
3. Pattern for cut work from Matthio Pagan's pattern book
4. Cut linen work, Italian, middle of the 16th century. This needlepoint *reticello* strip is similar to patterns designed by Matthio Pagan
5. Pattern from "Le Pompe," a pattern book of 1557
6. Modern execution of the pattern in fig. 5, by Madame Paulis. Brussels

PHOTOGRAPHS, (1) LEVY AND NEURDEIN, (2) ANDERSON

FRENCH AND SPANISH LACES

1. Marie Leszczynska (1703–68), queen consort of Louis XV. of France, wearing a bertha and ruffled sleeves of *point de France* lace; detail from the portrait (1747) by Carle van Loo (1705–65), in the Louvre

2. Queen Maria Christina of Bourbon, fourth wife (1829) of Ferdinand VII. of Spain (1784–1833), showing characteristic mode of wearing lace, probably Spanish blonde, period of 1830; from the portrait by Lopez y Portaña (1772–1850), in the Prado

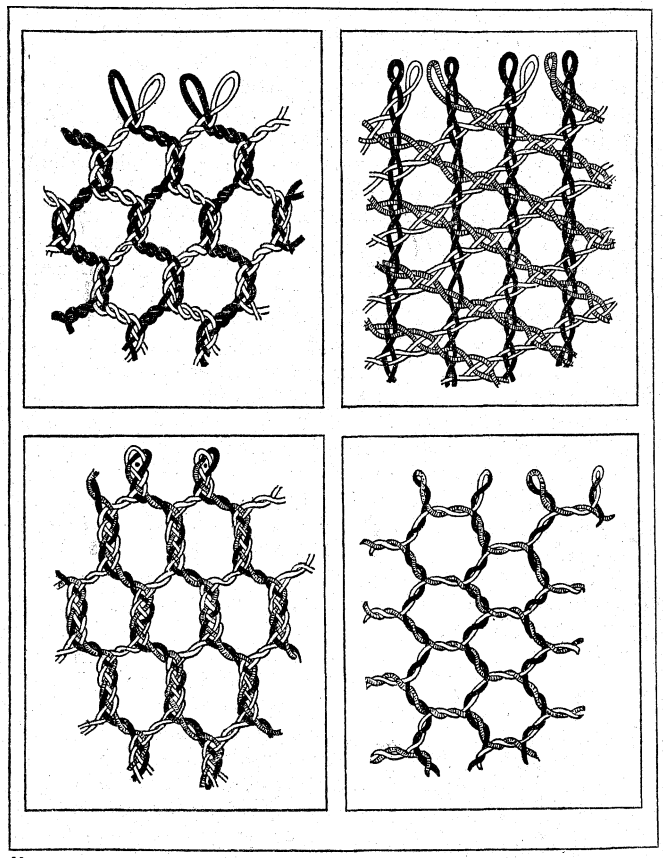
LACE

BY COURTESY OF THE BARON ROBERT DE ROTHSCHILD COLLECTION, PARIS, PHOTOGRAPH BY MAISON ADOLF BRAUN ET CIE.

FLEMISH NEEDLEPOINT LACE, 17TH CENTURY

Portrait by Rembrandt van Rijn (1607–69) of Martin Daey, 1634. The lace is Flemish needlepoint, *reticello*. The costume illustrates characteristic features of the period in lace collar and cuffs, garters worn like a scarf around the knee, and rosettes on the shoes

piece of equal interest is the flounce of *point d'Angleterre* in the Brussels collection (Pl. VII., fig. 7), a work executed presumably at the time of the marriage of Charles III. (afterwards Charles VI. of Spain), and Elizabeth of Brunswick. This lace designed in the earlier style of the *points de France,* combines in its pattern the interlaced monogram of these sovereigns and also their portraits surmounted by the Austrian crown. These with the splendid



UPPER LEFT, MECHLIN MESH. UPPER RIGHT, POINT DE PARIS. LOWER LEFT, BRUSSELS MESH. LOWER RIGHT, LILLE, ARRAS AND BUCKINGHAMSHIRE LACE

pieces preserved in the church treasuries of the 18th century and the number of historical works produced during the World War, form an important group illustrating the historical sequence of Belgian work during the past three centuries.

Eugene van Overloop in his guide to the Brussels collection, classifies Belgian laces according to districts under four general heads: (1) The laces of Brussels and the so-called Brabant laces. (2) The laces of Flanders. (3) The laces of Mechlin and those of the Antwerp district. (4) The laces of Valenciennes and their prototypes the laces of Binche.

In technique, Belgian laces may be divided as follows: (1) Bobbin laces: (a) Those made with a continuous thread on a stationary pillow; a process termed *fil continu,* such as Binche, Valenciennes, Mechlin, Lille, *point de Paris, point de Flandre* or *trolle kant.* (*Kant* is the old Flemish word for lace; *trolle kant* is a Flemish lace with a pattern outlined with a heavier thread than the body of the lace.) (b) Those made in sections—on a movable pillow that may be turned to follow the curves of the pattern—and the tie-bars (*brides*) or mesh added later; a work described as *à pièces rapportées.* In this variety the bobbins are at times supplemented by a crochet hook when the edges of the pattern have to be connected or additional threads have to be added in working the mesh, the hook drawing a loop of thread through a pin-hole in the edge of the work, in which loop a free bobbin is passed to draw the knot tight, as in the bobbin laces of the 16th and early 17th centuries, the *guipure* laces of Brussels and Bruges and the modern Duchesse. (c) The Brussels hand-made bobbin net (*droschel or vrai réseau*) made in narrow strips of one or more inches in width placed side by side and joined with the *point de raccroche.* The weaving of this delicate hexagonal mesh that has two sides braided and four sides twisted is one of Belgium's greatest achievements in lace-making. (2) Needlepoint laces: Those worked on cloth-backed parchment or paper; the Brussels *point à l'aiguille* or *point de gaze.* (3) Bobbin and needlepoint laces, which combine both techniques, the pattern usually worked on the pillow and the tie-bars or the mesh worked in with the needle. Modern lace of this type is often termed *point d'Angleterre.* (4) Applied laces: Those in which the pattern, worked with bobbins or by needle, is applied on hand-made or machine-made net; Brussels *appliqué.* (5) Embroidered machine net: this, when the pattern is in chain stitch worked with a crochet hook, is termed tambour work or *tulle brodé;* when the pattern is embroidered with a needle it is called *broderie à l'aiguille.*

Brussels as a court centre, produced the finest fabrics, a type which has a distinguishing feature in the delicate tape-like veining of its scrolls and leaves worked in a raised technique—a technique that was carried into England by Belgian refugees and reproduced in Devonshire Honiton. Brussels lace is worked in sections and the mesh or *brides* added. Especially fine were the old laces of Binche and Valenciennes, both worked *fil continu.* Early Valenciennes is distinguished by its round mesh, 19th century work having a square mesh and a quality less fine, while of special interest is the *potte kant* (flower pot) type of the Antwerp district. During the World War the Belgian relief made considerable progress in establishing better schools with modern methods, some of which have been continued in the different districts.

Holland.—Dutch portraits of the 17th century record in the lace-edged collars of Van Dyck's subjects, a closely worked pointed lace similar to, but less delicate than the Italian fabric. It is probable, however, that such lace may have been of Flemish rather than Dutch origin. What may be strictly termed Dutch lace is that made by the peasants for their native head-dresses. This in its close texture, reflects all the sturdy characteristics of the Dutch people. The fabric is so closely worked as to have the appearance of linen cloth in which the pattern is barely visible. A typical pattern, however, is an oval flower motive resembling a highly conventionalized chrysanthemum blossom considered by some authorities to have been inspired by the Chinese chrysanthemums in Oriental porcelains; other patterns for cap-bands are designed with a floral vase between confronted birds, or again, confronted swans. But little is known of the early laces produced in Holland. The Dutch excelled in bobbin lace.

England.—In the *opus Anglicanum* of the 13th century the art of England's needle-craftsmen had already attained its zenith in the great ecclesiastical embroideries of that period. But despite this perfected technique, England never excelled in the art of needlepoint lace, and it was to foreigners that she owed the introduction and development of her pillow-lace industry. The first reference to such occupation is that contained in a "Complaint" made in 1454 in consequence of the importation of six women, probably Flemings, who, it is said, at that time introduced Netherlandish linen-work and darning into England. Prior to the middle of the 16th century, however, there is little documentary evidence of anything other than imported fabrics, gold, silver and thread "lace" having become an article of commerce during the reign of Henry VII.

The earliest record of "laced linen" occurs in an inventory of 1519 which mentions Holland linen and a yard of lace. In the portraits of the wives of Henry VIII. the caps are edged with simple *purles* except in the case of Anne of Cleves, whose head-dress shows a band of lettered drawn-work designed in the style of the *libertas* piece in the pattern book of Vavassore (1532). During this reign while cutwork and *reticello* decorated the robes and vestments of church dignitaries, it did not yet appear in feminine attire. In Queen Mary Tudor's time (1553–58), however, the use of gold and silver lace and cutworks in costume had attained sufficient popularity to warrant a sumptuary law forbidding foreign cutworks to anyone under the degree of baron, while to a woman of a station beneath a knight's wife it was entirely prohibited. Throughout this early period lace was variously

described as *purle, passemayne* or "bone work," the latter referring to bobbin or pillow-made lace.

The establishment of England's lace industry owes its inception to the influx of continental refugees that poured into the country during the third quarter of the 16th century which occurred at three different times:—(1) 1563. Netherlandish Protestants fleeing from the terrors of the Spanish Inquisition. Among these were many "parchment lace" makers who settled along the coast of Kent. (2) 1568. A second group from the Mechlin lace district settled in Bedfordshire and Buckinghamshire. (3) 1572. A third group of French refugees who emigrated to England at the time of the slaughter of the Huguenots.

Thus at the time of the accession of Queen Elizabeth, while England was well supplied with lace-makers, foreign markets were still supplying the court with Genoese gold and silver edgings and simple Netherlandish bobbin laces such as were needed for the elaborate neck-ruffs, aprons and recently introduced handkerchiefs demanded by the current mode. In the midland counties and Devon, however, these foreign-born lace-workers were laying the foundations of a thriving industry for future generations. The geometric or *reticello* type of the Elizabethan period continued well into the reign of James I.; but with Charles I. the early 17th century mode that demanded elaborated points in lace patterns was established, a mode that gave way toward the middle of the century to broad, rounded scallops which gradually changed to a straight-edged variety in the latter part of the century. This century also witnessed the development of the foliated scroll in lace design following Venetian models.

The reign of Charles I. was marked by profligate extravagance in the use of lace. In the king's wardrobe accounts, one entry alone calls for 994 yd. for 12 collars and 24 pairs of cuffs, and again 600 yd. are required for trimming the ruffs of the king's night clothes. While lace was still imported in large quantities, in the first quarter of the 17th century, the English industry developed rapidly and in 1620 the exportation of a large quantity of gold and silver lace to India for the king of Golconda, recorded by an English company, indicates marked commercial activity. In order to encourage English workers, Charles I., in 1635, issued an edict prohibiting the importation of foreign "purles, cutworks and bone laces." It was at this time that the term *point d'Angleterre* came into use. Whether the lace bearing this name was an English fabric or whether it was a Flemish lace smuggled across the Channel to be sold as an English lace is a point that has caused much controversy.

A portrait of Catherine of Braganza painted by a Dutch artist illustrates the type of lace worn in court circles at the time of the accession of Charles II. The lace in this portrait corresponds closely to that illustrated in Plate V. fig. 2, an important document in English lace history. This lace which was found among some household linens in an old Devonshire shop, has a field of oak branches and acorns that serve as a background to a feather motive surmounted by the royal crown of England variously inscribed as follows: *Carolus Rex, C. 1661 B., Vive le Roi* and *C. B. Baronet.* Similar acorn branches are found in an old Bucks parchment dating from about 1700 illustrated by Wright; also the technique is the close bobbin stitch of the early Devonshire lace. While Dutch in type, there is no reason why a work of this importance should not have been made in England, bearing as it does the initials of Catherine of Braganza and the date 1661, which is not only the year of Charles's coronation and of his betrothal to Catherine, but also the year in which the king issued a proclamation enforcing his father's act prohibiting the importation of Continental lace.

During the reign of James II., England's lace-making population was again augmented by the immigration of refugees from France at the time of the revocation of the Edict of Nantes in 1685; many of these were from the districts of Chantilly, Paris, Alençon and Argentan, who brought with them the technique in which each of these centres specialized.

The court still retained its interest in Flemish laces throughout the reign of William and Mary, during which period the towering lace head-dress, the *fontange* of the French court, like the enormous neck-ruff of earlier days, proved a stimulus to the lace trade. From this time, the lace history of England reflects the popular trend of continental fashion until the early years of the 19th century, when hand industry everywhere was forced to give way to the increasing demand for machine-made fabrics, and in this field England took the lead, for it was an Englishman who built the first machine capable of producing fine Brussels net.

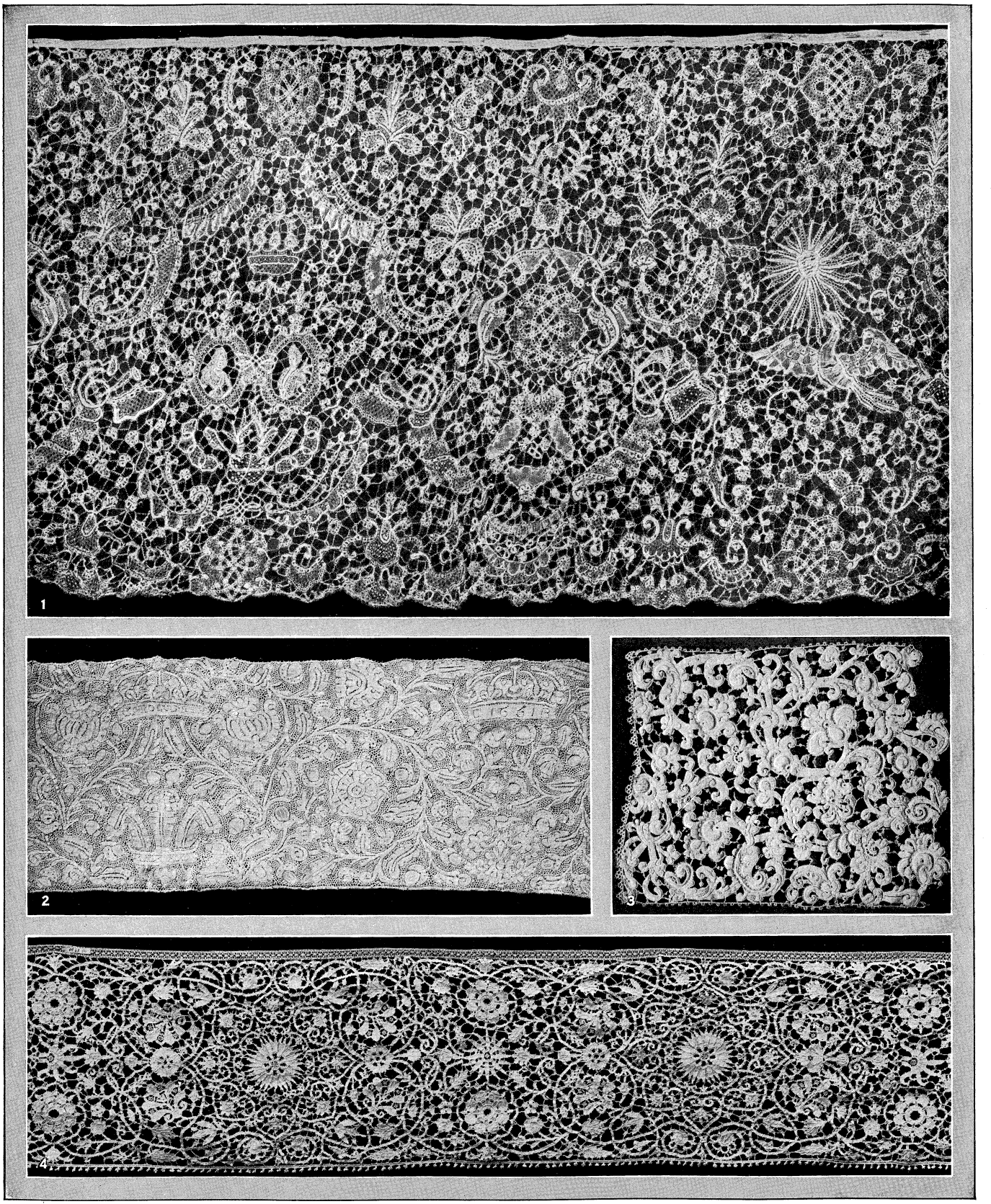
There was a revival of the Honiton industry under William IV. when a petition was addressed to Queen Adelaide in behalf of the distressed lace-makers. At that time the centre of the Devonshire lace industry was at Beer, a little fishing hamlet on the Devon coast between Seaton and Exmouth. Here the workers were furnished with new patterns, and it was here that the wedding lace of Queen Victoria was made, the dress costing £1,000. Honiton lace retained its popularity throughout the Victorian era; schools were established in various districts and every attempt was made by public and private enterprise to perpetuate the art, but these efforts met with little encouragement in the face of increasing interest in the less expensive machine product. (Honiton lace of the Victorian era is considered by some to be a decadent form of 18th century *point d'Angleterre* which such writers claim to have been of Devon rather than Flemish manufacture.) By the beginning of the 20th century lace was no longer fashionable, the prosperity of the native industry receiving a desperate set-back when the World War flooded the country with refugee lace-makers and Belgian relief work.

Of Irish lace to-day there are three distinct types. In date the earliest of these is the Carrickmacross *guipure* and *appliqué* which has been made in that neighbourhood since 1820. In this the pattern is cut from fine cambric embellished with needle-point stitches; in making the applied type the same process is employed, the finished work being afterwards applied on machine net. What is known as Limerick lace is the same as the Belgian *tulle brodé,* tambour work on machine-made net, a chain stitch worked with a crochet hook. Irish point, or Youghal lace, originated in the Convent of the Presentation of that town in County Cork. It is a flat needle-point lace and its technique is based on Italian models. All these industries originated as famine relief measures.

BY COURTESY OF THE METROPOLITAN MUSEUM OF ART

PILLOW USED IN MAKING 19TH CENTURY SWISS BOBBIN LACE

Germany.—The German presses produced the earliest pattern books, and German lace derived its technique from Flemish workers who emigrated at the time of the Spanish Inquisition and settled in Saxony. German tradition centres about the historic figure of Barbara Uttmann who, in 1561, organized an industry that developed rapidly and in time employed some 30,000 persons in the manufacture of lace work which had its origin in the network used for miners' caps. Dresden in the 18th century was noted for its drawn-work, European fashion for the moment demanding "Dresden ruffles" and "Dresden aprons." Drawn-work of this period followed contemporary lace patterns. In North Germany bobbin laces for native head-dresses, often referred to as Nüremberg lace, resembled the Valenciennes and Mechlin types but were worked with coarser thread which resulted in a much less delicate texture. In central and southern Germany the 18th and early 19th century peasant laces, like those of Russia, are of the serpentine braid type, coarsely worked on crudely drawn patterns; modern peasant laces from this district are of the coarse

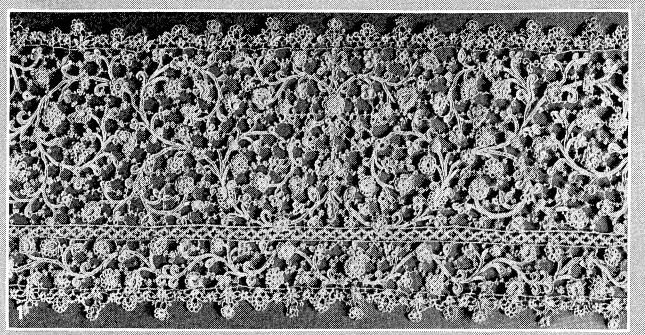


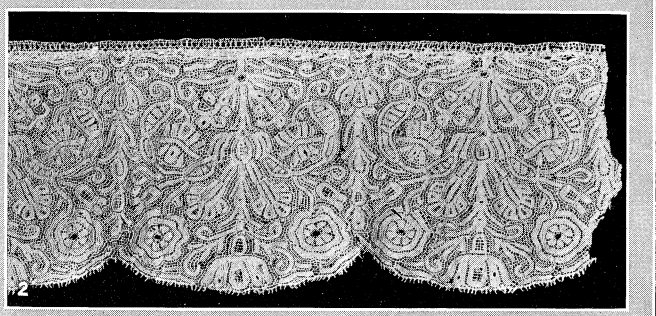
BY COURTESY OF (1, 3, 4) THE METROPOLITAN MUSEUM OF ART, NEW YORK, (2) MISS FRANCES MORRIS

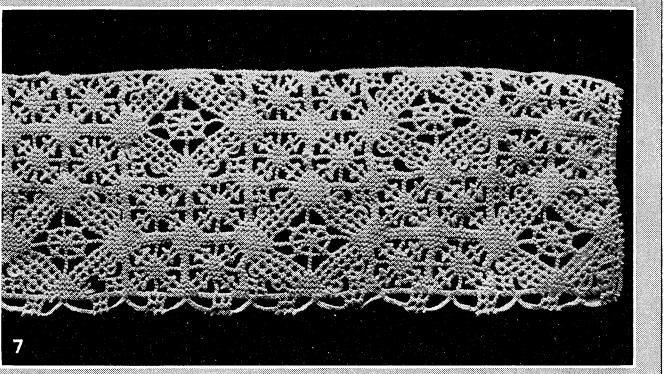
BOBBIN AND NEEDLEPOINT LACES, 16TH–18TH CENTURY

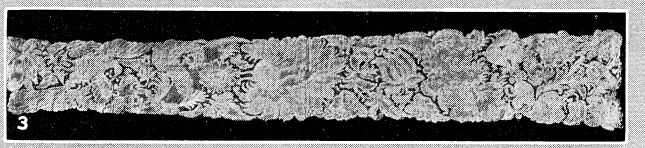
1. Flounce of Flemish bobbin lace, *c.* 1708. Another part of this flounce is in the Royal Museum du Cinquantenaire, Brussels. This specimen was made for presentation to Elizabeth of Brunswick, wife of Charles VI., on her entry into Brussels. The intertwined initials C and E, the portrait medallions, and the crown are significant motives. 2. Bobbin lace, probably made in Devonshire, England, 17 century. The pattern shows the British crown, surmounting the royal feather device. The crown motives bear the inscriptions "Carolus Rex," "Vive le Roi," "C. 1661 B.," and "C. B. Baronet." The date 1661 is that of Charles II.'s coronation, of his betrothal, and of his proclamation prohibiting the importation of foreign laces. 3. Venetian needlepoint in high relief. 16th–17th century. This heavy Venetian point, with details worked in high relief and often edged with loops, is termed *gros point de Venise*. 4. Venetian needlepoint, early 17th century. The motives, derived from Near Eastern art, show the conventional scrolling pattern like that in rugs and tooled leather. The technique is elaborated from the *punto in aria*

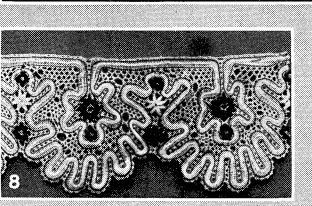
LACE

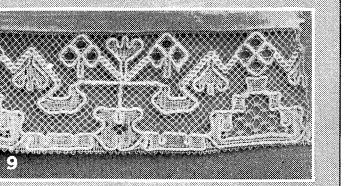


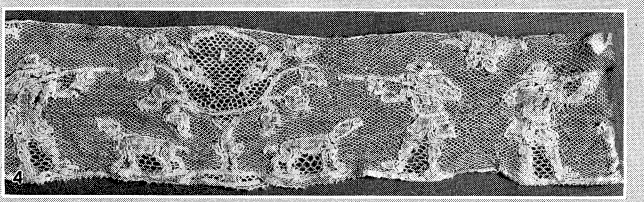


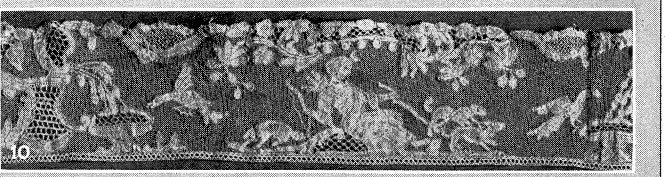


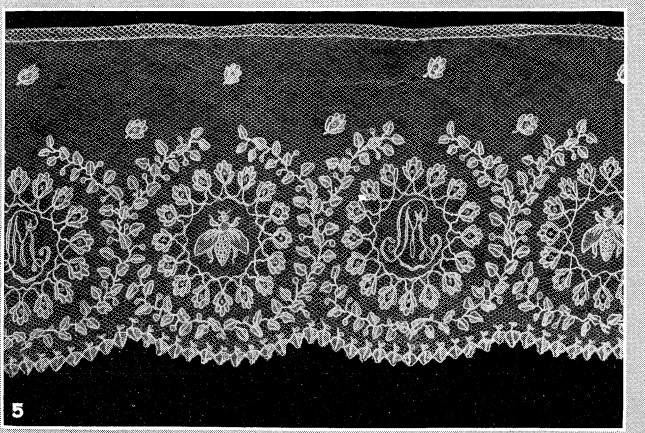


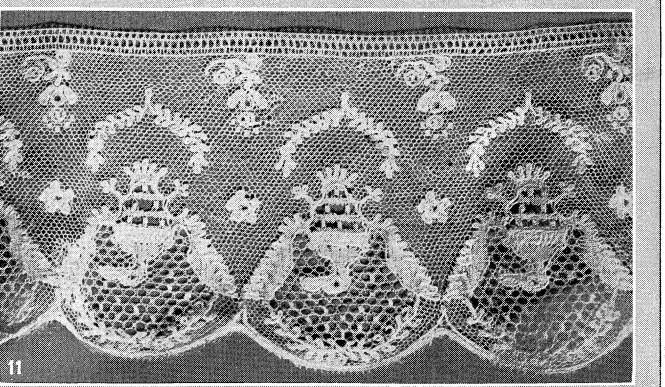












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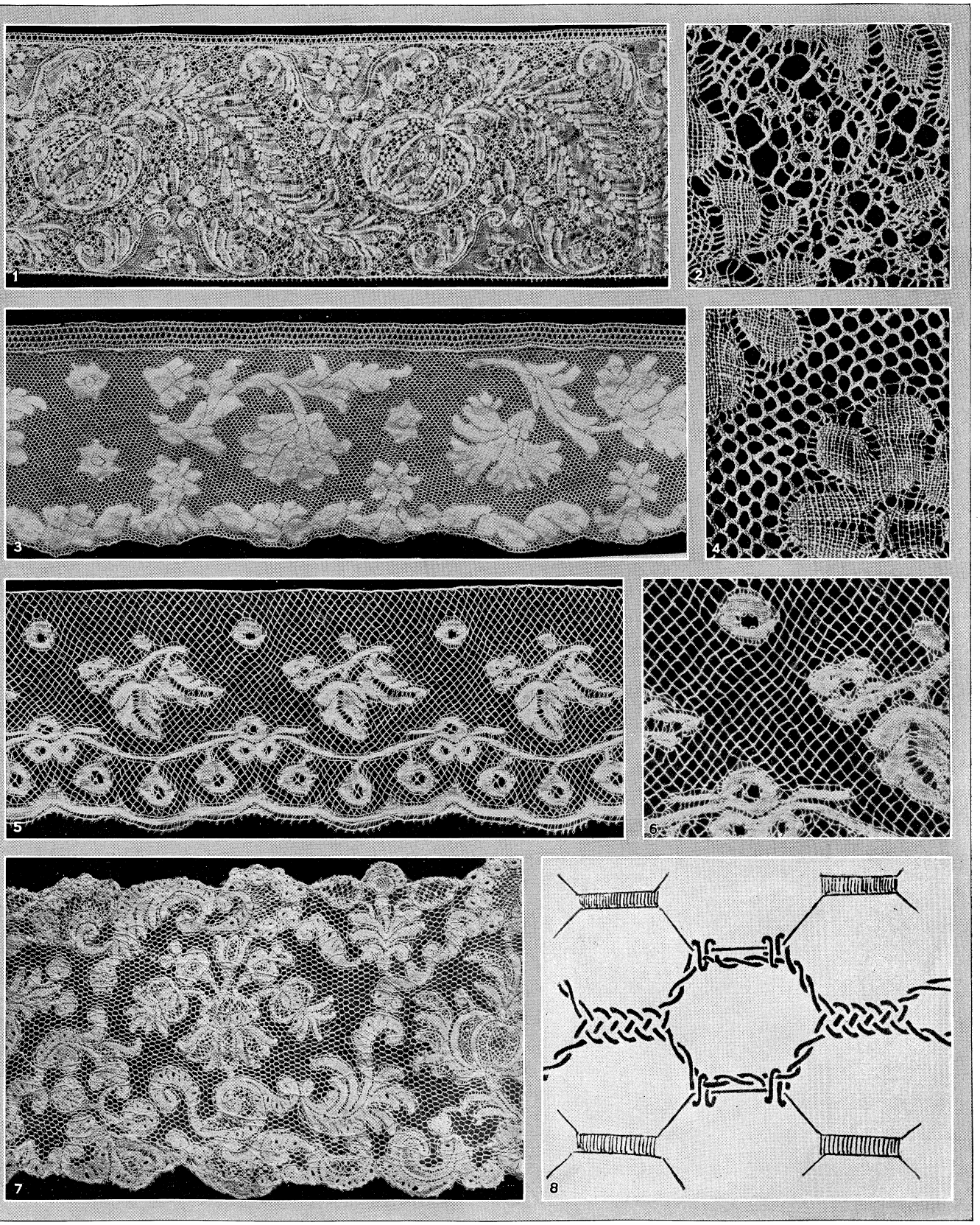
NEEDLEPOINT AND BOBBIN LACES, 17TH–19TH CENTURY

1. Needlepoint lace, Venetian rosepoint, 17th and early 18th centuries. This delicate lace is characterized by exquisite technique and evenly distributed accentuation
2. Schleswig-Holstein lace, needlepoint
3. Barbe or lappet of Old Brussels, a Flemish bobbin lace, the so-called *point d'Angleterre,* possibly made in France in the early 18th century, by Flemish workers from French designs. *Point d'Angleterre* was one of the fashionable court laces of the period
4. Bobbin lace, Mechlin, 18th century. The laces of Mechlin and of Antwerp developed a distinct character, the Mechlin type having a hexagonal ground and an outlining thread, with figures
5. Brussels needlepoint, applied on handmade net. The initials are those of the Empress Marie Louise, wife of Napoleon I.; they alternate with the Napoleonic emblem, the bee
6. Needlepoint, so-called grounded Venetian, *point de Venise à réseau,* Italian, 18th century. The most delicate of all needlepoint laces. The provenance of this type of lace is still a disputed point
7. Modern fine copy of Italian needlepoint worked in *punto avorio* in an 18th century pattern
8. Bobbin lace, Russian, 19th century, with details in characteristic bright colours
9. Bobbin lace, Swedish, 19th century. This Dalecarlia lace shows the angular arrowhead and tree motives, outlined with a heavy thread
10. Bobbin lace, so-called *point d'Angleterre,* 18th century, showing Diana and her dogs. The technique is called *à pièces rapportées;* the pattern is worked separately from the mesh
11. Bobbin lace, Mechlin type, of American workmanship, possibly made at Ipswich, Mass. The arms closely resemble those of the Washington family



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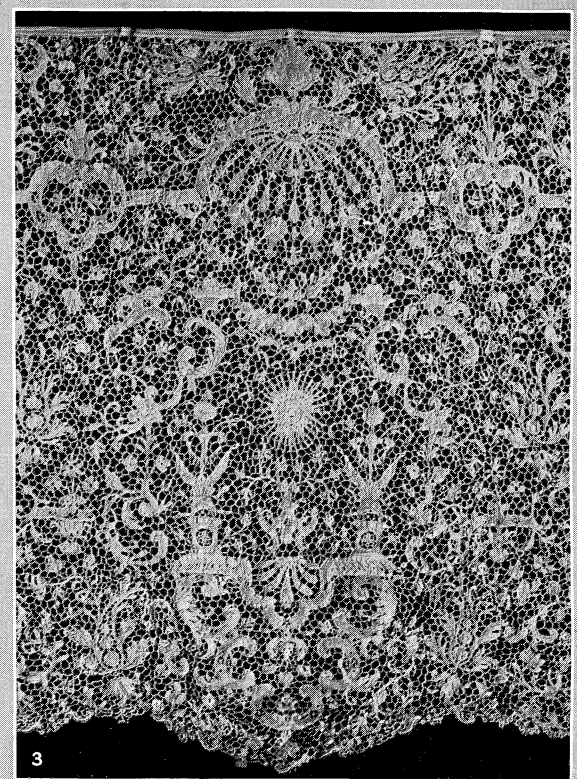
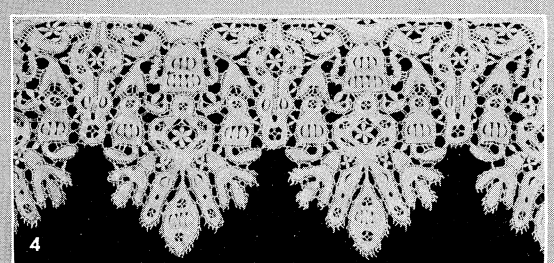
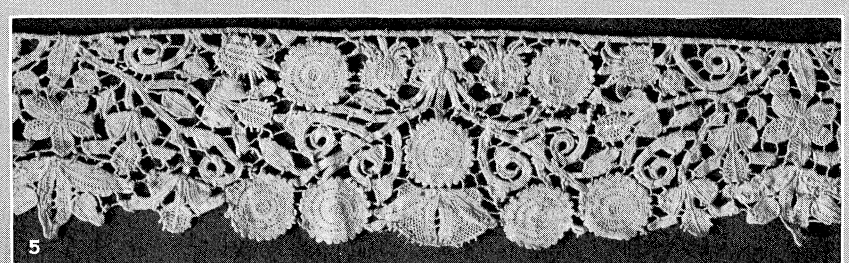
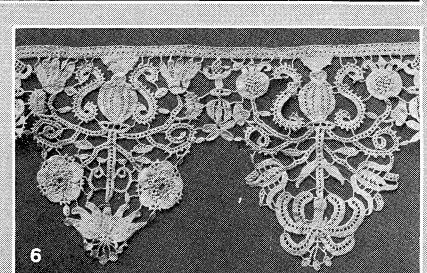
BINCHE, VALENCIENNES, AND BRUSSELS LACES, 17TH–19TH CENTURY

1. Bobbin lace, Binche, Belgian, the so-called "Old Valenciennes," with *fond de neige* or "snow ground," 17th–18th century. The technique is termed *fil continu*
2. Enlarged detail of Binche lace
3. Bobbin lace, Valenciennes, 18th century, with round mesh, called *maille ronde*. The technique is *fil continu*
4. Enlarged detail, showing the mesh, *maille ronde*
5. Bobbin lace, Valenciennes, 19th century, with square mesh, called *maille carré*. The technique is *fil continu*
6. Enlarged detail, showing the mesh, *maille carré*
7. Detail of Brussels *point d'Angleterre*, showing threads of the hexagonal braided mesh (*droschel*), carried behind the pattern as in *point de Milan*
8. Line drawing by Madame Paulis of Brussels, showing method of joining the narrow strips of *droschel*, or *vrai réseau*









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BOBBIN AND NEEDLEPOINT LACES, 17TH CENTURY

1. Linen apron with bobbin lace, probably Flemish, 16th or early 17th century, Brussels
2. Portrait bust by Antoine Coysevox (1640–1720) of Jean Baptiste Colbert (1619–83), Louis XIV.'s minister, who revived the lace and tapestry industry in France. He imported Venetian workers to develop the lace industry in France. The neckpiece in the figure is early *point de France* or *point Colbert*
3. *Point de France* lace, 17th century. derived from Italian models. The mesh is hexagonal. The pattern, in the style of Berain, shows the sun, royal emblem of Louis XIV., *le roi soleil* (1638–1715). This is typical Louis XIV. needlepoint of the best period of *point de France, c.* 1665–75
4. Bobbin lace, Italian (Genoese), early 17th century. This piece is in the United States National Museum, Washington, D. C.
5. Needlepoint lace, English, 17th century, corresponding to Italian *punto in aria*
6. Needlepoint lace, English, 17th century, *punto in aria*

torchon or Cluny variety. In the 19th century black silk *guipure* laces were made in Saxony.

Switzerland.—Here also, the first lace-workers were immigrants, French refugees having settled at Geneva in the 16th century; its most important centre, however, developed at Neuchâtel, where lace schools still teach the art, the laces produced resembling those of Lille and Brussels. Switzerland also has to her credit the publication of several early pattern books, one printed in Zürich in 1540, and another, a reprint of Vicellio's *Corona* printed at Saint Gall in 1593.

Denmark and Scandinavia.—In Denmark an act of 1643 records the interest of Christian IV. in the native industry. What is described as Schleswig Holstein lace is that shown in the portrait of Christian IV. in the Hampton Court Palace collection, a lace closely allied to that in the Charles II. fabric illustrated in Pl. VI. fig. 2. The industry at Tonder that in recent years has been revived was founded in 1647 when workers were imported from Westphalia to teach the art; the modern lace resembles that of Mechlin. Danish cutwork termed Hedebo is closely allied to similar Swedish work; the patterns are based on the Greek key motive. Native drawn-work follows the contemporary type found in France, Germany and the Netherlands. In Sweden the 17th century lace preserved in the Stockholm museum is of the same general type as the pointed bobbin laces of northern Italy. The modern lace industry centres are at Dalecarlia, Rattvik and Wadstena—the laces of Dalecarlia having the angular arrowhead and tree motives outlined with a heavy thread, while those of Rattvik are made of finer thread worked in a lozenge pattern with no distinctive outline.

The United States.—Ipswich, Mass., seems to have been the only place where lace-making was carried on to any great extent. While the industry there was confined to cottage work, the lace-workers of Ipswich are credited with having produced silk lace to the amount of 42,000 yd. yearly, a statement made by Tench Cocxe in an address before the Pennsylvania Society in 1786. The technique followed English traditions, the patterns used resembling those found in the Midland counties; the pillow was round, like those used by the Devonshire workers and the bobbins were slender wooden sticks without bulbed ends. A settlement of Huguenots in the Hudson valley introduced bobbin lace in that district, but it never developed into an industry. (*See* Mabel F. Bainbridge, "Early Lace Making in America," in *House and Garden*, April, 1916.)

LACE-MAKING MACHINES

It is uncertain who invented the first machine capable of making an openwork mesh, but it is generally conceded that an English Nottingham worker named Hammond was one of the earliest in the field and that in 1768 improvements made in the stocking-knitting machine resulted in the production of a lacey material resembling net. It was also in this year that the initial attempt to warp so-called "lace goods" was made by another Nottingham man named Crane, an invention likewise based on the stocking machine. A few years later, between 1771–77, Robert Frost, from the same district, invented a machine for making a coarse square net such as was used by wig-makers, and a finer quality extensively used in ladies' mits. The next step in the development was the introduction of what was termed "point net," a somewhat oblong hexagonal meshed fabric that appeared about 1776. Authorities differ as to the inventor; a patent was taken out by a man named Taylor in 1778 and the invention was finally acquired by the Hayne firm of Nottingham, which firm is credited with having introduced tambour work described as "stitch splitting and net tambouring." In 1795 William Dawson invented an improvement in the warp machine with which warp edgings were made, an invention that was afterwards applied to lace machinery.

The invention of the Jacquard loom in 1801 marked a new era in the world of machine-made fabrics, and in the early years of the 19th century, the development of power-driven machinery advanced rapidly. The outstanding figure of this period in the field of lace machinery is John Heathcoat, whose invention of the bobbin net machine in 1809 became the foundation of an enormous industry, the net produced on the perfected Heathcoat machine being a thread net of fine quality imitating the hand-made Brussels fabric. Another important name in the development of lace machinery is that of John Levers, who in 1813 improved and modified the arrangement of the bobbins and carriages in the Heathcoat machine, an invention that is said to have added £3,000,000 yearly to the lace trade. The first factory for the manufacture of machine net was set up at Tiverton, Devon, in 1815. In America the first lace factory was founded at Medway, Mass., in 1818, followed by a second at Ipswich, Mass., in 1824. In France the machine industry was established by the early years of the century by several Englishmen from Nottingham who settled in the Calais district, using a modified type of the Heathcoat machine.

Modern machine lace is made on Levers looms built in Nottingham; these machines are used by American manufacturers in New York, Philadelphia, Bridgeport and Pawtucket; they carry from 5,000 to 10,000 threads, and can produce from 40–180 sq.ft. of net or 40–18 yd. of 4 in. lace, the quality of the product depending largely upon the genius of the designer and the commercial viewpoint of the producer. In Europe, where the cost of production is less, laces of fine quality, close copies of old Mechlin, *point de Paris* and Valenciennes, are produced, but the use of mercerized cotton reduces the durability of the fabric.

In recent years the introduction of chemicals in lace manufacture has made possible the reproduction of heavy Venetian point. In this method the design worked in cotton on a silk or wool foundation is subjected to the action of chemicals that destroy the foundation leaving the cotton embroidery intact. This process has been developed with considerable success in the St. Gall district, Switzerland.

Another process employed in the manufacture of modern laces is one in which a cellulose paste is used in moulding the pattern. It is stated that in 1914 a Lyons factory was producing at the rate of 2,734 yd. of this type of "lace" in 24 hours.

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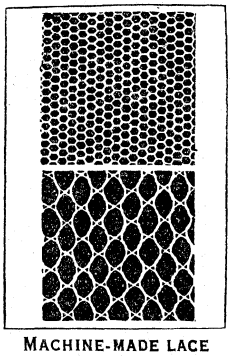
MACHINE-MADE LACE

Methods of Manufacture.—Lace was first made by machinery in the latter half of the 18th century, and there rapidly formed an extensive industry. The term "lace" is employed in connection with knitted fabric when the plain stitch is altered by the addition of a series of points which are selected according to pattern. These points descend on to the needles of the machine

and, lifting the selected stitches off, move them either to the left or to the right on to neighbouring needles. In the hosiery trade this is spoken of as lace fabric, but it would be more correctly described as openwork. These patterns can be made of full width repeats by the use of the Jacquard selective mechanism and for plain patterns the stitches are transferred *either* towards the right *or* the left, but always in the same direction. In what are known as double-dip patterns, each lacing course has two selections; the first is transferred towards the neighbouring needle on the right, and the lace points dip again and transfer their second selection towards the left. This gives a larger diversity to the fabric and increases the elegance and style of the pattern. This type of texture is used largely for underwear because it can be worked in the same material as the ground and is homogeneous to it.



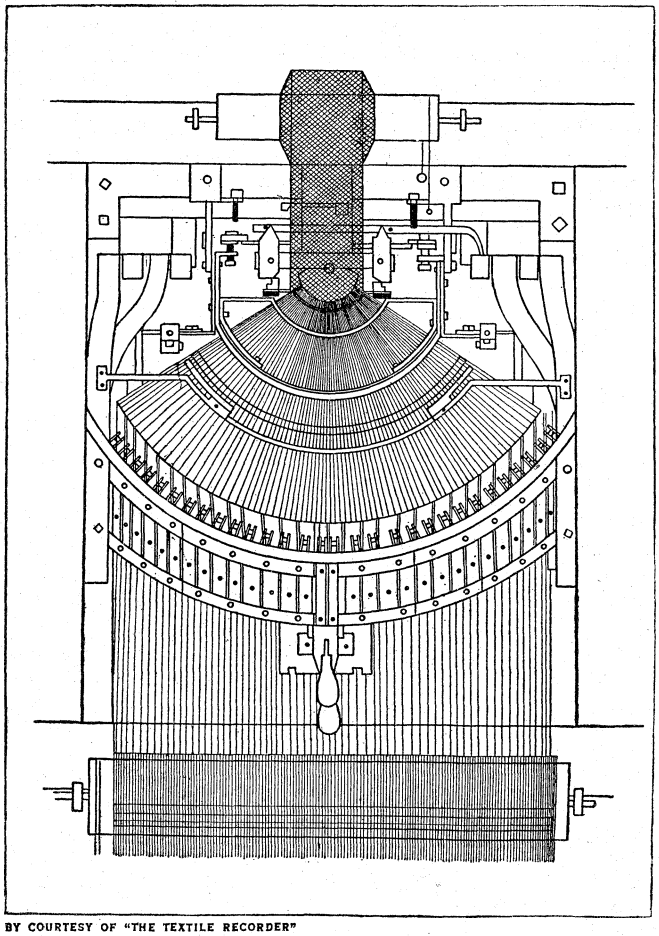
MACHINE-MADE LACE
Above, pattern of bobbin net; below, pattern of mosquito net fabric

In the hosiery trade there has been a great increase of lace-like edgings on garments, which have the advantage that they can be made in the same type of material and can match in colour; what is known as the shell-stitch is largely added to the edges of garments which were formerly trimmed with lace.

New Styles of Lace Curtains.—The decorative laces have experienced reduced demand because of the great changes which have occurred in fashion, which has taken many turns unfavourable to the wide use of lace. There are, however, many directions in which the lace trade has developed; for example, the lace curtain branches are active owing to the demand for the newer styles of lace curtains worked in decorative effects, particularly in the two-material foundation possible by employing viscose artificial silk and the acetate type which can be dyed two colours in the same bath, the viscose taking the colour for which it has affinity and the acetate selecting the other. Efforts have been made to employ idle lace machines in the making of fabrics intended for suitings and overcoatings; but on the whole the lace machine has been found too expensive a means of producing goods of this class in competition with the weaving loom. Many types of lace have their yarns prepared on a beam of the ordinary kind where the threads are first warped from the yarns arranged on a creel or jack. The threads are correctly tensioned and drawn on to the cylinder of the warping machine which is of large circumference and set to revolve the number of times required to give the length of warp. When one warp section is complete the operator cuts the threads and completes the section by securing it to the cylinder. He moves to the next space and places the second section of yarn on the new part, and repeats the operation until the warp is complete. These threads are next beamed in the usual manner by winding them on to the loom beam, adding flanges at the sides to prevent the edge threads falling over the side and becoming slack in tension. The beam is hung horizontally, with the threads coming up vertically through sleys of brass or woven wire, to guides or perforated steel bars from which they pass between the well of the comb bar, over the facing bar and round the work roller.

The work roller is hung parallel to the warp beam and parallel to it. If all the threads are arranged on one beam as is done for the simplest types of laces, it follows that all the constituents of the warp must have the same take-up of thread in the fabric; but in the great majority of laces there are many different lengths of take-up required by the various sets of threads which go to the composition of a pattern, consequently a number of small beams are employed, about 1½in. in diameter, on which the threads of varying take-up are wound. There are often 100 or more such beams in a machine. Certain lace looms such as the bobbin net type are used to produce grounds of lace texture which are destined to form the bases of further operations in embroidery and other ornamenting agencies.

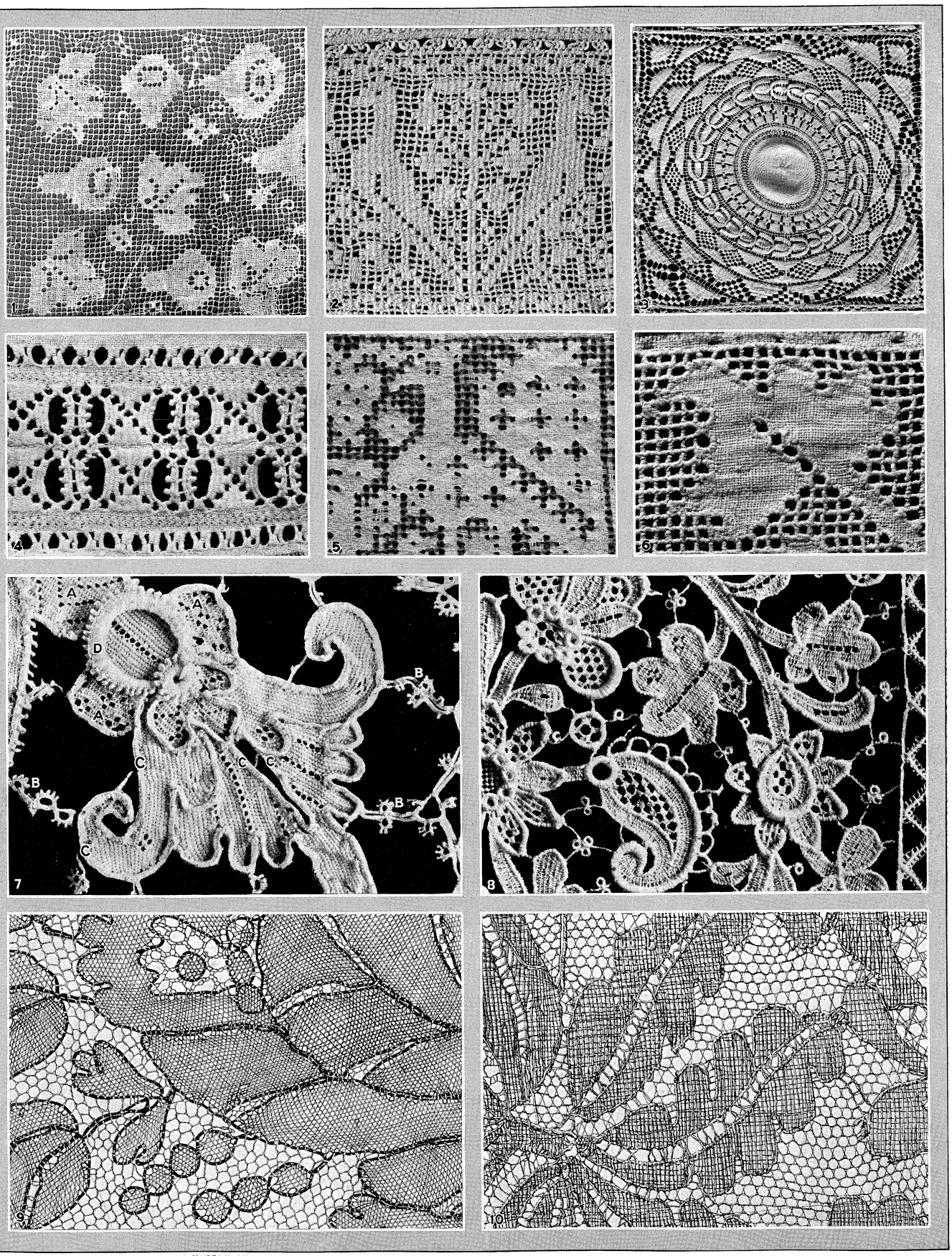
The Levers Loom.—What is known as the Levers loom is one of the most important types for producing fancy lace. It has bobbins and carriages which may be said to correspond to the spool and shuttle of the weaving loom. The bobbin consists of two circular discs riveted together with sufficient space between to house about 100yd. of yarn. The discs are free to revolve on the verge of a carriage and controlled in tension by a spring. A machine having 20 bobbins or carriages to the inch would be known as a 10-point machine, 16 carriages per inch would give 8-point and so on for other gauges, the number of carriages being divided by two to give the gauge. Each comb bar in the loom can hold the full number of carriages back and front, each of which carry the combs set in an arc of about 12in., of which the centre is the facing bar. Both comb bars are fixed so that the combs in each bar are directly opposite. Along with each comb bar is the catch bar which moves along the curve of the comb, and the function of the catch bar is to move the carriage backwards and forwards. It does this by alternately engaging with the nibs of the carriage. Working in conjunction with each catch bar is a landing bar which supports the extremity of the carriage at each swing across the well of the combs. The usual range of gauges on lace looms are from 4-point to 16-point lace, and recent tendencies have all been in the direction of finer laces, and some idea of this delicacy may be gathered from the fact that the finest yarn which it is possible to spin is used for fine lace. This yarn is produced



BY COURTESY OF "THE TEXTILE RECORDER"
FRONT VIEW OF JOHN HEATHCOAT'S FIRST LACE MACHINE, 1808

in Lancashire and holds the record in the world for fine cotton spinning. Cotton of 400 counts is used, that is to say 400×840=336,000yd. of this yarn are required to weigh 1 lb., this length being equivalent to 190 miles of yarn—a truly marvellous achievement.

The width of the lace loom is measured similar to the method adopted in the weaving industry, the unit being the quarter yard of 9in., thus a width of six quarter (6/4) is equal to 6×9=54in., eight quarter would be 8×9=72in. wide. The unit of measuring lace is known as the rack, and this consists of a definite num-



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NET, DRAWN WORK, NEEDLEPOINT AND BOBBIN LACES

1. Knotted net worked in *punto a tela*. 2. Woven net, *Buratto*. 3. Spanish net, *sol* pattern. 4 to 6. *Drawnwork:* 4. *Tela sfilata*—weft threads drawn out, warp threads overworked with weaving stitch. 5. *Fili tirati e ripresi* or *lacis*—groups of warp and weft threads drawn out, pattern darned in, threads of background overworked. 6. *Fili tirati tela lasciata*—groups of warp and weft threads out at edge of pattern, threads of background overworked with winding stitch. **7.** 17th cent. Venetian needlepoint, enlarged (A) Ornamental stitches, *jours* or *modes* (B) Tie-bars or *brides* (C) Cordonnet (D) High relief work. 8. Machine-made Venetian point type. 9. Bobbin lace, Chantilly, enlarged. 10. Machine-made Chantilly type

ber of motions, a motion being a clear position for the warp threads to shog. A rack of bobbin net equals 240 meshes counted vertically. If it is desired to designate the net quality, the number of holes is counted horizontally and diagonally and the total number of holes in one inch is given as the quality; for example, 13 diagonal holes and 9 horizontal holes per inch in a fabric would give 13+9=22 quality.

Lace machines are built in widths varying from 146in. to 222in., plain net machines are constructed from 200in. to 360in. wide, the wider machines being usually of a coarser point.

Speed of Modern Lace Machines.—In machines which do not use beams the preparation of the warp is a most important matter and small neat winding machines are used. As there are often about 3,000 such bobbins in work at a time, they have to be arranged to occupy the smallest space possible and all bobbins on the modern lace machine are subjected to a pressure of several tons weight to each row. The modern lace machine has a remarkable speed when one considers the complicated nature of the motions; on a machine making Mechlin lace, for instance, the speed is about 350 motions per minute, the speed of the veiling machine varies between 175 and 200 motions per minute, the Gothro loom averages 140, whilst the Levers machine runs at about 108 motions per minute. In making small laces the individual breadths are connected by a thread which can be afterwards drawn out to separate one breadth from another. The lace curtain machine is wide enough to take about eight curtains which finish 60in. wide each, requiring 460in. of machine breadth.

The Jacquard principle of selective mechanism has been adapted to the special requirements of the lace loom, and in the curtain machine, for instance, the threads of the warp pass through guides which are arranged in bars, each bar having gathered on to it all the threads which require an identical movement in the fabric. The guides are controlled by a cam or small Jacquard at one end of the machine and the pattern is actually produced by intercepting certain threads through individual tricks, each of which is controlled from an overhead Jacquard.

The rolling locker plain net lace machine is distinct from the Levers, Gothro or curtain type, in that there are two tiers of carriages; the front tier is continually traversed to the right, whilst the back tier is traversed to the left. This gives the diagonal effect to bobbin net laces which distinguishes them from all other types.

Finishing.—The procedure regarding lace finishing varies in many ways from that adopted in other branches of textiles. The fabric has to be examined or viewed and the examiner has to recreate the pattern where it has broken down, and in the very complicated character of many of those designs it requires one who has a thorough knowledge of the design structure. For white laces the material is bleached in the usual manner and the laces are joined together and given a preliminary softening by steeping them in water overnight. This performs the usual functions of steaming: it softens the material and also frees the larger and grosser impurities from the material. Keir boiling is next done in the usual manner by the use of a keir in which about 2 to 3% of caustic soda is used. After treatment in this way for several hours it is rinsed and at the next stages is treated with chloride of lime, after which the material is thoroughly washed and then run through a weak acid bath to neutralize the lime. It is then treated in the hydro extractor to remove the water, but the material is left damp in preparation for the next process of starching, which makes the fabric very stiff, and in this state it is stentered or stretched over hooks to draw it out to the width required. The narrower laces are then treated with a spray of water to soften them and prepare them for the calender, when they are passed through between several pairs of heated rollers which impart a gloss. (W. Ds.)

LACE-BARK TREE, a native of Jamaica, known botanically as *Lagetta Lintearia,* from its native name lagetto. The inner bark consists of numerous concentric layers of interlacing fibres resembling in appearance lace. Collars and other articles of apparel have been made of the fibre, which is also used in the manufacture of whips, etc. The tree belongs to the family Thymelaeaceae, and is known in hothouses in Britain.

LACEDAEMON, in historical times an alternative name of LACONIA (*q.v.*). Homer uses only the former, and in some passages seems to denote by it the Achaean citadel (Therapnae of later times) in contrast to the lower town Sparta (G. Gilbert, *Studien zur altspartanischen Geschichte,* Göttingen, 1872, p. 34 foll.). It is described by the epithets "hollow" and "spacious" and the name may be probably connected with λάκκος, *lacus,* "lake" or "basin." The modern department of Lacedaemon is the upper half of the valley, with Sparta as capital.

LACÉPÈDE, BERNARD GERMAIN ÉTIENNE DE LA VILLE, COMTE DE (1756–1825), French naturalist, was born at Agen on Dec. 26, 1756. His education was carefully conducted by his father, and the early perusal of Buffon's *Natural History* awakened his interest in that branch of study. His leisure he devoted to music, and two of his operas (never published) met with the approval of Gluck; in 1781–85 he also brought out in two volumes his *Poétique de la musique.* Meantime he wrote *Essai sur l'électricité* (1781) and *Physique générale et particulière* (1782–84), which led Buffon in 1785 to appoint him sub-demonstrator in the Jardin du Roi, and to suggest that he continue his *Histoire naturelle.* This continuation was published as *Histoire des quadrupèdes ovipares et des serpents* (2 vols., 1788–89) and *Histoire naturelle des reptiles* (1789). Having returned to Paris after the Revolution, he was appointed to the chair allocated to the study of reptiles and fishes. After the publication of vol. 1 of his *Histoire naturelle des poissons* (1798, vol. 5, 1803), politics began to absorb his attention. In 1799 he became a senator, in 1801 president of the senate, in 1803 grand chancellor of the legion of honour, in 1804 minister of state, and at the Restoration in 1819 he was created a peer. He died at Epinay on Oct. 6, 1825.

Besides the above works, Lacépède wrote *Histoire des cétacés* (1804) and *Hist. générale physique et civile de l'Europe* (18 vols., 1826). His collected works on natural history appeared in 1826.

LACEWING-FLY, the name given to neuropterous insects of the families *Hemerobiidae* and *Chrysopidae,* with long delicate antennae, slender bodies and two pairs of similar richly veined wings. They are world-wide in distribution. The larvae are stout grubs with prominent suctorial jaws and well developed legs: they roam about vegetation preying upon aphides and other soft-bodied insects. The *Hemerobiidae* include the brown lacewings; their eggs are devoid of stalks and their larvae are generally naked. The *Chrysopidae* include the green lacewings or golden-eye flies; their eggs are laid at the apices of stalks formed of hardened secretion, and the larvae often cover themselves with the empty skins of their prey. (*See* NEUROPTERA.)

LA CHAISE, FRANÇOIS DE (1624–1709), father confessor of Louis XIV., was born at the château of Aix in Forey on Aug. 25, 1624. During the long strife over the temporalities of the Gallican Church between Louis XIV. and Innocent XI. Père de la Chaise supported the royal prerogative, though he used his influence at Rome to conciliate the papal authorities. He must be held largely responsible for the revocation of the Edict of Nantes, but not for the brutal measures applied against the Protestants. He exercised a moderating influence on Louis XIV.'s zeal against the Jansenists. Père de la Chaise had a great affection for Fénelon, which remained unchanged by the papal condemnation of the *Maximes.* He died on Jan. 20, 1709. The cemetery of Père-la-Chaise in Paris stands on property acquired by the Jesuits in 1826, and not, as is often stated, on property personally granted to Père de la Chaise.

See R. Chantelauze, *Le Père de la Chaise: Études d'histoire religieuse* (Paris and Lyons, 1859).

LA CHAISE-DIEU, a town of central France, in the department of Haute Loire, 29 m. N.N.W. of Le Puy by rail. Pop. (1936) 881. The town, which is situated 3,500 ft. above the sea, owes its celebrity to its Gothic church built by Morel in the 14th century at the expense of Pope Clement VI. It belonged to a powerful Benedictine abbey founded in 1043. Trade in timber and linen and the making of lace chiefly occupy the inhabitants of the town.

LA CHALOTAIS, LOUIS RENÉ DE CARADEUC DE (1701–1785), French jurist, was born at Rennes, on March 6, 1701. He was for 60 years procureur général at the parlement of Brittany. He was an ardent opponent of the Jesuits and drew up in 1761 for the parlement a memoir on the constitutions of the Order, which did much to secure its suppression in France. The year 1763 began the conflict between the Estates of Brittany and the governor of the province, the duc d'Aiguillon (*q.v.*). The Estates refused to vote the extraordinary imposts demanded by the governor in the name of the king. La Chalotais was the personal enemy of d'Aiguillon, and he took the lead in its opposition. The parlement forbade by decrees the levy of imposts to which the Estates had not consented. The king annulling these decrees, all the members of the parlement but twelve resigned (Oct. 1764 to May 1765). The government considered La Chalotais one of the authors of this affair. La Chalotais, his son and four other members of the parlement were arrested on a charge of writing insulting anonymous letters to the governor of the province. On Nov. 16, 1765, a commission of judges was named to take charge of the trial.

La Chalotais was exiled, but after a long conflict, was recalled in 1775, and was allowed to transmit his office to his son. The opposition to the royal power gained largely through this affair, and it may be regarded as one of the preludes to the revolution of 1789. La Chalotais died at Rennes on July 12, 1785.

See, besides the *Comptes-Rendus des Constitutions des Jésuites* and the *Essai d'éducation nationale,* the *Mémoires de la Chalotais* (3 vols., 1766–1767). Two works containing detailed bibliographies are Marion, *La Bretagne et le duc d'Aiguillon* (Paris, 1893), and B. Pocquet, *Le Duc d'Aiguillon et La Chalotais* (Paris, 1901). *See* also a controversy between these two authors in the *Bulletin critique* for 1902.

LA CHARITÉ, a town of France in the department of Nièvre, on the bank of the Loire, 17 m. N.N.W. of Nevers on the Paris-Lyon-Méditerranée railway. Pop. (1936) 5,239. It owes its celebrity to its priory, which was founded in the 8th century and reorganized as a dependency of the abbey of Cluny in 1052. Manufactures are hosiery, boots and shoes, tarpaulin, lime and cement, furniture, hats, iron goods and woollen goods.

LA CHAUSSÉE, PIERRE CLAUDE NIVELLE DE (1692–1754), French dramatist, was born in Paris. La Chaussée was 40 years old before he produced his first play, *La Fausse Antipathie* (1734). His second play, *Le Préjugé à la mode* (1735), turns on the fear of incurring ridicule felt by a man in love with his own wife, a prejudice dispelled in France, according to La Harpe, by La Chaussée's comedy. *L'École des amis* (1737) followed, and, after an unsuccessful attempt at tragedy in *Maximinien,* he returned to comedy in *Mélanide* (1741). In *Mélanide* the type known as *comédie larmoyante* is fully developed. *L'École des mères* (1744) and *La Gouvernante* (1747) form, with those already mentioned, the best of his work. He died on May 14, 1754.

For the *comédie larmoyante see* G. Lanson, *Nivelle de la Chaussée et la comédie larmoyante* (1887).

LACHES, a term for slackness or negligence, used particularly in law to signify negligence on the part of a person in doing that which he is by law bound to do, in allowing an unreasonable time to elapse in asserting a right, seeking relief, or claiming a privilege. Statutes of limitation (*q.v.*) specify the time within which various classes of actions may be brought, and various statutes granting remedies, etc., impose a definite time within which legal action must be taken, *e.g.,* Affiliation, Public Officers Protection Acts, etc. Apart from statutes of limitation courts of equity will often refuse relief to those who have allowed unreasonable time to elapse in seeking it, on the principle *vigilantibus ac non dormientibus jura subveniunt.*

LACHINE, a city in Jacques Cartier county, Quebec, Canada, 8 m. W. of Montreal, on Lake St. Louis, an expansion of the St. Lawrence river, and at the upper end of the Lachine canal. Pop. (1941), 20,051. It is a station on the Canadian National railway and a port of call for steamers plying between Montreal and the Great Lakes. It is a favourite summer resort for the people of Montreal, and is the site of the electric works, which furnish power and light for the city of Montreal. It was named in 1669 in mockery of its then owner, Robert Cavelier de la Salle (1643–1687), who dreamed of a westward passage to China. In 1689 it was the scene of a massacre of the French by the Iroquois.

LACHISH, an ancient Amorite fortress in Southern Palestine now identified with Tell el-Hesy, a mound in the Wady el-Hesy, which runs from 6 m. S.W. of Hebron to the sea between Gaza and Askalon. It is mentioned in the Tell Amarna letters, and a tablet of the Amarna period was found on the site mentioning Zimrida, known to have been a governor of Lachish at that period, thus confirming the identification. Its fortunes were, generally speaking, those of any city situated on the borderlands between mighty empires, which, when called on to take sides in warfare, does so with fear and trembling. It was destroyed by Joshua, assigned to Judah, fortified by Rehoboam, and was the scene of the murder of King Amaziah. Sennacherib made it his headquarters for his campaign against Judah, and it long resisted Nebuchadrezzar, and maintained a precarious existence—now an outpost of Egypt, now a frontier fortress of Palestine. It was excavated for the Palestine Exploration Fund by Flinders Petrie and Bliss, 1890–93. The excavations show that eight cities succeeded each other on the site, then its inhabitants abandoned it (*c.* 400 B.C.) to erect their city on a new site. There is a mound in the neighbourhood (*Umm Lakis*) which preserves the name and probably marks the site of the Roman city.

See W. M. Flinders Petrie, *Tell el-Hesy* (1891); F. J. Bliss, *A Mound of Many Cities* (1898). (E. Ro.)

LACHMANN, KARL KONRAD FRIEDRICH WILHELM (1793–1851), German philologist and critic, was born at Brunswick on March 4, 1793, and died on March 13, 1851. In 1815 he joined the Prussian army as a volunteer, and marched to Paris. His life was spent in the study of philology, specially Old and Middle High German, and from 1825 he was professor of philology at Berlin.

Lachmann in his able "Habilitationsschrift" *Über die ursprüngliche Gestalt des Gedichts der Nibelunge Not* (1816), and still more in his review of Hagen's *Nibelungen* and Benecke's *Bonerius,* contributed in 1817 to the *Jenaische Literaturzeitung,* had already laid down the rules of textual criticism and elucidated the phonetic and metrical principles of Middle High German in a manner which marked a distinct advance in that branch of investigation. The rigidly scientific character of his method becomes increasingly apparent in the *Auswahl aus den hochdeutschen Dichtern des dreizehnten Jahrhunderts* (1820), in the edition of Hartmann's *Iwein* (1827), in those of Walther von der Vogelweide (1827) and Wolfram von Eschenbach (1833), in the papers "Über das Hildebrandslied," "Über althochdeutsche Betonung und Verskunst," "Über den Eingang des Parzivals," and "Über drei Bruchstücke niederrheinischer Gedichte" published in the *Abhandlungen* of the Berlin Academy, and in *Der Nibelunge Not und die Klage* (1826, 11th ed., 1892), which was followed by a critical commentary in 1836.

Lachmann's *Betrachtungen über Homers Ilias,* first published in the *Abhandlungen* of the Berlin Academy in 1837 and 1841, in which he sought to show that the *Iliad* consists of 16 independent "lays" variously enlarged and interpolated, have had considerable influence on modern Homeric criticism (*see* HOMER), although his views are no longer accepted. His smaller edition of the New Testament appeared in 1831, 3rd ed. 1846; the larger, in two volumes, 1842–50. Besides *Propertius* (1816), Lachmann edited *Catullus* (1829); *Tibullus* (1829); *Genesius* (1834); *Terentianus Maurus* (1836); *Babrius* (1845); *Avianus* (1845); *Gaius* (1841–42); the *Agrimensores Romani* (1848–52); *Lucilius* (edited after his death by Vahlen, 1876); and *Lucretius* (1850). The last, which was the main occupation of the closing years of his life, from 1845, was perhaps his greatest achievement, and has been characterized by Munro as "a work which will be a landmark for scholars as long as the Latin language continues to be studied." Lachmann also translated *Macbeth* (1829).

See M. Hertz, *Karl Lachmann, eine Biographie* (1851), where a full list of Lachmann's works is given; F. Leo, *Rede zur Säcularfeier K. Lachmanns* (1893); J. Grimm, biography in *Kleine Schriften;* W. Scherer in *Allgemeine deutsche Biographie,* xvii., and J. E. Sandys, *Hist. of Classical Scholarship,* iii. (1908), pp. 127–131.

LACINIUM, PROMUNTURIUM (mod. Capo delle Colonne), 7 m. S.E. of Croton (mod. Cotrone); the easternmost point of Bruttii (mod. Calabria). On the cape still stands a single column of the temple erected to Hera Lacinia, which is said to have been fairly complete in the 16th century, but to have been destroyed to build the episcopal palace at Cotrone. It is a Doric column with capital, about 27 ft. in height. In excavations in 1909 little was discovered but small fragments; but the entrance to the enclosure of the temple was found to correspond with the processional road from Crotona. The date of the erection of the temple may be given as 480–440 B.C.

LA CIOTAT, a coast town of south-eastern France in the department of Bouches-du-Rhône, on the west shore of the Bay of La Ciotat, 26 mi. S.E. of Marseilles by rail. Pop. (1936), 10,497. The port is easily accessible and well sheltered. The large ship-building yards and repairing docks of the Messageries Maritimes company give employment to between 2,000 and 3,000 workmen. It has also copper works and manufactures tents and sails and has trade in wood and oil. Fishing and an active coasting trade are carried on; the town is frequented for sea-bathing.

LACKAWANNA, city, Erie county, New York, U.S.A., on Lake Erie, adjoining Buffalo on the south, and served by the Buffalo, Rochester and Pittsburgh, the New York Central and the Pennsylvania railways. The population was 17,918 in 1920 (38% foreign-born white, largely from Poland and Hungary), and 24,058 in 1940. It is a vast workshop of the Bethlehem Steel company, which has extensive plants along the lake front. The city was incorporated in 1909.

LA CLOCHE, JAMES DE ["Prince James Stuart"] (1644?–1669), a character who was brought into the history of England by Lord Acton in 1862 (*Home and Foreign Review*, i. 146–174: "The Secret History of Charles II."). From information discovered by Father Boero in the archives of the Jesuits in Rome, Lord Acton averred that Charles II., when a lad at Jersey, had a natural son, James. The evidence follows. On April 2, 1668, as the register of the Jesuit House of Novices at Rome attests, "there entered Jacobus de la Cloche." His baggage was exiguous, his attire was clerical. He is described as "from the island of Jersey, under the king of England, aged 24." He bore certain letters purporting to have been written by Charles II., the most important being a letter of recommendation (Aug. 13, 1667) to Oliva, general of the Jesuit order. The truth is that all Charles's letters are forgeries. This is certain because in all he writes frequently as if his mother, Henrietta Maria, were in London, and constantly in company with him. Now she had left England for France in 1665, and to England she never returned. As the letters—including that to "Prince Stuart"—are all forged, it is clear that de la Cloche was an impostor. His aim had been to get money from Oliva, and to pretend to travel to England, meaning to enjoy himself. He did not quite succeed, for Oliva sent a *socius* with him into France.

The name of James de la Cloche appears no more in documents. He reached Rome in Dec. 1668, and in January a person calling himself "Prince James Stuart" appears in Naples, accompanied by a *socius* styling himself a French knight of Malta. Both are on their way to England, but Prince James falls ill and stays in Naples, while his companion departs. The knight of Malta may be a Jesuit. In Naples, Prince James marries a girl of no position, and is arrested on suspicion of being a coiner. To his confessors (he had two in succession) he says that he is a son of Charles II. Our sources are the despatches of Kent, the English agent at Naples, and the *Lettere*, vol. iii., of Vincenzo Armanni (1674), who had his information from one of the confessors of the "Prince." The viceroy of Naples communicated with Charles II., who disowned the impostor; Prince James, however, was released, and died at Naples in August 1669, leaving a wild will, in which he claims for his son, still unborn, the "apanage" of Monmouth or Wales, "which it is usual to bestow on natural sons of the king." The son lived till about 1750, a penniless pretender, and writer of begging letters.

Further conjectures may be found in *The Man of the Mask* (1908), by Monsignor Barnes, who argued that James was the man in the iron mask (*see* IRON MASK). (A. L.; X.)

LA CONDAMINE, CHARLES MARIE DE (1701–74), French geographer and mathematician, was born at Paris on Jan. 28, 1701, and was trained for the army. With Louis Godin and Pierre Bouguer he joined the expedition sent to Peru in 1735 to determine the length of a degree of the meridian in the neighbourhood of the equator, but finally separated from the rest and made his way from Quito down the Amazon to Cayenne. His was the first scientific exploration of the Amazon; he published the results with a map of the Amazon in *Mém. de l'académie des sciences*, 1745 (English translation 1745–47). He visited Rome with a view to determining the length of the Roman foot. The journal of his voyage to South America was published in Paris in 1751. He died at Paris on Feb. 4, 1774.

LACONIA, the ancient name of the south-eastern district of the Peloponnese (Gr. Λακωνική) of which Sparta was the capital. It has an area of some 1,048,000 acres, slightly greater than that of Somersetshire, and consists of three well-marked zones running north and south; (1) The valley of the Eurotas, which occupies the centre, is bounded west by (2) the chain of Taygetus (mod. Pentedaktylon, 7,900 ft.), which runs from the Arcadian mountains on the north to the promontory of Taenarum (Cape Matapan). The eastern portion (3), a more broken range of hill country, rises in Mt. Parnon to 6,365 ft. and terminates in the Cape Malea. The range of Taygetus is well watered and in ancient times had forests which afforded excellent hunting; also iron mines and quarries of the famous *rosso antico* of Taenarum, as well as an inferior bluish marble. The quarries of green porphyry (*lapis Lacedaemonius*) were at Croceae. Far poorer are the slopes of Parnon for the most part barren limestone scantily watered. The Eurotas valley, however, is fertile and produces maize, olives, oranges and mulberries. Laconia has no large rivers except Eurotas and its largest tributary Oenus (mod. Kelefína). The coast, especially on the east, is rugged with few good harbours. Cythera island, *q.v.*, lies south of Cape Malea. Important towns, besides Sparta and Gythium, were Bryseae, Amyclae and Pharis in the Eurotas plain; Pellana and Belbina on the upper Eurotas; Sellasia on the Oenus, Caryae on the Arcadian frontier; Prasiae, Zarax and Epidaurus Limera on the east coast; Geronthrae on the slopes of Parnon; Boeae, Asopus, Helos, Las and Teuthrone on the Laconian Gulf; and Hippola, Messa and Oetylus on the Messenian Gulf.

The earliest inhabitants in tradition, were autochthonous Leleges (*q.v.*). Minyan immigrants settled on the coast and even founded Amyclae in the Eurotas valley; Phoenician traders visited the Laconian Gulf, and there are indications of very early trade between Laconia and Crete, *e.g.*, blocks of green Laconian porphyry have been found in the Minoan palace at Cnossus. In Homer, Laconia is the realm of an Achaean prince, Menelaus, whose seat was perhaps Therapne, south-east of Sparta. This Achaean kingdom fell before the Dorians *c.* 1100 B.C. and throughout the classical period the history of Laconia is that of its capital Sparta (*q.v.*).

In 195 B.C. the coast towns were freed from Spartan rule by the Roman general T. Quinctius Flamininus, and became members of the Achaean League. When this was dissolved in 146 B.C., they remained independent under the title of the "Confederation of the Lacedaemonians" or "of the Free-Laconians" (*see* GYTHIUM). Augustus seems to have reorganized the league, for Pausanias (iii. 21, 6) speaks of him as its founder. Of the twenty-four cities which originally composed the league, only eighteen remained by the reign of Hadrian (*see* ACHAEAN LEAGUE). In A.D. 395 Goths under Alaric devastated Laconia, and later it was overrun by large bands of Slavs. Throughout the middle ages it was the scene of struggles between Slavs, Byzantines, Franks, Turks and Venetians, the memorials of which are the fortresses of Mistra near Sparta, Geráki (anc. Geronthrae) and Monemvasia, "the Gibraltar of Greece," on the east coast, and Passava near Gythium. In the War of Independence a prominent part was played by the Maniates or Mainotes, the inhabitants of the rugged peninsula formed by the southern part of Taygetus who had maintained virtual independence of the Turks and until quite

recently retained many mediaeval customs, living in fortified towers and practising blood-feud and marriage by capture.

The district has been divided into two departments (nomes), Lacedaemon and Laconia, with their capitals at Sparta and Gythium respectively. Pop. of Laconia (1938 estimate) 129,927.

Archaeology.—Besides the excavations undertaken at Sparta, Gythium and Vaphio (*q.v.*), the most important were those at the Apollo sanctuary of Amyclae before 1904 by C. Tsountas in 1890 (Ἐφημ. ἀρχαιολ. 1892, 1 ff.) and in 1904 by A. Furtwängler. At Kampos, on the western side of Taygetus, a small domed tomb of Mycenean age was excavated in 1890 and yielded two leaden statuettes of great interest; at Arkina a similar tomb had been explored in 1889. Important inscriptions were found at Geronthrae (Geráki), notably five long fragments of the *Edictum Diocletiani*. In 1904 the British Archaeological school at Athens undertook a systematic investigation of the ancient and mediaeval remains in Laconia. The results, of which the most important are summarized in the article SPARTA, are published in the British School *Annual*, x. ff. The acropolis of Geronthrae, a hero-shrine at Angelona in the south-eastern highlands, and the sanctuary of Ino-Pasiphae at Thalamae have also been investigated.

See the works cited under SPARTA and GREECE.

LACONIA, a city in the lake region of central New Hampshire, U.S.A., on the Winnepesaukee river, in the foot-hills of the White mountains; the county seat of Belknap county. It is on Federal highway 3 (the Daniel Webster), and is served by the Boston and Maine railroad. The population was 10,897 in 1920 (81% native white) and was 13,484 in 1940 (federal census), increasing to 20,000 in the summer months. The city has a land area of 20.3 sq.mi., bounded on the north-east by Lake Winnepesaukee, and on the southwest by Lake Winnisquam. Surrounding Laconia are the Belknap mountains, with the lakes and The Weirs making it a popular summer resort; the state school for feeble-minded children; the county farm; and the state fish hatchery. It is a centre for winter sports. Hydro-electric power is available, and the city has important manufactures (notably pleasure boats, wool and silk-and-wool hosiery, knitting machines and latch needles). Its trade area has a radius of 30 mi. and a population of 30,000. The assessed valuation of property in 1940 was $14,145,368.

The Weirs marks the northern limit of the territory claimed by Massachusetts, and was visited in 1652 by a party of surveyors sent out by Governor Endicott, who chiselled their initials on a boulder (now enclosed in a granite memorial structure). A blockhouse was built in 1736 and permanent settlement began in 1761. A township was incorporated under the name of Laconia in 1855, which in 1893, after additions of territory, was chartered as a city.

LACONICUM, the dry-sweating room of a Roman bath (*see* BATHS). The *laconicum* was usually circular in plan, and covered by either a conical roof or a dome, in the centre of which was a circular opening, closed or opened by means of a bronze shield which could be adjusted so as to regulate temperature and ventilation (Vitruvius 5, 10). In the smaller baths the *laconicum* was merely an apse or recess opening out of the *calidarium* or hot room. In the baths of the forum at Pompeii it is an apse occupying the entire end of the *calidarium*. The *laconicum* was heated by a hypocaust, a hollow space below the floor, through which smoke and heat from a furnace passed, and also by vertical heating flues in the side-walls. (*See* also SUDATORIUM.)

LACORDAIRE, JEAN BAPTISTE HENRI (1802–1861), French ecclesiastic and orator, was born at Recey-sur-Ource, Côte d'Or, on March 12, 1802. He was the second of a family of four, the eldest of whom, Jean Théodore (1801–70), travelled a great deal in his youth, and was afterwards professor of comparative anatomy at Liége. For several years Lacordaire studied at Dijon, showing a marked talent for rhetoric. He thought of going on the stage, but was induced to finish his legal training in Paris, and began to practise as an advocate (1817–24). Meanwhile Lamennais had published his *Essai sur l'Indifférence,*—a passionate plea for Christianity as necessary for the social progress of mankind. Lacordaire read the book, and determined to become a priest. In 1824 he entered the seminary of Saint Sulpice; four years later he was ordained and became almoner of the college Henri IV. He co-operated with Lamennais in editing *l'Avenir*. Lacordaire strove to show that Catholicism was not bound up with the dynastic idea, and allied it with a well-defined liberty, equality and fraternity. But the new propagandism was denounced from Rome in an encyclical.

In the meantime Lacordaire and Montalembert, believing that, under the charter of 1830, they were entitled to liberty of instruction, opened an independent free school. It was closed in two days, and the teachers fined before the court of peers. These reverses Lacordaire accepted with quiet dignity; but they brought his relationship with Lamennais to a close. He now began the course of Christian *conférences* at the Collége Stanislas, which attracted the art and intellect of Paris; thence he went to Notre Dame, and for two years his eloquent sermons were the delight of the city. He still preached the people's sovereignty in civil life and the pope's supremacy in religion, but he brought to his doctrine the full resources of a mind familiar with philosophy, history and literature, and led the reaction against Voltairian scepticism. In 1838 he set out for Rome, revolving a great scheme for christianizing France by restoring the old order of St. Dominic. At Rome he donned the habit of the preaching friar and joined the monastery of Minerva. His *Mémoire pour le rétablissement en France de l'ordre des frères prêcheurs* was then prepared and dedicated to his country; at the same time he collected the materials for the life of St. Dominic. When he returned to France in 1841 he resumed his preaching at Notre Dame.

Lacordaire's funeral orations are the most notable in their kind of any delivered during his time, those on Marshal Drouet and Daniel O'Connell being models of classical eloquence. He was elected to the National Assembly; but, being rebuked by his ecclesiastical superiors for declaring himself a republican, he resigned his seat ten days after his election. In 1850 he went back to Rome and was made provincial of the order, and for four years laboured to make the Dominicans a religious power. In 1854 he retired to Sorrèze to become director of a private lycée, and died there Nov. 22, 1861. He had been elected to the Academy in 1860.

The best edition of Lacordaire's works is the *Oeuvres complètes* (6 vols., 1872–73), published by C. Poussielgue, which contains, besides the *Conférences,* the exquisitely written, but uncritical, *Vie de Saint Dominique* and the beautiful *Lettres à un jeune homme sur la vie chrétienne*. For a complete list of his published correspondence *see* L. Petit de Julleville, *Histoire de la langue et de la littérature française* (1897–99) vii. 598.

The authoritative biography is by Ch. Foisset (2 vols., 1870). The religious aspect of his character is best shown in Père B. Chocarne's *Vie du Père Lacordaire* (2 vols., 1866—Eng. trans. by A. Th. Drane, 1868); *see* also Count C. F. R. de Montalembert's *Un Moine au XIXème siècle* (1862—Eng. trans. by F. Aylward, 1867). There are lives by Comte O. d'Haussonville (*Les Grands écrivains Français* series, 1897); and by the duc de Broglie (1889). *See* also the *Correspondance inédite du Père Lacordaire,* edit. by H. Villard (1870) and Saint-Beuve in *Causeries de Lundi*. Several of Lacordaire's *Conférences* have been translated into English, among these being, *Jesus Christ* (1869); *God* (1870); *God and Man* (1872); *Life* (1875).

LACQUER or **LACKER,** a general term for coloured and frequently opaque varnishes applied to certain metallic objects and to wood. The term is derived from the resin lac, which substance is the basis of lacquers properly so-called. Technically, among Western nations, lacquering is restricted to the coating of polished metals or metallic surfaces, such as brass, pewter and tin, with prepared varnishes which will give them a golden, bronze-like or other lustre as desired. Throughout the East Indies lacquering of wooden surfaces is practised, articles of household furniture, as well as boxes, trays and toys, being decorated with bright-coloured lacquer. This process of applying the lacquer to decorative articles of wood is also known as *Japanning*.

(X.)

CHINESE AND JAPANESE

The lacquer of the Far East, China, Japan and Korea must not be confused with other substances to which the term is generally applied; for instance, the lac of Burma, which is the gummy de-

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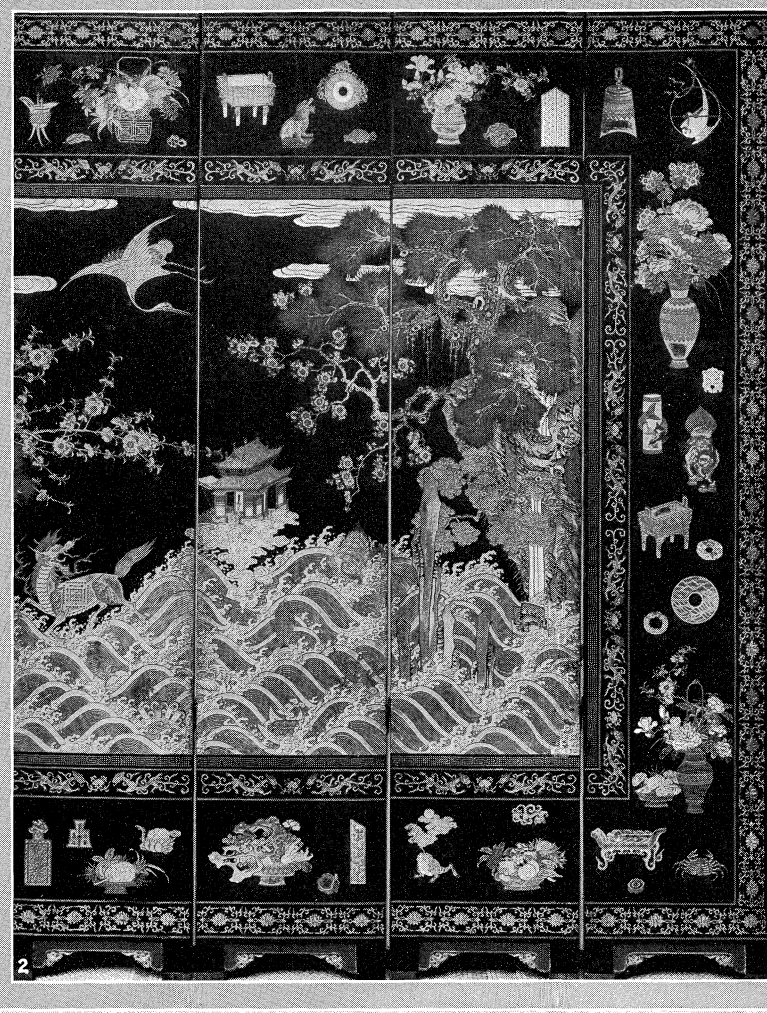

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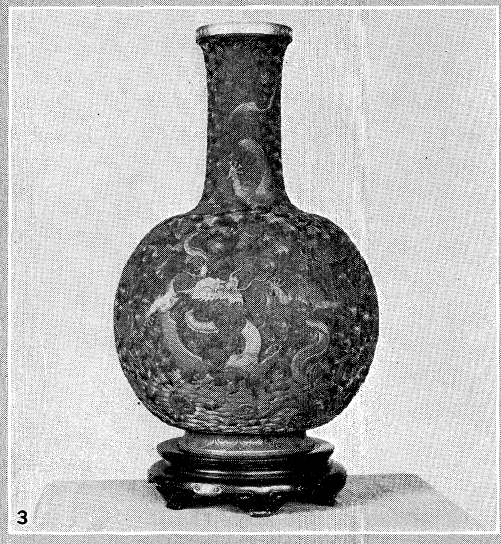

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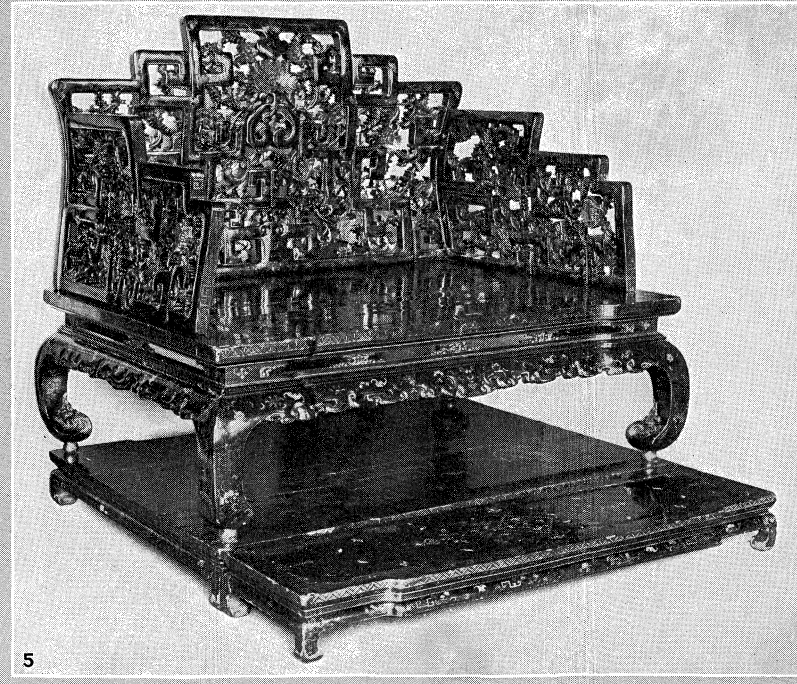

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BY COURTESY OF (1) SPINK AND SON, LTD., (2, 3, 4, 5) THE DIRECTOR OF THE VICTORIA AND ALBERT MUSEUM

CHINESE LACQUER WORK OF THE 16TH, 17TH AND 18TH CENTURIES

1. Formal-garden seat of carved lacquered wood, Khang H'si period (1622–1723). 2. Screen of black lacquered coromandel wood with designs incised and painted in gold and colours. 18th century. 3. Vase of cinnabar lacquer, coloured by the brilliant red mercury or cinnabar ore or oxide, carved. Attributed to reign of Ch'ien Lung (1736–1795). 4. Ewer with panel decorations inlaid with shell, coloured ivory and carved red lacquer, 16th century. 5. Throne, in flat lacquer of various colours on black. Early 17th century

posit of an insect, *Coccus Lacca,* and the various solutions of gums or resin in turpentine of which European imitations of Eastern lacquer have been and are concocted.

TECHNIQUE

Lacquer, properly so-called and as used in China and Japan, is a natural product, the sap of a tree, *Rhus Vernicifera;* subject to the removal of impurities and excess water, it can be used in its natural state, though it was frequently adulterated. The tree, which is indigenous to China, and has certainly been cultivated in Japan at least since the 6th century A.D., is tapped at about the age of ten years, lateral incisions being made in the bark and the running sap collected during the months of June to September. Branches of a diameter of one inch or more are also tapped, the bark having first been removed. Smaller branches are cut off, soaked in water for ten days, and the sap collected, producing a lacquer (*seshime*) of particular quality, used for special purposes. These processes kill the tree, but the wood, when of sufficient size, is of some use for carpentry. From the roots five or six shoots spring up, which become available for the production of lacquer after about six years, and the operation can be thus continued for a considerable length of time before the growth is exhausted. The Chinese and Japanese methods are practically identical in this respect, but the cultivation of the tree does not seem to have been so systematic in China as in Japan. The sap, when extracted, is white or greyish in colour and about the consistency of treacle. On exposure to the air it turns yellow-brown and then black. It is strained through hempen cloth to remove physical impurities, after being pounded and stirred in shallow wooden tubs, to give it uniform liquidity. It is then slightly heated over a slow fire or in hot sunshine and stirred again to evaporate excess moisture, and stored in air-tight vessels. The characteristic constituent of lacquer is termed by chemists *urushiol* (from the Japanese name of lacquer, *urushi*), and its formula has been stated as $C_{14}H_{18}O_2$. Japanese lacquer is said by Prof. K. Mijama to contain from 64·00 to 77·6% of *urushiol* as compared with an average of 55·84 for Chinese; the difference being due, probably, to inferior methods of cultivation and extraction, and perhaps in some cases to climatic differences. Lacquer is a slightly irritant poison, but workers in the industry soon become inoculated. A series of implements used in the preparation of lacquer with an illustration of the system employed in the actual gathering of the sap is exhibited in Museum No. 1 of the Royal Botanic gardens, Kew, England.

Lacquer-ware.—The basis of lacquer-ware, both in Japan and in China, is almost always wood, although it was also occasionally applied to porcelain and brass and white metal alloys. In some instances, objects were carved out of solid lacquer. The wood used, generally a sort of pine having a soft and even grain, was worked to an astonishing thinness. The processes that follow are the result of extraordinary qualities of lacquer itself, which, on exposure to air, takes on an extreme but not brittle hardness, and is capable of receiving a brilliant polish of such a nature as to rival even the surface of highly glazed porcelain. Moreover, it has the peculiar characteristic of attaining its maximum hardness in the presence of moisture. The Japanese, therefore, place the object, to secure this result, in a damp box or chamber after each application of lacquer to the basic material (wood, etc.). The Chinese are said (in an account of the industry dating from A.D. 1621–28) to use a "cave" in the ground for this purpose, and to place the objects therein at night in order to take advantage of the cool night air. It may, indeed, be said that lacquer dries in a moist atmosphere. The joiner's work having been completed, and all knots or projections having been most carefully smoothed away, cracks and joints are luted with a mixture of rice paste and *seshime* lacquer, till an absolutely even surface is obtained. It is then given a thin coat of *seshime* lacquer to fill up the pores of the wood and to provide a basis for succeeding operations: in the case of fine lacquer, possibly as many as 20 or 30 or even more; of each of which the following may be taken as typical. On the basis, as above described, is laid a coat of lacquer composition, allowed to harden, and ground smooth with whetstone. Next comes a further coat of finer composition, in which is mixed some burnt clay, which is again ground, and laid aside to harden for at least 12 hours. On this is fixed a coat of hempen cloth (or rarely in Japan, but more often in China, paper) by means of an adhesive paste of wheat or rice flour and lacquer, which needs 24 hours at least to dry. The cloth is smoothed with a knife, and then receives several successive coats of lacquer composition, each demanding the delay necessary for hardening. On this is laid very hard lacquer, requiring a much longer drying interval, afterwards being ground to a fine surface. Succeeding coats of lacquer of varying quality are now laid on, dried and polished; and this *preliminary* work, occupying in the case of artistic lacquer-work at least 18 days, produces the surface on which the artist in lacquer *begins* his task of decoration. A large number of processes were at his command, especially in Japan, but the design was first generally made on paper with their lacquer and transferred to the object while still wet, or drawn on it direct with a thin paste of white lead or colour. In carrying it out he made use of gold or silver dust applied through a quill or bamboo tube, or through a sieve to secure equal distribution. Larger fragments of the precious metals (*hirame* or *kirikane*) were applied separately by hand, with the aid of a small, pointed tool. In one typical instance the writer has counted approximately 500 squares of thin gold foil thus inserted, within one square inch. These decorative processes each entailed prolonged hardening periods and meticulous polishing. Relief was obtained by modelling with a putty consisting of a mixture of lacquer with fine charcoal, white lead, lamp-black, etc., camphor being added to make it work easily. Lacquer was sometimes engraved, both in China and Japan.

The carved lacquer of China (*tiao ch'i*) which, although imitated in Japan was never equalled in that country (as the Chinese have never reached the perfection of the Japanese gold lacquer-ware), needs particular notice. In this, the lacquer was built up in the method above described, but to a considerable thickness; and, when several colours were used, in successive layers of each colour, arranged in the order in which they were to predominate and of uniform thickness. When the whole mass was complete and homogeneous, it was cut back from the surface, so as to expose each colour as required by the design. The carving was done with a V-shaped tool kept very sharp, and when the lacquer was cold and hard. The cutting was done with amazing precision—no correction of faults was possible, for each layer had to be exactly and accurately reached, and the final result precisely foreseen and allowed for from the beginning of the work. The red lacquer (*tan sha*), so well known and justly appreciated, was coloured with cinnabar (red sulphuret of mercury). Other colours which are employed include a deep and a lighter olive-green, buff, brown, black and aubergine.

In Japanese lacquer, the following are the chief processes used:—*Nashiji* (pear-skin), small flakes of gold or silver sunk to various depths in the lacquer. *Fundame;* fine gold or silver powder worked to a flat, dull surface. *Hirame,* small, irregularly shaped pieces of sheet gold or silver placed on the surface. *Togidashi,* the design built up to the surface in gold, silver and colours with many coats of lacquer and then polished down to show them. *Takamakiye,* decoration in bold relief. *Hiramakiye,* decoration in low relief. *Rōiro,* polished black. *Chinkinbori,* engraved lacquer. *Kirikane,* square dice of sheet gold or silver, inserted separately on the surface. *Raden,* inlaid shell and metal. From the earliest times of which we have record, shell was used in the adornment of lacquer in China as well as in Japan, being inlaid on the surface in patterns, as well as in small squares like *kirikane* and dust. For this purpose various shells were used, mother-of-pearl for larger work and that of nautilus, pear-shell, sea-ear (*Haliotis,* Jap. *Awabi*) and *Turbo Cornutus* (Jap. *Sazaye*). For a very charming form, called by the French *Lac Burgautée,* the shell of the sea-ear, of iridescent blue and green, was employed in combination with gold and silver and delicately engraved, as early as the Ming period (A.D. 1368–1644) and also in Japan. Chinese lacquer was also inlaid with hard stones such as jade, malachite, etc., as well as coral, soapstone, ivory, porcelain and other decorative substances.

HISTORY OF LACQUER IN CHINA

The use of lacquer in China goes back traditionally to legendary times. A late Ming manuscript, the Hsui-shih-lu, states that it was first employed for writing on bamboo slips, then for utensils of food made of black lacquer, and subsequently for vessels for ceremonial use of black with red interiors. During the Chou dynasty (1122–249 B.C.) it served for the decoration of carriages, harness, bows and arrows, etc., and was the subject of official regulations, being accepted also in payment of taxes. At this time, gold and colours are said to have come into use. About the 2nd century B.C. buildings were decorated with lacquer and musical instruments are similarly described. Under the Han dynasty (206 B.C.–A.D. 220) further development took place and pot-covers of paper, covered with lacquer, were found in 1910 by Ryūzo Torii near Port Arthur which are definitely attributed to this period. Of the lacquer of the T'ang dynasty we have more reliable information, for the collections still preserved in the Hōryw-ji temple in Japan, founded A.D. 607, and those collected by the Japanese emperor, Shōmu (A.D. 724–749) and deposited after his death, by his widow, in the Imperial Treasury (Shōsō-in) at Nara, contain many objects to which must be given a Chinese origin; in particular, musical instruments with inlay of cut-out figures of gold and silver, inserted on the surface, covered with lacquer, which was then rubbed down till the metal ornaments were again brought to view. Under the Sung dynasty (A.D. 960–1279), the industry further developed and the use of gold and silver lacquer in the utensils made for the palace is particularly recorded. The late Dr. S. W. Bushell considered that "all branches of lacquer work now carried on in China can be traced as far back at least as the Sung dynasty and that the chief seat of manufacture at that period was Chia-hsing-Fu, between Hangchow and Soochow—the latter city being also an important centre of the industry. A lacquer box of the early Sung period, probably once of rhinoceros horn colour, black and red, with gold dust and silver wire, was recently exhibited in London and is one of the very few known examples of the period so far discovered. Towards the close of the period (*c.* A.D. 1220) it is stated that lacquer-wares were exported from Fu-kien to Java, India, Persia, Japan, Mecca and other places. Chinese writers record the existence of carved red lacquer during the time of the Yuan dynasty (A.D. 1280–1368) as well as of pierced ware and that inlaid with shell. Of the state of the industry under the Ming dynasty (A.D. 1368–1644) we have contemporary Chinese descriptions; for instance, the *Koku yao lun,* published during the reign of the first Ming emperor, and the *Ch'ing pi ts'ang* of A.D. 1595, both quoted freely by Dr. Bushell. The *Hsui shih lu,* of which a Japanese translation was published in the *Kokka* (No. 113), dates from A.D. 1621–28 and from these a good account of the progress of the art can be realized. From these records we glean that there were, in the early years of the dynasty, special factories of carved red lacquer at Ta-li Fu in Yunnan, which also produced spurious imitations. Nanking was noted for work of the same kind of high quality and for gold lacquer with pictures, as also were Peking and Ning-kuo Fu in Kiangnan. Inlay of mother-of-pearl is also mentioned. The excellence of the carved lacquer made during the reigns of Yung Lo (A.D. 1403–24) and Hsüan-Tê (A.D. 1426–35) is also recorded; and also that encrusted with shell, inlaid with sheet gold and silver, and flecked with powdered gold. Examples of carved lacquer are extant which can reasonably be attributed to this period. They are bold in design and free from the superabundance of small detail which characterized later productions; the colour also is generally deeper and richer than that of the 18th century pieces. The Victoria and Albert Museum, London, has several good examples of the period. Towards the end of the Ming dynasty, a factory was established at Peking, but fell into disuse during the troubles accompanying the fall of the Ming emperor. The first and, perhaps, the greatest of the Manchu emperors, K'ang Hsi (A.D. 1662–1723), revived it in A.D. 1680, when he established, in the precincts of the palace at Peking, a series of 27 workshops for artistic handicrafts. Carved lacquer was, however, also made at Canton, Tongking, Soochow and Foochow; and the Jesuit father, Louis le Comte, who arrived in China in 1687, gives a good account of the flourishing state of the industry at that time. In this connection it is worth noting that the period of K'ang Hsi is that which saw the first considerable importation of lacquer-ware (and other objects of industrial art) into Europe. The consequent development of imitation lacquer applied to furniture, etc., which, during the reigns of William and Mary and Anne, had so extended a vogue, was one of the conspicuous features of the *Chinoiserie* craze of that time. A curiosity of the vagaries of fashion is that objects then made in counterfeit of Chinese art are now more highly prized than the originals. A screen is still in existence made by command of K'ang Hsi for presentation to the emperor Leopold I., whose badge, the double-headed eagle, is incorporated in the design. Carved lacquer of this period hardly attains to the rich colour of that of the Ming period, nor to the breadth and simplicity of design of the latter—though these qualities are far from negligible. In technique the K'ang Hsi ware shows an advance and is generally free from the small cracks too often found to have developed in the Ming products. The perfection of this quality, apart from other considerations, is found in the lacquer-ware of Ch'ien Lung (A.D. 1736–96), a devoted admirer of this branch of industrial art, who employed it on a large scale for the furniture and fittings of his palaces, for ceremonial and commemorative gifts and other purposes. The workmanship of objects made under his auspices is brilliant in the extreme, and ranks with the finest products of a nation whose mere craftsmanship has been almost unrivalled. But the colour is hard compared with earlier work, and the design tends rather to a somewhat stereotyped formalism. Still, one can hardly call the 18th century a period of decadence in the industrial arts of China—the superb execution of its productions, a characteristic which will always, and justly, command admiration, redeems it from adverse criticism. The downward course began in the 19th century, with loss of originality and a falling-off, due to adulteration, in the quality of the material. What was left of the imperial factories was burnt in 1869, and though carved red lacquer was made after that date, the industry had already ceased to have artistic importance.

Lacquer in Gold and Colours.—Lacquer artists in China, curiously enough, never developed the use of gold lacquer to anything like the extent or to the high standard of merit attained by the Japanese, though, rarely, specimens can be found of fine quality. For the most part, gold was used as a simple, flat decoration, especially on a ground of black as in the screens and boxes, frequently of considerable decorative value, made at Canton and other ports in touch with foreign trade and largely exported by European merchants, especially at the beginning of the 19th century. On the other hand, the Chinese used to advantage a wider range of colour than was generally employed in Japan; and brilliant hues of green, red, brown, cream, purple and other tints are found on objects dating from the later years of the Ming period onwards. Screens, too, were often thus decorated most effectively, and sometimes enriched with applied hard stones, shell or porcelain. The most effective form of this typically Far Eastern article of furniture is provided by the so-called Coromandel work, in which the design is first cut out in *intaglio* and then completed with varied colour or gold. Such screens, which are sometimes of considerable size—as much as 20 ft. in width and 8 ft. in height, and with 12 leaves—were largely imported into western Europe at the end of the 17th and early years of the 18th century, by East India merchants whose headquarters (French and English) were either on the Coromandel Coast or (Dutch) at Bantam in Java—the latter place also providing a name often used by old writers. These imported screens were remorselessly cut up to make cabinets and other articles of furniture, in which form their remains are by no means rare at the present day.

Lac Burgautée.—One of the most delicate and charming manifestations of the Chinese lacquerer's art is that called by the French, *Lac Burgautée,* of which the technique has already been described. The effects of colour produced by the use of iridescent shell, sometimes engraved, and occasionally in combination with gold and silver, are exquisite. This work is generally on a small scale, and though temple utensils and other articles of fair size are to be found, as well as miniature table screens and

vases, a favourite production took the form of little wine-cups, originally in sets of five and lined with silver. This branch of art dates certainly from the Ming dynasty and has hardly yet received the attention that its qualities merit.

Subjects of Decoration.—Chinese ornament as applied to lacquer-ware (as to other of the industrial arts) is almost entirely symbolical and the subject-pieces generally derived from legends of the Buddhist, Taoist and Confucian personages. The more usual of the former are the "Eight Buddhist Emblems of Happy Augury," the "Eight Musical Instruments," and the "Eight Precious Things" (Taoist). The "Hundred Antiques" appear on Coromandel screens and other large works. Among figure subjects may be mentioned representations of Shou Lao, a deification of Lao Tze, the founder of the Taoist philosophy, the "Eight Taoist Immortals," the "Sages of the Bamboo Grove" and those of the wine-cup. Children at games are much favoured, and landscapes with pavilions, trees, mountains, lakes and formal gardens. Among animals the mythical dragon—if with five claws, peculiar to the emperor—and phoenix or *feng-huang* associated with the empress. The long-tailed tortoise, unicorn (*Ch'i-lin*), lion, crane, bat, butterfly and fish are frequently seen, all being symbolical of long life, good fortune, happiness, etc. The peach, pine, bamboo, peony, lotus, chrysanthemum and prunus are the chief motives selected from the vegetable kingdom. Of abstract pattern the meander or key-pattern and swastika are the chief. The forms of vessels resemble, as a rule, those either of porcelain or bronzes.

HISTORY OF LACQUER IN JAPAN

The earliest definite record of the existence of a lacquer industry in Japan consists in an allusion in the *Nihongi* (Chronicles of Japan) to a high court official who was probably in control of it in the year A.D. 587. This implies some development already achieved; and during the following two or three centuries it is certain that the cultivation of the lacquer tree and the use of the material were fostered and controlled by a Government department. Lacquer, for instance, was accepted in some districts in payment of taxes. But the history of the art, so far as concerns definite evidence still extant, begins with the 8th century, and the specimens to which reference may be made are those still preserved at Nara and in the Hōryuji temple referred to above. Although a number of these are of Chinese origin, the collections certainly include treasures that must be given an authentic Japanese origin. Among those may be mentioned the sword scabbard of the emperor Shomu (A.D. 724–749) himself, in gold on black lacquer and others decorated with leaves of gold and silver inlaid in lacquer. The emperor Kwammu (A.D. 781–806) removed the capital from Nara to a new city, Heiankyō—the modern Kyōto; and an increased luxury in the style of living brought about further developments in the art, especially in the use of gold lacquer, due largely to the spread of Buddhistic influence. This period, however, saw the beginnings of a Japanese national style as distinct from the Chinese methods and manner, imported by Buddhist missionaries. Lacquer was used at this time in the decoration of important buildings; and inlay of shell also became popular. The organization of the industry was extended, and as early as A.D. 905 sumptuary edicts began to be issued regulating the dimensions of and quantities of material to be used in the domestic utensils—chiefly of black or red polished lacquer—which now began to come into general use. From this time, it is no exaggeration to say that, to a considerable extent, lacquer filled the place occupied in China by ceramic wares. A remarkable development of this period which must not be overlooked was the production of statuary of considerable merit, made with lacquer composition (*kanshitsu*), a process derived from China, but carried to a high standard in Japan for a brief period, till it was superseded by wood sculpture. Some few authentic examples remain of the fine lacquer of the Heian period, notably the Case for Buddhist Scriptures in the Ninnaji temple at Kyōto, made by order of the emperor Uda at the beginning of the 10th century. This is in black lacquer, sprinkled with gold dust and with a pattern of flowers, clouds, birds and Buddhist angels. Several other historic pieces were exhibited, either in original or very accurate reproduction in the Japan-British exhibition of 1910. During the Kamakura period (A.D. 1192–1333), in spite of the disturbance caused by the famous struggle between the Minamoto and Taira clans, and the establishment of the feudal shogunate at Kamakura, which gives its name to the period, the art of making fine lacquer continued to progress, under the patronage of the Fujiwara family, who maintained the imperial court at Kyōto with ever-increasing luxury. Marked features of this time are improved methods of inlay of precious metals and shell, and especially an attractive form of design in which beautifully written poems are interwoven with the pattern (*ashide-ye*). The process called *Kamakura-bori*, carved wood thickly lacquered with red or black, also dates from this period and continued to flourish for another two centuries or so. Modern imitations of this work have to be reckoned with by the collector. During this epoch, we see the beginnings of the characteristic Japanese treatment of landscape and flower subjects in design, generally in flat gold lacquer, with nashiji and pewter inlay. The Ashikaga period (A.D. 1336–1573) saw a further technical and artistic development, largely under the patronage of the Shōgun Yoshimasa; who, after holding office for two years only, retired in 1451 and devoted himself to a life of luxury. He gave great impetus to the Tea and Incense ceremonies, to the latter of which was especially due a whole series of new applications of the art, in respect of the exquisitely wrought small utensils required by that ritual. The ostentatious simplicity of the Zen sect of Buddhists was displayed in the use of black lacquer of the first quality with little or no ornament. Excellent work in shell inlay was also a characteristic of the time. The gold lacquer of the Ashikaga craftsmen gained so great a reputation in China that artisans from that country came to Japan to learn the methods by which it was produced, though they seem to have had little success in introducing it into their own country. Among the leading Japanese craftsmen of the period may be mentioned Kōami Dōchō, Taiami, Seiami, and Igarashi Shinsai, but attribution of specific works to them is largely a matter of conjecture. The civil wars which continuously infested Japan during the later middle ages checked the growth of the industry for a while; but the short Momoyama period (A.D. 1574–1603) which followed saw at least the work of one of the greatest of Japanese artists in lacquer, Honami Kōyetsu (A.D. 1557–1637). He was the founder of a striking and original style of ornament, essentially national in character. His designs were bold and simple in detail, generally executed in high relief with masses of shell or metal inlay. The great Shōgun, Toyotomi Hideyoshi (d. 1598) who secured the peace of the country with a strong hand, was an enthusiastic patron of the arts; and under his patronage a real revival took place. At his death, his widow erected the Kōdaiji temple at Kyōto, in which a new method of lacquer decoration was used (*Kodaiji-makiye*). It still contains examples of this ware presented by her. In 1603 began the rule of the Tokugawa Shōgunate, which continued without a break until the restoration of the imperial family to actual power in 1868. The first of the line, Iyeyasu, established at Yedo (the modern Tōkyō) the great school of lacquer artists which is responsible for almost the whole of the artistic ware known outside Japan. Technical processes were still further developed with additions such as the engraved lacquer (*chinkinbori*) derived from China, carved red and black lacquer from the same source, and the so-called *Somada* ware of shell inlay on black, but different in character from the Chinese *lac burgautée* already mentioned above. This period also saw the introduction of a class of work made by workmen, as a rule, specially devoted to it, namely the now well-known *inrō* or portable medicine-cases, worn on the girdle and an indispensable addition to the national costume so long as the latter was uncontaminated by Western influence. These were small in size, generally oval or cylindrical in section and from 2½ to 4 in. in length. They consisted, as a rule, of from two to five compartments, beautifully fitted into each other and held together by silken cords running along each side, secured by a bead or toggle (*ojime*) and kept from slipping through the sash by a *netsuké*, sometimes of lacquer, but more often of cunningly carved wood, ivory, bone, or other material. On this class of work was lavished some of the finest

artistry of the Japanese craftsmen, and the convenient size and intrinsic charm of these dainty utensils (originally, perhaps, made for seals) has caused them to be much favoured by collectors. The earlier years of the Tokugawa period saw a considerable Chinese influence in the design of lacquer, especially in *inrō;* but the work of the greatest of Japanese lacquer artists, Ōgata Kōrin (*c.* 1657–1716), followed and extended the style originated by his master, Kōyetsu. Ritsuō (1663–1747) and Hanzan (18th century) maintained this tradition and a considerable revival of the style took place in the early years of the 19th century, when Hoitsu published his memorial volumes of the designs of the great master. To the latter period belong not a few objects which have been accepted as the original work of Kōrin himself. The more formal school of lacquerers included Kōami Choan and Koma Kitō-ye, who was appointed court lacquer artist to the Shōgun Igemitsu in 1636 and died in 1674. His successors held this post for 11 generations. A set of three stands made by Kōami Nagashige in 1637 as a wedding present from Iyemitsu to his daughter on her marriage with the Daimyō of Owari is considered by Japanese experts to be the finest extant piece of Japanese lacquer. It is now in the collection of the Marquis Tokugawa. Lacquer artists followed the practice of other craftsmen in Japan, in transmitting their names to sons or selected pupils. Thus, there were ten generations of the family of Yamamoto Shunshō, who died in 1682, aged 63. The Kajikawa family continued the tradition of its founder well into the 19th century, and the same must be said of Shiomi Masanari (Kyōto, *c.* 1716–36) whose work was notable for the quality of the rubbed-down gold and colour lacquer called *togidashi.* The *Genroku* epoch (1684–1704) saw, perhaps, the ultimate perfection of style and technique; but the work of the later 18th and, to some extent, of the early 19th centuries has many exquisite qualities. The later periods were characterized by more elaborate detail; but adulteration of the gold with bronze and other metallic powders was too often prevalent. A fiery brown tint of the *nashiji* is a certain mark of quite late date. Nevertheless, there is plenty of good work of the early 19th century, and to this period belongs the last of the great artists of the industry, Shibata Zeshin, who was born in 1807, was a pupil of Koma Kwansei and died in 1891. His work will bear comparison even with some of the greatest of his predecessors, both in technique and in design. There may still be a few men capable of producing artistic lacquer on the old lines; but modern industrial conditions have practically killed this ancient and beautiful art. It would not have survived so long had not the country been closed to alien influences for two and a half centuries. The applications of lacquer to various purposes were much more extended in Japan than in China. In addition to the medicine cases already described, and the use of lacquer for all sorts of domestic utensils (it is capable of resisting great heat and is impervious to acids) and for furniture such as sets of shelves, cabinets, screens, etc., the greatest skill of the craftsmen was applied, for instance, to sets of writing materials including the writing-box with its inkstone, water-pot and rack for brushes, a document box, and a low table or stand. Boxes of every kind, saké cups, trays and sword-scabbards were made of lacquer of the best quality and decorated by the leading artists of the industry, while, on a large scale, lacquer was extensively employed in the decoration of temples and other architectural works. Many cabinets imported into Western countries from the 17th century onwards and often attributed to China, were products of Japan exported through the British, and after the closure of the country, the Dutch and Chinese settlements at Nagasaki, but the first organized display of Japanese lacquer in Europe was at the Paris Exhibition of 1867.

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LACRETELLE, JEAN CHARLES DOMINIQUE DE, called LACRETELLE LE JEUNE (1766–1855), historian and journalist, was born at Metz on Sept. 3, 1766. He went to Paris in 1787 and, during the Revolution, belonged to the party of the *Feuillants.* He was for some time secretary to the duc de la Rochefoucauld-Liancourt, the celebrated philanthropist, and afterwards joined the staff of the *Journal de Paris,* then managed by Suard, where he had as colleagues André Chénier and Antoine Roucher. His monarchist sympathies brought him in peril of his life, so he enlisted in the army, but after Thermidor he returned to Paris and to his newspaper work. He was involved in the royalist movement of the 13th Vendémiaire, and condemned to deportation after the 18th Fructidor; but, thanks to powerful influence, he was left "forgotten" in prison till after the 18th Brumaire, when he was set at liberty by Fouché. Under the empire he became a professor of history in the *Faculté des lettres* of Paris (1809), and a member of the *Académie française* (1811). In 1827 he was prime mover in the protest made by the French Academy against the minister Peyronnet's law on the press, which led to the failure of that measure, but this step cost him, as it did Villemain, his post as *censeur royal.* Under Louis Philippe he devoted himself entirely to his teaching and literary work. In 1848 he retired to Mâcon; but there, as in Paris, he was the centre of a brilliant circle, for he was a wonderful *causeur,* and an equally good listener, and had many interesting experiences to recall. He died on March 26, 1855.

J. C. Lacretelle's chief work is a series of histories of the 18th century, the Revolution and its sequel: *Précis historique de la Révolution française,* appended to the history of Rabaud St. Étienne, and partly written in the prison of La Force (5 vols., 1801–06); *Histoire de France pendant le XVIIIe siècle* (6 vols., 1808); *Histoire de l'Assemblée Constituante* (1821); *L'Assemblée Législative* (1822); *La Convention Nationale* (1824–25); *Histoire de France depuis la restauration* (1829–1835); *Histoire du consulat et de l'empire* (1846).

LACROIX, ANTOINE FRANÇOIS ALFRED (1863–), French mineralogist and geologist, was born at Mâcon, Saône et Loire, on Feb. 4, 1863, and studied in Paris. In 1893 he was appointed professor of mineralogy at the *Jardin des Plantes,* Paris, and in 1896 director of the mineralogical laboratory in the *École des Hautes Études.* He studied minerals connected with volcanic phenomena and igneous rocks, the effects of metamorphism, and mineral veins, in various parts of the world, notably in the Pyrenees. In his contributions to scientific journals he dealt with the mineralogy and petrology of Madagascar, and published an exhaustive volume on the eruptions in Martinique, *La Montagne Pelée et ses éruptions* (1904). In addition, he also issued an important work entitled *Mineralogie de la France et de ses Colonies* (1893–98), and other works in conjunction with A. Michel Lévy. He was elected member of the Académie des sciences in 1904, and became its secretary in 1914.

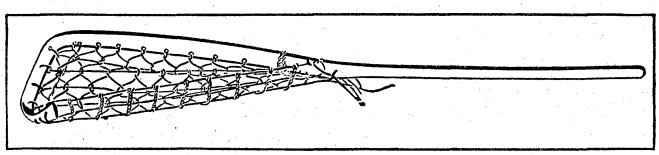
LACROIX, PAUL (1806–1884), French author and journalist, was born in Paris, the son of a novelist. He is best known under his pseudonym of P. L. Jacob, *bibliophile,* or "Bibliophile Jacob." Over 20 historical romances alone came from his pen,

and he also wrote some serious historical works. He was the joint author with Ferdinand Séré of *Le Moyen Âge et La Renaissance* (5 vols., 1847), a standard illustrated work on the manners, customs and dress of those times. In 1885 he was appointed librarian of the Arsenal library, Paris. He died in Paris on Oct. 16, 1884.

LACROMA (Serbo-Croatian *Lokrum*), a small island in the Adriatic sea, belonging to Yugoslavia, and lying less than half a mile south of Ragusa. Though barely $1\frac{1}{4}$ mi. in length, Lacroma is remarkable for its beauty and its vegetation. It was a favourite resort of the archduke Maximilian, afterwards emperor of Mexico (1832–67). It contains an 11th-century Benedictine monastery; and the remains of a church, associated with Richard I of England (1157–99). It was occupied by Italy in 1941.

LA CROSSE, a city of southwestern Wisconsin, U.S.A., on the Mississippi, at the mouth of the Black and of the La Crosse rivers; the county seat of La Crosse county. It is on federal highways 14, 16, 53 and 61 and on state highways 33 and 35. It has a private airport on French island, N.E. of the city proper; the United States government has an emergency landing field on Brice Prairie, about 8 mi. N.W. of the city. La Crosse is served by the Burlington, the Chicago, Milwaukee, St. Paul and Pacific and the Chicago and North Western railways. A river terminal was under construction in 1941, assuring La Crosse of continued water transportation service. The population was: 1920, 30,421; 1930, 39,614; 1940, 42,707. The city lies on level ground, extending back from the river about $2\frac{1}{2}$ mi. to the bluffs which may be climbed with automobiles on good, paved roads. La Crosse is the seat of a state teachers' college (1909). La Crosse developed varied manufacturing after the close of the lumber industry, which had predominated in the early days. Bank clearings for 1940 were $115,347,956.26; for 1939, $108,258,192.45. The assessed valuation, 1940, was $51,817,930. La Crosse was founded in 1842 by Nathan Myrick, who constructed the first log house and traded with Indians. Father Hennepin and the Sieur du Lhut visited or passed the site of La Crosse as early as 1680, and it is possible that adventurous *coureurs des bois* preceded them. The city was chartered in 1856.

LACROSSE. Lacrosse was the name given by the French settlers of Canada to the old Indian game of "baggataway" (because the implement used, the curved netted stick, resembled a bishop's crozier). It is the oldest organized sport in America. It was played by the Six Nations tribes of the Iroquois throughout the territory known as upper New York state and lower Ontario before Columbus landed at San Salvador in 1492. The Iroquois Confederation adopted the sport as a training measure for war. It is still played by the Indians at many of the government reservations in the United States and Canada.



THE "CROSSE," MADE OF BENT HICKORY WOOD. THE NETWORK OVAL TRIANGLE SERVES FOR CATCHING, CARRYING OR THROWING THE BALL

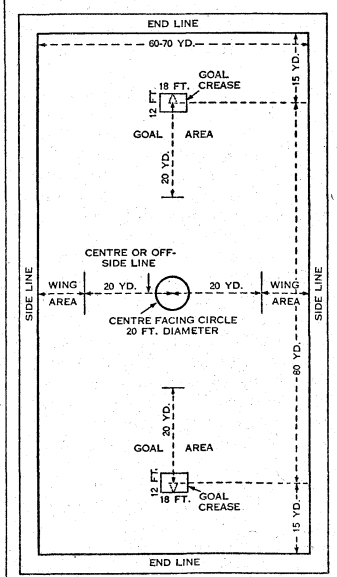
The game was taken up by the white men about 1840. It has become the national summer sport in Canada and is popular also in the British Isles and Australia. It has been played on an organized basis in the United States for more than 75 years. The popularity of the game has increased, and it is played by most preparatory schools, high schools, colleges and clubs in the eastern and southern parts of the United States. The game is regarded as a great "conditioner" and has been appropriately described as "the fastest game on two feet."

The United States Intercollegiate Lacrosse association has been very active in organizing and promoting the game. Membership in the association is unlimited and most of the colleges playing the game are members. An All-American team is picked annually by the association from the member colleges participating in the sport. The Wingate trophy, emblematic of the college lacrosse championship is awarded each year by the association to the outstanding team in intercollegiate competition.

Lacrosse has been played in the Olympic games and the teams representing the United States have been most successful, winning in 1928 at Amsterdam and again in 1932 at Los Angeles. International series have been held periodically with England and Ireland, dating back to 1884 and competition has been held frequently between the United States and Canada since 1885. For several years prior to the outbreak of World War II, All-American teams sponsored by the U.S. Intercollegiate Lacrosse association played a series of games each year with the champions of Canada or England. When it was no longer possible to hold international games because of World War II, the association sponsored an All-Star North-South game, starting in 1940. These games which were organized under the direction of John H. Paige, president of the association, have been among the outstanding college athletic events each year. Because of their great popularity, they have become a feature in American sports.

Ladies' lacrosse was started in England about 1900 and later introduced in the United States by the English women. In 1934, an All-English ladies' team played in the United States, and the following year an American team visited the British Isles. The game is played in England, Ireland, Wales, Australia, New Zealand, Canada, South Africa and the United States. The sport was organized by the Women's Lacrosse association in the United States and became very popular.

Implements of the Game and Players' Equipment.—The "crosse" is formed of a light staff of hickory wood, the top being bent to form a kind of hook, from the tip of which a thong is drawn and made fast to the shaft, usually about 2 ft. or 3 ft. from the other end. The oval triangle thus formed is woven with a loose network of gut or rawhide. The length-strings of this network are woven within 2 in. of their termination so that the ball cannot catch in the meshes. The crosse may be of any length to suit the player, but must not exceed 1 ft. in width. Metal of any kind is not allowed upon the crosse, and the use of one in which the pocket of the mesh has been permitted to sag to a depth which would make it unreasonably difficult for an opponent to dislodge the ball is prohibited. The ball is made of India-rubber sponge, weighs 5 oz. to $5\frac{1}{4}$ oz. and measures from $7\frac{3}{4}$ in. to 8 in. in circumference.



LACROSSE FIELD OF PLAY

The goals are set up 80 yd. from each other, the goal posts being 6 ft. high and the same distance apart, joined at the top by a rigid cross bar. The posts are fitted with a pyramid shaped cord netting which is fastened at a point 7 ft. back of the goal, made so as to prevent passage of the ball put through from the front. The goals are set in the middle of the "goal crease," a space 18 ft. by 12 ft., marked with chalk.

There are 15 yd. of clear space behind each goal. The width of the field is between 60 and 70 yd. The field boundaries are marked with white lines. It is also divided by a white line drawn through the centre, perpendicular to the side lines. A circle with a radius of 10 ft. is drawn at the centre of the field.

The players' equipment in addition to the crosse is designed to afford the maximum of protection but is very light because of the need for speed and agility. Shoes with rubber cleats are usually worn. The players wear a helmet with a heavy steel wire face guard to give sufficient protection to the face and head. Light pads are worn under the jersey to protect the shoulders and arms. The gloves are very similar to those used in ice hockey.

The Game.—The object of the game is to send the ball through the enemy's goal posts as many times as possible during the playing periods. While there are minor variations in the rules

of the game in the different countries, they are fundamentally similar to those prevailing in the United States. There are ten players on each side. They are designated as follows: goalkeeper; cover point; first and second defense; centre; second and first attack; outside home and inside home. Games are officiated over by two officials, a referee and judge-of-play.

The game is divided into four periods of 15 minutes each, with intervals of one minute between the first and second, and third and fourth periods and a ten-minute rest period between the second and third periods (half time). Play is started at the beginning of each quarter and after each goal is scored, by "facing" in the centre circle of the field. This is done by placing the ball between the reverse surfaces of the crosses of the two centres, each with his back to his own goal, their crosses being held with the wood downward on the ground. At the referee's signal, the centres draw their crosses sharply apart in order to gain possession of the ball. The two opposing centres alone are permitted in the centre circle while the ball is being "faced," and, until it has passed out of the circle, no other players are permitted to enter that area. When the ball is being "faced" in the centre of the field each team must confine the goalkeeper and two other players in the defense goal area, two players in the attack goal area, and one player in each of the wing areas. As soon as the referee's whistle sounds starting play, these players are immediately released from their respective areas.

The game is extremely fast, as the ball can be passed and caught at terrific speed and all kinds of plays are developed by a well coached team, the same as in basketball and hockey. A good player must be adept in handling his crosse, an ability which requires considerable practice and skill. He must also be in good physical condition and be an alert "team" player.

Either team may request time out for a period not to exceed two minutes, twice during each half of the game, without penalty. Thereafter, unless the team calls time for the purpose of removing an injured player, the request is granted but a technical foul penalty is exacted. Requests for time out are granted only on a dead ball.

Substitution of players may be made at any time during the match but only on the referee's whistle. At all times during the game each team must have at least three men on the attack, between the centre of the field and the boundary of the field behind the goal, and at least four players on the defense, between the centre of the field and the boundary behind its own goal. Any violation of this rule is known as an "off-side play." The ball may be passed in any direction, forward, backward or sideways.

Although the ball may be thrown with the crosse a long distance, the entire length of the field by many players, long throws are seldom tried; it being generally more advantageous for a player to run with the ball in his crosse until he can pass it to a member of his side who is better placed to start an attack or to shoot at the goal. An opposing player may attempt to dislodge the ball by hitting the opponent's crosse with his own or by body checking. No one may interfere with a player unless he has the ball or is about to catch it.

A player in possession of the ball who steps on or over a boundary line loses the ball and a "free throw" is given to the player on the opposite side at the point where he stepped out. A free throw means that the ball is given to the player in his crosse and play is started again at the referee's whistle. A free throw is not made within 20 yd. of the goal nor is the ball ever "faced" within this area. A ball crossing either side line is given as a free throw at the point where it crosses the line to a player on the side opposite that of the player who last touched it. No player is allowed to catch or throw the ball with other than his crosse and if anyone should lose his crosse during the match he is considered "out of play" until he recovers it. No attacking player is permitted within the "goal crease" while the ball is in his team's attack half of the field, nor can he at any time interfere with the goal tender while the latter is within the crease.

Infractions of the rules of the game are called fouls, which are in two major classes, "technical" fouls and "personal" fouls. For technical fouls, the penalty is either suspension from the game for one minute or a free throw to the opponent. These fouls are generally of a minor nature, such as moving after the whistle, interfering with another player, illegal equipment, throwing the crosse, entering the centre circle, and an off-side play. For personal fouls the penalty is suspension from the game for from one to three minutes. These fouls are of a more serious nature, such as tripping, pushing, slashing, striking, an illegal body check and unnecessary roughness.

In case of a tie game at the end of the regulation periods, play is continued after a brief intermission for two five-minute periods, with the teams changing goals preceding each over-time period. In the event of a tie at the end of these over-time periods, the game is declared a tie.

See the National Collegiate Athletic Association *Official Lacrosse Guide;* also Tad Stanwick, *Lacrosse; The Official Handbook* of the English Lacrosse Union; and George Catlin, *Manners, Customs and Conditions of the North American Indians.* (J. H. Pe.)

LA CRUZ, RAMON DE: *see* Cruz, Ramon de la.

LACTANTIUS FIRMIANUS (*c.* 260–*c.* 340), also called Lucius Caelius (or Caecilius) Lactantius Firmianus, Christian writer, called the "Christian Cicero." His history is very obscure. He was born of heathen parents in Africa, and became a pupil of Arnobius, whom he far excelled in style though his knowledge of the Scriptures was equally slight. About 290 he went to Nicomedia in Bithynia to teach rhetoric. In middle age he became a convert to Christianity, and about 306 he went to Gaul (Trèves) on the invitation of Constantine the Great, and became tutor to his eldest son, Crispus. He probably died about 340.

Lactantius' chief work, *Divinarum Institutionum Libri Septem,* seems to have been begun in Nicomedia about 304 and finished in Gaul before 311. Jerome states that Lactantius wrote an epitome of these *Institutions,* and such a work, which may well be authentic, was discovered in ms. in the royal library at Turin in 1711 by C. M. Pfaff. Besides the *Institutions* Lactantius wrote several treatises: (1) *De Ira Dei,* addressed to one Donatus and directed against the Epicurean philosophy. (2) *De Opificio Dei sive de Formatione Hominis,* his earliest work, and one which reveals very little Christian influence. (3) A celebrated treatise, *De Mortibus Persecutorum,* which describes God's judgments on the persecutors of his church from Nero to Diocletian, has served as a model for numberless writings. *De Mort. Persecut.* is not in the earlier editions of Lactantius; it was discovered and printed by Baluze in 1679, and its authorship is doubtful. The poems sometimes attributed to Lactantius are probably from other hands.

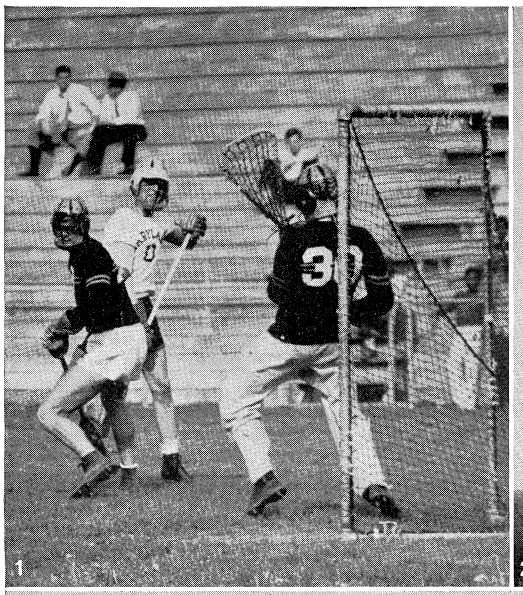
Editions: O. F. Fritzsche in E. G. Gersdorf's *Bibl. patr. eccl.* x, xi (Leipzig, 1842–44); Migne, *Patr. Lat.* vi, vii; S. Brandt and G. Laubmann in the Vienna *Corpus Script. Eccles. Lat.* xix, xxvii, 1 and 2 (1890–93–97). Translation: W. Fletcher in *Ante-Nicene Fathers,* vii. Literature: the German histories of early Christian literature, by A. Harnack, O. Bardenhewer, A. Ebert, A. Ehrhard, G. Kruger's *Early Chr. Lit.* p. 307 and Hauck-Herzog's *Realencyk.* vol. xi, gives guides to the copious literature on the subject.

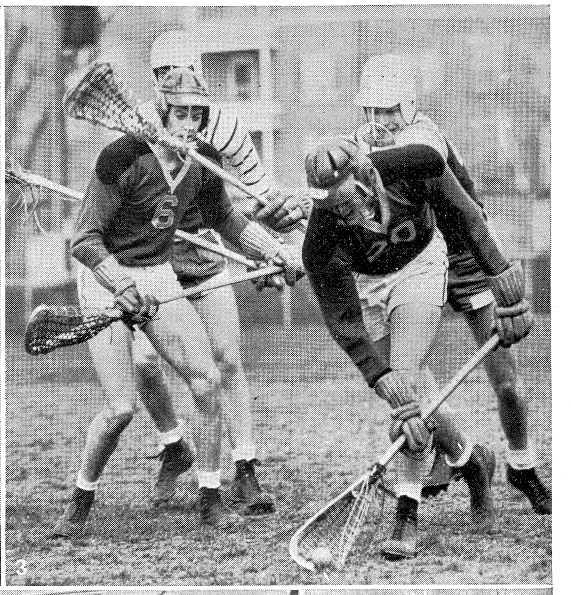
LACTIC ACID, four acids of the same chemical structure, the commonest being an acid produced in sour milk (Lat. *lac, lactis,* whence the name) during the bacterial fermentation of milk sugar or lactose; they have the formula $HO(C_2H_4)CO_2H$ and are hydroxypropionic acids. Other sugars, such as glucose and sucrose, and allied carbohydrates, such as starch and certain gums, also undergo this biochemical change, which is induced by certain species of bacteria known as *lactic bacilli.* The fermentation proceeds most favourably at 34–35° C. and in a nearly neutral solution. Fermentation lactic acid as set free from crude zinc lactate (*see* below) by sulphuretted hydrogen is a viscid hygroscopic non crystallising syrup (sp. gr. 1.2485 at 15° C.) miscible with water, alcohol or ether; it decomposes on distillation under atmospheric pressure, but under reduced pressure (1 mm.) it distils at about 85° C. and then sets to a crystalline solid melting at 18° C. This acid was first isolated from sour milk by K. W. Scheele in 1780, and its composition was established by J. von Liebig and E. Mitscherlich in 1832.

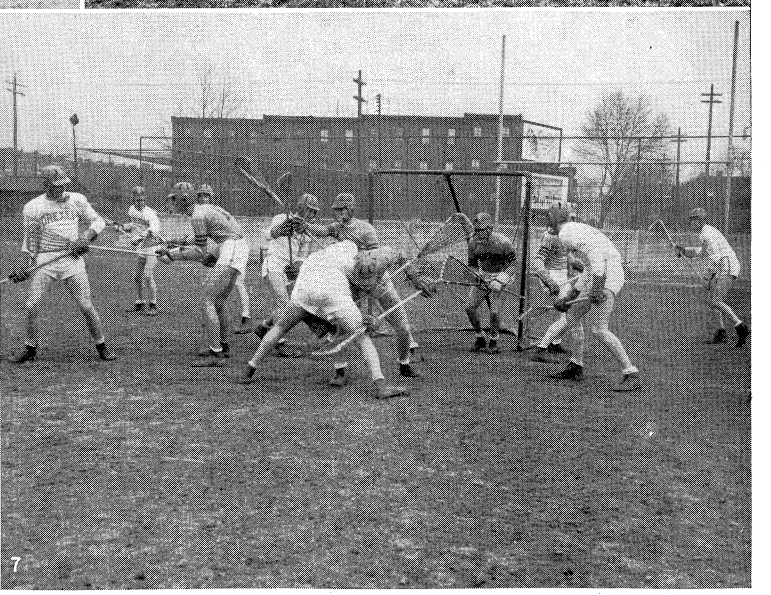
In carrying out the lactic fermentation, sugar is dissolved in water, acidified with tartaric acid and fermented by the addition of sour milk with some putrid cheese. Zinc carbonate is added to neutralise excess of acid and the mixture is kept warmed and stirred.

Ethylidenelactic Acids, $CH_3.CH(OH).CO_2H$.—Although containing one asymmetric carbon atom, fermentation lactic acid is optically inactive but has been resolved into laevo- and dextro-modifications by fractional crystallisation of the strychnine salts. (*See* Stereochemistry.) Moreover, when *Penicillium Glaucum* is cultivated in a solution of inactive ammonium lactate, the *laevo*-acid is assimilated more rapidly so that the solution acquires excess of *dextro*-acid and becomes optically active. The *dextro*-lactic acid, formerly termed sarcolactic acid, occurs in meat juice and is accordingly found in Liebig's extract. The *laevo*-lactic acid

LACROSSE







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1. Save by the goalie
2. Catching the ball in midair
3. Defense player picking up ball
4. Defense man clearing the ball
5. Action in front of goal
6. Goal scored
7. Defense covering attack players

is obtained from the fermentation of sucrose (cane sugar) by means of *Bacillus laevo-lacti*. Its salts have the same composition, solubilities, and chemical properties as those of the *dextro*-acid but both series differ from the corresponding salts of the inactive or racemoid variety of lactic acid. This inactive acid has been synthesised by several methods of which the following two are the simplest: (1) hydrolysis of the cyanohydrin of acetaldehyde, $CH_3.CH(OH).CN$; (2) digestion of α-chloropropionic acid, $CH_3.CHCl.CO_2H$, with caustic alkali or moist silver oxide.

Ethylenelactic Acid, $HO.CH_2.CH_2.CO_2H$ (β-hydroxypropionic acid or hydracrylic acid), the structural isomeride of the three foregoing lactic acids, contains no asymmetric carbon atom and exists only in one form as a syrupy mass breaking up on heating into water and acrylic acid, $CH_2:CH.CO_2H$. The conversion of ethylene, $CH_2:CH_2$, successively into ethylene chlorohydrin, $HO.CH_2.CH_2Cl$, and ethylene cyanohydrin, $HO.CH_2.CH_2.CN$, leads by hydrolysis of the latter to β-hydroxypropionic acid. (For lactic acid in relation to muscular contraction, *see* MUSCLE AND MUSCULAR EXERCISE.) (G. T. M.)

LACTONES, in chemistry, are cyclic esters (*q.v.*) formed by the loss of water from hydroxy acids, or of hydrogen halides from halogenated acids. The γ- and δ-hydroxy acids frequently lose water spontaneously, even in aqueous solution, to form the corresponding γ- and δ-lactones with five- and six-membered rings, respectively; γ- and δ-halogenated acids usually lose a molecule of hydrogen halide on being heated, with formation of the same γ- and δ-lactones as before. Some β-lactones, with four-membered rings, have been made by the action of silver nitrate upon the sodium salts of β-iodoacids. Lactones with from 7 to 24 atoms in the ring have been prepared by slow distillation of the corresponding hydroxy acids under greatly reduced pressure, or by heating very dilute solutions of the hydroxy acids with benzene sulphonic acid.

In the presence of water, lactones are hydrolyzed partially or completely to the hydroxy acids from which they are derived. In alkaline solution, the hydrolysis is more rapid and goes to completion with formation of the salts of the acids. Lactones with six or more atoms in the ring tend to polymerize spontaneously, or on heating.

The simplest lactones are liquids that are soluble in water, alcohol and ether. γ-Butyrolactone, $CH_2.CH_2.CH_2.C:O$ (with O bridging the chain) is a colourless liquid boiling at 206° C. and volatile with steam. (G. W. WD.)

LA CUEVA, JUAN DE: *see* CUEVA, JUAN DE LA.

LACUNAR, a Latin architectural term for a panelled or coffered ceiling; the panels are known as *lacunaria*.

LACY, FRANZ MORITZ, COUNT (1725–1801), Austrian field marshal, was born at St. Petersburg on Oct. 21, 1725. His father, Peter, Count Lacy, was a distinguished Russian soldier, who belonged to an Irish family, and had followed the fortunes of the exiled James II. Franz Moritz was educated in Germany for a military career, and entered the Austrian service. He served in Italy, Bohemia, Silesia and the Netherlands during the War of the Austrian Succession, was twice wounded, and by the end of the war was a lieut.-colonel. At the age of 25 he became full colonel and chief of an infantry regiment. From 1756–1763 he was engaged in the Seven Years' War. He was thrice wounded, but rose very rapidly to the rank of Feldzeugmeister, and received the grand cross of the Maria Theresa order. After early victories, however, he developed an external caution; in 1759 he fell into some disfavour, and his capacity for supreme command was doubted by his own colleague Daun.

After the peace of Hubertusburg, Lacy was made a field marshal, and given the task of reforming and administering the army (1766), which he carried out very efficiently, framing new regulations for each arm, a new code of military law, a good supply system. Joseph, whom Maria Theresa had placed in charge of Austrian military affairs, soon became very intimate with his military adviser, while at the same time Lacy also enjoyed Maria Theresa's full confidence. In the War of the Bavarian Succession, Lacy and Loudon were the chief Austrian commanders against the king of Prussia, and when Joseph II succeeded his mother, Lacy remained his most trusted friend. In the Turkish war of 1787–91 Lacy, who was old and ailing, commanded with ill-success. His active career was at an end, although he continued his effective interest in state and military affairs throughout the reign of Joseph's successor, Leopold I. His last years were spent in retirement at his castle of Neuwaldegg near Vienna. He died at Vienna, Nov. 24, 1801.

See memoir, by A. v. Arneth in *Allgemeine deutsche Biographie* (Leipzig, 1883).

LACYDES OF CYRENE, Greek philosopher, was head of the Academy at Athens in succession to Arcesilaus *c.* 241 B.C. Though some regard him as the founder of the New academy, the testimony of antiquity is that he adhered in general to the theory of Arcesilaus, and, therefore, that he belonged to the Middle academy. He lectured in a garden called the Lacydeum, which was presented to him by Attalus I of Pergamum, and for 26 years maintained the traditions of the academy. A short time before his death he voluntarily resigned his position as lecturer to his pupils, Euander and Telecles. None of his works are extant.

See Cicero, *Acad.* ii, 6; and Aelian, *V.H.* ii, 41; also articles ACADEMY, GREEK, ARCESILAUS, CARNEADES.

LADAKH AND BALTISTAN, a province of Kashmir, India. The name Ladak, commonly but less correctly spelt Ladakh, and sometimes Ladag, belongs primarily to the broad valley of the upper Indus in West Tibet, but includes several surrounding districts in political connection with it; the present limits are between 75° 40′ and 80° 30′ E., and between 32° 25′ and 36° N. It is bounded north by the Kuenlun range and the slopes of the Karakoram, northwest and west by the dependency of Baltistan or Little Tibet, southwest by Kashmir proper, south by British Himalayan territory, and east by the Tibetan provinces of Ngari and Rudok. The whole region lies very high, the valleys of Rupshu in the southeast being 15,000 ft., and the Indus near Leh 11,000 ft., while the average height of the surrounding ranges is 19,000 ft. The proportion of arable and even possible pasture land to barren rock and gravel is very small. Pop., including Baltistan (1931), 192,138, of whom 38,212 in Ladakh proper are Buddhists, whereas the Baltis have adopted the Shiah form of Islam.

The natural features of the country may be best explained by reference to two native terms, under one or other of which every part is included, viz., *changtang, i.e.*, "northern, or high plain," where the amount of level ground is considerable, and *rong, i.e.*, "deep valley," where the contrary condition prevails. The former predominates in the east, diminishing gradually westwards. There, although the vast alluvial deposits which once filled the valley to a remarkably uniform height of about 15,000 ft. have left their traces on the mountain sides, they have undergone immense denudation, and their débris now forms secondary deposits, flat bottoms or shelving slopes, the only spots available for cultivation or pasture. These masses of alluvium are often either metamorphosed to a subcrystalline rock still showing the composition of the strata, or simply consolidated by lime.

A central range divides the Indus valley, here 4 to 8 mi. wide, from that of its north branch the Shyok, which with its fertile tributary valley of Nubra is again bounded on the north by the Karakoram. This central ridge is mostly syenitic gneiss, and north-east from it are found, successively, Silurian slates, Carboniferous shales and Triassic limestones, the gneiss recurring at the Turkestan frontier. The Indus lies along the line which separates the crystalline rocks from the Eocene sandstones and shales of the lower range of hills on the left bank, the lofty mountains behind them consisting of parallel bands of rocks from Silurian to Cretaceous.

Several lakes in the east districts at about 14,000 ft. have been of much greater extent, and connected with the river systems of the country, but they are now mostly without outlet, saline and in process of desiccation.

Leh (*q.v.*) is the capital of Ladakh, and the road to Leh from Srinagar lies up the lovely Sind valley to the sources of the river at the Zoji La Pass (11,300 ft.) in the Zaskar range. This is the range which, skirting the southern edge of the upland plains of

Deosai in Baltistan, divides them from the valley of Kashmir, and then continues to Nanga Parbat (26,620 ft.) and beyond that mountain stretches to the north of Swat and Bajour. To the south-east it is an unbroken chain till it merges into the line of snowy peaks seen from Simla and the plains of India—the range which reaches past Chini to the famous peaks of Gangotri, Nandadevi and Nampa. It is the most central and conspicuous range in the Himalaya. The Zoji La, which curves from the head of the Sind valley on to the bleak uplands of Dras (where lies the road to the trough of the Indus and Leh), is, in spite of its altitude, a pass on which little snow lies. From the Zoji La the road continues by easy gradients, following the line of the Dras drainage, to the Indus, when it turns up the valley to Leh. From Leh there are many routes into Tibet, the best known being that from the Indus valley to the Tibetan plateau, by the Chang La, to Lake Pang-kong and Rudok (14,000 ft.). Rudok occupies a forward position on the western Tibetan border analogous to that of Leh in Kashmir. The chief trade route to Lhasa from Leh, however, follows the line offered by the valleys of the Indus and the Brahmaputra (or Tsanpo), crossing the divide between these rivers north of Lake Manasarowar.

The observatory at Leh is the most elevated observatory in Asia. "The atmosphere of the Indus valley is remarkably clear and transparent, and the heat of the sun is very great. There is generally a difference of more than 60° between the reading of the exposed sun thermometer *in vacuo* and the air temperature in the shade, and this difference has occasionally exceeded 90°. . . . The mean annual temperature at Leh is 40°, that of the coldest months (Jan. and Feb.) only 18° and 19°, but it rises rapidly from Feb. to July, in which months it reaches 62° with a mean diurnal maximum of 80° both in that month and Aug., and an average difference of 29° or 30° between the early morning and afternoon. The mean highest temperature of the year is 90°, varying between 84° and 93° in the twelve years previous to 1893. On the other hand, in the winter the minimum thermometer falls occasionally below 0°, and in 1878 reached as low as 17° below zero. The extreme range of recorded temperature is therefore not less than 110°. The air is as dry at Quetta, and rather more uniformly so. . . . The amount of rain and snow is insignificant. The average rain (and snow) fall is only 2.7 in. in the year."[1] In Jan. and Feb. the air is generally calm, and April and May are the most windy months of the year.

Vegetation is confined to valleys and sheltered spots, where a stunted growth of tamarisk and *Myricaria, Hippophae* and *Elaeagnus,* furze, and the roots of *burtsi,* a salsolaceous plant, supply the traveller with much-needed firewood. The trees are the pencil cedar (*Juniperus excelsa*), the poplar and willow (both extensively planted, the latter sometimes wild), apple, mulberry, apricot and walnut. Irrigation is skilfully managed, the principal products being wheat, a beardless variety of barley called *grim,* millet, buck-wheat, pease, beans and turnips. Lucerne and prangos (an umbelliferous plant) are used as fodder.

Among domestic animals are the famous shawl goat, two kinds of sheep, of which the larger (*huniya*) is used for carrying burdens, and is a principal source of wealth, the yak and the dso, a valuable hybrid between the yak and common cow. Among wild animals are the kiang or wild ass, ibex, several kinds of wild sheep, antelope (*Panthalops*), marmot, hare and other Tibetan fauna.

The present value of the trade between British India and Tibet passing through Ladakh is inconsiderable. Ladakh, however, is improving in its trade prospects apart from Tibet. It is curious that both Ladakh and Tibet import a considerable amount of treasure, for on the borders of western Tibet and within a radius of 100 or 200 mi. of Leh there centres a gold-mining industry which apparently only requires scientific development to render it enormously productive. Here the surface soil has been for many centuries washed for gold by bands of Tibetan miners, who never work deeper than 20 to 50 ft., and whose methods of washing are of the crudest description. They work in winter, chiefly because of the binding power of frost on the friable soil, suffering great hardships and obtaining but a poor return for their labour.

[1] H. F. Blandford, *Climate and Weather of India* (London, 1889).

The adjoining territory of Baltistan forms the west extremity of Tibet, whose natural limits here are the Indus from its abrupt southward bend in 74° 45′ E., and the mountains to the north and west, separating a comparatively peaceful Tibetan population from the fiercer Aryan tribes beyond. The Balti call Gilgit "a Tibet," and Dr. Leitner says that the Chilasi call themselves Bot or Tibetans; but, although these districts may have been overrun by the Tibetans, or have received rulers of that race, the ethnological frontier coincides with the geographical one given. Baltistan is a mass of lofty mountains, the prevailing formation being gneiss. In the north is the Baltoro glacier, the largest out of the arctic regions, 35 mi. long, contained between two ridges whose highest peaks to the south are 25,000 and to the north 28,265 ft. The Indus, as in Lower Ladakh, runs in a narrow gorge, widening for nearly 20 mi. after receiving the Shyok. The capital, Skardu, a scattered collection of houses, stands here, perched on a rock 7,250 ft. above the sea. The rapid slope westward is seen generally in the vegetation. Birch, plane, spruce and *Pinus excelsa* appear; the fruits are finer, including pomegranate, pear, peach, vine and melon, and where irrigation is available, as in the North Shigar, and at the deltas of the tributary valleys, the crops are more luxuriant and varied.

History.—The earliest notice of Ladakh is by the Chinese pilgrim Fa-hien, A.D. 400, who, travelling in search of a purer faith, found Buddhism flourishing there. Ladakh formed part of the Tibetan empire until its disruption in the 10th century, and since then has continued ecclesiastically subject, and sometimes tributary, to Lhasa.

Its inaccessibility saved it from any Mohammedan invasion until 1531, when Sultan Said of Kashgar marched an army across the Karakoram, one division fighting its way into Kashmir and wintering there. Next year they invaded eastern Tibet, where nearly all perished from the effects of the climate.

Early in the 17th century Ladakh was invaded by its Mohammedan neighbours of Baltistan, who plundered and destroyed the temples and monasteries; and again, in 1685–88, by the Sokpa, who were expelled only by the aid of the lieutenant of Aurangzeb in Kashmir, Ladakh thereafter becoming tributary. The gyalpo or king then made a nominal profession of Islam, and allowed a mosque to be founded at Leh, and the Kashmiris have ever since addressed his successors by a Mohammedan title. When the Sikhs took Kashmir, Ladakh was, however, conquered and annexed in 1834–1841 by Gulab Singh of Jammu—the unwarlike Ladakhis being no match for the Dogra troops. These next turned their arms successfully against the Baltis (who in the 18th century were subject to the Mogul), and were then tempted to revive the claims of Ladakh to the Chinese provinces of Rudok and Ngari. This, however, brought down an army from Lhasa, and after a three days' fight the Indian force was almost annihilated—chiefly indeed by frostbite and other sufferings, for the battle was fought in midwinter, 15,000 ft. above the sea. The Chinese then marched on Leh, but were soon driven out again, and peace was finally made on the basis of the old frontier.

See: A. Cunningham, *Ladak* (1854); F. Drew, *The Jummoo and Kashmir Territories* (1875); J. Biddulph, *The Tribes of the Hindoo Koosh* (1880); W. Lawrence, *The Valley of Kashmir* (1895).

LADD, GEORGE TRUMBULL (1842–1921), U.S. philosopher, was born in Painesville, O., on Jan. 19, 1842. He graduated at Western Reserve college in 1864 and at Andover theological seminary in 1869; preached for a decade in Ohio and Milwaukee; was professor of philosophy at Bowdoin college in 1879–81 and Clark professor of metaphysics and moral philosophy at Yale from 1881 till 1901, when he took charge of the graduate department of philosophy and psychology; and became professor emeritus in 1905. He also lectured at other educational institutions in the United States and the Orient. He was much influenced by Lotze, whose *Outlines of Philosophy* he translated (1877), and was one of the first to introduce (1879) the study of experimental psychology into the U.S., the Yale psychological laboratory being founded by him. He died in New Haven, Conn., on Aug. 8, 1921. Besides books on religion, education and the

Orient, Ladd was the author of numerous important works on psychology and philosophy, including *Elements of Physiological Psychology* (1887, new ed. with R. S. Woodworth, 1911); *Psychology, Descriptive and Explanatory* (1894); *Philosophy of Knowledge* (1897); *Philosophy of Religion* (1905); and *The Secret of Personality* (1918).

LADIN, a term sometimes used as an alternative name for the Rhaeto-Romance subdivision of the Italo-Celtic language family. It is strictly the name of the chief dialect of that sub-division, spoken in Grisons and the Tyrol together with several other dialects; *e.g.,* Frioul (*q.v.*). *See* RHAETO-ROMANCE LANGUAGES.

See also *Saggi ladini* in *Arch. glott. Ital.,* vol. i.; R. Brandstellei, *Rätoromanische Forschungen* (1905).

LADING, BILL OF: *see* AFFREIGHTMENT.

LADISLAUS I., SAINT (1040–1095), king of Hungary, the son of Bela I., king of Hungary, and the Polish princess Richeza, was born in Poland, whither his father had sought refuge. Returning to Hungary, Ladislaus and his brother Geza refused to contest the throne against their cousin Salomon, whom they served in his campaigns against the Cumans (1070) and Pechenegs (1072). In 1073, however, the brothers quarrelled with and expelled Salomon, Geza taking his throne (1074), and on Geza's death Ladislaus succeeding him (1077). His reign was peculiarly eventful. He defeated an alliance between Salomon and the Cumans, and after crushing a second Cuman invasion by alleged Divine aid (1091), extended Hungary's frontier in Transylvania, founding, amongst other cities, Gyula Fehervár, of which he became the patron saint. He supported the pope against the Emperor Henry IV.; married the daughter of Welf, duke of Bavaria, and is said to have refused the German crown for himself. By supporting the widow of Prince Stephen II. of Croatia against his enemies he secured Croatia for Hungary (1091) and introduced Catholicism into that country, founding the bishopric of Agram (Zagreb). He extirpated heathendom in his dominions with great severity, and also introduced an elaborate legal code. Ladislaus died suddenly on July 29, 1095, when about to take part in the first crusade. No other Hungarian king was so generally beloved. The whole nation mourned for him for three years, and regarded him as a saint long before his canonization. A whole cycle of legends is associated with his name. His daughter Piriska married the Byzantine emperor John Comnenus.

See Gyorgy Pray, *Dissertatio de St. Ladislao* (Pressburg, 1774); Antal Ganoczy, *Diss., hist. crit. de St. Ladislao* (Vienna, 1775); J. Babik, *Life of St. Ladislaus* (Hung.) (Eger, 1892).

LADISLAUS IV., The Cumanian (1262–1290), king of Hungary, succeeded his father, Stephen V., in 1272. His minority, 1272–77, was an alternation of palace revolutions and civil wars, in the course of which his Cuman mother Elizabeth was engaged in a continuous struggle with rebellious vassals supported by Ottokar of Bohemia. Rudolph of Habsburg, however, on becoming emperor, sought Ladislaus' help and the young king at the battle of Dürnkraut (Aug. 12, 1278) destroyed the Bohemian power. This danger removed, Ladislaus, a talented man, but wild and reckless, was at once involved in a further struggle with his own magnates. He had married for political reasons, Elizabeth of Anjou; but neglected her for Cuman mistresses, and was accused by his enemies of undermining Christianity by preferring the Cumans to the Magyars. After an enquiry by a papal legate into his conduct, he was forced to take up arms against the Cumans whom he defeated at Hodmézö (May 1282); but soon relapsed, adopted Cuman dress, passed his time exclusively with Cumans, and ill-treated his legitimate wife. At last the pope, Nicholas IV., decided to supersede him by his Angevin kinsfolk, and on Aug. 8, 1288, proclaimed a crusade against him. For the next two years all Hungary was convulsed by a horrible civil war; Ladislaus, who fought to the last with desperate valour, was driven from one end of the kingdom to the other like a hunted beast. On Dec. 25, 1289, he issued a manifesto to the lesser gentry, many of whom sided with him, urging them to continue the struggle against the magnates and their foreign supporters; but on July 10, 1290, he was murdered in his camp at Korosszeg by the Cumans, who never forgave him for deserting them in 1282.

See Karoly Szabo, *Ladislaus the Cumanian* (Hung.) (Budapest, 1886); and Acsády, *History of the Hungarian Realm,* i. 2 (Budapest, 1903). The latter is, however, too favourable to Ladislaus.

LADISLAUS V. (1440–57), king of Hungary and Bohemia, the only son of Albert, king of Hungary, and Elizabeth, daughter of the emperor Sigismund, was born at Komárom on Feb. 22, 1440, four months after his father's death, and was hence called Ladislaus Posthumus. The estates of Hungary had already elected Wladislaus III. of Poland their king, but Ladislaus's mother caused the holy crown to be stolen from its guardians at Visegrad, and compelled the primate to crown the infant king at Székesfejérvár on May 15, 1440; whereupon, for safety's sake, she placed the child beneath the guardianship of his uncle the emperor Frederick III. On the death of Wladislaus (Nov. 10, 1444), the Hungarian estates elected Ladislaus king; but Frederick, despite many representations, retained him and the crown till 1452. The child was then transferred to the guardianship of his maternal grandfather Ulrich Cillei, who inspired him with a jealous hatred of the Hunyadis. On Oct. 28, 1453 he was crowned king of Bohemia, and henceforth spent most of his time at Prague and Vienna, actually trying to hinder Hunyadi's attempts to defend Hungary against the Turk. His judicial murder of Laszló Hunyadi (*q.v.*) finally raised such a storm in Hungary that the king fled to Prague, where he died suddenly (Nov. 23, 1457), while making preparations for his marriage with Magdalena, daughter of Charles VII. of France. He is supposed to have been poisoned by his political opponents in Bohemia.

See F. Palacky, *Zeugenverhör über den Tod König Ladislaus von Ungarn u. Böhmen* (Prague, 1856); Ignacz Acsády, *History of the Hungarian State* (Hung.), vol. i. (Budapest, 1903).

LADO ENCLAVE, a region west of the upper Nile reaching southwards to Lake Albert that was at one time leased to the Belgian Congo. It had an area of 15,000 sq.m., and a population estimated at 250,000 and consisting of Bari, Madi, Kuku and other Nilotic Negroes. The boundary between the Anglo-Egyptian Sudan and Belgian Congo now runs far north of Lake Albert, which forms part of the frontier between the Belgian Congo and Uganda.

The country is a moderately elevated plateau sloping northward from the higher ground marking the Congo-Nile watershed. The plains are mostly covered with bush, with stretches of forest in the northern districts. Traversing the plateau are two parallel mountainous chains having a general north to south direction. One chain, the Kuku Mountains (average height 2,000 ft.), approaches close to the Nile and presents, as seen from the river, several apparently isolated peaks. Below the Bedden Rapids rises the conical hill of Rejaf, and north of that point the Nile valley becomes flat. Ranges of hill, however, are visible farther westwards, and a little north of 5° N. is Jebel Lado, 2,500 ft. high and some 12 m. distant from the Nile. It has given its name to the district, being the first hill seen from the Nile in the ascent of some 1,000 m. from Khartum.

The northern part of the district was first visited by Europeans in 1841–1842, when the Nile was ascended by an expedition despatched by Mehemet Ali to the foot of the rapids at Bedden. The neighbouring posts of Gondokoro, on the east bank of the Nile, and Lado, soon became stations of the Khartum ivory and slave traders. After the discovery of Albert Nyanza by Sir Samuel Baker in 1864, the whole country was overrun by Arabs, Levantines, Turks and others, whose chief occupation was slave raiding. The region was claimed as part of the Egyptian Sudan, but it was not until the arrival of Sir Samuel Baker at Gondokoro in 1870 as governor of the equatorial provinces, that any effective control of the slave traders was attempted. Baker was succeeded by General C. G. Gordon, who established a separate administration for the Bahr-el-Ghazal. In 1878 Emin Pasha became governor of the Equatorial Province, and made his headquarters at Lado, whence he was driven in 1885 by the Mahdists. He then removed to Wadelai, a station farther south, but in 1889 the pasha, to whose aid H. M. Stanley had conducted an expedition from the Congo, evacuated the country and with Stanley made his way to the east coast. In February 1894 the Union Jack was hoisted at

Wadelai, while in May of the same year Great Britain granted to Leopold II., as sovereign of the Congo State, a lease of large areas lying west of the upper Nile inclusive of the Bahr-el-Ghazal and Fashoda. Pressed however by France, Leopold II. agreed to occupy only that part of the leased area east of 30° E. and south of 5° 30′ N., and in this manner the actual limits of the Lado Enclave, as it was thereafter called, were fixed. After the withdrawal of the French from Fashoda, Leopold II. revived (1899) his claim to the whole of the area, leased to him in 1894. In this claim he was unsuccessful, and the lease, by a new agreement made with Great Britain in 1906, was annulled. The king however retained the enclave, with the stipulation that six months after the termination of his reign it should be handed over to the Anglo-Sudanese government.

LADOGA, a lake of northern Russia and Finland (formerly Nevo), the boundary between the two countries running in a north-easterly direction across the lake, which lies between 59° 56′ and 61° 46′ N., and 29° 53′ and 32° 50′ E. It has the form of a quadrilateral, elongated from north-west to south-east. Its eastern and southern shores are flat and marshy, the north-western craggy and fringed by numerous small rocky islands, the largest of which are Valamo and Konnevitz, lying in the Finnish section, together having an area of 14 sq.m. Ladoga is 7,000 sq.m. in area, that is, 31 times as large as the Lake of Geneva; but, its depth being less, it contains only 19 times as much water as the Swiss lake. The greatest depth, 730 ft., is in a trough in the north-western part, the average depth not exceeding 250 to 350 ft. The level of Lake Ladoga is 55 ft. above the Gulf of Finland, but it rises and falls about 7 ft., according to atmospheric conditions, a phenomenon very similar to the *seiches* of the Lake of Geneva being observed in connection with this.

The western and eastern shores, as well as a narrow strip on the southern shore, consist of boulder clay, south of which runs a ridge of crags of Silurian sandstones. The hills of the north-western shore afford a variety of granites and crystalline slates of the Laurentian system, whilst Valamo island is made up of a rock which Russian geologists describe as orthoclastic hypersthenite.

No fewer than 70 rivers enter Ladoga, pouring into it the waters of numberless smaller lakes which lie at higher levels round it. The Volkhov, which conveys the waters of Lake Ilmen, is the largest; a hydro-electric station on the Volkhov was opened in 1926 with a capacity of 56,000 kilowatts. Lake Onega discharges its waters by the Svir; and the Saima system of lakes of eastern Finland contributes the Vuoxen and Taipale rivers; the Syas brings the waters from the smaller lakes and marshes of the Valdai plateau. Ladoga discharges its surplus water by means of the Neva, which flows from its south-western corner into the Gulf of Finland, rolling down its broad channel 104,000 cu.ft. of water per second.

The water of Ladoga is very pure and cold; in May the surface temperature does not exceed 36° and even in August it reaches only 50° and 53°, the average yearly temperature of the air at Valamo being 36·8°. The lake begins to freeze in October, but it is only about the end of December that it is frozen in its deeper parts; and it remains ice-bound until the end of March, though broad ice-fields continue to float in the middle of the lake until broken up by gales. Only a small part of the Ladoga ice is discharged by the Neva; but it is enough to produce in the middle of June a return of cold in Leningrad. The thickness of the ice does not exceed 3 or 4 ft.; but during the alternations of cold and warmer weather, with strong gales, in winter, stacks of ice, 70 to 80 ft. high, are raised on the shores and on the icefields. The water is in continuous rotatory motion, being carried along the western shore from north to south, and along the eastern from south to north. The vegetation on the shores is poor; immense forests, which formerly covered them, are now mostly destroyed. But the fauna of the lake is somewhat rich; a species of seal which inhabits its waters, as well as several species of arctic crustaceans, recall its former connection with the Arctic ocean. The fresh water Diatomaceae which are found in great variety in the ooze of the deepest parts of the lake, also have an arctic character.

Fishing is very extensively carried on. Navigation, which is practicable for only 180 days in the year, is rather difficult owing to fogs and gales, which are often accompanied, even in April and September, with snow-storms. The prevailing winds blow from north-west and south-west; north-east winds cause the water to rise in the south-western part, sometimes 3 to 5 ft. Steamers ply regularly from Leningrad to the mouth of the Svir, whence they go up that river to Lake Onega and Petrozavodsk; and small vessels transport timber, firewood, planks, iron, kaolin, granite, marble, fish, hay and various small wares from the northern shore to Schlüsselburg, and thence to Leningrad. Navigation on the lake being too dangerous for small craft, canals with an aggregate length of 104 m. were dug in 1718–31, and others in 1861–86 having an aggregate length of 101 m. along its southern shore, uniting with the Neva at Schlüsselburg the mouths of the rivers Volkhov, Syas and Svir, all links in the elaborate system of canals which connect the upper Volga with the Gulf of Finland.

LADY, a term of which the main applications are two, (1) as the correlative of "lord" (*q.v.*) in certain of the usages of that word, (2) as the correlative of "gentleman" (*q.v.*). The primary meaning of mistress of a household is, if not obsolete, in present usage only a vulgarism. The special use of the word as a title of the Virgin Mary, usually "Our Lady," represents the Lat. *Domina Nostra.* As a title of nobility the uses of "lady" are mainly paralleled by those of "lord."

LADYBANK AND MONKSTON, small burgh, Fifeshire, Scotland, 5½ mi. S.W. of Cupar by the L.N.E.R., ½ mi. from the left bank of the Eden. Pop. (est. 1938) 1,212. Besides having a station on the main line to Dundee, it is also connected with Perth and Kinross and is a railway junction of some importance, with considerable workshops of the L.N.E.R. Linen manufacturing and malting are carried on. Kettle, 1 mi. S., has prehistoric barrows and a fort. At Collessie, 2½ mi. N. by W., a standing stone, a mound and traces of ancient camps exist.

LADYBIRD or **LADYBUG,** the popular name given to beetles of the family Coccinellidae of the order Coleoptera (*q.v.*).

LADYBRAND, a town in the Orange Free State, 80 mi. E. of Bloemfontein, and about 4 mi. W. of the Caledon river, which separates the Orange Free State from Basutoland, 29° 9′ S., 27° 29′ E.; altitude 5,241 feet. Many of the buildings are of light cream-coloured sandstone from the local upper Karroo formations. The town is the centre of a good agricultural area, and has a wheat market. It also attracts a certain number of visitors. Its population in 1936 numbered 2,314 Europeans, 134 "coloured" (mixed) and 2,305 natives.

LADY-CHAPEL, a chapel attached to a large church and dedicated to the Blessed Virgin. As the development of the chevet (*q.v.*), or system of radiating chapels, progressed during the late 12th century in France, it became customary to give the one dedicated to the Blessed Virgin the most important position, directly in the centre, and behind the high altar of the church, and also to make it larger than the other chapels. In French Gothic churches, the lady-chapel is sometimes emphasized, as in Le Mans cathedral (*c.* 1230), Rheims (*c.* 1241), Amiens (1269). In others, however, such as Notre Dame at Paris (1180) and Bourges (*c.* 1200), all the chapels are similar. In England, the chevet of Westminster Abbey had an enormous lady-chapel, built by Henry III. (1220), the site of which is now occupied by the Henry VII. chapel. The square east end, common in English cathedrals, led to a tremendous emphasis upon the lady-chapel, which frequently became almost as large as the choir itself. Good examples exist at Winchester (15th century, chapel lengthened 1487), Salisbury (1220–60), Exeter (1194–1206), Wells (1326) and St. Albans (14th century). The cathedral at Ely (1321–49) is remarkable in possessing a large and lavish late curvilinear Gothic lady-chapel, actually a separate building at one side of the church east end, connected with the church only by a small vestibule. In this chapel a considerable area of the original colour decoration still exists. The position at the end of the choir is by no means universal; in Canterbury (1449–68) the lady-chapel is on the east side of the north transept. Continental Gothic examples usually

follow French precedent. Many rich Renaissance examples exist in Italy and Spain.

LADY DAY, the feast of the Annunciation, held on March 25 in each year. Lady Day was, in mediaeval times, the beginning of the legal year in England. In 1752 this was altered to Jan. 1, but March 25 remains a Quarter Day. *See* ANNUNCIATION.

LADY'S MANTLE (*Alchemilla*), a genus of herbaceous plants of the family Rosaceae (*q.v.*). The plants are mostly natives of temperate regions. The flowers are small and numerous, with an 8-cleft calyx and no corolla. The leaves—from which the name, meaning Mantle of Our Lady, is derived—are large, serrated and many-lobed. In the British Isles there are three species: the mountain lady's mantle (*A. alpina*), the field lady's mantle (*A. arvensis*), and the common lady's mantle (*A. vulgaris*). The last named is the most abundant; it grows in pastures, and bears yellow flowers. *A. arvensis* is widely naturalized in North America from Nova Scotia to California; *A. vulgaris* has become sparingly established near the coast from Nova Scotia to Labrador.

LADYSMITH, a town in Natal, South Africa, in 28° 32′ S., 29° 40′ E.; altitude 3,284 feet. Population (1936) 3,660 Europeans, 261 "coloured" (mixed), 4,137 natives and 1,644 Asiatics. The town is built near the Klip river, 201 mi. by rail from Durban, and about 30 mi. from the Drakenberg. Here the main railway line of Natal bifurcates, one branch going to the Transvaal, the other to the Orange Free State. There are important railway workshops in the town. Ladysmith, founded in 1851, is named after the wife of Sir Harry Smith, governor of the cape. It was besieged by the Boers during the second Boer War, and the church contains stained glass windows and tablets in memory of more than 3,000 men who died in its defense.

The new town hall is a substantial building of local dolerite and sandstone, and contains a hall, theatre and administrative offices. The town has several schools, and a good water supply.

Siege of Ladysmith.—In the first and most critical stage of the South African War of 1899–1902 (*q.v.*) Ladysmith was the centre of the struggle. During the British concentration on the town there were fought the actions of Talana (or Dundee) on Oct. 20, 1899, Elandslaagte on the 21st and Rietfontein on the 24th. On Oct. 30 the British sustained a serious defeat in the general action of Lombard's Kop or Farquhar's Farm, and Sir George White decided to hold the town, which had been fortified, against investment and siege until he was relieved directly or indirectly by Sir Redvers Buller's advance. The greater portion of Buller's available troops were despatched to Natal in November, with a view to the direct relief of Ladysmith, which meantime the Boers had closely invested. His first attempt was repelled on Dec. 15 in the battle of Colenso, his second on Jan. 24, 1900, by the successful Boer counterstroke against Spion Kop, and his third was abandoned without serious fighting (Vaalkranz, Feb. 5). But two or three days after Vaalkranz, almost simultaneously with Lord Roberts's advance on Bloemfontein, Buller resumed the offensive in the hills to the east of Colenso, which he gradually cleared of the enemy, and although he was checked after reaching the Tugela below Colenso (Feb. 24) he was finally successful in carrying the Boer positions (Pieter's Hill) on the 27th and relieving Ladysmith, which during these long and anxious months (Nov. 1–Feb. 28) had suffered very severely from want of food, and on one occasion (Caesar's Camp, Jan. 6, 1900) had only with heavy losses and great difficulty repelled a powerful Boer assault. The garrison displayed its unbroken resolution on the last day of the investment by setting on foot a mobile column, composed of all men who were not too enfeebled to march out, in order to harass the Boer retreat. This expedition was, however, countermanded by Buller.

LADY'S-SLIPPER, the common name of the plants of the botanical genus *Cypripedium,* belonging to the orchid family (Orchidaceae). The genus comprises about 30 species, native to north temperate and subtropical regions. They are leafy-stemmed herbs, usually ½ ft. to 2½ ft. high, with broad, many-nerved leaves and showy flowers. The lower petal is developed into a large, inflated, slipper-like sac.

LADY'S TRESSES (*Spiranthes autumnalis*), a plant of the orchid family, found in pastures and on hill-sides in Europe (including Great Britain) and North Africa. The white, scented flowers appear in August and are succeeded by a rosette of oval leaves. Below ground are several tubers. An allied species, the hooded lady's tresses (*S. Romanzoffiana*), which inhabits North America and Kamchatka, occurs also at Bantry bay, in Ireland. Besides the last named several other species occur in the eastern and southern United States and Canada, and one on the Pacific coast.

LAELIUS, the name of a Roman plebeian family, probably settled at Tibur (Tivoli). The chief members were:—

GAIUS LAELIUS, general and statesman, was a friend of the elder Scipio, whom he accompanied on his Spanish campaign (210–206 B.C.). In Scipio's consulship (205), Laelius went with him to Sicily, whence he conducted an expedition to Africa. In 203 he defeated the Massaesylian prince Syphax, who, breaking his alliance with Scipio, had joined the Carthaginians, and at Zama (202) was in command of the cavalry. In 197 he was plebeian aedile and in 196 praetor of Sicily. As consul in 190 he was employed in organizing the recently conquered territory in Cisalpine Gaul. Placentia and Cremona were repeopled, and a new colony founded at Bononia. He is last heard of in 170 as ambassador to Transalpine Gaul. Silius Italicus (*Punica,* xv. 450) describes him as a man of great endowments and an eloquent orator.

See Index to Livy; Polybius x. 3. 9, 39, xi. 32, xiv. 4. 8, xv. 9. 12, 14; Appian, *Hisp.* 25–29; Cicero, *Philippica,* xi. 7.

His son, GAIUS LAELIUS, is known chiefly as the friend of the younger Scipio, and as one of the speakers in Cicero's *De senectute, De amicitia* (or *Laelius*) and *De Republica.* He was surnamed *Sapiens* ("the wise"), either from his scholarly tastes or because, when tribune, he withdrew his proposal (151 B.C.) for the relief of the farmers by distributions of land, when he saw that it was likely to bring about disturbances. In the third Punic War (147) he accompanied Scipio to Africa, and distinguished himself at the capture of the Cothon, the military harbour of Carthage. In 145 he carried on operations with moderate success against Viriathus in Spain; in 140 he was elected consul. During the Gracchan period he supported Scipio and the aristocrats. He assisted to prosecute the supporters of Tiberius Gracchus, and in 131 opposed the bill brought forward by C. Papirius Carbo to render legal the election of a tribune to a second year of office. A member of the "Scipionic circle," he was a student of philosophy and a poet, and was one of those mainly instrumental in introducing Greek culture to Rome. As an orator, he was more at home in the Senate than in the forum.

See Index to Cicero; Plutarch, *Tib. Gracchus,* 8; Appian, *Punica,* 126; Horace, *Sat.* ii. 1. 72; Quintilian, *Instit.* xii. 10. 10; Suetonius, *Vita Terentii;* Terence, *Adelphi, Prol.* 15, with the commentators.

LAENAS, the name of a plebeian family in ancient Rome, notorious for cruelty and arrogance. The two most famous of the name are:—

GAIUS POPILLIUS LAENAS, consul in 172 B.C. He was sent to Greece in 174 and took part in the war against Perseus, king of Macedonia (Livy xliii. 17, 22). When Antiochus Epiphanes, king of Syria, invaded Egypt, Laenas was sent to stop him. Meeting him near Alexandria, he handed him the decree of the senate, demanding the evacuation of Egypt. Antiochus having asked time for consideration, Laenas drew a circle round him with his staff, and told him he must give an answer before he stepped out of it. Antiochus thereupon submitted (Livy xlv. 12; Polybius xxix. 11; Cicero, *Philippica,* viii. 8; Vell. Pat. i. 10).

PUBLIUS POPILLIUS LAENAS, son of the preceding. When consul in 132 B.C. he incurred the hatred of the democrats by his harsh measures as head of a special commission appointed to take measures against the accomplices of Tiberius Gracchus. In 123 Gaius Gracchus brought in a bill prohibiting such commissions which may have contained a retrospective clause. In any case, Laenas left Rome, and was exiled from Italy. He was recalled on the restoration of the aristocracy in 121.

See Cicero, *Brutus,* 25. 34, and *De domo sua,* 31; Vell. Pat. ii. 7; Plutarch, *C. Gracchus,* 4.

LAËNNEC, RENE THÉOPHILE (1781–1826), French physician, was born at Quimper, Brittany, on Feb. 17, 1781. After studying in various military hospitals and at Paris, he became in 1812 physician to the Hôpital Beaujou, in 1816 physician to the Hôpital Necker and in 1822 professor of medicine at the Collège de France. Laënnec's fame rests on his invention of the stethoscope in 1819, and on the appearance, in the same year, of his *De l'auscultation médiate,* a work from which our knowledge of chest diseases is mainly derived.

See H. Saintignon: *Laënnec, sa vie, son ouvrage* (Paris, 1904).

LAESTRYGONES, a mythical race of giants and cannibals. According to the *Odyssey* (x. 80) they dwelt in a land where the shepherd who was driving out his flock met another driving it in. (Possibly a vague reminiscence of the short sub-Arctic summer night, but quite as likely a reference to some custom of pasturing by night.) Odysseus in his wanderings arrived at the coast inhabited by the Laestrygones, and escaped with only one ship.

Later traditions placed the country of the Laestrygones in Sicily, near Leontini; or in southern Latium, near Formiae.

LAETUS, JULIUS POMPONIUS (Giulio Pomponio Leto) (1425–1498), Italian humanist, was born at Salerno. He studied at Rome under Laurentius Valla, whom he succeeded (1457) as professor of eloquence in the Gymnasium Romanum. About this time he founded an academy, the members of which adopted Greek and Latin names, met on the Quirinal to discuss classical questions and celebrated the birthday of Romulus. The academy fell under the suspicion of Paul II. as savouring of paganism; Laetus was arrested, but afterward acquitted, and the academy was suppressed. Sixtus IV. permitted the resumption of its meetings, which continued to be held till the sack of Rome (1527). Laetus continued to teach in Rome until his death on June 9, 1498. As a teacher, Laetus, who has been called the first head of a philological school, was extraordinarily successful; in his own words, like Socrates and Christ, he expected to live on in the person of his pupils, amongst whom were many of the most famous scholars of the period. His works, written in pure and simple Latin, were published in a collected form (*Opera Pomponii Laeti varia,* 1521). They contain treatises on the Roman magistrates, priests and lawyers, and a compendium of Roman history from the death of the younger Gordian to the time of Justin III.

See *The Life of Leto* by Sabellicus (Strasbourg, 1510); G. Voigt, *Die Wiederbelebung des klassischen Alterthums,* ii. (3rd ed., 1893); F. Gregorovius, *Geschichte der Stadt Rom im Mittelalter,* vii. (1894), p. 576, for an account of the academy; Sandys, *History of Classical Scholarship* (1908), ii. 92.

LAEVIUS (? *c.* 80 B.C.), a Latin poet of whom practically nothing is known. The earliest reference to him is perhaps in Suetonius (*De grammaticis,* 3), though it is not certain that the Laevius Milissus there referred to is the same person. Definite references do not occur before the 2nd century (Fronto, Aulus Gellius, etc.). Some 60 miscellaneous lines are preserved (*see* Bährens, *Fragm. poët. rom.* pp. 287–293), from which it is difficult to see how ancient critics could have regarded him as the master of Ovid or Catullus.

See H. de la Ville de Mirmont, *Etude biographique et littéraire sur le poète Laevius* (1900), with critical ed. of the fragments, and remarks on vocabulary and syntax; A. Weichert, *Poëtarum latinorum reliquiae* (Leipzig, 1830); a convenient summary in F. Plessis, *La Poésie latine* (1909), pp. 139–142.

LAEVULINIC ACID or Laevulic acid (β-acetopropionic acid), a ketonic acid prepared from laevulose, inulin, starch and other carbohydrates, by boiling them with dilute hydrochloric or sulphuric acids. It crystallizes in plates which melt at 32.5–33° C. and it boils at 148–149° C. (15 mm.). It is readily soluble in water, alcohol or ether. It is synthesized by condensing sodium acetoacetate with ethyl chloroacetate, the acetosuccinic ester produced being then hydrolyzed with dilute hydrochloric acid. It may also be prepared by oxidation of methylheptenone and of geraniol (*see* TERPENES). Laevulinic acid, $CH_3CO.CH_2.CH_2.CO_2H$, when distilled slowly, yields α- and β-angelica lactones. When heated with hydriodic acid and phosphorus, it yields *n*-valeric acid; and with iodine and cold sodium hydroxide solution it gives iodoform. With hydroxylamine it forms an oxime, which by the action of concentrated sulphuric acid is transformed into *N*-methylsuccinimide $[CH_2.CO]_2N.CH_3$.

LAEVULOSE: *see* FRUCTOSE; CARBOHYDRATES; SUGAR.

LA FARGE, JOHN (1835–1910), American artist, was born in New York on March 31, 1835, of French parentage. He received instruction in drawing from his grandfather, Binsse de St. Victor, a painter of miniatures; studied law and architecture; entered the atelier of Thomas Couture in Paris, where he remained a short time, giving especial attention to the studying and copying of old masters at the Louvre; and began by making illustrations to the poets (1859). An intimacy with the artist William M. Hunt had a strong influence on him, the two working together at Newport (R.I.). La Farge painted landscape, still life and figure alike in the early '60s. But from 1866 on he was for some time incapacitated for work, and when he regained strength he did some decorative work for Trinity church, Boston, in 1876, and turned his attention to stained glass, becoming president of the Society of Mural Painters. Some of his important commissions include windows for St. Thomas's church (1877), St. Peter's church, the Paulist church, the Brick church (1882), the churches of the Incarnation (1885) and Ascension (1887), all New York; Trinity church, Buffalo, and the "Battle Window" in Memorial Hall at Harvard. He was also a prolific painter in oil and water colour, as seen notably in some water-colour sketches, the result of a voyage in the South Seas, shown in 1895. He became president of the Society of American Artists, a member of the National Academy of Design in 1869, and an officer of the Legion of Honour of France. He published *Considerations on Painting* (New York, 1895), *Hokŭsai: A Talk about Hokŭsai* (1897), and *An Artist's letters from Japan* (1897).

See Cecilia Waern, "John La Farge, Artist and Writer" (1896, No. 26 of *The Portfolio*).

LA FARINA, GIUSEPPE (1815–1863), Italian author and politician, was born at Messina. On account of the part he took in the insurrection of 1837 he had to leave Sicily, but returning in 1839 he conducted various Liberal newspapers, until his efforts were interdicted, when he removed to Florence. La Farina was in Sicily again during the revolution of 1848, and after its failure he fled to France. Whilst in exile he wrote *Storia documentata della Rivoluzione Siciliana del 1848–1849* (1850) and *Storia d' Italia dal 1815 al 1848* (6 vols., 1851–52). He returned to Italy in 1854 and settled at Turin, and in 1856 he founded the *Piccolo Corriere d'Italia,* an organ of the Società, Nazionale Italiana, of which he ultimately was chosen president. With Daniele Manin (*q.v.*), one of the founders of that society, he advocated the unity of Italy under Victor Emmanuel even before Cavour, and organized the emigration of volunteers from all parts of Italy into the Piedmontese army. He negotiated an interview between Cavour and Garibaldi, with the result that the latter was appointed commander of the Cacciatori delle Alpi in the war of 1859. Later he supported Garibaldi's expedition to Sicily, but he failed to bring about the immediate annexation of the island to Piedmont as Cavour wished. In 1860 he was chosen a member of the first Italian parliament and was subsequently made councillor of State. He died on Sept. 5, 1863.

See A. Franchi, *Epistolario di Giuseppe La Farina* (2 vols., 1869); L. Carpi, *Il Risorgimento Italiano,* vol. i. (Milan, 1884); B. Croce, *Storia della storiografia italiana nel secolo decimonono* (1921).

LA FAYETTE, GILBERT MOTIER DE (1380–1462), marshal of France, served under Marshal Boucicaut in Italy, and on his return to France after the evacuation of Genoa in 1409 became seneschal of the Bourbonnais. In the English wars John I., 4th duke of Bourbon, made him lieutenant-general in Languedoc and Guienne. He failed to defend Caen and Falaise in the interest of the dauphin (afterwards Charles VII.) against Henry V. in 1417 and 1418, but in the latter year he held Lyons for some time against Jean sans Peur, duke of Burgundy. A series of successes over the English and Burgundians on the Loire was rewarded in 1420 with the government of Dauphiny and the office of marshal of France. La Fayette commanded the Franco-Scottish troops at the battle of Baugé (1422), though he did not, as has been some-

times stated, slay Thomas, duke of Clarence, with his own hand. In 1424 he was taken prisoner by the English at Verneuil, but was released shortly afterwards, and fought with Joan of Arc at Orleans and Patay in 1429. The marshal had become a member of the grand council of Charles VII., and with the exception of a short disgrace about 1430, due to the ill-will of Georges de la Trémouille, he retained the royal favour all his life. He died on Feb. 23, 1462.

LA FAYETTE, LOUISE DE (*c.* 1616–1665), was one of the fourteen children of John, comte de La Fayette, and Marguerite de Bourbon-Busset. Louise became maid of honour to Anne of Austria, and Richelieu brought her to the notice of Louis XIII. in the hope that she might counterbalance the influence of Marie de Hautefort. The affair did not turn out as the minister wished, for she set herself to encourage the king in his resistance to Richelieu. She entered the convent of the Filles de Sainte-Marie in 1637. Here she was often visited by Louis, with whom she maintained a correspondence, until Richelieu intervened successfully. At the time of her death January 1665 Mlle. de La Fayette was superior of a convent of her order which she had founded at Chaillot.

See *Mémoires de Madame de Motteville;* Victor Cousin, *Madame de Hautefort* (Paris, 1868); L'Abbé Sorin, *Louise-Angèle de La Fayette* (Paris, 1893).

LA FAYETTE, MARIE JOSEPH PAUL YVES ROCH GILBERT DU MOTIER, MARQUIS DE (1757–1834), was born at the Château of Chavaniac in Auvergne, France, on Sept. 6, 1757. The family of La Fayette, to the cadet branch of which he belonged, received its name from an estate in Aix, Auvergne, which belonged in the 13th century to the Motier family. His father was killed at Minden in 1759, and at the age of thirteen he was left an orphan with a princely fortune. He married at sixteen Marie Adrienne Françoise de Noailles (d. 1807).

La Fayette entered the Guards, and was a captain of dragoons when the English colonies in America proclaimed their independence. "At the first news of this quarrel," he afterwards wrote in his memoirs, "my heart was enrolled in it." Through Silas Deane, American agent in Paris, an arrangement was concluded, on Dec. 7, 1776, by which La Fayette was to enter the American service as major-general. At this moment the news arrived of grave disasters to the American arms. La Fayette's friends urged him to abandon his purpose. Even the American envoys, Franklin and Arthur Lee, withheld further encouragement, and the king himself forbade his leaving. At the instance of the British ambassador at Versailles, orders were issued to seize the ship La Fayette was fitting out at Bordeaux, and La Fayette himself was arrested. But the ship was sent from Bordeaux to a neighbouring port in Spain, La Fayette escaped from custody in disguise, and before a second *lettre de cachet* could reach him he was afloat. He landed near Georgetown, S.C., and hastened to Philadelphia.

The lad of nineteen, with the command of only what little English he had been able to pick up on his voyage, presented himself to Congress with Deane's authority to demand a commission of the highest rank after the commander-in-chief. He perceived the difficulty immediately, and offered to serve as a simple volunteer, and Congress passed a resolution, on July 31, 1777, "that his services be accepted, and that, in consideration of his zeal, illustrious family and connections, he have the rank and commission of major-general of the United States." Next day La Fayette met Washington, whose lifelong friend he became. The question of giving him a command was left entirely to Washington's discretion. His first battle was Brandywine (*q.v.*) on Sept. 11, 1777, where he was wounded. Shortly afterwards he secured what he most desired, the command of a division—the immediate result of a communication from Washington to Congress of Nov. 1, 1777. Though the commander of a division, he never had many troops in his charge. In the first months of 1778 he commanded troops detailed for the projected expedition against Canada. His retreat from Barren Hill (May 28, 1778) was commended as masterly; and he fought at the battle of Monmouth (June 28), and received from Congress a formal recognition of his services.

The treaties of commerce and defensive alliance, signed by the insurgents and France on the 6th of February 1778, were promptly followed by a declaration of war by England against the latter, and La Fayette asked leave to revisit France and to consult his king as to the further direction of his services. This leave was readily granted. He embarked on Jan. 11, 1779, was received with enthusiasm, and was made a colonel in the French cavalry.

La Fayette was absent from America about six months, and his return was the occasion of a complimentary resolution of Congress. The battle of Yorktown terminated his military career in the United States. He immediately obtained leave to return to France, where it was supposed he might be useful in negotiations for a general peace. He was also occupied in the preparations for a combined French and Spanish expedition against some of the British West India Islands, of which he had been appointed chief of staff, and a formidable fleet assembled at Cadiz, but the armistice signed on Jan. 20, 1783, between the belligerents put a stop to the expedition. He had been promoted (1781) to the rank of *maréchal de camp* (major-general) in the French army. He visited the United States again in 1784 and was the guest of the nation.

In 1787 La Fayette took his seat in the Assembly of Notables. He demanded, and he alone signed the demand, that the king convoke the states-general, thus becoming a leader in the French Revolution. In 1789 he was elected to the states-general. He was chosen vice-president of the National Assembly, and on July 11, 1789, presented a declaration of rights, modelled on Jefferson's Declaration of Independence in 1776. On July 15, the second day of the new régime, La Fayette was chosen by acclamation colonel-general of the new National Guard of Paris. He proposed the combination of the colours of Paris, red and blue, and the royal white, into the tricolour cockade of modern France (July 17). For the succeeding three years, until the end of the constitutional monarchy in 1792, his history is largely the history of France.

In the Constituent Assembly he pleaded for the abolition of arbitrary imprisonment, for religious tolerance, for popular representation, for the establishment of trial by jury, for the gradual emancipation of slaves, for the freedom of the press, for the abolition of titles of nobility, and the suppression of privileged orders. In February 1790 he refused the supreme command of the National Guard of the kingdom. In May he founded the "Society of 1789" which afterwards became the Feuillants Club. He took a prominent part in the celebration of July 14, 1790, the first anniversary of the destruction of the Bastille. After suppressing an *émeute* in April 1791 he again resigned his commission, and was again compelled to retain it. He was the friend of liberty as well as of order, and when Louis XVI. fled to Varennes he issued orders to stop him. Shortly afterwards he was made lieutenant-general in the army. He commanded the troops in the suppression of another *émeute,* on the occasion of the proclamation of the constitution (September 18, 1791), and then retired to private life.

When, in December 1791, three armies were formed to attack Austria, La Fayette was placed in command of one of them. But he definitely opposed himself to the further advance of the Jacobin party, intending eventually to use his army for the restoration of a limited monarchy. On Aug. 19, 1792 the Assembly declared him a traitor. He fled to Liége, whence as one of the prime movers in the Revolution he was taken and held as a prisoner of state for five years, first in Prussian and afterwards in Austrian prisons. Napoleon stipulated in the treaty of Campo Formio (1797) for La Fayette's release. He returned to France in 1799; in 1802 voted against the life consulate of Napoleon; and in 1804 he voted against the imperial title. He lived in retirement during the First Empire, but returned to public affairs under the First Restoration and took some part in the political events of the Hundred Days. From 1818 to 1824 he was deputy for the Sarthe, speaking and voting always on the Liberal side, and even becoming a *carbonaro.* He then revisited America (July 1824–September 1825), where he was overwhelmed with popular applause and voted the sum of $200,000 and a township of land. From 1825 to his death he sat in the Chamber of Deputies for Meaux. During the revolution of 1830 he again took command of the National Guard. In 1834 he made his last speech—on behalf of Polish political refugees.

He died at Paris on May 20, 1834.

His son, GEORGES WASHINGTON MOTIER DE LA FAYETTE (1779–1849), was aide-de-camp to General Grouchy through the Austrian, Prussian and Polish (1805–07) campaigns. He took an active part in the "campaign of the banquets," which led up to the revolution of 1848. His son, OSCAR THOMAS GILBERT MOTIER DE LA FAYETTE (1815–1881), received a post in the provisional government after the revolution of 1848, and as a member of the Constituent Assembly he became secretary of the war committee. After the dissolution of the Legislative Assembly in 1851, he retired from public life, but emerged on the establishment of the third republic, becoming a life senator in 1875. His brother EDMOND MOTIER DE LA FAYETTE (1818–1890) was one of the secretaries of the Constituent Assembly, and a member of the senate from 1876 to 1888.

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LA FAYETTE, MARIE-MADELEINE PIOCHE DE LA VERGNE, COMTESSE DE (1634–1692), French novelist, was baptized in Paris, on March 18, 1634. Her father, Marc Pioche de la Vergne, commandant of Havre, died when she was 16, and her mother seems to have been more occupied with her own than her daughter's interests. Mme. de la Vergne married in 1651 the chevalier de Sévigné, and Marie thus became connected with Mme. de Sévigné, who was destined to be a lifelong friend. She studied Greek, Latin and Italian, and inspired in one of her tutors, Gilles de Ménage, an enthusiastic admiration which he expressed in verse in three or four languages. Marie married in 1655 François Motier, comte de La Fayette. They lived on the count's estates in Auvergne, according to her own account (in a letter to Ménage) quite happily; but after the birth of her two sons her husband disappeared so effectually that it was long supposed that he died about 1660, though he really lived until 1683. Mme. de La Fayette had returned to Paris, and about 1665 contracted an intimacy with the duc de la Rochefoucauld, then engaged on his *Maximes.* The constancy and affection that marked this liaison on both sides was its justification, and when in 1680 La Rochefoucauld died Mme. de La Fayette received the sincerest sympathy. Her first novel, *La Princesse de Montpensier,* was published anonymously in 1662; *Zayde* appeared in 1670 under the name of J. R. de Segrais; and in 1678 her masterpiece, *La Princesse de Clèves,* also under the name of Segrais. The history of the modern novel of sentiment begins with the *Princesse de Clèves.* The interminable pages of Mlle. de Scudéry with the *Précieuses* and their admirers masquerading as Persians or ancient Romans had already been discredited by the burlesques of Paul Scarron and Antoine Furetière. Mme. de La Fayette's story offered in its shortness and simplicity a complete contrast to the extravagant and lengthy romances of the time. Its interest depends not on incident but on the characters of the personages. They act in a perfectly reasonable way and their motives are analyzed with the finest discrimination. In answer to these criticisms, which her anonymity prevented her from answering directly, Mme. de La Fayette wrote her last novel, *Comtesse de Tende.*

The character of her work and her history have combined to give an impression of melancholy and sweetness that only represents one side of her character, for a correspondence brought to light in modern times showed her as the acute diplomatic agent of Jeanne de Nemours, duchess of Savoy, at the court of Louis XIV. She had from her early days also been intimate with Henrietta of England, duchess of Orleans, under whose immediate direction she wrote her *Histoire de Madame Henriette d'Angleterre,* which only appeared in 1720. She died on May 25, 1692.

See C. A. Sainte-Beuve, *Portraits de femmes* (1881); O. d'Haussonville, *Madame de La Fayette* (1891), in the series of *Grands écrivains français;* and a critical edition of the historical memoirs by Eugène Asse (1890). *See* also L. Rea, *Marie Madeleine, comtesse de La Fayette* (1908); H. Ashton, *Madame de la Fayette, sa vie et ses oeuvres* (1922).

LAFAYETTE, a city of Indiana, U.S.A., on the Wabash river, 64 mi. N.W. of Indianapolis; the county seat of Tippecanoe county. It is on federal highway 52, and is served by the Chicago, Indianapolis and Louisville, the Big Four, the Nickel Plate and the Wabash railways and by electric interurban lines. The population was 22,486 in 1920 (92% native white) and was 28,798 in 1940 by the federal census. It lies in a valley 560 ft. above sea level, bordered on either side by the walls of the Wabash basin, in the heart of a rich agricultural district. The city is a market for grain, hogs and cattle, and has manufacturing industries (including railroad shops, pork-packing plants, factories making automobile accessories and steering gears, lumber and flour mills), with an output in 1939 valued at $11,625,008. West Lafayette (pop. 6,270) adjoining Lafayette across the Wabash, is the seat of Purdue university (a state institution and "land-grant college," named for a business man whose gift secured its establishment there by the state legislature in 1869), which offers courses in agriculture, engineering, applied science, industrial education, pharmacy and home economics.

Lafayette is 5 mi. N.E. of the site of the ancient Miami Indian village known as Ouiatenon, where the French established a post about 1720. They were displaced by the English about 1760, and during the Conspiracy of Pontiac the stockade fort was destroyed. Near the present village of Battle Ground, 7 mi. N. of Lafayette, was fought (Nov. 7, 1811) the battle of Tippecanoe, in which the Indian forces of the Shawnee chief Tecumseh and his brother "the Prophet" were decisively defeated by Gov. William Henry Harrison. The battle ground is now owned by the State. Permanent settlement on the site of Lafayette dates from 1820. The town was laid out in 1825, but grew slowly until after the completion of the Wabash and Erie canal (1843). It was incorporated in 1854.

LAFAYETTE, a city of southwestern Louisiana, U.S.A., on Vermilion Bayou, 145 mi. W. of New Orleans. It is on federal highway 90 (the old Spanish Trail), and is served by the Southern Pacific railway, which has division headquarters and a roundhouse there. The population was 7,855 in 1920 (38% Negroes) and was 19,210 in 1940 (the federal census). It is in a beautiful region of undulating plains and winding streams, and has sufficient elevation to have escaped even the disastrous floods of 1927, when the city sheltered 25,000 refugees from other places. Sugar, cotton-seed oil, lumber and salt are the leading products of its manufacturing industries. It is the seat of the Southwestern Louisiana institute, a state institution of college grade, established in 1898 and opened in 1901. Lafayette was founded in 1823 by the Acadians from Nova Scotia, and incorporated the same year.

LAFAYETTE NATIONAL PARK, the first national park east of the Mississippi river, was acquired by the Government as a gift in 1919, and in 1928 embraced about 12 sq.m. of the granite elevations and shore of Mount Desert island (*q.v.*) on the Maine coast. It is a region of lakes and of abundant and varied fauna and flora, and the national park service is developing it both as a preserve and as a place of scenic beauty. Future extensions of territory are contemplated and a programme of reforesting has been adopted. The French name of the island—Mont Désert—was not given to convey the meaning of a region

without flora, but indicated only that it was wild and solitary.

In the 17th century it was covered with noble trees, and the present reforesting is intended to re-create the primitive and natural aspect of the region. Flower-life, too, which, like that of the trees, birds and indigenous animals, was threatened by human industry or vandalism, has been revived and preserved in a system of wild rock gardens which exhibit the various flowers in their natural surroundings. Motor and horse roads make the interior of the park accessible, even at the highest elevations. An inexhaustible spring, which has been consecrated to the memory of Sieur de Monts, founder of the old French Territory of Acadia, insures a constant supply of fresh water. Within the reservation is Cadillac mountain (1,552 ft.), the highest elevation on the eastern seaboard of the United States.

LA FERTÉ, the name of a number of localities in France, differentiated by agnomens. The general name is derived from *fermeté*=a stronghold. La Ferté Imbault (department of Loir-et-Cher) was in the possession of Jacques d'Étampes, known as the Marquis of La Ferté Imbault (1590–1668), marshal of France and ambassador in England. La Ferté Nabert (the modern La Ferté Saint Aubin, department of Loiret) was acquired in the 16th century by the house of Saint Nectaire (corrupted to Senneterre), and erected into a duchy in 1665 for Henri de Saint Nectaire, marshal of France. It was called La Ferté Lowendal after it had been acquired by Marshal Lowendal in 1748. La Ferté Milon is in the department of Aisne on the Ourcq, 47 mi. W. by S. of Reims by rail. Pop. (1936) 1,429. The town has remains comprising one side flanked by four towers of an unfinished castle built about the beginning of the 15th century by Louis of Orleans, brother of Charles VI. The churches of St. Nicholas and Notre Dame, chiefly 16th century but damaged in the war of 1914–18, contain old stained glass. Jean Racine, the poet, was born in the town.

LA FERTÉ-BERNARD, town of France, in the department of Sarthe, on the Huisne, 27 mi. N.E. of Le Mans. Pop. (1936) 4,712. La Ferté-Bernard, a stronghold (*fermeté*) built about the 11th century and afterwards held by the family of Bernard, fell in 1424 to the English after four months' siege. It belonged in the 16th century to the family of Guise and supported the league, but was captured by the royal forces in 1590. La Ferté carries on cloth manufacture and flour milling and has trade in horses and cattle. The church of Notre Dame des Marais has a choir (16th century) with Renaissance apse-chapels.

LA FERTÉ MILON: *see* LA FERTÉ.

LAFFITTE, JACQUES (1767–1844), French banker and politician, was born at Bayonne on Oct. 24, the son of a carpenter. He became clerk in the banking house of Perregaux in Paris, was made a partner in the business in 1800, and in 1804 succeeded Perregaux as head of the firm. The house of Perregaux, Laffitte et Cie. became one of the greatest in Europe, and Laffitte became regent (1809), then governor (1814) of the Bank of France and president of the chamber of commerce (1814). He raised large sums of money for the provisional government in 1814 and for Louis XVIII during the Hundred Days, and it was with him that Napoleon deposited five million francs in gold before leaving France for the last time. Rather than permit the government to appropriate the money from the bank, he supplied two million from his own pocket for the arrears of the imperial troops after Waterloo. He was returned by the department of the Seine to the chamber of deputies in 1816, and took his seat on the left.

In 1818 Laffitte saved Paris from a financial crisis by buying a large amount of stock, but next year, in consequence of his heated defense of the liberty of the press and his political attitude, the governorship of the bank was taken from him. One of the earliest partisans of Louis Philippe, his house in Paris became the headquarters of the revolutionary party. When Charles X, after retracting the hated ordinances, sent the comte d'Argout to Laffitte to negotiate a change of ministry, the banker replied, "It is too late. There is no longer a Charles X," and it was he who secured the nomination of Louis Philippe as lieutenant general of the kingdom. On Aug. 3, he became president of the chamber of deputies. On Nov. 15, accordingly, Laffitte became minister-president of a government pledged to progress (*mouvement*), holding at the same time the portfolio of finance. But the difficulties proved insuperable, and Laffitte's government ended by being discredited with all parties. Laffitte left office politically and financially a ruined man. He died in Paris on May 26, 1844.

See P. Thureau-Dangin, *La Monarchie de Juillet* (1884).

LAFFITTE, PIERRE (1823–1903), French Positivist, was born on Feb. 21, 1823, at Béguey (Gironde). He was a disciple of Comte, who appointed him his literary executor. On the schism of the Positivist body which followed Comte's death, he was recognized as head of the section which accepted the full Comtian doctrine; the other section adhering to Littré, who rejected the religion of humanity as inconsistent with the materialism of Comte's earlier period. He died on Jan. 4, 1903.

LAFITTE, JEAN (1780–*c.* 1826), buccaneer, about whose earlier life nothing authentic is known, was the leader of a colony of pirates and smugglers located on the Baratarian coast south of New Orleans from 1810 to 1814. Holding privateer commissions from the republic of Carthagena, they preyed on Spanish commerce and illegally disposed of their plunder through merchant connections in New Orleans. All efforts to dislodge them were in vain, including an attempt by Commodore Patterson of the U.S. navy, who in June 1814, captured their ships, but did not destroy their business nor their power. The Baratarian gulf being an important approach to New Orleans, the British in their operations against that city in 1814 offered Lafitte £30,000 and a commission in the royal navy for his co-operation. But Lafitte sent the British papers to the American authorities together with an offer to aid the Americans provided the United States would pardon him and his men. This offer, General Andrew Jackson, badly in need of men, accepted, and in the battle of New Orleans, the Baratarians, in charge of the artillery, signally distinguished themselves. President Madison issued a public proclamation of pardon for them. Lafitte might henceforth have followed an honourable career, but instead, in 1817, with nearly a thousand followers, he occupied the island site of the future city of Galveston, Texas, and from this depot continued his privateering against the Spanish. He seemed to lose control somewhat and when pressure was brought to bear by the United States in 1821 because several of his lieutenants had attacked American ships, Lafitte suddenly picked a crew to man his favourite vessel, "The Pride," and sailed away into the legendary realms from which he had come.

See C. Gayarré, "Pierre and Jean Lafitte," *Magazine of American History,* vol. x, pp. 284–298 and 389–396 (1883); G. Cusachs, "Lafitte, the Louisiana Pirate and Patriot," *Louisiana Historical Quarterly,* vol. ii, pp. 418–438 (1919); Lyle Saxon, *Lafitte, the Pirate* (1930).

LA FLÈCHE, town of France, capital of an arrondissement in the department of Sarthe on the Loir, 31 mi. S.S.W. of Le Mans by rail. Pop. (1936) 8,574. The Prytanée, with buildings of 1620–53 including a chapel, was founded for the Jesuits by Henry IV in 1607 and has become a school for the sons of officers. La Flèche carries on tanning, the manufacture of paper, starch, wooden shoes and gloves. It is an important agricultural market for poultry, grain and fruit.

The lords of La Flèche became counts of Maine about 1100, but the lordship became separate from the county and passed in the 16th century to the Bourbon family and to Henry IV.

LA FOLLETTE (lah föl'ĕt), **ROBERT MARION** (1855–1925), American politician, was born in Dane county, Wis., on June 14, 1855. He graduated from the University of Wisconsin in 1879, studied law there, was admitted to the bar in 1880, and began practice in Madison. From 1885 to 1891 he was a representative in congress, and, as a member of the ways and means committee, helped to draft the McKinley Tariff bill. He was elected governor of Wisconsin in 1901 and was re-elected in 1903 and 1905. It was largely due to him that state laws were passed for taxing railways according to valuation (1903), for nominating all candidates for public office by direct vote of the people (1904) and for regulating the railways in the state through a state commission (1905). He resigned the governorship in 1905 on being elected to the U.S. senate, and was re-elected

for three succeeding terms.

In 1915 he was sponsor in the Senate for the Seamen's Bill providing for better working conditions and increase of life-saving equipment on board ship. After America's entrance into World War I he was a pronounced pacifist. The Republican national convention held at Cleveland, O., in June, 1924, rejected a platform presented on behalf of Senator La Follette by the Wisconsin delegation, and he received only 34 votes on being placed in nomination for president. Accordingly a convention for progressive political action was convened at Cleveland on July 4, at which La Follette was endorsed as a presidential candidate. He selected the name "Progressive" for his party, and his platform included advocacy of public ownership of water-power and railways, strict public control of all national resources, a recognition of agriculture as the basic industry of the country and abrogation of the power of the Supreme Court to nullify legislation. In the ensuing election he was beaten by both Republican and Democratic candidates, his electoral vote being 13, as against 382 for Coolidge and 136 for Davis, the popular vote being 4,822,856 for La Follette, 15,725,016 for Coolidge and 8,386,503 for Davis. In 1913 he published his *Autobiography, a Personal Narrative of Political Experiences.* He died at Washington, D.C., June 18, 1925.

His son ROBERT M. LA FOLLETTE, JR., born in Madison, Wis., on Feb. 6, 1895, was elected by a large plurality on Sept. 29, 1925, to fill the unexpired term of his father's senatorship. He stood as a supporter of his father's platform and was re-elected for later terms. Another son, PHILIP F. LA FOLLETTE (1897–) was governor of Wisconsin, 1931–33 and 1935–39.

See *Political Philosophy of Robert M. La Follette,* compiled by Ellen Torelle and others (1920); Albert Olaus Barton, *La Follette's Winning of Wisconsin, 1894–1904* (1922); and studies by Stirn (1937) and A. F. Lovejoy (1941).

LA FONTAINE, JEAN DE (1621–1695), French poet, was born at Château Thierry in Champagne, probably on July 8, 1621. His father was Charles de La Fontaine, *maître des eaux et forêts*—a kind of deputy-ranger—of the duchy of Château Thierry; his mother was Françoise Pidoux. On both sides his family was of the highest provincial middle class, but was not noble. Jean, the eldest child, was educated at the *collège* of Reims. He entered the Oratory in May 1641, and the seminary of Saint-Magloire in October; but he had no religious vocation. He is said to have been admitted as *avocat.* In 1647 his father resigned his rangership in his favour, and arranged a marriage for him with Marie Héricart, a girl of sixteen, who brought him twenty thousand livres, and expectations. The marriage was unhappy, and a *séparation de biens* was arranged in 1658. For the greater part of the last forty years of La Fontaine's life he lived in Paris and his wife at Château Thierry, which, however, he frequently visited. One son was born to them in 1653.

Even in the earlier years of his marriage La Fontaine seems to have been much at Paris; about 1656 he became a regular visitor to the capital. He was past thirty when his literary career began. At first he wrote trifles in the fashion of the time—epigrams, ballades, rondeaux, etc. His first serious work was a translation or adaptation of the *Eunuchus* of Terence (1654). He was introduced to Fouquet by Jacques Jannart, and he soon received a pension of 1,000 livres (1659), on the easy terms of a copy of verses for each quarter's receipt.

After the fall of Fouquet La Fontaine found a new protector in the duke and still more in the duchess of Bouillon, his feudal superiors at Château Thierry. Some of La Fontaine's liveliest verses are addressed to the duchess, Anne Mancini, the youngest of Mazarin's nieces, and it is even probable that the taste of the duke and duchess for Ariosto had something to do with the writing of his first work of real importance, the first book of the *Contes,* which appeared in 1664.

About this time the quartette of the Rue du Vieux Colombier, so famous in French literary history, was formed. It consisted of La Fontaine, Racine, Boileau and Molière, the last of whom was almost of the same age as La Fontaine, the other two considerably younger. Chapelle was also a kind of outsider in the coterie. Of the many anecdotes about these meetings the most characteristic is perhaps that which asserts that a copy of Chapelain's unlucky *Pucelle* always lay on the table, a certain number of lines of which was the appointed punishment for offences against the company. The coterie furnished under feigned names the personages of La Fontaine's version of the Cupid and Psyche story, which, however, with *Adonis,* was not printed till 1669.

In 1664 La Fontaine was regularly commissioned and sworn in as gentleman to the duchess dowager of Orleans, and was installed in the Luxembourg. He still retained his rangership, and in 1666 we have something like a reprimand from Colbert suggesting that he should look into some malpractices at Château Thierry. In the same year appeared the second book of the *Contes,* and in 1668 the first six books of the *Fables,* with more of both kinds in 1671. In 1672 he edited, at the instance of the Port-Royalists, a volume of sacred poetry dedicated to the prince de Conti. A year afterwards his situation changed. The duchess of Orleans died, and he apparently had to give up his rangership, probably selling it to pay debts. But there was always a providence for La Fontaine. Madame de la Sablière invited him to make his home in her house, where he lived for some twenty years.

In 1682 he was, at more than sixty years of age, recognized as one of the first men of letters of France. Madame de Sévigné had spoken of his second collection of *Fables* published in the winter of 1678 as divine. He presented himself for election to the Academy, and, though the subjects of his *Contes* were scarcely calculated to propitiate that decorous assembly, while his continued attachment to Fouquet and to more than one representative of the old Frondeur party made him suspect to Colbert and the king, most of the members were his personal friends. He was first proposed in 1682, but was rejected for Dangeau. The next year Colbert died and La Fontaine was again nominated. Boileau was also a candidate, but the first ballot gave the fabulist sixteen votes against seven only for the critic. The king, whose assent was necessary, was ill-pleased, and the election was left pending. Another vacancy occurred, however, some months later, and Boileau was elected. The king hastened to approve the choice.

His admission was indirectly the cause of the only serious literary quarrel of his life. A dispute took place between the Academy and one of its members, Antoine Furetière (*q.v.*), on the subject of the latter's French dictionary, which was decided to be a breach of the Academy's corporate privileges. Furetière bitterly assailed those whom he considered to be his enemies, and among them La Fontaine, whose unlucky *Contes* made him peculiarly vulnerable, his second collection of these tales having been the subject of a police condemnation. Shortly afterwards La Fontaine had a share in a still more famous affair, the celebrated Ancient-and-Modern squabble in which Boileau and Perrault were the chiefs, and in which La Fontaine (though he had been specially singled out by Perrault for favourable comparison with Aesop and Phaedrus) took the Ancient side. About the same time (1685–1687) he made the acquaintance of the last of his many hosts and protectors, Monsieur and Madame d'Hervart, and fell in love with a certain Madame Ulrich. This acquaintance was accompanied by a great familiarity with Vendôme, Chaulieu and the rest of the libertine coterie of the Temple; but, though Madame de la Sablière had long given herself up almost entirely to good works and religious exercises, La Fontaine continued an inmate of her house until her death in 1693. What followed is told in one of the best known of the many stories bearing on his childlike nature. Hervart on hearing of the death, had set out at once to find La Fontaine. He met him in the street in great sorrow, and begged him to make his home at his house. "J'y allais" was La Fontaine's answer. He did not survive Madame de la Sablière much more than two years, dying on April 13, 1695, at the age of seventy-three. He was buried in the cemetery of the Holy Innocents.

The curious personal character of La Fontaine, like that of some other men of letters, has been enshrined in a kind of legend by literary tradition. At an early age his absence of mind and

indifference to business gave a subject to Tallemant des Réaux. His later contemporaries helped to swell the tale, and the 18th century finally accepted it, including the anecdotes of his meeting his son, being told who he was, and remarking, "Ah, yes, I thought I had seen him somewhere!" of his insisting on fighting a duel with a supposed admirer of his wife, and then imploring him to visit at his house just as before; of his going into company with his stockings wrong side out; with, for a contrast, those of his awkwardness and silence, if not positive rudeness, in company. One of the chief authorities for these anecdotes is Louis Racine, a man who possessed intelligence and moral worth, and who received them from his father, La Fontaine's attached friend for more than thirty years.

Works.—The works of La Fontaine, the total bulk of which is considerable, fall no less naturally than traditionally into three divisions, the *Fables,* the *Contes* and the miscellaneous works. Of these the first may be said to be known universally, the second to be known to all lovers of French literature, the third to be with a few exceptions practically forgotten. This distribution of the judgment of posterity is as usual just in the main, but not wholly. There are excellent things in the *Oeuvres Diverses,* but their excellence is only occasional, and it is not at the best equal to that of the *Fables* or the *Contes.* The best dramatic pieces usually published under his name—*Ragotin, Le Florentin, La Coupe enchantée,* were originally fathered not by him but by Champmeslé, the husband of the famous actress who captivated Racine and Charles de Sévigné. His avowed work was chiefly in the form of opera. *Psyché* has all the advantages of its charming story and of La Fontaine's style.

In the *Contes* La Fontaine takes his stories (varying them, it is true, in detail not a little) from Boccaccio, from Marguerite, from the *Cent Nouvelles Nouvelles,* etc. He applies to them his marvellous power of easy sparkling narration, and his hardly less marvellous faculty of saying more or less outrageous things in the most polite and gentlemanly manner. These *Contes* are emphatically *contes pour rire,* a genuine expression of the *esprit gaulois* of the fabliau writers and of Rabelais, destitute of the grossness of envelope which had formerly covered that spirit.

The *Fables,* with hardly less animation and narrative art than the *Contes,* best exhibit the versatility and fecundity of the author's talent. Perhaps the best criticism ever passed upon La Fontaine's *Fables* is that of Silvestre de Sacy, to the effect that they supply three several delights to three several ages: the child rejoices in the freshness and vividness of the story, the eager student of literature in the consummate art with which it is told, the experienced man of the world in the subtle reflections on character and life which it conveys.

La Fontaine did not during his life issue any complete edition of his works, nor even of the two greatest and most important divisions of them. Among the works published in his lifetime which have not been already mentioned are: *Poëme de la captivité de St. Malc* (1673), one of the pieces inspired by the Port-Royalists, the *Poëme du Quinquina* (1692), and a number of pieces published either in small pamphlets or with the works of other men. Among the latter may be singled out the pieces published by the poet with the works of his friend Maucroix (1685). The year after his death some posthumous works appeared, and some years after his son's death the scattered poems, letters, etc., with the addition of some unpublished work bought from the family in manuscript, were carefully edited and published as *Oeuvres diverses* (1729).

See M. Grouchy, *Documents inédits sur La Fontaine* (1893); G. Lafenestre, *Jean de la Fontaine* (1895); E. Faguet, *Jean de La Fontaine* (1900; new ed. 1913); H. Taine, *La Fontaine et ses Fables* (16th ed. 1903); A. Hallays, *Jean de la Fontaine* (1922). A new English version, by E. H. Marsh, *Forty-two Fables of La Fontaine* appeared in 1924, and *More Fables of La Fontaine* in 1925.

LAFONTAINE, SIR LOUIS HIPPOLYTE, BART. (1807–1864) Canadian statesman and judge, third son of Antoine Ménard LaFontaine (1772–1813) and Marie-J-Fontaine Bienvenue, was born at Boucherville in the province of Quebec on Oct. 4, 1807. LaFontaine was educated at the Collège de Montréal under the direction of the Sulpicians, and was called to the bar of the province of Lower Canada on Aug. 18, 1829. In 1830 he was elected a member of the House of Assembly for the county of Terrebonne, and became a supporter of Papineau in opposing the administration of the governor-in-chief, which led to the rebellion of 1837. But he disapproved of Papineau's methods. The rebellion broke out afresh in the autumn of 1838; the constitution of 1791 was suspended; LaFontaine was imprisoned for a brief period; and Papineau, who favoured annexation by the United States, was in exile. At this crisis in Lower Canada the French Canadians turned to LaFontaine as their leader, and under his direction maintained their opposition to the special council, composed of nominees of the crown. In 1839 Lord Sydenham, the governor-general, offered the solicitor generalship to LaFontaine, which he refused.

Defeated in the county of Terrebonne LaFontaine obtained a seat in the assembly of the province of Canada, and on the death of Sydenham he was called by Sir Charles Bagot to form an administration with Robert Baldwin. The ministry resigned in November 1843, as a protest against the actions of Lord Metcalfe, who had succeeded Bagot. In 1848 LaFontaine formed a new administration with Baldwin, and remained in office until 1851, when he retired from public life. During the ministry of LaFontaine-Baldwin the Amnesty Bill was passed, which occasioned grave riots in Montreal, personal violence to Lord Elgin and the destruction of the parliament buildings. After the death of Sir James Stuart in 1853 LaFontaine was appointed chief justice of Lower Canada and president of the seigneurial court, which settled the vexed question of land tenure in Canada; and in 1854 he was created a baronet. He died at Montreal on Feb. 26, 1864.

LaFontaine's principal works are: *L'Analyse de l'ordonnance du conseil spécial sur les bureaux d'hypothèques* (Montreal, 1842); *Observations sur les questions seigneuriales* (Montreal, 1854).

See *La Fontaine,* by A. DeCelles (Toronto, 1906).

LAFORGUE, JULES (1860–1887), French poet, was born at Montevideo on Aug. 22, 1860, of a Breton family. His childhood was passed at Tarbes, and while still a boy he went to Paris. For several years he held the post of reader to the Empress Augusta in Berlin, but returned to Paris in 1886. In the following year he married, but died shortly afterwards, on Aug. 20, 1887, at the age of 27. Laforgue's place in the history of French poetry is important rather for the influence which he exercised over some of his contemporaries than for his own achievements, and the tragic circumstance of his early death appears to have exaggerated his real merits. Laforgue is seen at his best in those of his poems which have been compared to "aquarelles en cinq minutes" (*L'hiver qui vient Dimanche*), and his longer and more ambitious poems tend to become monotonous. The note of despair which runs through all his work was no doubt the result in part of his continual ill-health; it is often expressed with a simplicity which has a charm in itself. He tries to express his consciousness of the relative unimportance of everyday life, and at the same time the inability of the individual to see it in its true perspective, and in this attempt gives play to a certain grim humour.

Laforgue's *Poésies complètes* were published in 1894; and his *Oeuvres complètes* in 1903–17 (3 vols.).

See C. Mauclair, *Jules Laforgue* (1896); George Moore, *Impressions and opinions. Two unknown Poets (Rimbaud and Laforgue)* (1891); G. Kahn, *Jules Laforgue,* in the series "Les Hommes d'aujourd'hui" (1924); F. Fénelon, "Jules Laforgue," in *Art Moderne,* Brussels, Nos. 41 and 42.

LAFOSSE, CHARLES DE (1640–1716), French painter, was born in Paris. He was a pupil of Le Brun, under whose direction he shared in the chief of the great decorative works undertaken in the reign of Louis XIV. From 1662 he spent two years in Rome and three in Venice, and the influence of Veronese is evident in his "Finding of Moses" (Louvre), and "Rape of Proserpine" (Louvre), which he presented to the Royal Academy as his diploma picture in 1673. He was at once named assistant professor, and became professor in 1674. The dome of the Invalides (engraved, Picart and Cochin) is now the only work existing which gives the full measure of his talent. He died at Crozat's house on Dec. 13, 1716.

LAGARDE, PAUL ANTON DE (1827–1891), German biblical scholar and orientalist, was born at Berlin on Nov. 2, 1827. His real name was Bötticher, Lagarde being his mother's

name. He studied at Berlin, Halle, London and Paris. In 1854 he became a teacher at a Berlin public school, but this did not interrupt his biblical studies. He edited the *Didascalia apostolorum syriace* (1854), the Aramaic translation (the Targum) of the Prophets according to the Codex Reuchlinianus preserved at Carlsruhe, *Prophetae chaldaice* (1872), the *Hagiographa chaldaice* (1874), an Arabic translation of the Gospels, *Die vier Evangelien, arabisch aus der Wiener Handschrift herausgegeben* (1864), a Syriac translation of the Old Testament Apocrypha, *Libri V. T. apocryphi syriace* (1861), a Coptic translation of the Pentateuch, *Der Pentateuch koptisch* (1867), and a part of the Lucianic text of the Septuagint, which he was able to reconstruct from manuscripts for nearly half the Old Testament. Lagarde was a Conservative and an anti-Semite. He died at Göttingen on Dec. 22, 1891.

See the article in Herzog-Hauck, *Realencyklopädie;* and Anna de Lagarde, *Paul de Lagarde* (1894).

LAGASH, one of the oldest and most important of the ancient Sumerian cities of Mesopotamia. It is now known as Telloh and consists of a long line of mounds along a dry canal, three miles east of the Shatt al Hai in 31° 30′ N. 46° E. about ten miles from the modern town of Shatra. The mounds occupy a great oval running north and south, about $2\frac{1}{2}$ miles long and $1\frac{1}{4}$ miles broad. The old canal, which rendered the site possible for a city, lies just east of the mounds. Inscriptions suggest that in ancient times there were numerous canals. The most northerly mound which rises to a height of 46 feet covers the site of the great temple of Ningursu, the god of Lagash. This temple is comparatively late and belongs to the time of Ur-Bau, about the middle of the third millenium B.C. In the centre lies the oldest part of the city, the pre-historic site of Girsu. A short distance south-east of this mound is a mound called by the excavators "tablet hill," from the number of temple records which were found there. The ancient city was surrounded by a thick wall, of which part, including the fortified west gate has been excavated. This old wall encompassed not only the later temple and ziggurat (stage tower), but also the more ancient buildings. Girsu covers the remains of the oldest buildings of Sumer. Twelve feet below the pavement of Ur-nina, the earliest historical ruler of Lagash, there was found a building 26×20 ft. oriented to the points of the compass. The walls which are intact to nine feet high are built of plano-convex bricks. The building is divided into two unequal compartments by a solid wall, and there is no communication.

The city was of considerable importance in early Sumerian times and its eastern position rendered it a frontier city against the men of Elam on the east, while it also seems to have engaged in struggles with the dominant city of Kish in the north. In Sargonic times it ceased to lead an independent existence but remained a city of importance, especially as an artistic centre and the French excavators found abundant evidence of its products. Lagash however ceased to be inhabited after the time of Hammurabi, and the mounds appear to have been deserted until the time of the Seleucid kingdom in the second century B.C.

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LAGER BEER: *see* BEER.

LAGERLÖF, SELMA (1858–1940), Swedish author, was born on Nov. 20, 1858, at Mårbacke in Vermland where she grew up in a province rich in local tradition, and became a teacher in Landskrona. In a literary competition in a weekly paper she won the highest prize for some chapters of her first work *Gösta Berlings Saga* (Eng. trans., 1898), which was published in two volumes in 1891 and attracted great attention. The book is a collection of stories of Vermland life in the year 1830, related with vivid imagination and lyric style. In 1894 she published *Osynliga Länkar* (Invisible Links) and from 1895 onwards was able to devote herself entirely to writing. After visiting Italy for the purpose of extending her studies, she published in 1897 *Antikrists Mirakler* (Eng. trans., 1898) depicting life in Sicily. In 1899 appeared *Drottningar i Kungahälla* (Eng. trans., 1917), historical legends, as well as *En Herrgårdssägen* (Eng. trans., *The Legend of the Manor,* 1922). After a journey to Palestine and the East in 1900 she published *Jerusalem* (2 vol., 1901–02, Eng. trans., 1903), describing a religious movement in the Swedish province of Dalarne, which led to an emigration to Palestine. She also wrote *Kristuslegender* (1904); *Nils Holgerssons underbara resa* (2 vol., 1906–07, Eng. trans., 1908), a book for children; *Liljecronas Hern* (1911, Eng. trans., 1913); *Korkarlen* (1912); *Dunungen* (1914), a dramatized novel; *Kejseren af Portugalien* (1914, Eng. trans., 1916); *Troll och Manniskor* (*Demons and Men*) (2 vol., 1915, 1921) and *Charlotte Löfvensköld* (1925). In 1909 she won the Nobel prize for literature, and in 1914 was elected the first woman member of the Swedish Academy. Most of her books have been translated into other languages.

See J. Mortensen, *Literary Biography* (1908); André Bellesort, *La Suède* (1910); also works with title *Selma Lagerlöf* by O. I. Levertin (1904); M. Jepson (1913); M. Kristensen (1917).

LAGHMAN, a district of Afghanistan, in the province of Jalalabad, between Jalalabad and Kabul, on the northern side of the Peshawar road, one of the richest and most fertile tracts in Afghanistan. It is the valley of the Kabul river between the Tagao and the Kunar and merges on the north into Kafiristan. The inhabitants, Ghilzais and Tajiks, are supposed to be the cleverest business people in the country. Sugar, cotton and rice are exported to Kabul. The Laghman route between Kabul and India crossing the Kunar river into the Mohmand country is the route followed by Alexander the Great and Baber.

LAGOON, a term of very general use but applied more particularly to (1) a sheet of salt or brackish water or marshy land near the sea, (2) the expanse of smooth water enclosed by an atoll (*q.v.*). Sea lagoons are formed only along low shores protected from wave action. Here a bar may be raised above sea-level or a spit may grow until its end touches the land. Shallow water is thus isolated; the seaward banks broaden, and the lagoon becomes a permanent area of still water with faunal features.

LAGOS, at one time a separate British colony and protectorate on the West Coast of Africa, since 1914 part of Nigeria (*q.v.*). The former colony of Lagos is now the colony of Nigeria; the protectorate, which included the Yoruba country, is divided among the provinces of Southern Nigeria. The colony consists of Lagos and Idda islands and adjacent territories on the mainland and has an area of 3,420 sq.m.; the former protectorate had an area of about 20,000 sq. miles.

In physical features, flora and fauna, the district resembles other regions of Southern Nigeria. The coast is low and marshy and all along the shore the Atlantic billows cause a dangerous surf. Behind the coast line stretch lagoons and mangrove swamps; next comes a broad zone of dense forest, the most characteristic tree being the oil palm. Further north the land rises in undulations to the watershed (about 2,000 ft. high) between the rivers flowing to the Niger and those going direct to the Bight of Benin. The Ogun, the largest river in Yorubaland falls into the Lagos lagoon; its current is strong enough to keep the seaward channel open. Hence the importance of the port of Lagos which lies in smooth water at the northern end of this channel.

History.—Lagos island was so named by 15th century Portuguese explorers because of the many lagoons or lakes on this part of the coast. In the 18th century Lagos lagoon became the chief resort of slavers frequenting the Bight of Benin, this portion of the Gulf of Guinea becoming known pre-eminently as the Slave Coast. British traders established themselves at Badagry, 40m. west of Lagos, where in 1851 they were attacked by Kosoko, the Yoruba king of Lagos island. As a result a British naval force seized Lagos after a sharp fight and deposed the king, placing his cousin, Akitoye, on the throne. Akitoye bound himself by treaty to put down the slave trade. This treaty was not adhered to, and in 1861 Akitoye's son and successor, King Docemo, was induced to give up his territorial jurisdiction and accept a pension which he drew until his death in 1885. Immediately after the proclamation of the British annexation, a steady current of immigration from the mainland set in, and a flourishing town arose on

Lagos island. Iddo island was acquired at the same time as Lagos island, and from 1862 to 1894 various additions by purchase or cession were made to the colony. In 1892 the Jebu, who acted as middlemen between the colony and the Yorubas of the hinterland, closed several trade routes which resulted in an expedition and the annexation of part of their country. An order in council issued in 1899 extended the protectorate over Yorubaland (*see* YORUBA).

Lagos was made a separate government in 1863; in 1866 it was placed in political dependence upon Sierra Leone; in 1874 it became (politically) an integral part of the Gold Coast Colony, whilst in 1886 it was again made a separate government. In Sir William Macgregor, M.D., formerly administrator of British New Guinea, governor 1899–1904, the colony found an enlightened ruler. He inaugurated the railway system, and drew much closer the ties between the British and the tribes of the protectorate. Meanwhile, since 1884, the whole of the Niger delta, lying immediately east of Lagos, as well as the Hausa states and Bornu, had been acquired by Great Britain. The delta regions and Lagos were formed in 1906 into one government (*see* NIGERIA).

See A. B. Ellis, *The Yoruba-speaking Peoples* (1894); Lady Glover, *The Life of Sir John Hawley Glover* (governor 1864–66, 1871–72) (1897); Sir W. N. M. Geary, *Nigeria under British Rule,* chap. ii. and v. (1927). Consult also the works cited under NIGERIA and DAHOMEY.

LAGOS, the capital and principal port of Nigeria, in 6° 26′ N., 3° 23′ E. Lagos Township (24.24 sq.mi.), located in the colony of Nigeria, consists of 12 divisions, the most important of which are Lagos Island, Iddo, Apapa, Ebute Metta and Yaba Estate. Pop. (1939) 167,000, of which less than 2,000 were Europeans and about 150 Syrians. Lagos Island (1.7 sq.mi.) and Iddo (0.39 sq.mi.) are islands in the lagoon formed by the Ogun river. Apapa, Ebute Metta, and Yaba Estate are on the mainland. The Carter bridge (2,600 ft.) connects Lagos Island with Iddo and the Denton bridge (917 ft.) connects Iddo with the mainland. The harbour is reached from the Bight of Benin over a shifting sand bar which is kept clear by extensive harbour works and by continual dredging, so that steamers drawing less than 25 ft. can use the wharfs at Lagos Island and Apapa. Of the total wharfage of 5,000 ft., the most important are the customs wharf at Lagos Island (1,183 ft.) and the railway wharf at Apapa (1,800 ft.). Lagos is the terminal of Nigeria's Western line, which extends via Kaduna and Kano to N'guru in Northern Nigeria, a distance of 847 mi.

In the first half of the 19th century Lagos was a centre of the slave trade. In Dec. 1851 British naval forces occupied the place and by agreement with the Yoruba chief, Akitoye, abolished the export of slaves and established a consulate. Akitoye's son, Dosumu, ceded Lagos to the British in 1861; it was proclaimed a colony in 1862. After having been administered as part of the Gold Coast and of Sierra Leone, Lagos and the hinterland acquired its own administration in 1886. After 1920 the township had a town council which in 1940 consisted of four elected members and seven appointed by the governor of Nigeria.

The principal streets of the town have modern buildings of European design, but in 1944 many sections were still overcrowded and unsanitary. Water and electricity are ample. Two daily and three weekly newspapers were published in 1943. In 1938 Lagos had many elementary schools, mostly maintained by missions and three secondary boarding schools supported by the government. The oldest is King's college. Almost two-thirds of all imports into Nigeria enter at Lagos. In 1938, 557 vessels brought 1,398,639 tons of merchandise and 476 vessels cleared the harbour carrying 1,203,128 tons of goods, slightly less than two-thirds of Nigeria's export. The majority of Africans living in Lagos are Yoruba (*q.v.*), but other Nigerian tribes such as the Hausa and the Ibo have large colonies. (H. A. WF.)

LAGOS, a seaport of southern Portugal, in the district of Faro. Pop. (1940) 7,339. The city is defended by fortifications erected in the 17th century. The harbour is deep, capacious, and completely sheltered on the north and west; it is frequently visited by the British Channel fleet. Vines and figs are extensively cultivated in the neighbourhood, and Lagos is the centre of important sardine and tunny fisheries. Its trade is chiefly carried on by small coasting vessels, as there is no railway. Lagos is on or near the site of the Roman *Lacobriga.* Cape St. Vincent, the ancient *Promontorium Sacrum,* and the south-western extremity of the kingdom, is 22 m. W. It is famous for its connection with Prince Henry the Navigator, who here founded the town of Sagres in 1421; and for several British naval victories. In 1759 Admiral Boscawen defeated a French fleet off Lagos. The great earthquake of 1755 destroyed a large part of the city.

LA GRAND' COMBE, a town of southern France, in the department of Gard on the Gardon, 39 mi. N.N.W. of Nîmes by rail. Pop. (1936) 8,357. There are extensive coal mines nearby.

LA GRANDE, a city of north-eastern Oregon, U.S.A., on the Grande Ronde river, altitude 2,780 ft., the county seat of Union county. It is served by the Union Pacific railway. Population is 7,747 (1940) by federal census. La Grande is the site of the Eastern Oregon College of Education. It is the commercial centre for a wide farming area; has railroad shops, large lumber and flour mills, and fruit-packing plants; and is the starting-point, by rail or highway, for the Wallowa mountains. The city was settled about 1845 and incorporated in 1855.

LAGRANGE, JOSEPH LOUIS (1736–1813), French mathematician, was born at Turin, on Jan. 25, 1736. He was of French extraction, his great-grandfather, a cavalry captain, having passed from the service of France to that of Sardinia, and settled in Turin under Emmanuel II.

Lagrange was educated at Turin college and his early tastes were more classical than scientific. His interest in mathematics was aroused by the chance reading of a memoir by Halley (*Phil. Trans.* xviii. p. 960). He then began unaided a course of study pursued with such effect that at the age of 18 he was appointed professor of geometry at the artillery academy. During the following year he sent to Euler a method of dealing with the isoperimetrical problem out of which grew the calculus of variations. In 1758 Lagrange, aided by the marquis of Saluces and G. F. Cigna, founded the society which was later incorporated as the Turin Academy of Sciences. To the five volumes of its memoirs (*Miscellanea Taurinensia*) he contributed many papers.

By 1761 Lagrange was recognized as the greatest living mathematician; but, owing to his intense application in the nine previous years, his health now broke down, and, although partially restored by rest, his nervous system was permanently impaired. In 1764 he was awarded the prize offered by the Paris Academy of Sciences for an essay on the libration of the moon, in which he uses his now well known equations. This success encouraged the academy to propose, in 1766, as a problem the theory of the Jovian system. The prize was again awarded to Lagrange; and he won the same distinction in 1772, 1774 and 1778. He visited Paris and there met Clairaut, D'Alembert the Abbé Marie, and others. In 1776 Lagrange, on the recommendation of Euler and D'Alembert, went to Berlin to fill the post at the academy vacated by Euler; at the invitation by Frederick the Great who expressed the wish of "The greatest king in Europe" to have "the greatest mathematician in Europe" at his court. Lagrange lived in Berlin for 20 years, during which time he communicated many memoirs to the Berlin academy dealing with algebra, mechanics and astronomy, and produced his great work *Mécanique analytique,* which testifies to his genius for generalization and analysis. A publisher for this work was found by Legendre, in 1788, in Paris.

After the death of Frederick the Great, Lagrange accepted Louis XVI.'s invitation to Paris. Here he was given apartments in the Louvre, was continually honoured, and was treated with respect throughout the Revolution. In 1792 he married the daughter of the astronomer Lemonnier, and, although she was much younger than he, the union proved a very happy one. In 1793 he was made president of the commission for the reform of weights and measures, and in 1795 appointed professor in the École Normale, Paris; the school, however, was closed after a few months. In 1797 he became a professor in the newly-founded École Polytechnique, and his lectures were as elegant and original as his writings. The same year he published *Théorie*

des fonctions analytiques, which followed the lines of his lectures given on differential calculus. In 1810 he began the revision of his *Mécanique analytique,* but died on April 10, 1813, before it was completed. He was buried in the Pantheon, the funeral oration being given by Laplace and Lacépède. Lagrange was a very modest man, and had a great dislike of controversy.

His complete works were edited by Serret and Darboux, *Oeuvres de Lagrange* (14 vols., 1867–92). Delambre's notice of his life, extracted from the *Mém. de l'Institute* (1812), is given in vol. i.

LA GRANGE, a city of western Georgia, U.S.A., near the Chattahoochee river, at an altitude of 785ft.; the county seat of Troup county. On federal highways 27 and 29, it is served by the Atlanta and West Point and the Atlanta, Birmingham and Coast railways. The population was 20,131 in 1930 and 21,983 in 1940 (the federal census). It is a manufacturing centre, producing especially cotton rugs, canvas, bagging, cottonseed oil and fertilizer. The factory output in 1940 was valued at $17,000,000. La Grange college (for women) was founded in 1847. The city was settled about 1826.

LA GRANGE, a residential village of Cook county, Ill., U.S.A., 14m. W. by S. of Chicago, on the Burlington Route. The population was 10,103 in 1930 and 10,479 in 1940.

LAGRANGE-CHANCEL (CHANCEL), **FRANÇOIS JOSEPH** (1677–1758), French dramatist and satirist, was born at Périgueux. He was an extremely precocious boy, and at Bordeaux, where he was educated, he produced a play when he was nine years old. Five years later his mother took him to Paris, where he found a patron in the princesse de Conti, to whom he dedicated his tragedy of *Jugurtha* or, as it was called later, *Adherbal* (1694). Racine had given him advice and was present at the first performance, although he had long lived in complete retirement. Other plays followed: *Oreste et Pylade* (1697), *Méléagre* (1699), *Amasis* (1701), and *Ino et Mélicerte* (1715). Lagrange was in high favour at court, becoming *maître d'hôtel* to the duchess of Orleans. This prosperity ended with the publication in 1720 of his *Philippiques,* odes accusing the regent, Philip, duke of Orleans, of the most odious crimes. Lagrange might have escaped the consequences of this libel but for the bitter enmity of a former patron, the duc de La Force. He found sanctuary at Avignon, but was enticed beyond the boundary of the papal jurisdiction, when he was arrested and sent as a prisoner to the isles of Sainte Marguerite. He escaped to Sardinia and thence to Spain and Holland, where he produced his fourth and fifth *Philippiques.* On the death of the Regent he was able to return to France. He was part author of a *Histoire de Périgord* left unfinished, and made a further contribution to history, or perhaps, more exactly, to romance, in a letter to Elie Fréron on the identity of the Man with the Iron Mask. He died at Périgueux at the end of Dec. 1758.

He had collected his own works (5 vols., 1758) some months before his death. His most famous work, the *Philippiques,* was edited by M. de Lescure in 1858, and a sixth philippic by M. Diancourt in 1886.

LA GRANJA or SAN ILDEFONSO, former summer palace of the kings of Spain, on the southeastern border of the province of Segovia, and on the western slopes of the Sierra de Guadarrama, 7 mi. S.E. of the city of Segovia. The estate is 3,905 ft. above sea-level. The scenery of this region, especially in the gorge of the river Lozoya, with its granite rocks, its dense forest of pines, firs and birches, and its red-tiled farms, more nearly resembles the highlands of northern Europe than any other part of Spain. Above the palace rise the wooded summits of the Guadarrama, culminating in the peak of Peñalara (7,891 ft.); in front of it the wide plains of Segovia extend northwards. The village of San Ildefonso, the oldest part of the estate, was founded in 1450 by Henry IV., who built a hunting lodge and chapel here. In 1477 the chapel was presented by Ferdinand and Isabella to the monks of the Parral, a neighbouring Hieronymite monastery. The original *granja* (*i.e.,* grange or farm), established by the monks, was purchased in 1719 by Philip V., after the destruction of his summer palace at Valsain, the ancient *Vallis Sapinorum,* 2 mi. south. Philip determined to convert the estate into a second Versailles.

LA GUAIRA, a town and port of Venezuela, in the Federal district, 23m. by rail and eight m. in a direct line N. of Carácas. Pop. (1941), 10,103. It is situated between a precipitous mountain side and a broad, semicircular indentation of the coast line which forms the roadstead of the port. The harbour has been improved by the construction of a concrete breakwater running out from the eastern shore line 2,044ft., rising 19½ft. above sea-level. This encloses an area of 80ac., having an average depth of nearly 28 feet. The harbour is further improved by 1,870ft. of concrete quays and 1,397ft. of retaining sea-wall, with several piers (three covered) projecting into deep water. These works were executed by a British company, known as the La Guaira Harbour Corporation, Ltd., and were completed in 1891 at a cost of about one million sterling. Further additions were begun in 1928 on a two-year building programme which calls for a million dollars outlay. The concession is for 99 years and the additional charges which the company is authorized to impose are necessarily heavy. These improvements and the restrictions placed upon the direct trade between West Indian ports and the Orinoco have greatly increased the foreign trade of La Guaira. Coffee, cacao, hides, sugar and cotton-seed oil are among the chief exports. The city stands on sloping ground stretching along the circular coast line with a varying width of 130 to 330ft. and having the appearance of an amphitheatre. The port improvements now in progress will add many acres of reclaimed land to La Guaira's area and the port's facilities for handling cargo will be doubled.

La Guaira was founded in 1588, was sacked by filibusters under Amias Preston in 1595, and by the French under Grammont in 1680, was destroyed by the great earthquake of March 26, 1812, and suffered severely in the war for independence. In 1903, pending the settlement of claims of Great Britain, Germany and Italy against Venezuela, La Guaira was blockaded by a British-German-Italian fleet.

LAGUNA or **LA LAGUNA,** an episcopal city and formerly the capital of the island of Teneriffe, in the Spanish archipelago of the Canary islands. Pop. (1940) 10,485 (mun., 33,042). Laguna is 4 mi. N. by W. of Santa Cruz, in a plain 1,800 ft. above sea-level, surrounded by mountains. Snow is unknown here, and the mean annual temperature exceeds 63° F; but the rainfall is very heavy. The humidity of the atmosphere, combined with the warm climate and rich volcanic soil, renders the district exceptionally fertile; wheat, wine and tobacco, oranges and other fruits, are produced in abundance.

LA HARPE, JEAN FRANÇOIS DE (1739–1803), French critic, was born in Paris of poor parents. His father, who signed himself Delharpe, was a descendant of a noble family originally of Vaud. Left an orphan at the age of nine, La Harpe was a scholar of the Collège d'Harcourt. When 19 he was imprisoned for some months on the charge of having written a satire against his protectors at the college, though he always denied it. In 1763 his tragedy of *Warwick,* perhaps the best he ever wrote, was played at court. *Timoléon* (1764), *Pharamond* (1765) and *Gustave Wasa* (1766) were failures. *Mélanie* was a better play, but was never represented. The success of *Warwick* led to a correspondence with Voltaire, who even allowed him to correct his verses. In 1764 La Harpe married the daughter of a coffee-house keeper. This marriage, which proved very unhappy and was dissolved, did not improve his position. They were very poor, and for some time were guests of Voltaire at Ferney. When, after Voltaire's death, La Harpe in his praise of the philosopher ventured on some reasonable, but rather ill-timed, criticism of individual works, he was accused of treachery to one who had been his constant friend. In 1768 he returned from Ferney to Paris, where he began to write for the *Mercure.* He was a born fighter and a severe critic. He was himself violently attacked, and his reception (1776) at the Academy, is described by Sainte-Beuve as his "execution." On the stage he produced *Les Barmécides* (1778), *Philoctète, Jeanne de Naples* (1781), *Les Brames* (1783), *Coriolan* (1784), *Virginie* (1786). In 1786 he began a course of literature at the newly established Lycée. In these lectures, published as the *Cours de littérature ancienne et moderne,* La Harpe is at his best, for he found a standpoint more or less independent

of contemporary polemics. If he is inexact in dealing with the ancients and the middle ages, he is excellent in his analysis of 17th-century writers.

As a disciple of the *"philosophes"* La Harpe supported the extreme party through the excesses of 1792 and 1793. In 1793 he edited the *Mercure de France* which supported the revolutionary leaders. But in April 1794 he was nevertheless seized as a "suspect." In prison he underwent a spiritual crisis, and emerged an ardent Catholic and a reactionary in politics. When he resumed his chair at the Lycée, he attacked his former friends in politics and literature. He was imprudent enough to begin the publication (1801–07) of his *Correspondance littéraire* (1774–91) with the grand-duke, afterwards the emperor Paul of Russia. In these letters he surpassed the brutalities of the *Mercure*. He contracted a second marriage, which was dissolved after a few weeks by his wife. He died on Feb. 11, 1803 in Paris. Among his posthumous works was the *Prophétie de Cazotte*, a sombre description of a dinner-party of notables long before the Revolution, when Jacques Cazotte is made to prophesy the frightful fates awaiting the various individuals of the company.

Among his works not already mentioned are:—*Commentaire sur Racine* (1795–96), published in 1807; *Commentaire sur le théâtre de Voltaire* of earlier date (published posthumously in 1814), and an epic poem *La Religion* (1814). His *Cours de littérature* has been often reprinted. To the edition of 1825–26 is prefixed a notice by Pierre Daunou. *See* also Sainte-Beuve, *Causeries du lundi*, vol. v.; G. Peignot, *Recherches historiques, bibliographiques et littéraires . . . sur La Harpe* (1820).

LAHAWIIN: *see* ARABS.

LAHIRE, LAURENT DE (1606–1656), French painter, was born at Paris on Feb. 27, 1606. He became a pupil of Lallemand, studied the works of Primaticcio at Fontainebleau, but never visited Italy, and belongs wholly to that transition period which preceded the school of Simon Vouet. His picture of Nicolas V. opening the crypt in which he discovers the corpse of St. Francis of Assisi standing (Louvre) was executed in 1630 for the Capuchins of the Marais; it shows a gravity and sobriety of character which marked Lahire's best work, and seems not to have been without influence on Le Sueur. The Louvre contains eight other works, and paintings by Lahire are in the museums of Strasbourg, Rouen and Le Mans. His drawings, of which the British Museum possesses a fine example, "Presentation of the Virgin in the Temple," are treated as seriously as his paintings, and sometimes show simplicity and dignity of effect. The example of the Capuchins, for whom he executed several other works in Paris, Rouen and Fécamp, was followed by the goldsmiths' company, for whom he produced in 1635 "St. Peter healing the Sick" (Louvre) and the "Conversion of St. Paul" in 1637. In 1646, with eleven other artists, he founded the French Royal Academy of Painting and Sculpture. Richelieu called Lahire to the Palais Royal; Chancellor Séguier, Tallemant de Réaux and many others entrusted him with important works of decoration; for the Gobelins he designed a series of large compositions. Lahire painted also a great number of portraits. He died on Dec. 28, 1656.

LAHN, a river of Germany, a right-bank tributary of the Rhine. Its source is on the Jagdberg (1,975 ft.) a summit of the Rothaar mountains. It flows at first eastward and then southward to Giessen, then turns south-westward and with a winding course reaches the Rhine between the towns of Oberlahnstein and Niederlahnstein. Its valley, the lower part of which divides the Taunus hills from the Westerwald, is often very narrow as it lies along a line of structural weakness. Among the towns and sites of interest on its banks are Marburg and Giessen with their universities, Wetzlar with its cathedral, Runkel with its castle, Limburg with its cathedral, the castles of Schaumburg, Balduinstein, Laurenburg, Langenau, Burgstein and Nassau, and the health resort of Ems. The Lahn is about 135 m. long; it is navigable from its mouth to Giessen, and is partly canalized.

LAHNDA: *see* SINDHI and LAHNDA.

LA HOGUE, BATTLE OF, a clumsy name given to the naval operations between the English, Dutch and French fleets off the Normandy coast, May 19 to 23, 1692. Louis XIV. had assembled near La Hogue, for the invasion of England, a mixed French and Irish army, together with transports, under the command of Marshal Bellefonds and the exiled king, James II. Admiral Tourville (*q.v.*) was bringing the Brest fleet of 44 of the line up the Channel, his orders being to protect the crossing of the invading army, which implied a possible action with the English and Dutch fleets then concentrated off Spithead. These comprised 63 English and 36 Dutch ships of the line, under the supreme command of Admiral Edward Russell, assisted by Admiral Philippus van Almonde (Dutch) and Admiral Sir John Ashby. French hopes that Jacobite intrigues would cause disaffection in the English fleet were entirely shattered by Russell's vigorous assertion of his own and his officers' complete loyalty, in response to a personal appeal by the queen. Tourville was sighted off Portland on May 15, and Russell at once took the allied fleet across the Channel, and early on the 19th sighted Tourville westward, off Cape Barfleur. At that very moment despatch boats from Louis XIV. were trying to find Tourville, with last-minute instructions, permitting him to avoid battle against such superior forces. But the vessels never reached him, and, stung by the king's previous aspersions, he determined to fight.

The wind being south-west, Russell formed the allies in line ahead on the starboard tack, heading south-east towards the French coast, and at about 9 A.M. Tourville bore down to attack, keeping his van at long range and disposing his inferior force equally along the whole allied line. For some time the French held their own, the Dutch ships in the allied van being unable to double them, owing to the wind dropping; but about 2 P.M. it began to blow north-west by west and Rear-admiral Clowdisley Shovel was able to break through the French line with the leading division of the allied centre. Rear-admiral Richard Carter had meanwhile doubled the French rear with the sternmost division of the allied rear, and the French were in a most critical position. However, the wind again dropped and both fleets anchored on the flowing tide at 3 P.M. The English ships which had weathered the enemy's fleet were now cut off, and as they tried to drift back through the French line on the tide they received heavy damage, Carter being killed.

At 5 P.M. Tourville who had put up a most courageous fight against very superior forces began to withdraw, having so far not lost a single ship. But from this moment he was completely overwhelmed, though fogs and changing winds for some time held up the allied chase. This was continued intermittently throughout the next day. On May 21 both fleets were off Cape La Hogue, and d'Amfreville led 20 of the French to St. Malo through the treacherous Race of Alderney. The remainder being unable to round the Cape doubled back eastwards on the tide. Tourville's flagship, the "Royal Sun," which was too damaged for further use, ran into Cherbourg bay with two other three-deckers, all being burnt later by Vice-admiral Sir Ralph Delavall. Meanwhile, Tourville, with 12 of the ships which had turned back to the east, rounded Cape Barfleur and anchored in the bay of La Hogue where the army for the invasion was encamped. Tourville warped six ships under the guns of Fort Lisset, and the other six under the guns of Fort St. Vaast, thinking himself fairly secure. But on the night of May 23 Russell sent in a strong force of 200 boats supported by shallow draft frigates, all under the command of Admiral George Rooke, who succeeded in burning the six ships under Fort Lisset, despite the fire from the fort's guns and the small arms of the troops. Next morning, May 24, Rooke again entered the bay and destroyed the ships under St. Vaast as well as the transports for the army. The remaining nine ships escaped to other harbours. This disaster forced Louis to make offers for peace.

See Sir W. L. Clowes, *The Royal Navy*, vol. ii. (1898); O. Troude, *Batailles navales de la France* (1867). (G. A. R. C.; W. C. B. T.)

LAHORE, an ancient city of British India, the capital of the Punjab, which gives its name to a district and division. It lies in 31° 35′ N. and 74° 20′ E. near the left bank of the River Ravi, under 1000 ft. above sea, and 1,252 m. by rail from Calcutta. It is thus in about the same latitude as Cairo, but owing to its inland position is considerably hotter than that city, being one of the hottest places in India in the summer time. In the cold season the climate is pleasantly cool and bright. The old city is about

1¼ m. in length W. to E. and about ¾ m. in breadth N. to S. Its site has been occupied from early times, and much of it stands high above the level of the surrounding country, raised on the remains of a succession of former habitations. Hindu tradition traces the origin of Lahore to Loh or Lava, son of Rama, the hero of the *Ramayana*. The absence of mention of Lahore by Alexander's historians, and the fact that coins of the Graeco-Bactrian kings are not found among the ruins, lead to the belief that it was not a place of any importance during the earliest period of Indian history. On the other hand, Hiüan Tsang, the Chinese Buddhist, notices the city in his *Itinerary* (A.D. 630); and it seems probable, therefore, that Lahore first rose into prominence between the 1st and 7th centuries A.D. Governed originally by a family of Chauhan Rajputs, a branch of the house of Ajmere, Lahore fell successively under the dominion of the Ghazni and Ghori sultans, who made it the capital of their Indian conquests, and adorned it with numerous buildings, almost all now in ruins. But it was under the Mogul empire that Lahore reached its greatest size and magnificence. The reigns of Humayun, Akbar, Jahangir, Shah Jahan and Aurangzeb form the golden period in the annals and architecture of the city. Akbar enlarged and repaired the fort, and surrounded the town with a wall, portions of which remain, built into the modern work of Ranjit Singh. Lahore formed the capital of the Sikh empire of that monarch. At the end of the second Sikh War, with the rest of the Punjab, it came under the British dominion. The fort was occupied by British troops until 1924.

The architecture of Lahore cannot compare with that of Delhi although there are some beautiful buildings in the Fort dating from the time of Jahangir and Shah Jahan. The mosque of Wazir Khan (1634) and the northern wall of the Fort display magnificent examples of *kashi* or encaustic tile work. Aurangzeb's Badsháhí Masjid is a huge bare building, stiff in design, and lacking the detailed ornament typical of buildings at Delhi. The buildings of Ranjit Singh and his mausoleum, are common and meretricious in style. He was, moreover, responsible for much of the despoiling of the earlier buildings. The streets of the old city are narrow and tortuous, and are best seen from the back of an elephant. Two of the chief features of Lahore lie outside its walls at Shahdara and Shalamar gardens, respectively. Shahdara, which contains the tomb of the emperor Jahangir, lies across the Ravi some 6 m. N. of the city. It consists of a splendid marble cenotaph surrounded by a garden. The Shalamar gardens, which were laid out in A.D. 1637 by Shah Jahan, 6 m. E. of the city, are a beautiful specimen of the oriental formed type of garden.

The modern city of Lahore, which contained a population of 671,659 in 1941, may be divided into four parts: the native city, already described; the civil station or European quarter, known as Donald Town; the Anarkali bazaar, a suburb S. of the city wall; and the cantonment of Mian Mir. The main street of the civil station is locally known as the Mall. This street and its neighbourhood have been greatly beautified of late years, especially during the lieutenant-governorship of Sir Charles Rivaz (1902–07). Three miles beyond the civil station is the cantonment of Mian Mir where the garrison is stationed, except a company of British infantry, which occupies barracks in the civil station. Lahore is the headquarters of a division, and is an important junction on the North-western railway system, but is of little importance industrially except for the workshops of the railway. The chief industries are silk goods, gold and silver lace, metal work and carpets which are made in the Lahore jail. There are also cotton mills, flour mills, an ice-factory and several factories for mineral waters, oils, soap, leather goods, etc. Lahore is an important educational centre. Here are the Punjab university with its numerous arts, medical and law colleges, a central training college, the Aitchison Chiefs' college for the sons of noblemen, and a number of other high schools and technical and special schools.

The DISTRICT OF LAHORE has an area of 2,595 sq.mi., and its population in 1941 was 1,695,375, consisting chiefly of Mohammedans with a large admixture of Hindus and Sikhs. The Manjha plateau, between the Ravi and the Beas, has been rendered fertile by the Upper Bari Doab canal. The principal crops are wheat, pulse, millets, maize, oilseeds and cotton. There are numerous factories for ginning and pressing cotton. The district is crossed in several directions by lines of the North-western railway. Lahore, Kasur, Chunian and Raiwind are the chief trade centres.

LA HOZ Y MOTA, JUAN CLAUDIO DE: *see* HOZ Y MOTA, JUAN CLAUDIO DE LA.

LAHR, a town in the *Land* of Baden, Germany, on the Schutter, 9 mi. S. of Offenburg, and on the railway Dinglingen-Seelbach. Pop. (1939) 17,820. Lahr first appears as a town in 1278, and passed wholly to Baden in 1803. It manufactures tobacco and cigars, woollen goods, chicory, leather, pasteboard, machinery and numerous other articles, and has considerable trade in wine.

LAHTI, second largest inland town of Finland, is favourably located on the southern end of the Lake Päijänne waterway and on the Helsinki-Viipuri railroad. Pop. (est. 1939) 26,864. Founded in 1905, Lahti is important as an industrial town (sawmills and glass) and as a winter sports centre.

LAIBACH, CONGRESS OR CONFERENCE OF. Before the break-up of the conference at Troppau (*q.v.*), which had been summoned to take counsel on the situation created by the military revolution in Naples, the powers had decided to adjourn the meeting until the following January, and to invite the king of Naples to attend, Laibach being chosen as the place of assembly. Here the adjourned conference opened on Jan. 26, 1821, the emperors of Austria and Russia being present in person, together with Ferdinand of Naples and the duke of Modena. Almost the first act of Ferdinand on his arrival was to repudiate his oath to the constitution; Naples thereupon declared war and was presently occupied by Austrian troops, who also invaded Piedmont and suppressed the military revolt which had broken out on March 10. This was approved by the conference; but a serious difference arose between Great Britain and the autocratic powers as to the principle justifying these interventions, the former holding that it was solely the affair of Austria (justified in the case of Naples by the terms of the treaty of 1813 with King Ferdinand, and in that of Piedmont by the right of vicinage), while Russia, Austria and Prussia issued a declaration which in effect repeated the claim (formulated in the Troppau protocol) of the European alliance to intervene anywhere in order to suppress revolution. The consequent protest of Lord Stewart, on behalf of Great Britain, marked the first beginnings of the cleavage between the autocratic powers and France and England.

It was at Laibach that, on March 19, the Emperor Alexander received the news of Ypsilanti's invasion of the Danubian principalities, which heralded the outbreak of the War of the Greek Independence and from Laibach Capo d'Istria addressed to the Greek leader the tsar's repudiation of his action. The conference closed on May 12.

See W. Alison Phillips, *The Confederation of Europe* (2nd ed., 1919).

LAIDLAW, WILLIAM (1780–1845), friend and amanuensis of Sir Walter Scott, was born at Blackhouse, Selkirkshire, on Nov. 19, 1780, the son of a sheep farmer. After an elementary education in Peebles he returned to work upon his father's farm. James Hogg, the shepherd poet, who was employed at Blackhouse for some years, became Laidlaw's friend and appreciative critic. Together they assisted Scott by supplying material for his *Border Minstrelsy,* and Laidlaw, after two failures as a farmer in Midlothian and Peebleshire, became Scott's steward at Abbotsford. He also acted as Scott's amanuensis at different times, taking down a large part of *The Bride of Lammermoor, The Legend of Montrose* and *Ivanhoe* from the author's dictation. He died at Contin near Dingwall, Ross-shire, on May 18, 1845. Of his poetry, little is known except *Lucy's Flittin'* in Hogg's *Forest Minstrel.*

LAIDONER, JOHAN (1884–), Estonian soldier, was born in the Viljandi district. He completed his military studies at the Vilna cadet school and the Petrograd (Leningrad) military academy. In 1914 he served in the Russian army on the Caucasian Front, and in 1915 became divisional chief of the staff of the Russian Western Front. In 1917 he commanded the Caucasian Grenadier Division, and was chief of staff to the 62nd Division. On the formation of the Estonian National Army he commanded the first Estonian Division. During the German occupation (1918) he negotiated with Soviet Russia to prevent German annexation. He organized the transport of the Estonian Army, via Archangel and Murmansk, to the Allied front. He commanded the Estonian army in the War of Independence, and then abandoned the army for politics. He sat as an agrarian in the diet from 1920 onward.

He became president of the commission for foreign affairs and state defence of the Diet, and Estonian delegate to the League of Nations. In 1925 he presided over the League of Nations Commission appointed to inquire into the Mosul frontier dispute between Great Britain and Turkey. (*See* MOSUL.)

LAING (lāng), **ALEXANDER GORDON** (1793–1826), Scottish explorer, the first European to reach Timbuktu, born at Edinburgh on Dec. 27, 1793. He was educated at Edinburgh university. In 1811 he went to Barbados as clerk to his uncle, Colonel (afterwards General) Gabriel Gordon. He obtained an ensigncy in the York Light Infantry, and, after serving in the West Indies, was promoted (1822) to a company in the Royal African Corps. In that year, while with his regiment at Sierra Leone, he was sent by the governor, Sir Charles MacCarthy, to the Mandingo country, with the double object of opening up commerce and endeavouring to abolish the slave trade in that region. Later in the same year Laing visited Falaba, the capital of the Sulima country, and found the source of the Rokell. He endeavoured to reach the source of the Niger, but was stopped by the natives. He fixed it, however, with approximate accuracy. He took an active part in the Ashanti War of 1823–24, and was sent home with the despatches containing the news of the death in action of Sir Charles MacCarthy. Henry, 3rd earl Bathurst, then secretary for the colonies, instructed Captain Laing to undertake a journey, via Tripoli and Timbuktu, to explore the Niger basin. Laing left England in Feb. 1825, and at Tripoli on July 14, he married Emma Warrington, daughter of the British consul. Two days later, leaving her behind, he started to cross the Sahara, being accompanied by a sheikh who was subsequently accused of planning his murder. Ghadames was reached, by an indirect route, in Oct. 1825, and in December Laing was in the Tuat territory, where he was at first well received by the Tuareg. On Jan. 10, 1826 he left Tuat, and made for Timbuktu across the desert of Tanezroft. He arrived in Timbuktu on Sept. 21, after severe fighting, in which he was wounded. He left Timbuktu on Sept. 24, and was murdered on the night of Sept. 26, 1826. His papers were never recovered, though it is believed that they were secretly brought to Tripoli in 1828.

While in England in 1824 Laing prepared a narrative of his earlier journeys, which was published in 1825 and entitled *Travels in the Timannee, Kooranko and Soolima Countries, in Western Africa.*

LAING, MALCOLM (1762–1818), Scottish historian, son of Robert Laing, and elder brother of Samuel Laing the elder, was born on his paternal estate on the Mainland of Orkney. He was called to the Scottish bar in 1785. In 1793 he completed the sixth and last volume of Robert Henry's *History of Great Britain,* the portion which he wrote being in its strongly liberal tone at variance with the preceding part of the work; and in 1802 he published his *History of Scotland from the Union of the Crowns to the Union of the Kingdoms.* In a dissertation, prefixed to a second and corrected edition of the *History* published in 1804, Laing endeavoured to prove that Mary, queen of Scots, wrote the Casket letters, and was partly responsible for the murder of Lord Darnley. Laing, who was a friend of C. J. Fox, was M.P. for Orkney and Shetland from 1807 to 1812. He died on Nov. 6, 1818.

His other works include editions of the *Life and Historie of King James VI.* (1804) and of Ossian (1805).

LAING, SAMUEL (1810–1897), British author and railway administrator, was born at Edinburgh on Dec. 12, 1810. In 1848 he became chairman of the London, Brighton and South Coast railway, and in 1852 chairman of the Crystal Palace company. On retiring from both posts in 1855, he commenced a political career, being appointed financial secretary to the Treasury (1859), and finance minister in India (1860). From 1852–73 he sat as Liberal member for Wick, with two short intervals, and from 1873–84 he was member for Orkney and Shetland. He was also chairman of the Railway Debenture Trust and the Railway Share Trust. He died at Sydenham on Aug. 6, 1897. His most important works are:—*Modern Science and Modern Thought* (1885); *Problems of the Future* (1889); and *Human Origins* (1892).

LAING'S (or LANG'S) NEK, a pass by which the ascent of the Drakenberg is made. It lies immediately north of Majuba and is the lowest part of a ridge which slopes from Majuba to the Buffalo river. It is the main artery of communication between Durban and Pretoria. The railway at 5,399 ft. enters a tunnel 2,213 ft. long. Fighting took place here in 1881, when the pass was occupied by a Boer force to oppose the entry of British reinforcements into the Transvaal.

LAIRD, MACGREGOR (1808–1861), Scottish merchant, pioneer of British trade on the Niger, was born at Greenock in 1808, the younger son of William Laird, founder of the Birkenhead firm of shipbuilders of that name. In 1831 Laird and certain Liverpool merchants formed a company for the commercial development of the Niger regions, the lower course of the Niger having been made known that year by Richard and John Lander. In 1832 the company despatched two small ships to the Niger, one, the "Alburkah," a paddle-wheel steamer of 55 tons designed by Laird, being the first iron vessel to make an ocean voyage. Macgregor Laird went with the expedition, which was led by Richard Lander and numbered 48 Europeans, of whom all but nine died from fever or, in the case of Lander, from wounds. Laird went up the Niger to the confluence of the Benue (then called the Shary or Tchadda), which he was the first white man to ascend. He did not go far up the river but formed an accurate idea as to its source and course. The expedition returned to Liverpool in 1834, Laird and Surgeon R. A. K. Oldfield being the only surviving officers besides Captain (then Lieut.) William Allen, R.N., who accompanied the expedition by order of the Admiralty to survey the river. Laird and Oldfield published in 1837 in two volumes the *Narrative of an Expedition into the Interior of Africa by the River Niger . . . in 1832, 1833, 1834.*

After his return Laird devoted himself to the development of trade with west Africa and especially to the opening up of the countries now forming the British protectorates of Nigeria. He believed that this method was the best means of stopping the slave trade and raising the social condition of the Africans. In 1854 he sent out at his own charges, but with the support of the British government, a small steamer, the "Pleiad," which under W. B. Baikie made so successful a voyage that Laird induced the government to sign contracts for annual trading trips by steamers specially built for navigation of the Niger and Benue. Various stations were founded on the Niger, and though government support was withdrawn after the death of Laird and Baikie, British traders continued to frequent the river which Laird had opened up. Laird was one of the promoters of a company formed in 1837 to run steamships between England and New York, and the "Sirius," sent out by this company in 1838 was the first ship to cross the Atlantic from Europe entirely under steam. Laird died in London on Jan. 9, 1861.

John Laird.—His elder brother, John Laird (1805–74), was one of the first to use iron in the construction of ships; in 1829 he made an iron lighter of 60 tons which was used on canals and lakes in Ireland; in 1834 he built the paddle steamer "John Randolph" for Savannah, U.S.A., stated to be the first iron ship seen in America. For the East India company he built in 1839 the first iron vessel carrying guns and he was also the designer of the famous "Birkenhead." A Conservative in politics, he represented Birkenhead in the House of Commons from 1861 to his death.

LAIS, the name of three celebrated Greek courtesans.

1. A Corinthian of the 5th century B.C. *See* Athenaeus 544 B *seq.,* 570 B *seq.* Her best-known lover was Aristippus the Cyrenaic philosopher. From her Athenaeus (574 E) distinguishes—

2. Lais, the younger daughter of Timandra or Damasandra, the mistress of Alcibiades. She was born in Hyccara in Sicily, but went to Corinth at the time of the Sicilian expedition, being then seven years old (Athen., 588 B, citing Polemon; schol. Aristoph., *Plut.,* 179); hence she was born about 420 B.C. But Apelles (contemporary of Alexander the Great) knew a Lais still a little girl, about 100 years later than this, Athen. 588 C; therefore there must also have been—

3. A third Lais, contemporary with Alexander. Ancient authori-

ties confuse the three. The usual type of stories are told of them.

See Geyer in Pauly-Wissowa-Kroll, *Realenc. s.v.*

LAISSEZ-FAIRE. Laissez-faire may be defined as the doctrine which demands the minimum interference by government in economic and political affairs. The maxim itself was long attributed to Vincent de Gournay, a French economist of the 18th century; but Oncken has shown that this was an error. The most probable origin of the phrase is the well-known reply of the manufacturer Legendre to Colbert who asked what he could do for industry; *Laissez-nous faire* (Let us alone). Others attribute its popularity to the remark of D'Argenson, the ex-minister of Louiv XV., whose insistence on the theory of free trade earlier and even more completely than with the Physiocrats makes the attribution not improbable. Whatever the actual origin of the phrase, the doctrine arose naturally at the end of the 17th and the beginning of the 18th century, as a protest against the excessive regulation of industry by government action. A number of causes explain this protest. In both England and France, government interference with religious belief meant interference with commerce since, in both countries, trade was largely in the hands of dissenters from the orthodox faith of the state. Government interference, moreover, meant only too often monopoly; and as early as the treatises of Sir Josiah Child the danger to commercial well-being of closed corporations is insisted upon. "No one," says Child, "ought to be able to buy immunity and monopoly to the prejudice of the country." In France, particularly, the restrictions imposed upon production both by the immense number of local customs-systems and by the jealous regulation of the different *maîtrises* necessarily aroused dissatisfaction with the existing state of affairs.

It is curious to note how early the doctrine of laissez-faire assumed its characteristic modern form. In the Physiocrats, and especially in Mercier de la Rivière (*Ordre Essentiel,* ed. Daire, ch. xliv. p. 444), there is little absent which remained to be added by later speculation. The ideal society for him is one characterised by the competition of individuals armed with equal rights who freely search for their interests in the interaction of economic relationships. It is assumed that they are naturally led to take thought for social well-being by their need to exchange their products freely, and that production naturally adapts itself to that need. Distribution is, further, naturally built upon the basis of equivalent utilities. Each individual, in the process of exchange, seeks the product which, by its utility, recompenses him for the labour he has expended upon the production of his own commodity. Under the beneficent aegis of competition, the continuous effort of producers to increase their profit leads to improvements in technique for the sake of economy, and these, as they are widely adopted, lead in their turn to lower prices. "Personal interest," says Mercier de la Rivière, "compels each man vigorously and continuously to perfect and to multiply the things he seeks to sell. He thus enlarges the mass of pleasures he can produce for other men in order to increase the mass of pleasures other men can produce for him in exchange. The world thus advances of itself." Laissez-faire is, thus, from its beginnings marked by an optimistic faith in the power of uncontrolled individual action to produce social good. This is the "natural order" which, for Adam Smith, underlay the appearance made wasteful and confused by governmental regulation, a "natural liberty," which in its operation naturally results in benefit to the community. In addition to Adam Smith and the physiocrats, the outstanding names in the history of laissez-faire as an economic doctrine are Say, Dunoyer and Bastiat in France, Ricardo, McCulloch and, though in a less degree, Nassau Senior in England.

Broadly speaking, the economic thesis of laissez-faire may be summarized in three propositions. 1. *As a theory of exchange* laissez-faire leads to such a stabilization of prices as results, in a given market, in the maximum possible satisfaction to all participating therein. 2. *As a theory of production,* laissez-faire results in such a disposition of the productive forces as will secure the maximum benefit from their employment. 3. *As a theory of distribution,* laissez-faire creates the maximum harmony between capital and labour by securing to each such a part of the common product as is equivalent to the share it has created.

But laissez-faire is a political, as well as an economical, doctrine. In the former field it assumed the garb of individualism. Here, perhaps, its outstanding exponent was Jeremy Bentham, and its essential basis the hedonistic calculus. Since every person, it argued, is the best judge of his own happiness, the more free he is left in his search for its attainment, the more certain he is to reach it; and since each man is equally entitled to happiness, all artificial barriers imposed by government in the way of its realization are necessarily evil. Armed with this creed, Benthamism became the main agent in the nineteenth century of political democracy. It may claim to have been the chief doctrinal factor in securing the enlargement of the parliamentary franchise, the improvement of judicial procedure, the promotion of liberty of contract (including the right of combination), and the abolition of religious inequality. Its underlying assumption was a purely mechanical conception of society as an aggregate of individual atoms each of which would secure the best results for itself in the absence of contravening circumstances. It regarded the State as essentially the promoter of order and security, and viewed with distrust its assumption of larger functions on the ground that this tended to a paternalism which decreased the initiative and responsibility of the individual. Since no government could know the interests of its individual citizens as well as they knew these themselves, it was, *a priori,* doctrinal error for government to embark upon any social experiment destined to limit the sphere of individual action.

The political leaders of the individualist school were, in England, Bentham himself and the two Mills; though the younger Mill, especially after 1848, moved slowly but definitely towards socialism. In France, men like Tocqueville, Prevost-Paradol, and, in a special sense, Tarde, may be regarded as outstanding exponents of this attitude. Towards the close of the nineteenth century Herbert Spencer lent the weight of his then enormous prestige to the support of an individualism perhaps more far-reaching than in any other expression; but it should be said that his outlook was in fundamental contradiction with the general principles of his own philosophy. It is important, also, to note that, through its hostility to state action laissez-faire has, on its political side, close affiliations with anarchist doctrine. Logically, the border-line between such thinkers as Spencer and Bastiat, on the one side, and anarchists so different as Godwin and Max Stirner upon the other, is very narrow, though the differences in temper and object are, of course, outstanding. (*See* ANARCHISM.)

As an influence in affairs, laissez-faire may be said to have reached its apogee about 1870; after that time the current of events moved steadily and increasingly in the direction of collectivism. It was discovered that competition logically resulted in combination; and it was found that liberty of contract only begins where equality of bargaining power begins. To secure the latter, or some approximation thereto governmental interference was adjudged necessary by thinkers of the most various schools. The development of systems of national education and social insurance, the growth of municipal trading, the need to protect the consumer from, particularly, the angle of public health, the necessity of responding to the wants of an electorate increasingly proletarian in character, these and things like these all softened the sharpness of the original doctrine. By the end of the century, the thinkers who maintained it in its pristine rigour were but a handful.

See the article ECONOMICS and also L. Stephen, *The English Utilitarians* (1900); E. Halévy, *La Formation du radicalisme philosophique* (1901); E. Cannan, *Theories of Production* (2nd ed., 1903); A. Schatz, *L'Individualisme* (1907); C. Gide and C. Rist, *History of Economic Doctrines* (1915); H. J. Laski, *Political Thought from Locke to Bentham* (1920); J. M. Keynes, *The End of Laissez-Faire* (1926).

(H. J. L.)

LAJPAT RAI, LALA (1865–1928), a Nationalist politician, who played an influential part in the development of Indian political extremism. He was born in 1865 at Jagron, a small town in the Ludhiana district, Punjab, the son of Munshi Radha Krishen Lala, the author of numerous Urdu books and pamphlets,

who, when his son was twelve years old was converted to the reformed Hindu cult, the Arya Samaj, founded by Swami Dayanand Sarasavathi. Graduating in law from the Government college, Lahore, in 1885, Lajpat Rai practised first at Hissar, and then at Lahore, where he took an active part in founding the Dayanand Anglo-Vedic college. Joining the Indian National Congress, he was one of the originators of the view that the Nationalists should rely on their own exertions for Indian political progress and should form no sort of alliance with British parties. In the spring of 1907 agitation broke out among the settlers in the newly formed Chenab Canal and Bari Doab irrigation colonies, and in consequence Lajpat Rai and Ajit Singh were deported to Mandalay under Regulation 3 of 1818 without trial. Spurred by radical critics in the House of Commons, John Morley, then secretary of state for India, was very uneasy about the use of this "rusty sword," and in the autumn persuaded the viceroy, Lord Minto, to release the deportees. Thereafter Lajpat Rai, a man of great energy, combined with his legal practice political, philanthropic and educational activities, edited a vernacular magazine and a vernacular weekly journal.

For some time before and during the World War Lajpat Rai was in the United States, where he wrote *The Arya Samaj* (1915), *Young India* (1917) and *National Education in India* (1920). Obtaining permission in the latter year to return to India, he went back when political feeling was running very high. He was president of the special session of the National Congress which in September 1920 launched the non-cooperation programme, but his own attitude was halting. Imprisoned for seditious activities in 1921 he was released in August 1923 and at the end of the year was elected to the legislative assembly, where for some time his tendency was to draw away from a policy of mere negation. He accepted a Government nomination to represent the Indian trade unions at the International Labour Conference at Geneva in 1926, but in 1928 he moved the resolution in the Legislative Assembly carried by a small majority for boycott of the Statutory Commission under Sir John Simon. His active share in promoting various Hindu movements and his proselytizing zeal tended to encourage communal disturbances. His *Unhappy India* (1928) was a voluminous reply to Katharine Mayo's *Mother India.* He died in the autumn of 1928 of heart failure though his death was stated to be the result of injuries received during a baton charge at Lahore. This was disproved at the subsequent enquiry. (F. H. Br.)

LA JUNTA, (lah-hŭn'tą), a city of southeastern Colorado, on the Arkansas river, at an elevation of 4,046 ft.; the county seat of Otero county. It is on Federal highways 50 and 350, and is a division point on the Santa Fe railway. The population was 7,193 in 1930 and 7,040 in 1940 (the federal census). The large railroad and machine shops constitute the principal industry, but there are also meat-packing and brick plants.

La Junta (Spanish: meeting place or junction) was a converging point on Indian and pioneer trails, and became an important trading centre on the old Santa Fe trail.

LAKANAL, JOSEPH (1762–1845), French politician, was born at Serres (Ariège) on July 14, 1762. His name, originally Lacanal, was altered to distinguish him from his Royalist brothers. In 1792 he was acting as vicar to his uncle Bernard Font (1723–1800), the constitutional bishop of Pamiers, when he was elected to the Convention, where he held apart from the various party sections. He became a member of the Committee of Public Instruction (1793), and brought forward on June 26 his *Projet d'éducation nationale* which proposed to lay the burden of primary education on the public funds, but to leave secondary education to private enterprise. The scheme, in the main the work of Sieyès, was refused by the Convention. Lakanal began to work for the organization of higher education, and abandoning the principle of his *Projet* advocated the establishment of state-aided schools for primary, secondary and university education. After the revolution of Thermidor, he became president of the Education Committee and drew up various educational schemes, continuing his reports, in spite of the supersession of his system, after his election to the council of the Five Hundred. In 1799 he was sent by the Directory to organize the defence of the four departments on the left bank of the Rhine threatened by invasion. Under the consulate he resumed his professional work, and after Waterloo retired to America, where he became president of the university of Louisiana. He returned to France in 1834, and died in Paris on Feb. 14, 1845. Lakanal was an original member of the Institute of France. He published in 1838 an *Exposé sommaire des travaux de Joseph Lakanal.*

His *éloge* at the Academy of Moral and Political Sciences was pronounced by the comte de Rémusat (Feb. 16, 1845), and a *Notice historique* by F. A. M. Mignet was read on May 2, 1857. *See* also notices by Émile Darnaud (1874), "Marcus" (1879), P. Legendre in *Hommes de la révolution* (1882), E. Guillon, *Lakanal et l'instruction publique* (1881). For details of the reports submitted by him to the government *see* M. Tourneux, "Histoire de l'instruction publique, actes et délibérations de la convention, etc." in *Bibliog. de l'hist. de Paris* (vol iii., 1900); also A. Robert and G. Cougny, *Dictionnaire des parlementaires* (vol. ii., 1890).

LAKE, GERARD LAKE, 1ST VISCOUNT, cr. 1807 (1744–1808), British general, was born on July 27, 1744. He entered the foot guards in 1758. By 1792 he was a general officer in the army. He served with his regiment in Germany in 1760–1762 and with a composite battalion in the Yorktown campaign of 1781. After this he was equerry to the prince of Wales, afterwards George IV. In 1793 he was appointed to command the Guards Brigade in the duke of York's army in Flanders. He was in command at Lincelles, on Aug. 18, 1793, and served on the continent until April 1794. In 1797 he was promoted lieut.-general. In the following year the Irish rebellion broke out. Lake succeeded Sir Ralph Abercromby in command of the troops in April 1798, issued a proclamation ordering the surrender of all arms by the civil population of Ulster, and, on June 21, routed the rebels at Vinegar Hill (near Enniscorthy, Co. Wexford). He exercised great severity towards all rebels found in arms. Lord Cornwallis now assumed the chief command in Ireland, and in August sent Lake to oppose the French expedition which landed at Killala Bay. On Aug. 29 Lake arrived at Castlebar, but only in time to witness the rout of the troops under General Hely-Hutchinson. He retrieved this disaster by compelling the surrender of the French at Ballinamuck, near Cloone, on Sept. 8. In 1799 Lake returned to England, and in 1800 obtained the command in chief in India. He took over his duties at Calcutta in July 1801, and applied himself to the improvement of the Indian army, especially in the direction of making all arms, infantry, cavalry and artillery, more mobile and more manageable. In 1802 he was made a full general.

On the outbreak of war with the Mahratta confederacy in 1803 General Lake took the field against Sindhia, and within two months defeated the Mahrattas at Coel, stormed Aligahr, took Delhi and Agra, and won the great victory of Laswari (Nov. 1, 1803), where the power of Sindhia was completely broken. This defeat, followed a few days later by Wellesley's victory at Argaum, compelled Sindhia to come to terms, and a treaty with him was signed in December 1803. Operations were, however, continued against his confederate, Holkar, who, on Nov. 17, 1804, was defeated by Lake at Farrukhabad. Lake was superseded as commander-in-chief by Cornwallis in July 1805. But after the death of Cornwallis in October of the same year, Lake pursued Holkar into the Punjab and compelled him to surrender at Amritsar in December 1805. For his services Lake received the thanks of parliament, and a peerage. He represented Aylesbury in the House of Commons from 1790 to 1802, and he sat in the Irish parliament as member for Armagh in 1799 to vote for the Union. He died in London on Feb. 20, 1808.

See H. Pearse, *Memoir of the Life and Services of Viscount Lake* (London, 1908); and a short memoir in *From Cromwell to Wellington,* ed. Spenser Wilkinson.

LAKE, a mass of still water situated in a depression of the ground, without direct communication with the sea. The term is also applied to widened parts of rivers, and to bodies of water which lie along sea-coasts, and in direct communication with the sea. The terms, *pond, tarn, loch* and *mere* are applied to smaller lakes according to size and position. Lakes are nearly universally distributed, but are more abundant in high latitudes, and in

mountain regions, especially those which have been recently glaciated. They are frequent along rivers which have low gradients and wide flats, being clearly connected with the changing channel of the river. Low lands in close proximity to the sea, especially in wet climates, have numerous lakes, *e.g.*, Florida. Lakes may be either fresh or salt, some being more salt than the sea itself. They occur at all altitudes: *e.g.*, Lake Titicaca (S. America) 12,500 ft., Yellowstone lake (U.S.A.), 7,741 ft. above sea-level; and on the other hand the surface of the Caspian sea is 86 ft., the Sea of Tiberias 682 ft., and the Dead Sea 1,292 ft. below the level of the Mediterranean. The primary source of lake water is atmospheric precipitation, which may reach the lakes by rain, melting ice and snow, springs, rivers and immediate run-off from the land-surfaces. Lakes, owing to their isolation from the great oceans, have peculiar physical, chemical and biological features.

Classification of Lakes.—Lakes are classified according to their mode of origin. The following classification is that adopted by L. W. Collet (*Les Lacs*, Paris, 1925).

a. Lakes due to Glacial Erosion. Of these the following types are recognized:—(1) Lakes in terminal basins. These are common in the lower valleys of the Alps and occupy the sites of ancient glaciers, *e.g.*, Lakes Lucerne, Zürich, Neuchâtel, etc. (2) Lakes in valleys deepened by glacial erosion. Many lakes in glaciated mountain regions can only be explained by this means. (3) Lakes in cirques. (4) Lakes in hanging valleys. (5) Lakes on roches moutonnées. The three types last mentioned are also common in glaciated mountain regions. Many are now completely filled with alluvium.

b. Barrier Lakes are of great importance and are formed in the following ways: (1) Landslides. These occur in mountain regions where a fall of rock may dam back the water of a stream. Lakes thus formed have not a permanent character, for the effluent will rapidly lower its bed in the loose material of the landslide. (2) A valley glacier. Below the snow-line a valley glacier may block a tributary stream, *e.g.*, Lake Märjelen, dammed by the Aletsch glacier (Switzerland) and Lake Castain (Alaska) held up by the Malaspina glacier. (3) The lateral moraine of a glacier may obstruct the flow of a river thus forming a lake, *e.g.*, Lake Mattmark (Switzerland). (4) Frontal moraines frequently hold back the water of the river after the glacier has disappeared. Such lakes are abundant in high latitudes, *e.g.*, the great Canadian Lakes. (5) Irregularities in glacial drift, boulder clay and other deposits left by a retreating ice-sheet may cause the formation of lakes. (6) The alluvium laid down by a main stream may dam back the waters of a tributary stream or *vice versa*, *e.g.*, the lakes formed by the levees of the Mississippi. Barrier lakes are also formed by the obstruction of the flow of a river in the following ways: (7) by a lava-flow, (8) by the movement of a sand dune, (9) by the accumulation of beach material or the growth of a storm beach across the mouth of a river.

c. Crater Lakes. The craters of ancient and dormant volcanoes are frequently filled with water. They vary from a few yards to several miles, are usually circular and rarely have a visible outlet.

d. Lakes of Tectonic Origin occur in natural structural features of the crust of the earth, *e.g.*, L. Joux (Jura) in a syncline, Lakes Tanganyika, Nyassa, etc., lying in the Great Rift Valley of North Africa.

e. Lakes due to Solution in Calcareous Rocks. The solvent action of water in limestone regions causes depressions to be formed in various ways and with varying shapes. If such regions have been glaciated within recent times, an impervious ground moraine may line the depressions thus forming a lake basin and preventing further solvent action. Again underground streams cause subsidence in limestone areas producing a "limestone sink" and limestone soils being usually clayey, a lake is formed. A similar action is seen in regions underlain by salt beds.

f. Lakes on Ice occur in depressions. They may be completely on the ice or partly on the ice and partly on solid rock.

g. Lakes frequently occur in hollows and depressions in water bearing strata, owing to the rise of the water-table. They have no apparent inlet or outlet and will show periodic changes in level owing to variations in the height of the water-table. Desert oases and lakes on moraines are often of this type.

h. Organic Lakes. In the tundras around the Arctic Circle, a great number of frozen ponds and lakes occur, surrounded by banks of vegetation. Snow banks generally accumulate in the same place every season. During the summer the growth of vegetation is rapid thus quickly surrounding lingering snowdrifts. When these latter melt, their sites are occupied by a thinner growth of vegetation than the surrounding regions and thus, year after year these places become more and more depressed and give rise to lakes.

Life History of Lakes.—From the time of its formation a lake is destined to disappear. The historical period has not been long enough to enable man to investigate the life history of any lake of considerable size, but much information is now available upon the various stages in the development. In humid climates two processes tend to the extinction of a lake, *e.g.*, the deposition of detrital matter and the lowering of the lake by the downward cutting of the effluent stream. These outgoing streams, however, being very pure and clear, all detrital matter having been deposited in the lake, have less eroding power than the inflowing streams. The accumulation of organic deposits plays an important part under certain conditions in filling up lakes. Such deposits are known as cumulose deposits.

In arid regions where the rainfall is often less than 10 in. per annum, the effects of evaporation are greater than those of precipitation, so that salt and bitter lakes prevail in these regions. The occurrence of salt and bitter lakes generally indicates a change from humid to arid conditions, for many salt lakes, *e.g.*, the Dead Sea and the Great Salt Lake, are descended from freshwater ancestors, whilst others, *e.g.*, the Caspian and Aral Seas, are isolated parts of the ocean. In lakes of the first group evaporation exceeds the inflow. The inflowing waters bring in a small amount of saline and alkaline matter, which becomes more and more concentrated. In lakes of the second group the waters were salt at the outset.

The Water of Lakes.—The composition of lake water is important for on it depends not only the type of fauna that the lake can maintain but the possibility of it maintaining any fauna at all. Also lakes rich in saline and alkaline compounds, are of commercial importance. As already shown the relation between the rates of evaporation and inflow are the determining factors of the composition, but the time element also enters in. River water may contain a variety of salts in solution, the most important being calcium carbonate. These salts are not equally soluble in water and the addition of a more soluble salt to an already saturated solution will cause the precipitation of the less soluble salt. Moreover, as evaporation proceeds and the water becomes more saturated, salts are precipitated in the following order:—calcium and magnesium carbonates, calcium sulphate, sodium carbonate and sodium sulphate, sodium chloride and magnesium sulphate whilst magnesium chloride and calcium chloride remain in solution. Slight variations in order may occur, but the important fact remains that the longer the process of evaporation has gone on, the richer the water becomes in various chlorides. The composition of the water of inflowing streams depends upon the mineralogical constitution of the rocks in the drainage area of the inflowing rivers. The composition is also dependent on whether the rivers are glacial streams. This is very marked in small fresh water lakes.

F. W. Clarke (*Data of Geochemistry*, Washington, 1916), divides salt lakes into nine classes according to their chemical composition [for additional information *see* also L. W. Collet, *Les Lacs* (1925) and Chamberlin and Salisbury, *Geology* (1909)]. The amount of dissolved matter varies considerably in salt and bitter lakes, as the following list will show (the figures are in grammes per litre):—Dead Sea (Terriel) 245·732, Caspian Sea (Gobel) 6·294; Elton Lake (Erdman) 264·98; Great Salt Lake (Allen) 149·936; Pyramid Lake, Nevada (Clarke) 3·4861; Van Lake (Chancourtois) 22·6; Aral Sea 10·8416; and the Atlantic Ocean (Thoulet) 35·0631. With these may be compared the composition of fresh water lakes, *e.g.*, Katrine (Harris) 0·029.

Movements and Temperature of Lake-waters.—Winds cause a transference of water which results in raising the level at the end to which the wind is blowing. In addition to the well-known progressive waves there are also stationary waves or "seiches" which are less apparent. A seiche is a standing oscillation of a lake, usually in the direction of the longest diameter, but occasionally transverse. Seiches were first discovered in 1730 and they were first systematically investigated upon Lake Geneva. Subsequently a large number of observations have been made on lakes throughout the whole of the world.

LAKE CHARLES, a city of southwestern Louisiana, U.S.A., 35 mi. from the Gulf of Mexico; the parish seat of Calcasieu parish. It is on federal highways 90 (the Old Spanish Trail), 165, and 171; has an airport; and is served by the Kansas City Southern, the Missouri Pacific, and the Southern Pacific railways and by ocean-going steamers. The population was 13,088 in 1920 (34% Negroes) and was 21,207 in 1940 by the federal census. The city has a beautiful location on Lake Charles and the Calcasieu river. It is in the heart of the principal rice-producing region of the country, and is surrounded by oilfields. Its leading manufactures are petroleum products, cellulose, fertilizer and lumber products, and it has a large complete rice mill. Lake Charles has a commodious fresh-water, land-locked harbour, accessible from the Gulf through a 32-foot channel, opened to commerce in 1926. The port ordinarily has regular service to the principal ports on the Atlantic and the Pacific seaboards, Puerto Rico and the West Indies, and many foreign ports.

LAKE CITY, a city of northern Florida, U.S.A., 60 mi. W. by S. of Jacksonville; the county seat of Columbia county. It is on federal highways 41 and 90, and is served by the Atlantic Coast Line, the Seaboard Air Line and the Southern railways. The population in 1930 was 4,416 (about one-third Negroes) and in 1940 was 5,836 by the federal census. There are ten lakes in the neighbourhood. Lake City is a winter resort, and the seat of a U.S. Veterans hospital. It has a large trade in fruits, vegetables, poultry, lumber, turpentine, bright-leaf cigarette tobacco, cattle and hogs. The town was settled about 1826, as Alligator; was incorporated in 1854; and adopted its present name in 1859.

LAKE DISTRICT, in England, in the counties of Cumberland, Westmorland and Lancashire (Furness district), and containing the principal English lakes. It is celebrated as a district of remarkable and strongly individual physical beauty. Its area is 700 sq.m.; in a circle, 30 m. in diameter, within which is the largest lake, Windermere, and the highest peak, Scafell Pike. A flat coastal belt, bordering the Irish sea, Morecambe bay and Solway firth, marks off the Lake District, while to the east the valleys of the Eden, and the Lune divide it from the Pennine mountain system. Geologically, it is individual. The periphery is of Carboniferous limestones, Coal Measures and Trias sandstones, which structurally form a dome, the top of which has been removed by denudation revealing in the centre volcanic rocks and slates (Ordovician) with a belt of Silurian rocks in the south. Intrusions of igneous rocks, chiefly granites, at Eskdale, Skiddaw, Shap and Carrock Fell form important sources of excellent building stone. The radial drainage is obviously antecedent. There is a main north to south depression along the valleys of St. John, Thirlmere, Grasmere and Windermere, surmounting a pass (Dunmail Raise) of only 783 ft.; while a secondary depression runs parallel along Derwentwater, Borrowdale, Wasdale and Wastwater, but here Styhead pass rises to 1,600 ft. The physical features have been greatly modified by glaciation, evidences of which occur on every hand. The principal features of the district may be indicated by following the circle round from north, by west, south and east.

RIVERS AND LAKES

The river Derwent (*q.v.*), rising in the tarns north of Styhead pass and Scafell, flows north through the wooded Borrowdale and forms Derwentwater and Bassenthwaite. These two lakes are broad for their length, and quite shallow (18 ft. to 70 ft.). Borrowdale is joined on the east by the wild dale of Langstrath, and the Gretna joins the Derwent immediately below Derwentwater; the town of Keswick lying near the junction. From Seatoller in Borrowdale a road traverses Honister pass (1,100 ft.), whence it descends westward, beneath Honister Crags, into the valley containing Buttermere (94 ft. max. depth) and Crummock Water (144 ft.), drained by the Cocker. Between this and the Derwent the principal height is Grasmoor (2,791 ft.); southward a steep ridge (High Style, 2,643) divides it from Ennerdale, containing Ennerdale Water (148 ft., max. depth) which is fed by the Liza and drained by the Ehen. A splendid range separates this dale from Wasdale and Mosedale, including Great Gable (2,949 ft.), Pillar (2,927) and Steeple (2,746). Wasdale Head between Gable and Scafell range, is peculiarly grand. On this side of Gable is Napes Needle. Wastwater is the deepest lake (258 ft.), its floor, like those of Windermere and Ullswater, sinking below sea level. East of Wasdale lies the range of Scafell (3,162 ft.), Scafell Pike (3,210), Lingmell (2,649) and Great End (2,984), continued over Esk Hause pass (2,490) along Bow Fell (2,960), Crinkle Crags (2,816) to the head of Eskdale and Wrynose pass (1,270), from which the Duddon runs south; while the range continues south to culminate in the Old Man of Coniston (2,633). Yewdale drains south to Coniston lake ($5\frac{1}{2}$ m. long, 184 ft. max. depth) east of which a lower tract, containing Tarn Hows and Esthwaite Water, extends to Windermere (*q.v.*). This lake collects waters from Langdale between Bow Fell and Langdale Pikes (2,401 ft.) and from Dunmail Raise and the lakes of Grasmere and Rydal Water, east of which are Helvellyn (3,118 ft.) and Fairfield (2,863) with magnificent crags on the east side towards Grisedale and Patterdale. These dales drain to Ullswater (205 ft. max.) and so to the Eden. To the east lies the ridge named High Street (2,663 ft.), from the Roman road traceable along its summit, and sloping east again to Hawes Water (103 ft. max.) which, with Thirlmere, supply Manchester with water. Thirlmere drains north by St. John's Vale into the Gretna, north of which are Saddleback or Blencathra (2,847 ft.), and Skiddaw (3,054 ft.).

The most noteworthy waterfalls are:—Scale Force (Crummock), Lodore (Derwentwater), Dungeon Gill Force (Langdale), Dalegarth Force (Eskdale), Aira (Ullswater), Stock Gill Force and Rydal Falls, near Ambleside. The principal centres in the Lake District are Keswick (Derwentwater), Ambleside, Bowness, Windermere and Lake Side, Coniston and Boot (Eskdale), Grasmere and Hawkshead. There are regular steamer services on Windermere and Ullswater. Coaches and cars traverse the main roads during the summer, but many of the finest dales and passes are accessible only on foot. All the mountains offer easy routes but some of them, such as Scafell, Pillar, Gable (Napes Needle), Pavey Ark above Langdale and Dow Crags near Coniston are difficult to climb. This mountainous district, having the sea to the west, records an unusually heavy rainfall. Near Seathwaite, below Styhead pass, the largest annual rainfall in the British Isles is recorded, the average being 154 in. At Keswick the annual mean is 60·02, at Grasmere about 80 in.

The industries of the Lake District include slate quarrying and some lead and zinc mining, weaving, bobbin making and pencil-making.

Of late years, the Lake District has lost much of its seclusion. There is a multitudinous incursion of visitors by motorbus and automobile, for which traffic the former picturesque but difficult roads have been modernized.

LITERARY ASSOCIATIONS

The Lake District is intimately associated with English literature. Connected with the region is Gray (1769) but it was Wordsworth himself, who really made it a Mecca for lovers of English poetry. He spent 60 years at Hawkshead, Grasmere and Rydal Mount. In the churchyard of Grasmere the poet and his wife lie buried; and near to them are the remains of Hartley Coleridge. Southey, the friend of Wordsworth, lived at Keswick from 1803–43 and is buried in Crosthwaite. Samuel Taylor Coleridge lived at Keswick, and also with the Wordsworths at Grasmere. From 1807 to 1815 Christopher North (John Wilson) was settled at Windermere. De Quincey spent from 1809 to 1828 at Grasmere; Ambleside was a place of residence of Dr.

Arnold (of Rugby) and Harriet Martineau built herself a house there in 1845. At Keswick Mrs. Lynn Linton was born in 1822. Brantwood (Coniston lake) was the home of Ruskin during the last years of his life. In addition to these are Shelley, Scott, Nathaniel Hawthorne, Clough, Crabb Robinson, Carlyle, Keats, Tennyson, Matthew Arnold, Mrs. Hemans, Gerald Massey.

BIBLIOGRAPHY.—*See* CUMBERLAND, LANCASHIRE, WESTMORLAND, Also H. D. Rawnsley, *A Rambler's Note-book of the English Lakes* (1902); J. E. Marr, *The Geology of the Lake District* (1916); M. J. B. Baddeley, *The English District* (1922); W. G. Collinwood, *Lake District History* (1925).

LAKE DRUMMOND CANAL, in the United States, connects Chesapeake bay with Albemarle sound. It was constructed to bring out lumber of the Dismal Swamp and surrounding country. In the War of 1812 it afforded water communication for the transportation of military stores and products. It has seven locks. The canal is 22 m. long, 70 ft. wide and 9 ft. in depth.

LAKE DWELLINGS. Habitations were constructed within the margins of lakes, creeks or the sea, at some distance from the shore. They exist in such parts as the estuaries of the Orinoco and the Amazon, New Guinea, Borneo and the west coast and centre of Africa. Their existence in Lake Prasias is recorded by Herodotus.

In prehistoric times nearly all the lakes of Switzerland, and many in the adjoining countries—in Savoy and the north of Italy, in Austria and Hungary and in Mecklenburg and Pomerania—were peopled by lake-dwelling communities, living in villages constructed on platforms supported by piles at varying distances from the shores. They are also found in peat moors on the sites of ancient lakes now drained or silted up, as at Laibach in Carniola. In some of the larger lakes the number of settlements was very great. Fifty are enumerated in the Lake of Neuchâtel, 32 in the Lake of Constance, 24 in the Lake of Geneva and 20 in the Lake of Bienne. The settlement at Morges, one of the largest in the Lake of Geneva, is 1,200ft. long by 150ft. broad and was exposed to view during the drought of 1921. The settlement of Sutz, one of the largest in the Lake of Bienne, extends over six acres, and was connected with the shore by a gangway nearly 100yd. long and about 40ft. wide.

The substructure which supported the platforms on which the dwellings were placed was most frequently of piles driven into the bottom of the lake; less frequently a stack of brushwood or fascines was built up from the bottom and strengthened by stakes penetrating the mass so as to keep it from spreading. The piles used were the rough stems of trees of a length proportioned to the depth of the water, sharpened sometimes by fire and at other times chopped to a point by hatchets. On their level tops the beams supporting the platforms were laid and fastened by wooden pins, or inserted in mortices cut in the heads of the piles. In some cases the whole construction was further steadied and strengthened by cross beams, notched into the piles below the supports of the platform. The platform itself was composed of rough layers of unbarked stems, or occasionally of boards split from larger stems. When the mud was too soft to afford foothold for the piles they were mortised into a framework of tree trunks, placed horizontally on the bottom of the lake. When the bottom was so rocky that the piles could not be driven, they were steadied at their bases by being enveloped in a mound of loose stones. The huts themselves were quadrilateral in form. The size of each dwelling is in some cases marked by boards resting edgeways on the platform. The walls, which were supported by posts, or by piles of greater length, were formed of wattle-work coated with clay. The floors were of clay, and in each floor there was a hearth constructed of flat slabs of stone. The roofs were thatched with bark, straw, reeds or rushes. Some walls were formed of split tree trunks set upright and plastered with clay, and the flooring of similar timbers bedded in clay. In other cases the remains of the gangways or bridges connecting the settlements with the shore have been discovered, but often the village appears to have been accessible only by canoes.

The settlements were the dwellings of a people using stone, bone and wood for their implements, ornaments and weapons; in others, of a people using bronze as well as stone and bone; and in others again the occasional use of iron is disclosed. At the settlement in the Lake of Moosseedorf, near Berne, the most perfect example of a lake dwelling of the stone age, the implements found in the relic bed were axe-heads of stone, with their haftings of stag's antler and wood; a flint saw, set in a handle of fir wood and fastened with asphalt; flint flakes and arrow-heads; harpoons of stag's antler with barbs; awls, needles, chisels, fish-hooks and other implements of bone; a comb of yew wood 5in. long; and a skate made out of the leg bone of a horse. The pottery consisted chiefly of roughly-made vessels, some of which were of large size, others had holes under the rims for suspension, and many were covered with soot, the result of their use as culinary vessels. Burnt wheat, barley and linseed, with many varieties of seeds and fruits, were plentifully mingled with the bones of the stag, the ox, the swine, the sheep and the goat, representing the ordinary food of the inhabitants, while remains of the beaver, fox, hare, dog, bear, horse, elk and the bison were also found.

At Robenhausen, in the moor which was formerly the bed of the ancient Lake of Pfäffikon which continued in occupation after the introduction of bronze, on some parts three distinct successions of inhabited platforms have been traced. The first is represented at the bottom of the lake by a layer of charcoal mixed with implements of stone and bone and other relics highly carbonized. The second is represented above the bottom by a series of piles with burnt heads, and in the bottom by a layer of charcoal mixed with corn, apples, cloth, bones, pottery and implements of stone and bone, separated from the first layer of charcoal by 3ft. of peaty sediment intermixed with relics of the occupation of the platform. The piles of the third settlement are fixed in the layers representing the first and second settlements. The huts of this last settlement appear to have had cattle stalls between them, the droppings and litter forming heaps at the lake bottom.

The settlement of Auvernier in the Lake of Neuchâtel yielded four bronze swords, ten socketed spear-heads, 40 celts or axe-heads and sickles, 50 knives, 20 socketed chisels, four hammers and an anvil, 60 rings for the arms and legs, several highly ornate torques or twisted neck rings, and upwards of 200 hair pins of various sizes up to 16in. in length, some having spherical heads in which plates of gold were set. Moulds for sickles, lance-heads and bracelets were found cut in stone or made in baked clay. From 400 to 500 vessels of pottery finely made and elegantly shaped are indicated by the fragments recovered from the relic bed. The Lac de Bourget, in Savoy, has eight settlements, all of the bronze age. These have yielded upwards of 4,000 implements, weapons and ornaments of bronze, among which were a large proportion of moulds and founders' materials. A few stone implements suggest the transition from stone to bronze; and the occasional occurrence of iron weapons and pottery of Gallo-Roman origin indicates the survival of some of the settlements to Roman times. Near the north-east confines of Lake Neuchâtel is the celebrated station of La Tène (*q.v.*).

Other classes of prehistoric pile-structures akin to the lake dwellings are the *terremare* of Italy and the terpen of Holland. Both are settlements of wooden huts erected on piles, on flat land subject to inundations. The *terremare* (so named from the marly soil of which they are composed) appear as mounds, sometimes of very considerable extent, which when dug into disclose the remains and relic beds of the ancient settlements. They are most abundant in the plains of northern Italy traversed by the Po and its tributaries, though similar constructions have been found in Hungary in the valley of the Theiss. These pile-villages were often surrounded by an earthen rampart within which the huts were erected in more or less regular order. Many of them present evidence of having been more than once destroyed by fire and reconstructed, while others show one or more reconstructions at higher levels on the same site. They belong for the most part to the age of bronze, although in some cases they may be referred to the latter part of the stone age. Their inhabitants practised agriculture and kept the common domestic animals, while their tools, weapons and ornaments were mainly of similar character to those of the contemporary lake dwellers of the adjoining

regions. The terpen of Holland appear as mounds somewhat similar to those of the *terremare,* and were also pile structures on low or marshy lands subject to inundations from the sea. Unlike the *terremare* and the lake dwellings they do not seem to belong to the prehistoric ages, but yield indications of occupation in post-Roman and mediaeval times. Owing to an exceptional drought in 1921 extensive foundations of pile dwellings were exposed to view at Greug, Lake Morat, Switzerland, and several settlements in Lake Neuchâtel.

Prehistoric lake dwellings have been reconstructed (1927) at Unteruhldingen on the German shore of Lake Constance, but the question of the accuracy of these reproductions has given rise to considerable discussion. The petty chieftains of Ireland in the 16th century had their defensive strongholds constructed in the "freshwater lochs" of the country, and a similar system existed in the western parts of Scotland. Such artificial constructions in lakes were used as defensive dwellings by the Celtic people from an early period to mediaeval times. (*See* CRANNOG.)

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LAKE EYRE is the largest of the salty lakes or playas in Australia and lies some 400 mi. north of Adelaide in South Australia. The salty expanse is about 120 mi. long by about 50 mi. wide. Cecil Thomas Madigan examined the deposits and found 17 in. of salt overlying 13 ft. of gypseous clay.

LAKE GENEVA, a city of Walworth county, Wis., U.S.A., 65 mi. N.W. of Chicago on federal highway 12, and served by the Chicago and North Western railway. The population in 1940 was 3,238. The lake from which the city takes its name is 9 mi. long by 1½ to 3 mi. wide. At Williams Bay, 6 mi. W. of the city, is the Yerkes observatory of the University of Chicago.

LAKE GEORGE is an interesting lake about 120 mi. to the southwest of Sydney, New South Wales, near Canberra, Australia. It has no outlet. In wet seasons (*i.e.,* 1816 and 1875) it may be 15 mi. long and 30 ft. deep, while in dry seasons (1838 and 1915) the water evaporates and sheep graze over the bed, which is soon covered with useful grasses.

LAKELAND, a rapidly growing inland city of Florida, U.S.A., 32 mi. E. of Tampa; on federal highway 92, and served by the Atlantic Coast Line railroad. Pop. (1940) 22,068. It is the centre of the citrus industry of the state, with a rich back country producing large quantities of strawberries and vegetables, and having extensive pebble phosphate mines. Cattle raising is also an important industry. Lakeland is the home of Florida Southern college, coeducational. Lakeland has a municipal airport and government training school for air pilots. The city was settled about 1883, incorporated as a city in 1884.

LAKE OF THE THOUSAND ISLANDS, a lakelike expansion of the St. Lawrence (*q.v.*) river, below Lake Ontario.

LAKE OF THE WOODS, a lake in the southwest of the province of Ontario, Canada, bordering west on the province of Manitoba, and south on the state of Minnesota. It is of extremely irregular shape, and contains thousands of islands. Its length is 70 mi., breadth 10 to 50 mi., area 1,500 sq.mi. It lies in the centre of the Laurentian region between Lakes Winnipeg and Superior and collects the waters of many rivers, the chief being Rainy river from the east, draining Rainy lake. By the Winnipeg river on the northeast it discharges into Lake Winnipeg. At its source Winnipeg river is 1,057 ft. above the sea, and drops 347 ft. in its course of 165 mi., supplying hydroelectric power for the city of Winnipeg. The scenery both on and around the lake is exceedingly beautiful, and the islands are largely occupied by summer residences. Kenora, a flourishing town at the source of the Winnipeg river, is the centre of numerous lumber and flour mills.

LAKE PLACID, village, Essex county, New York, U.S.A., on the W. shore of Mirror lake, near the south end of Lake Placid, in the heart of the Adirondacks. It is served by the Delaware and Hudson and the New York Central railways. The population in 1940 was 3,136, and this increases to 15,000 in summer. It is one of the principal resorts of the Adirondack region. The village has an altitude of 1,864 ft. Within a few miles are Mount Marcy (5,344 ft.), McIntyre (5,210 ft.), Whiteface (4,871 ft.), the summit of which may be reached by the World War Memorial highway, and other peaks. International contests in all summer and winter sports are held, with indoor ice skating during the summer. John Brown's farm and grave is 2 mi. E. The village was incorporated in 1900.

LAKEWOOD, a township of Ocean county, New Jersey, 59 mi. S. by W. of New York city and 8 mi. from the ocean on the Central railroad of New Jersey. The resident population in 1940 was 8,502. It is both a winter and a health resort of long standing, in the heart of the New Jersey pine belt. There are two picturesque lakes, charming walks and drives, fine hotels and private estates. The soil is sandy and dry; and the climate delightful and invigorating, with a winter temperature that seems much higher than that of New York city because of the absence of dampness. At Lakehurst, 5 mi. S.W., is a U.S. naval air station.

LAKEWOOD, a city of Cuyahoga county, O., U.S.A., on Lake Erie, adjoining Cleveland on the west; served by the Nickel Plate railway. Pop. (1940) 69,160. This residential suburb, incorporated in 1911, has the distinction of having won the national fire prevention award 13 consecutive times (1928–40). Assessed valuation in 1941 was $93,888,520.

LAKH (from the Sans. *laksha,* one hundred thousand), a term used in British India, in a colloquial sense, to signify a lakh of rupees (written 1,00,000), which at the face value of the rupee would be worth £10,000. The term is also largely used in trade returns. A hundred lakhs make a crore.

LAKHIMPUR, a district of British India in the extreme east of the province of Assam. Area, 4,156 sq.mi. It lies along both banks of the Brahmaputra for about 400 mi. The Brahmaputra is navigable for steamers in all seasons as far as Dibrugarh, in the rainy season as far as Sadiya; its navigable tributaries within the district are the Subansiri, Dibru and Dihing. The deputy-commissioner in charge exercises political control over the tribes in the Lakhimpur Frontier Tract in the east. The most important of these tribes are the Miris, Abors, Mishmis, Khamtis, Kachins and Nagas. In 1941 the population was 894,842. The district has enjoyed remarkable and continuous prosperity. This is chiefly due to the numerous tea gardens and to the coal mines and other enterprises of the Assam Railways and Trading company. There are two sub-divisions, viz., Dibrugarh, which contains most of the tea gardens in the district and the majority of the coal mines and oil wells working in the province, and North Lakhimpur, where the land lies at a lower level and is not so suitable for tea. The tea gardens had a population of 233,171 in 1921, when 93,000 ac. were under tea, with an output of 49,000,000 pounds. The Makum coal field lies within the district; over 300,000 tons are raised annually at the mines near Margherita. The coal, which is of good quality, is used by tea gardens and river steamers and is also exported. Oil is also found in the Makum field and refined in large refineries at Digboi. Another industry is the manufacture of tea chests, for which several sawmills have been started. Reserved forests cover 464 sq.mi.

LAKING, SIR FRANCIS HENRY, 1ST BART. (1847–1914), English physician, was born in Kensington on Jan. 9, 1847. He was educated at Heidelberg, and after studying medicine was for many years one of the physicians to the royal household, being appointed physician-in-ordinary to King Edward

VII. in 1901. He was knighted in 1893, created a baronet in 1902, G.C.V.O. in 1903, and K.C.B. in 1910. He died in London on May 21, 1914.

His son, SIR GUY FRANCIS LAKING, 2nd Bart. (1875–1919), English antiquary, was born in London on Oct. 21, 1875. He was educated at Westminster school, and studied art, entering Christie's, art dealers. He was an enthusiastic student of armour, and this led to his appointment by King Edward VII. as keeper of the king's armoury and hon. inspector of the armouries of the Wallace collection (1900). He was responsible for the arrangement of the London museum. He died in London on Nov. 22, 1919.

LAKSHMI (Skt. *laksha,* "prize" at dicing; *lakshana,* "brand" on cattle). In the Epic Hindu mythology, Shri ("Fortune") Lakshmi, who rose from the milk-ocean clad in white and for whom gods and demons contended, is Damodara's (Vishnu's) wife, worshipped as goddess of prosperity, beauty and love. She is also described as wife of Dharma. She has many later titles, e.g., *Padma,* "lotus," *Padmālaya* "lotus-dwelling," and *Jaladhija,* "water-born"; and Kubera. She is depicted as golden in colour.

LALANDE, JOSEPH JÉRÔME LEFRANÇAIS DE (1732–1807), French astronomer, was born at Bourg, on July 11, 1732. His parents sent him to Paris to study law; but the accident of lodging in the Hôtel Cluny, where J. N. Delisle had his observatory, drew him to astronomy, and he became the zealous and favoured pupil of both Delisle and Lemonnier. He completed his legal studies, and then went to Berlin to make observations on the lunar parallax in concert with those of N. L. Lacaille at the Cape of Good Hope. The successful execution of his task procured for him, before he was twenty-one, admission to the Academy of Berlin, and the post of adjunct astronomer to that of Paris. He now devoted himself to the improvement of the planetary theory, publishing in 1759 a corrected edition of Halley's tables, with a history of the celebrated comet whose return in that year he had aided Clairault to calculate. In 1762 J. N. Delisle resigned in his favour the chair of astronomy in the Collège de France, the duties of which were discharged by Lalande for 46 years. His house became an astronomical seminary, and amongst his pupils were J. B. J. Delambre, G. Piazzi, P. Mechain, and his own nephew Michel Lalande. His planetary tables were the best available up to the end of the 18th century, and by his publications in connection with the transit of 1769 he won great fame. He is best known, however, as a populariser of astronomy. The Lalande prize, instituted by him in 1802 for the chief astronomical performance of each year, still testifies to his enthusiasm for his favourite pursuit. He died on April 4, 1807.

Amongst his voluminous works are *Traité d'astronomie* (2 vols., 1764; enlarged edition, 4 vols., 1771–81; 3rd ed., 3 vols., 1792); *Histoire céleste française* (1801), giving the places of 50,000 stars; *Bibliographie astronomique* (1803), with a history of astronomy from 1781 to 1802; *Astronomie des dames* (1785); *Abrégé de navigation* (1793); *Voyage d'un françois en Italie* (1769), a valuable record of his travels in 1765–66. He communicated papers to the Paris Academy of Sciences, edited the *Connoissance des temps* (1759–74), and (1794–1807) wrote the concluding 2 vols. of the 2nd ed. of Montucla's *Histoire des mathématiques* (1802).

See *Mémoires de l'Institut,* t. viii. (1807) (J. B. J. Delambre); Delambre, *Hist. de l'astr. au XVIIIe siècle,* p. 547; *Magazin encyclopédique,* ii. 288 (1810) (Mme. de Salm); J. S. Bailly, *Hist. de l'astr. moderne,* t. iii. (ed. 1785); J. Mädler, *Geschichte der Himmelskunde,* ii. 141; R. Wolf, *Gesch. der Astronomie;* J. J. Lalande, *Bibl. astr.* p. 428.

LA LIBERTAD, a port of the Central American republic of El Salvador, 23 mi. S. of San Salvador, with which it is connected by a modern highway. Pop. (1940) 1,913. Steamers discharge and load from lighters, as the port is an open roadstead.

LALÍN, a town of north-western Spain, in the province of Pontevedra. Pop. (1940) 1,136 (mun., 18,620). Lalín is the centre of the trade in agricultural products of the fertile highlands between the Deza and Arnego rivers. Near Lalín are the ruins of the Gothic abbey of Carboeiro.

LA LINEA or LA LINEA DE LA CONCEPCION, a town of Spain, in the province of Cadiz, between Gibraltar and San Roque. Pop. (1940) 35,101 (mun., 38,188). La Linea, which derives its name from the *line* or boundary dividing Spanish territory from the district of Gibraltar, is a town of modern date and was formerly looked upon as a suburb of San Roque. It is now a distinct frontier post and headquarters of the Spanish commandant of the lines of Gibraltar. The fortifications erected here in the 16th century were dismantled by the British in 1810, to prevent the landing of French invaders.

LALITPUR, a town of British India, in Jhansi district, United Provinces. Pop. (1941) 16,881. It has a large trade in oil-seeds, hides and *ghi.* It contains several beautiful Hindu and Jain temples. It was formerly the headquarters of a district of the same name, which was incorporated with that of Jhansi in 1891. The Bundela chiefs of Lalitpur were among those who most eagerly joined the Mutiny, and it was only after a severe struggle that the district was pacified.

LALLY, THOMAS ARTHUR, COMTE DE, Baron de Tollendal (1702–1766), French general, was born at Romans (Drôme), on Jan. 1, 1702, being the son of Sir Gerard O'Lally, an Irish Jacobite who married a French lady of noble family, from whom the son inherited his titles. Entering the French army in 1721 he served in the war of 1734 against Austria; he was present at Dettingen (1743), and commanded the regiment de Lally in the famous Irish brigade at Fontenoy (May 1745). He was made a brigadier on the field by Louis XV. He had previously been mixed up in several Jacobite plots, and in 1745 accompanied Charles Edward to Scotland, serving as aide-de-camp at the battle of Falkirk (January 1746). Escaping to France, he served with Marshal Saxe in the Low Countries, and at the capture of Maestricht (1748) was made a *maréchal de camp.* When war broke out with England in 1756 Lally was given the command of a French expedition to India. He reached Pondicherry in April 1758, and at the outset met with some trifling military success. He was a man of courage and a capable general; but his pride and ferocity made him disliked by his officers and hated by his soldiers, while he regarded the natives as slaves, despised their assistance, and trampled on their traditions of caste. In consequence everything went wrong with him.

He was unsuccessful in an attack on Tanjore, and had to retire from the siege of Madras (1758) owing to the timely arrival of the British fleet. He was defeated by Sir Eyre Coote at Wandiwash (1760), and besieged in Pondicherry and forced to capitulate (1761). He was sent as a prisoner of war to England. While in London, he heard that he was accused in France of treachery, and insisted, against advice, on returning on parole to stand his trial. He was kept prisoner for nearly two years before the trial began; then, after many painful delays, he was sentenced to death (May 6, 1766), and three days later beheaded.

See G. B. Malleson, *The Career of Count Lally* (1865); "Z's" (the marquis de Lally-Tollendal) article in the *Biographie Michaud;* and Voltaire's *Oeuvres complètes.* The legal documents are preserved in the Bibliothèque Nationale.

LALLY-TOLLENDAL, TROPHIME GÉRARD, MARQUIS DE (1751–1830), was born at Paris on March 5, 1751. He was the legitimized son of the comte de Lally (*see* LALLY, THOMAS ARTHUR, COMTE DE), and only discovered the secret of his birth on the day of his father's execution, when he began a long series of vain efforts to secure the rehabilitation of his parent's memory. Elected a deputy to the states-general for the *noblesse* of Paris, in 1789 Lally-Tollendal played some part in the early stages of the Revolution, but threw himself into opposition to the "tyranny" of Mirabeau, and condemned the epidemic of renunciation which in the session of Aug. 4, 1789, destroyed the traditional institutions of France. Later in the year he emigrated to England. During the trial of Louis XVI. by the National Convention (1793) he offered to defend the king, but was not allowed to return to France. He did not return till the time of the Consulate. Louis XVIII. created him a peer of France, and in 1816 he became a member of the French Academy. From that time until his death, on March 11, 1830, he devoted himself to philanthropic work, especially prison reform.

See his *Plaidoyer pour Louis XVI.* (London, 1793); Lally-Tollendal was also in part responsible for the *Mémoires,* attributed to Joseph Weber, concerning Marie Antoinette (1804); he further edited the article on his father in the *Biographie Michaud; see* also Arnault, *Discours prononcé aux funerailles de M. le marquis de Lally-Tollendal le 13 mars 1830* (Paris); G. de Brecy, *Nécrologie de M. le marquis de*

Lally-Tollendal (Paris, undated); Voltaire, *Oeuvres complètes* (1889), in which *see* the analytical table of contents, vol. ii.

LALO, EDOUARD (1823–1892), French composer, was born at Lille, on Jan. 27, 1823. He studied at Lille and in Paris. His early works include two trios, a quartet, and several pieces for violin and pianoforte. In 1867 his opera *Fiesque,* was accepted at the Paris Opéra, but not produced. Between 1870 and 1880 Lalo wrote a sonata for violoncello, a "divertissement" for orchestra, a violin concerto and the Symphonie Espagnole for violin and orchestra, one of his best-known compositions. In the meanwhile he had written a second opera, *Le Roi d'Ys,* which he hoped would be produced at the Opéra. The administration commissioned him instead to write a ballet *Namouna.* Lalo fell ill, and the orchestration was completed by Gounod. It was produced at the Opéra in 1882. The performance of *Le Roi d'Ys* (Opéra Comique, May 7, 1888) brought Lalo fame at last, but unfortunately too late. A pianoforte concerto and the music to *Néron,* a pantomimic piece played at the Hippodrome in 1891, were his last two works. He had begun a new opera, but had only written the first act when, (April 23, 1892) he died. This opera, *La Jacquerie,* was finished by Arthur Coquard, and was produced in 1895 at Monte Carlo, Aix-les-Bains and finally in Paris. Lalo's musical ideas were original, and his orchestration brilliant, and his Symphonie Espagnole is still constantly performed.

See G. Servières, *Edouard Lalo* (1925).

LA MADDALENA, an island 2½ m. from the north-east coast of Sardinia. Pop. (1936) 10,968. Napoleon bombarded it in 1793 without success, and Nelson made it his headquarters for some time. An important naval station of the Italian fleet, it was bombed by the Allies in World War II. A bridge and an embankment connect it with Caprera.

LAMAISM, the modified form which Buddhism (*see* BUDDHA AND BUDDHISM) has assumed among the peoples of Tibet and Mongolia. The name is derived from the Tibetan *lama* (*bla-ma*), properly a title of the monks in the higher ranks of the hierarchy. It owes its peculiar character not to any fundamental change of doctrine, but chiefly to political causes. The monastic order has developed a hierarchic organization, and the head of the order has acquired temporal sovereignty. There is also little doubt that the prominent position which magic and divination hold is due to the influence of the native Tibetan religion known as *Bon,* but these practices were well enough established in Mahāyāna Buddhism to form a natural breeding ground for the native superstitions (*see* MAHĀYĀNA). The stages in this development are the official introduction of Buddhism into Tibet in the 7th century A.D., its reintroduction in the 10th, the reformation under Tsong-kha-pa in the 14th century and the acquisition of temporal power.

King Srong-tsan Gam-po, a strong ruler who had carried on successful wars with China, married a daughter of the ruler of Nepal and also a daughter of the Chinese emperor. Both of them were Buddhists, and their influence on the king led to the introduction of some of the scriptures and to the erection of two monasteries. About 632 his minister Thon-mi Sambhota was sent to India to acquire sacred books, and to him is attributed the invention of the Tibetan alphabet (*see* TIBETAN LANGUAGE) and the translation of some Buddhist works. In the next century under king Khri-srong-lde-btsans the teacher Padma Sambhava was invited from Udyāna in North-west India. His doctrine was much infected with magic and Hindu practices, and his followers still exist as the Red Hat sect. At this time the systematic translation of the sacred texts was undertaken, but it was not completed till much later.

Of this period, termed "the first introduction of the doctrine," little is known. It was brought to an end by the opposition of the native Bon religion. King Lang-dar-ma in the 10th century persecuted and almost expelled Buddhism, till he was assassinated by a monk. Two important consequences followed: Buddhism was reintroduced, and, as there was no longer a strong central rule, the country fell into the power of a number of practically independent chiefs. This anarchy occasioned the beginning of the acquisition of temporal power by the monasteries in self-defence.

The second introduction of the doctrine was chiefly carried through in the 11th century by the patriarch Atīśa and his followers. He had been invited from Magadha, and under him the work of translation was resumed. His doctrine was to some extent a reform of the earlier teaching, and was based on the Mādhyamika school of Mahāyāna. Among the various sects which arose at this time one of the most important in political influence was that of

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TIBETAN LAMAS AT BATANG WEARING YELLOW CAPS, THE INSIGNIA OF THEIR ORDER. THE TRUMPETS ARE USED IN RELIGIOUS SERVICES

the Sa-kya (Saskya) monastery. In this sect a kind of marriage was allowed, and the headship passed from father to son. The leaders of this sect sought in the 13th century to strengthen their position by alliances with the Mongols, especially Kublai Khan (*q.v.*), then emperor of China.

By the beginning of the 14th century the translation of the scriptures was completed and revised. It is known as the *Kanjur* (*bKah-hgyur*), "translation of precepts," and consists of 108 volumes divided into (1) Vinaya (discipline), (2) Sher-chin (sūtras teaching the Mahāyāna doctrine of the void), (3–5) three other collections of Mahāyāna sūtras, Buddhāvatamsaka, Ratnakūta, and *mDo* or sūtra proper, (6) Nirvāna (on the death of Buddha), (7) Tantra (charms and magic). A second collection, the *Tanjur* (*bsTan-hgyur*), "translation of commentaries," contains besides sūtras and charms many commentaries, grammars and other secular works.

REFORMED LAMAISM

The New Teaching.—The translation of the rules of discipline had brought to serious minds the need of reform. One thing further required was a leader with sufficient moral impetus to carry it through. Tsong-kha-pa was born about 1356 in the province of Amdo in North-east Tibet. He entered the Order early, and after a period of careful preparation settled near Lhasa. There he began his reform, in which he was effective both through his eloquent preaching as well as through his writings. He aimed in the first place at the restoration of monastic discipline. Celibacy was enforced and the use of the yellow dress—hence the name of the Yellow Hat sect for his followers as against the older Red Hat sect. The prātimoksha was restored with the fortnightly meeting, the repetition of the rules, confession and the annual period of retreat (*varsha*). A religious assembly was instituted, attended annually in the first half of the first month by monks of the three great monasteries (*see* LHASA). In 1409 the first monastery of the new teaching was founded some miles east of Lhasa and known as Galdan. The next was at Bras-spungs west of Lhasa, and the third at Sera on the north. The reformed school was known at first as Ga-ldan-pa, and finally as Ge-lug-pa (*dGe-lugs-pa*), "the virtuous sect." The elaborate ritual of the religious services, the ceremonial dresses of the monks, their organization in hierarchical ranks, and the local divisions into dioceses, dependent on a central authority, have been often noticed and compared with similar features in the Roman Catholic Church. On closer examination some of the resemblances are seen to be purely accidental and shared by Buddhism in all countries. It has been held that Tsong-kha-pa had a Catholic missionary as teacher, but this, though possible, appears to be unproved. The Nestorians

had been long in Asia, and it is probable that some ceremonies were borrowed from them. Schulemann holds that in the last centuries Catholic ritual has doubtless in many cases been the model.

The Dalai Lama.—During the next century the new sect strengthened its position, until the system which recognized two grand lamas was firmly established, but the native historians trace back the succession of lamas, and hold that dGe-hdun-grub-pa, nephew of Tsong-kha-pa, was the first Dalai lama. The first to bear this title was the third, who is credited with the second conversion of the Mongols to Buddhism. He was invited to Mongolia in 1568, and received from the Mongol chief the title of *Vajradhara Dalai lama, dalai* being a Mongolian term—"ocean." The greatest of the Dalai lamas, the one who established the present constitution, was the fifth, Ngag-dbang-bLo-bzang (1617–82). Gushri Khan, the head of a branch of the Mongols and a friend of the reformed sect, had defeated in 1639 Beri Khan, a supporter of the Bon religion. Soon afterwards he overran another Tibetan province, and took the chief or king prisoner. He then presented the conquered districts to the Dalai lama and received compensating concessions. This lama was an able but unscrupulous politician, and under him the temporal power of the Yellow Hat sect was definitely established. He began the erection of the great palace, the Potala at Lhasa, in which the Dalai lamas have since resided.

The Tashi Lama.—As in the case of the Dalai lama there is also a doubt about the early succession of the other grand lama, the Tashi lama, whose Tibetan title is Pan-chen-rin-po-che, "great-jewel pandit." From 1663 his residence has been at Tashilhunpo, a monastery half a mile from Shigatse. His temporal power is confined to one province. The succession of these lamas depends upon the Buddhist doctrine of reincarnation. It is taught in the earliest documents that one who has entered the first stage of the Path is exempt from rebirth in a lower state of existence, so that the reappearance of a departed person is to be expected. Further, an arhat acquires the power of recognizing such rebirths, but the Tibetans, not content with this, have applied their highly developed system of magic to determining the rebirth of any particular person, and it is done in accordance with the Mahāyāna belief that every individual may become a Buddha. Everyone who has made a vow to attain Buddhahood is a bodhisattva, and is repeatedly reborn in order to teach others. The Dalai lama is the incarnation of the great bodhisattva Avalokiteśvara, the ancestor of the Tibetans, and the Tashi lama is an earthly reflex of Amitābha, one of the Buddhas of the ten directions of space. When either of them dies it becomes necessary for the other to determine in which of the recently born infants he has been reincarnated. The proceedings are carried out by a number of lamas from the chief monasteries and the details have varied at different times. Three or four boys are first selected according to certain omens and one finally chosen, according to the characteristics which he exhibits. In 1793 the Chinese prescribed the regulations following which the election was carried out under Chinese control, but according to Sir Charles Bell they have been discarded. At what time the incarnation theory was established is not certainly known. It has been extended to several other grades of monks, who are known as incarnation lamas. For the latest history of the country and the external political relations *see* TIBET and MONGOLIA.

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(E. J. T.)

LAMALOU-LES-BAINS, a watering-place of southern France in the department of Hérault, 53½ m. W. of Montpellier by rail, in a valley of the southern Cévennes. Pop. (1936) 931. The waters, which are both hot and cold, are mostly alkaline, rich in bicarbonates, especially of soda.

LAMAR, LUCIUS QUINTUS CINCINNATUS (1825–1893), American statesman and judge, was born in Putnam county (Ga.), Sept. 17, 1825. His father, Lucius Q. C. Lamar (1797–1834), a judge of the superior court of Georgia, was the compiler of the *Laws of Georgia from 1810 to 1819* (1821). In 1845 young Lamar graduated at Emory college (Oxford, Ga.), and in 1847 was admitted to the bar. In 1850–52 he was adjunct professor of mathematics in the Mississippi State university. In 1852 he removed to Covington (Ga.) to practise law, and in 1853 was elected a member of the Georgia house of representatives. In 1855 he returned to Mississippi, and in 1857 became a member of the U. S. House of Representatives, where he served until Dec. 1860. He was elected to the "secession" convention of Mississippi and drafted for it the Mississippi ordinance of secession. He was appointed a lieutenant-colonel in the Confederate army in the spring of 1861 and a colonel in May 1862, but in October he resigned from the army. In Nov. 1862 President Jefferson Davis appointed him special commissioner of the Confederacy to Russia; but he did not proceed farther than Paris before his mission was terminated by the refusal of the Confederate Senate to confirm his appointment. From 1873–77 he was again a Democratic representative in Congress; from 1877–85 he was a U. S. Senator; from 1885 to Jan. 1888 he was secretary of the interior; and from 1888 until his death at Macon (Ga.), on Jan 23, 1893, he was an associate justice of the Supreme Court of the United States. On the Supreme Court bench his dissenting opinion in the *Neagle Case,* based upon a denial that certain powers belonging to Congress, but not exercised, were by implication vested in the department of justice, is famous. But he is perhaps best known for the part he took after the Civil War in helping to effect a reconciliation between the North and the South.

See Edward Mayes, *Lucius Q. C. Lamar: His Life, Times and Speeches* (Nashville (Tenn.), 1896).

LAMARCK, JEAN BAPTISTE PIERRE ANTOINE DE MONET, CHEVALIER DE (1744–1829), French naturalist, was born on Aug. 1, 1744, at Bazantin, Picardy, the son of the lord of the manor. He studied under the Jesuits at Amiens, but when 17, joined the troops at Bergen-op-Zoom, where for his bravery he was given a commission. After the peace he went to Paris to study medicine, supporting himself by working in a banker's office. He became interested in meteorology and in chemical speculations but threw his main strength into botany. In 1778 he published his *Flore française,* a work which by a dichotomous system of characters enabled the student to determine species with facility. This gained for its author admission to the Academy of Sciences.

In 1781 and 1782, under the title of botanist to the king, he travelled across Europe and on his return wrote the *Dictionnaire de Botanique* and the *Illustrations de Genres,* voluminous works contributed to the *Encyclopédie Méthodique* (1785). In 1793, in consequence of changes in organization at the Jardin du Roi, where he had held a botanical appointment since 1788, Lamarck was presented to a zoological chair, and called to lecture on the *Insecta* and *Vermes* of Linnaeus, the animals for which he introduced the term *Invertebrata.* The first expression of his views on evolution given in his *Système des Animaux sans Vertèbres* (1801) and *Recherches sur l'Organisation des Corps Vivans* (1802) were elaborated in his *Philosophie Zoologique* (1809); and in spite of impaired sight, he published the *Histoire naturelle des animaux sans vertèbres* (1815–22) with the assistance, in the last two volumes, of his eldest daughter and of P. A. Latreille (1762–1833). He died on Dec. 18, 1829.

As a naturalist Lamarck excelled in width of scope, fertility of ideas and a faculty of precise description. The work which constitutes his claim to the highest honour as a zoologist is his detailed investigation of living and fossil Invertebrata. His endeavours at classification of such groups as the echinoderms, ascidians and intestinal worms are necessarily very defective, yet they are not without interest, on account of the attempt to unite in one great division as Articulata all those groups that appeared to present a segmented construction. He was the first to distinguish vertebrate from invertebrate animals by the presence of a vertebral column, and among the *Invertebrata* to found the groups

Crustacea, Arachnida and *Annelida.* In 1785 he evinced his appreciation of the necessity of natural orders in botany by a somewhat crude attempt at the classification of plants.

To the general reader Lamarck is chiefly interesting for his theory of the origin of the diversities of animal forms. The idea, favoured by Buffon before him, that species were not unalterable, and that the more complex were developed from pre-existent simpler forms, was widely propagated by Lamarck. Spontaneous generation, he considered, might have resulted from heat and electricity causing in small gelatinous bodies an utricular structure, and inducing a "singular tension," a kind of "éréthisme" or "orgasme." Having thus accounted for the appearance of life, he explained the whole organization of animals and formation of different organs by four laws (introduction to his *Histoire naturelle des animaux sans vertèbres,* 1815):—

1. Life by its proper forces tends continually to increase the volume of every body possessing it, and to enlarge its parts, up to a limit which it brings about.
2. The production of a new organ in an animal body results from the supervention of a new want continuing to make itself felt, and a new movement which this want gives birth to and encourages.
3. The development of organs and their force of action are constantly in ratio to the employment of these organs.
4. All which has been acquired, laid down, or changed in the organization of individuals in the course of their life is conserved by generation and transmitted to the new individuals which proceed from those which have undergone those changes.

The second law is often referred to as Lamarck's hypothesis of the evolution of organs in animals by appetence or longing, although he does not teach that the animal's desires affect its conformation directly, but that altered wants lead to altered habits, which result in the formation of new organs as well as in modification. (*See* LAMARCKISM.) The fourth law expresses the inheritance of acquired characters. (*See* EVOLUTION, ORGANIC.)

See A. S. Packard, *Lamarck, the Founder of Evolution* (1901 with bibliography); G. Revault d'Allonnes, *Lamarck* (Paris, 1910); E. Perrier, *Lamarck* (Paris, 1925) and H. Daudin, *Cuvier et Lamarck; Les Classes Zoologiques et l'idée de série animale* (1926).

LAMARCKISM. The doctrine often spoken of as Lamarckism is only a part of Lamarck's teaching concerning the transformation of lower into higher forms of life, and probably not the most important part. Lamarck incorporated into his theory of transformation (organic evolution) a belief that had been current in many lands as long as we have records, written and oral, and is still ardently adhered to even by many animal breeders. In the folk-lore of primitive peoples there are stories that take for granted that acquired characters are inherited. These stories now appeal to our sense of humour and would have long ago been forgotten or disregarded by scientists were it not that in every generation new illustrations are continually brought forward. Much of this evidence rests on hearsay, and much of it arises from a succession of events that is merely fortuitous.

An acquired character may be defined as one that has developed in the course of the life of an individual in the somatic or body cells, usually as a direct response to some external change in the environment or through the use or disuse of a part. The inheritance of such a character means its reappearance in one or more individuals in the next or in succeeding generations. For example, the human skin turns brown on exposure to sunlight. If this acquired character were transmissible, the children from two tanned persons (or even from one of them, perhaps) should have a darker skin than that characteristic of the white race to which the parents belonged. Whether it is to be expected that the children should be as dark as their sun-tanned parents, or only somewhat darker than the average of the white race, as some Lamarckians suggest, is a matter of choice. There is no evidence that such transmission occurs even although it is evident that the darker-skinned races of man are found in tropical and subtropical parts of the earth. A somewhat different example would be found in the supposed inheritance of a change brought about by the use and disuse of a special organ. The blacksmith's arm (or any other set of muscles) enlarges when used continually against an external resistance such as the weight of the hammer. If the effect were inherited, his children at birth would have unusually large arms; if not at birth, then, when they become adults, even although they had not used their arms excessively. There is no evidence supporting this case. A more subtle illustration is found in the supposed inheritance of an increased dexterity of the hands of a musician through practice; the skill acquired, although causing no visible increase in size of the fingers, might be imagined to be inherited by his children, and they might then be expected to play skilfully on the piano without practice; or if this seems too ridiculous, they might be imagined to learn more rapidly than did one of their parents. Just how the intricate interplay of cerebral sequences that has given the dexterity to the musician's fingers could ever be transferred to a spermatozoon, and through it to his children, has never been brought within the range of biological possibilities. It is clear that the case of a musician's children playing the piano exceptionally well might be due to parent and offspring both inheriting unusual musical aptitude, quite apart from practice.

Lamarck recognized several ways in which the environment brings about changes in plants and animals, and it is significant to note that his attention was directed more particularly to the adaptive character of the response, which, as Bergson points out, implies the teleological nature of the result. In plants the response is direct and immediate, *i.e.,* not through the mediation of a central nervous reaction system, since this is absent in plants. In animals the adaptive changes are supposed to be more indirect. According to Lamarck, new needs (*besoins*) arise in animals as a result of a change in the environment. This leads to new types of behaviour involving new uses of pre-existing organs. Their use leads to an increase in size or to other methods of functioning. Conversely, the disuse of other parts leads to their decline. It is the resulting material alterations that are inherited. The examples that Lamarck gives to illustrate his doctrine are illuminating. If seeds of a plant adapted to live in a bog should be carried to a neighbouring hill and germinate there, they become *adapted* to the drier soil of the hill and change their character; the new type perpetuates itself and may be transformed into a new species. In animals, as stated above, a new environment calls forth new needs and the animal seeks to satisfy them by making some effort. Thus new needs engender new habits which modify the parts. The effects are inherited. For example, the giraffe, seeking to browse higher and higher on the leaves of trees on which it feeds, stretches its neck; as a result of this habit, continued for a long time in all the individuals of the race, the giraffe's front limbs and neck have gradually grown longer. Birds that need to rest on the water to find their food, spread out their feet when they wish to swim. The skin becomes accustomed to being stretched and forms the web between the toes. The horns of ruminants have resulted from their butting their heads together during combats. Flat-fishes have arisen from the habit of turning on one side in shallow water; the eye on the lower side has moved towards the upper side as a result of the need of paying attention to objects above the fish. These naïve examples constitute the evidence on which Lamarck rested his theory.

In his *Origin of Species,* Darwin accepted the principle of the inheritance of acquired characters as one of the factors contributory to evolution. In his later book on *Animals and Plants under Domestication,* Darwin elaborated his view and proposed a "provisional hypothesis" to explain the transmission. This hypothesis he called Pangenesis. Each part of the body is imagined to throw off invisible particles called gemmules, which, getting into the blood-stream, are supposed to collect in the germ-cells, and there combine with like units already present, modifying them in accordance with the changes that have taken place in the peripheral organs. Hence the next generation arising from the germ-cells is a photograph, as it were, of the parent at the particular stage when the germ-cells were formed. This hypothesis, frankly tentative, recalls an ancient belief recorded by Hippocrates that all parts of the body contribute to form the semen of the male, the egg furnishing nourishment for its development. It is, perhaps, almost needless to point out that this vague conception of the mode of development of the germ-cells is totally at variance with modern knowledge concerning the origin of eggs and spermatozoa, which in many cases are present and often developed before the

adult stages are reached. The most that might be claimed would be that the units of heredity already present might be modified by late contributions from other parts of the body.

A. Weismann's challenge of the entire theory of the transmission of acquired characters marks a turning-point from the older credulous attitude to the modern demand for more critical evidence. Weismann's challenge was not based, however, on experimental evidence. His few experiments—cutting off the tails of mice—can scarcely be regarded as convincing. Darwin had, in fact, pointed out that the loss of a part is not inherited, because he added, the germ-material already contained the inherited units for the development of each part. Nevertheless, the admission weakens the argument that organs become rudimentary through disuse. Weismann succeeded in showing the complete inadequacy of much of the evidence generally accepted by Lamarckians in support of their views, and he pointed out, moreover, that the continuity of the germ-plasm—an idea suggested earlier by Galton in his theory of the stirp—suffices to account for the inheritance of the great majority of characters common to all individuals of a species without the need of postulating contributions from the body-cells.

In more recent times the discussion has been carried on by several palaeontologists, Hyatt, Cope, and at one time Osborn. In fact, as early as 1853 Sir Charles Lyell had reported Lamarck's views and reprinted them in later editions of his famous *Principles,* treating the evidence, however, with great caution and scepticism. The doctrine has also appealed to some psychologists and popular writers, owing to a fancied resemblance of heredity to memory (Hering and Samuel Butler *q.v.*). Others, impressed by the difficulty of explaining co-ordinated reactions and instincts unless nervous reactions are inherited, have resorted to Lamarck's doctrine. The inheritance of acquired characters was maintained by Herbert Spencer. In more recent times special applications of the doctrine have been made by Semon in his book on the Mneme, and by Wolfgang Pauli in his volume *Darwinismus und Lamarckismus.* Y. Delage, in his *L'Hérédité,* gives a critical summary of the evidence, advocating a limited acceptance of the Lamarckian principle, as does G. J. Romanes in his second volume on *Darwinism.* J. A. Thomson in his popular treatise on *Heredity* has not supported the hypothesis. L. Cuénot in his brochure *L'Adaptation* has pronounced against it, while Cunningham has emphasized the need of some such theory of heredity to account for sexual dimorphism, and later has appealed to hormones as furnishing a possible means of communication between the body and the germ-cells.

Experimental evidence for and against Lamarckism has come, in still more recent times, conspicuously to the front on several occasions. This evidence covers a great diversity of subjects and a variety of methods, opening up new possibilities, some of which are far removed from the original contention. One line of evidence goes back to the extraordinary results of Charles E. Browne-Séquard with guinea-pigs. Injury to one of the parents, localized or even more general, caused, he believed, epilepsy in the offspring, or deformation and sloughing off of a limb or toes, and these effects were, he thought, sometimes transmitted to a few of their descendants. The results have, in general, not been confirmed by subsequent work, although a few physiologists have given partial support to his conclusion though with important reservations. Romanes has summarized much of the evidence in the second volume of his book on *Darwin and After Darwin.* It is obvious at the present time that, unless work of this sort is done with inbred and pedigreed material, any conclusion is venturesome in the extreme; for, unless it can be demonstrated first that some of these peculiarities are not present in the stock from the beginning, the results may be caused by germinal inheritance of recessive characters, or to indirect injury to the germ-cells themselves. The lack of specificity in the outcome may seem to support the latter interpretation rather than legitimate Lamarckism.

Guthrie exchanged the ovaries of black and white fowls, and concluded that a change was brought about in them, but Davenport's later experiments have shown that no such effects are produced. Guthrie's results were probably caused either by impurity in the birds or by regeneration of the original ovary. Castle and Phillips transplanted the ovaries of a black guinea-pig into a white one. When mated to a white male black offspring resulted.

It has been shown by a number of experimenters that the colours of moths and butterflies are affected by extremes of temperature, and there are a few records, particularly those of Standfuss, showing that some of the extreme aberrations may be inherited. But there is no evidence to prove that the induced effects are transmitted from the body to the germ-cells.

Pictet has reported that when caterpillars are fed on leaves other than their natural food, the colour of the moth may be changed. When two or three generations have been so reared, and the next generation is returned to normal food, some of the effects may still persist. It seems not unreasonable to conclude from the rather meagre evidence that the results are caused by the weakened condition of the germ-cells, or other general metabolic effects. Pictet has also reported that when caterpillars are forced to feed on foreign plants their progeny may then select the same foreign food rather than that usual for the race. The evidence does not suffice to establish the conclusion that the change is caused by inheritance of an acquired habit, but if the results are confirmed they open up other interesting possibilities.

W. Heslop Harrison has described the appearance of melanic forms in the moth *Selenia* after feeding on leaves treated with lead nitrate or manganese sulphate. The evidence points to the conclusion that the treatment brought about the change and that the change was directly on the germ-cells. The melanic types that appeared—one a dominant, the others recessive—were shown to give Mendelian inheritance when crossed to the type-forms.

Beginning in 1907 P. Kammerer has brought forward case after case supporting, he believed, the doctrine of the inheritance of acquired characters. He studied the effect of coloured surroundings on the skin-colour of the spotted salamander (*S. maculosa*). Placed on a yellow background the young salamander develops, as it reaches the adult stage, more yellow, while on a black background, it develops more black. Offspring from the former develop on a yellow background even more yellow than their parents and on a dark background more yellow than does the ordinary salamander when so treated. Similarly the offspring of artificially produced black salamanders become blacker than did their parents on a black background.

These experiments when repeated by others (Secerov, Herbst, von Frisch, Przibram-Dembowski, Boulenger) have shown that the background does affect the relative amount of yellow or of black on an individual, but it has never been shown that the effects are transmitted. It is also realized that there are many possible sources of error of interpretation (purity of material, unconscious selection of the most responsive parents and personal judgment based on selected individuals). Experiments of this sort are, as we now realize, open to several possible errors unless these are carefully guarded against, which has not been done in the majority of reported cases. The same adverse criticism applies to Kammerer's other experiments; for example, to those with the secondary sexual character (thumb-pads) of the midwife-toad (*Alytes*); with the effect of heat on the eggs of lizards; with the transplanted ovaries of dark and light races of salamanders; and with the length of siphons of the ascidian *Ciona.* In every one of these cases the facts he reports have been either contested or disproved. The lack of quantitative data in Kammerer's work and his too ready acceptance of unsubstantiated evidence of others, has aroused wide scepticism. His appeal to popular audiences for unprejudiced judgment of his results in his book on the *Inheritance of Acquired Characters* is not likely to win the case, and the recklessness with which he has made positive statements about other biological topics creates an unfavourable impression of his ability to reach an unbiased conclusion on a question that calls for high critical judgment.

The experiments of Dürken (1923) on the effect of coloured lights on the larvae and pupae of the cabbage butterfly, which seem to him to prove the inheritance of an acquired character (colour changes), while furnishing quantitative data are capable of a different interpretation, namely, the selection of those indi-

viduals for parents that had already an inherited difference of response to light. A careful series of experiments by Francis B. Sumner on the effect of temperature in the length of foot and tail in mice and on the possible transmission of the effect are probably significant, but the results are not claimed by him as demonstrating the inheritance by means of a changed somatic character. H. Przibram, experimenting in carefully controlled conditions, found that the temperature at which rats are kept has an effect upon their tail-length. He further found that when parents were kept at extreme temperatures, this did have an effect upon the tail length of the young, even when these were reared at normal temperature. However, when the temperature of the parents' environment was very extreme, the tail-length of the young was altered in the opposite direction from what would be expected on Lamarckian principles; and secondly, the effect was not transmitted to later generations. Now the experiments, while opening up interesting lines of research, are wholly contrary to Lamarckian views. The announcement of Pavlov (1923), that a conditioned reflex, established in mice, is inherited and shows marked advances in each generation, has been withdrawn by Pavlov as an error. The results as announced, were, moreover, in direct contradiction to somewhat similar experiments by Halsey J. Bagg, Edwin C. McDowell, and Emilia Vicari.

An elaborate series of experiments with rats was carried out by the psychologist, William McDougall (1927–30). The young rats were given a choice of two escape passages from a tank of water in which they were plunged. One passage was illuminated, and if chosen, the rat received a strong electric shock. The other passage way was only dimly lighted, and a rat escaping by it did not receive a shock. In time the rats learned to take the less illuminated passage. The test was brought to an end when each rat made 12 successive escapes by the dim passage. These rats became the parents of another generation which in turn received the same training. McDougall's records show that the time taken by the rats to learn to take the passage way that gave no shock gradually decreased in successive generations, as a result, he claimed, of the experience of their ancestors. The same experiment was later repeated by F. A. E. Crew (1932), who found no evidence of improvement in 18 successive generations. W. E. Agar (1935) also repeated the experiment with negative results.

Several biologists have drawn attention to certain similarities between the hereditary element, the gene, postulated by geneticists, and viruses. Both have the property of multiplying indefinitely in the presence of certain proteins. In 1944 Sterling Emerson and A. H. Sturtevant have proposed tentatively that antibodies produced against specific cellular antigens might unite with and modify specific genes in chromosomes and thereby be carried to subsequent generations. As yet critical evidence has not been produced to support this interpretation.

There is another class of experiments carried out in recent years that has also opened up a wide field for discussion, namely, the direct and indirect effect of the external environment on the germ-cells themselves. There are two distinct possibilities involved in the situation. First, it has been claimed that the same kind of effect produced in the body-cells by an external agent may simultaneously affect the germ-cells (egg or sperm) in such a way that they produce a new individual showing the same trait (parallel induction). Second, that the external agent may produce a change only in the germ-cells, which change appears in the individuals of the next generation developing from such germ-cells (direct induction). The same effects may then appear in later generations, because the affected germ-material itself is handed on.

The first supposition, however plausible it may sound, may rest on a false analogy. The response of the body cells to an external agent is presumably a reaction depending on their specific differentiation. This view is supported by the absence of a similar response in other kinds of organs or tissues. What grounds, then, are there for supposing that the undifferentiated germ-cells should be affected specifically but not show their response until the definite organ in question develops? There can be given no rational explanation for such an expectation, which obviously rests on an assumption at variance with what is known to physiology. There is no positive evidence to appeal to in support of this supposition, although there are a few cases which may at first sight seem to come under this heading. For example, Michael F. Guyer injected crushed lenses from the eye of a rabbit into fowls with the intention of producing in the blood of the fowl an antibody. Later some of the blood of the fowl was injected into a pregnant rabbit. In rare instances one or more of the young rabbits that were born showed abnormalities of some kind in their eyes. From a few of those affected individuals offspring were produced which sometimes had abnormal eyes, but it was not claimed that the same specific abnormalities always appeared in parent and offspring. Several explanations may be offered. It is known that occasionally rabbits are born with defective eyes, but the absence of abnormal eyes in the control, unoperated relatives of those used, was supposed to meet this argument. Until the frequency of the occurrence is known the reply is not entirely adequate. Nevertheless, the facts as reported appear to make it improbable that the connection was accidental. J. S. Huxley and A. M. Carr-Saunders have repeated Guyer's experiments and failed to produce inherited defects in the eyes of the offspring, and other failures in mice and other species have been reported by other workers. Guyer has also later reported that when the lenses of rabbits are destroyed by a needle, a few of the offspring may have eye-defects. This result would seem to mean that a parent with injured eyes may produce something (antibody?) that affects the eyes of the developing young *in utero,* but whether the germ-cells are affected has not yet been stated, much less proven. A more surprising instance of the apparent inheritance of an acquired character is reported by Griffith. Adult rats were rotated in cages for several months. They became disequilibrated, showing a tendency, when removed, to circle in the direction in which they had been rotated. Later, pus was discharged from the ears and they did not live long. Some of the offspring (60 out of 500 born from parents that had been previously rotated) also showed a tendency to circle and a preponderating number in the same direction as their parents. John A. Detlefsen has reported that rats with diseased or defective ears occur in a small percentage of cases. They show the type of behaviour characteristic of Griffith's rats. Whether a diseased condition of the parent ears could lead to infection of the ears of the young rats has not been tested, and even if it were, the specific inheritance (duration of rotation) described by Griffith remains to be explained.

There are also some carefully controlled experiments on mammals in which malformations were produced and were inherited. The results can be explained as caused by direct action on the germ-cells of the young *in utero,* and in fact the experimenters have so interpreted them. It may be significant that these types are all defective. It was reported by Charles R. Stockard that, after prolonged treatment of adult guinea pigs with the fumes of strong alcohol, the lenses of the eyes become opaque. Some of the offspring may have defective eyes, as well as other abnormalities, and defects may appear in some of their offspring; but again there is no specific relation between the defects in parent and offspring. Bagg has treated pregnant mice with radium emanations. Some of the young may have defective kidneys or abnormal extremities or other defects, and such defects continue to appear in some of their offspring. Amongst these, certain individuals that appear to be normal may also produce some defective offspring. Here again, however, it is not certain whether the defects may not have been latent in the untreated stock. All these results appear to be caused by a direct effect on the germ-cells and not to be caused by the transmission from the body to the germ-cells. Hermann J. Muller's experiments with *Drosophila* (1930) treated with X-ray, in which defects, and even mutant types of a specific kind, are produced and inherited, appear also to be due to the direct action of the X-ray on the germ-cells. Some of the mutant types thus produced were identical with those which had occurred "spontaneously" in earlier experiments. (*See* VARIATION: *Experimental Variation.*)

Finally, the most complete disproof of the inheritance of somatic influence is demonstrated in almost every experiment in genetics. When an individual with a dominant character is mated to one with a recessive character, all the offspring show the dominant character, in some cases in full force, in others less completely. When the hybrid is bred back to the recessive stock half of the offspring show the dominant character, half the recessive. This is the expected ratio if half the ripe germ-cells of the hybrid carry the dominant, half the recessive element. This result could not happen if the bodily characters (dominant) of the hybrid produced a sympathetic effect on the germ-cells. Furthermore, it is possible to breed continuously from hybrid forms only—a common procedure in certain Mendelian work—yet when after many generations the stock is tested, the dominant character has never been found to have affected the recessive elements in the germ-material. It is surprising that this critical evidence is seldom referred to by the advocates of the inheritance of acquired characters. Here, then, in the only field of heredity where we have really scientific evidence, the facts are positive and unquestioned, and contradict thoroughly the claim that the germ-cells are affected specifically by the character of the individual.

The social evolution of man has obviously come about by the transmission of the experience of one generation to the next by means of oral and written instruction. Our thinking is so saturated with this point of view that it was natural to extend it to the bodily structures and behaviour of lower animals. Instincts have, in fact, been sometimes defined as inherited habits, which implies the Lamarckian theory. Experience has shown, however, that it is unwise to apply the evidence from one domain to another where an entirely different set of relations is known to exist.

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(T. H. M.)

LA MARGHERITA, CLEMENTE SOLARO, COUNT DEL (1792–1869), Piedmontese statesman, was born at Mondovi. He studied law at Siena and Turin. In 1816 he entered the diplomatic service. Later he returned to Turin, and gained the confidence of King Charles Albert, who in 1835 appointed him minister of foreign affairs. A fervent Roman Catholic, devoted to the pope and to the Jesuits, friendly to Austria and firmly attached to the principles of autocracy, he was bitterly hated by the liberals. When the agitation for constitutional reform broke out the king dismissed La Margherita. His apologia for his administration, *Memorandum storico-politico* (1851), is a document of great interest for the study of the conditions of Piedmont and Italy at that time. In 1853 he was elected deputy for San Quirico; as leader of the Clerical Right, he opposed Cavour's policy, and on the establishment of the kingdom of Italy he retired.

LA MARMORA, ALFONSO FERRERO (1804–1878), Italian general and statesman, was born at Turin on Nov. 18, 1804. He entered the Sardinian army in 1823, and distinguished himself at the siege of Peschiera. He liberated Charles Albert, king of Sardinia, from the Milan revolutionaries on Aug. 5, 1848, and in October was promoted general and appointed minister of war. After suppressing the revolt of Genoa in 1849, he again became minister of war. Having reconstructed the Piedmontese army, he took part in the war of 1859 against Austria; and in July of that year succeeded Cavour in the premiership. In 1860 he was sent to Berlin and St. Petersburg to arrange for the recognition of the kingdom of Italy, and subsequently he held the offices of governor of Milan and royal lieutenant at Naples, until, in September 1864, he succeeded Minghetti as premier. He modified the scope of the September Convention by a note in which he claimed for Italy full freedom of action in respect of Rome, a document of which Visconti-Venosta afterwards took advantage when justifying the Italian occupation of Rome in 1870.

In April 1866 La Marmora concluded an alliance with Prussia against Austria, and, on the outbreak of war in June, took command of an army corps, but was defeated at Custozza on June 23. Accused of treason by his fellow-countrymen, and of duplicity by the Prussians, he eventually published in defence of his tactics (1873) a series of documents entitled *Un po' più di luce sugli eventi dell' anno 1866.* Meanwhile he had been sent to Paris in 1867 to oppose the French expedition to Rome, and in 1870, after the occupation of Rome by the Italians, had been appointed lieutenant-royal of the new capital. He died at Florence on Jan. 5, 1878.

See G. Massari, *Il generale Alfonso La Marmora* (Milan, 1880).

LAMARTINE, ALPHONSE DE (1790–1869), French poet, statesman, and man of letters, was born at Mâcon on Oct. 21, 1790. He was the eldest of six children, the only son, and was brought up mainly in the country, from which the inspiration of his graceful and meditative verse is chiefly derived. At 20 he went to Italy for the sake of his health, and there fell in love with Graziella of his verse. His family was noble, and Lamartine entered the Garde du Corps at the Bourbon restoration, taking refuge during the Hundred Days in Switzerland and at Aix. His first book, *Méditations, poétiques et religieuses,* appeared in 1820, followed in 1823 by *Nouvelles Méditations.* This philosophic, harmonious verse won the public by its freshness and grace. Then, in 1830, came *Harmonies,* described by its author as an intimate and involuntary revelation of his every-day impressions, pages from his inner life. The poems of *Harmonies* were, in fact, less lyrical and more reflective. *Chute d'un ange* and *Jocelyn* appeared in 1837, and his last volume of poetry, *Recueillements,* in 1839. *Jocelyn* has been compared with *Hermann und Dorothea.* In it he describes his old friend and tutor, the abbé Dumont. The common things of every-day life are described in simple language, but the whole is seen with a poet's eyes.

Lamartine was a precursor of the Romantic revival. He availed himself of the reviving interest in legitimism and Catholicism as represented by Bonald and Joseph de Maistre, of the nature worship of Rousseau and Bernardin de Saint-Pierre, the sentimentalism of Madame de Staël, of the mediaevalism of Chateaubriand and Scott, of the *maladie du siècle* of Chateaubriand and Byron. Perhaps if his matter be closely analysed it will be found that he added little of his own. But if the parts of the mixture were like other things, the mixture was not. It seemed, indeed, to the immediate generation so original that tradition has it that the *Méditations* were refused by a publisher because they were in none of the accepted styles. They appeared when Lamartine was nearly 30 years old. The best of them, and the best thing that Lamartine ever did, is the *Lac,* describing his return to the little mountain tarn of le Bourget after the death of his mistress, with whom he had visited it in other days. The verse is exquisitely harmonious, the sentiments conventional but refined and delicate, the imagery well chosen and gracefully expressed. As a prose writer Lamartine was very fertile. His characteristics in his prose fiction and descriptive verse are not very different from those of his poetry. He is always and everywhere sentimental, though very frequently, as in his shorter tales (*The Stone Mason of Saint-Point, Graziella,* etc.), he is graceful as well. His poetic reputation has suffered many changes, but it remains greater in his own country than abroad.

But while Lamartine was accomplishing his poetical work he was taking an active part in the administration and politics of his country. He entered the diplomatic service, and in 1823 became secretary of embassy at Naples. In that year he married an Englishwoman of some fortune, Marianne Birch. The years 1824–29 were spent at Florence, and in 1829 he went on a mission to Prince Leopold of Saxe-Coburg. He declined any appointment under the July monarchy, and travelled in the Near East between 1832 and 1834. Elected during his absence to the Chamber of Deputies, he spoke more and more frequently, and gradually moved to the Left in politics. His *Histoire des Girondins,* published in instalments, was printed as a whole in 1847. At the February Revolution of 1848 he declared for a provisional government, and was chosen as one of the five members of the executive committee. But he had neither the decision nor the force required for the occasion, though his eloquence served more than once to pacify the Parisians. After the fighting in June, his influence disappeared before that of Cavaignac, and when he was nominated for the presidency in Jan. 1849 he received a handful of votes. He was not elected to the Legislative Assembly.

His term of office left him a poor man, and he now wrote continuously for a living. He published a series of "Confidences" in *La Presse,* wrote many historical and biographical works, and in 1860 began to edit his works in 41 volumes. His wife died in 1863. At length, in 1867, the Government of the Empire came to his assistance with a vote of £20,000, which he accepted in spite of the reproaches of his more intransigeant friends. He died on Feb. 28, 1869.

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LAMB, CHARLES (1775–1834), English essayist and critic, was born in Crown Office Row, Inner Temple, London, on Feb. 10, 1775. His father, John Lamb, a Lincolnshire man, who filled the situation of clerk and servant-companion to Samuel Salt, a member of parliament and one of the benchers of the Inner Temple, was successful in obtaining for Charles, the youngest of three surviving children, a presentation to Christ's hospital, where the boy remained from his eighth to his 15th year (1782–1789). Here he had for a schoolfellow Samuel Taylor Coleridge, his senior by rather more than two years, and a close and tender friendship began which lasted for the rest of the lives of both. When the time came for leaving school, where he had learned some Greek and acquired considerable facility in Latin composition, Lamb, after a brief stay at home (probably spent, as his school holidays had often been, over old English authors in Salt's library) was condemned to the labours of the desk—"an inconquerable impediment" in his speech disqualifying him for the clerical profession, which, as the school exhibitions were usually only given to those preparing for the church, thus deprived him of the only means by which he could have obtained a university education. For a short time he was in the office of Joseph Paice, a London merchant, and then for 23 weeks, until Feb. 8, 1792, he held a small post in the Examiner's Office of the South Sea House, where his brother John was established, a period which, although his age was but 16, was to provide him nearly 30 years later with materials for the first of the *Essays of Elia.* On April 5, 1792, he entered the Accountant's Office in the East India House, where during the next 33 years the 100 official folios of what he used to call his true "works" were produced.

Of the years 1792–1795 we know little. At the end of 1794 he saw much of Coleridge and joined him in writing sonnets in the *Morning Post,* addressed to eminent persons: early in 1795 he met Southey and was much in the company of James White, whom he probably helped in the composition of the *Original Letters of Sir John Falstaff;* and at the end of the year for a short time he became so unhinged mentally as to necessitate confinement in an asylum. The cause, it is probable, was an unsuccessful love affair with Ann Simmons, the Hertfordshire maiden to whom his first sonnets are addressed, whom he would have seen when on his visits as a youth to Blakesware House, near Widford, the country home of the Plumer family, of which Lamb's grandmother, Mary Field, was for many years, until her death in 1792, sole custodian.

It was in the late summer of 1796 that a dreadful calamity came upon the Lambs, which seemed to blight all Lamb's prospects in the very morning of life. On Sept. 22, his sister Mary, "worn down to a state of extreme nervous misery by attention to needlework by day and to her mother at night," was suddenly seized with acute mania, in which she stabbed her mother to the heart. The calm self-mastery and loving self-renunciation which Charles Lamb, by constitution excitable, nervous and self-mistrustful, displayed at this crisis in his own history and in that of those nearest him, will ever give him an imperishable claim to the reverence and affection of all who are capable of appreciating the heroisms of common life. With the help of friends he succeeded in obtaining his sister's release from the life-long restraint to which she would otherwise have been doomed, on the express condition that he himself should undertake the responsibility for her safe-keeping. It proved no light charge: for though no one was capable of affording a more intelligent or affectionate companionship than Mary Lamb during her periods of health, there was ever present the apprehension of the recurrence of her malady; and when from time to time the premonitory symptoms had become unmistakable, there was no alternative but her removal, which took place in quietness and tears. How deeply the whole course of Lamb's domestic life must have been affected by his singular loyalty as a brother needs not to be pointed out.

EARLY WORKS

Lamb's first appearance as an author was made in the year of the great tragedy of his life (1796), when there were published in the volume of *Poems on Various Subjects* by Coleridge four sonnets by "Mr. Charles Lamb of the India House." In the following year he contributed, with Charles Lloyd, a pupil of Coleridge, some pieces in blank verse to the second edition of Coleridge's *Poems.* In 1797 his short summer holiday was spent with Coleridge at Nether Stowey, where he met the Wordsworths, William and Dorothy, and established a friendship with both which only his own death terminated. In 1798, under the influence of Henry Mackenzie's novel *Julie de Roubigné,* he published a short and pathetic prose tale entitled *Rosamund Gray,* in which it is possible to trace beneath disguised conditions references to the misfortunes of the author's own family, and many personal touches; and in the same year he joined Lloyd in a volume of *Blank Verse,* to which Lamb contributed poems occasioned by the death of his mother and his aunt Sarah Lamb, among them being his best-known lyric, "The Old Familiar Faces." In this year, 1798, he achieved the unexpected publicity of an attack by the *Anti-Jacobin* upon him as an associate of Coleridge and Southey (to whose *Annual Anthology* he had contributed) in their Jacobin machinations. In 1799, on the death of her father, Mary Lamb came to live again with her brother, their home then being in Pentonville; but it was not until 1800 that they really settled together, their first independent joint home being at Mitre Court Buildings in the Temple, where they lived until 1809. At the end of 1801, or beginning of 1802, appeared Lamb's first play, *John Woodvil,* on which he set great store, a slight dramatic piece written in the style of the earlier Elizabethan period and containing some genuine poetry and happy delineation of the gentler emotions, but as a whole deficient in plot, vigour and character; it was held up to ridicule by the *Edinburgh Review* as a specimen of the rudest condition of the drama, a work by "a man of the age of Thespis." The dramatic spirit, however, was not thus easily quenched in Lamb, and his next effort was a farce, *Mr. H———,* the point of which lay in the hero's anxiety to conceal his name "Hogsflesh"; but it did not survive the first night of its appearance at Drury Lane, in Dec. 1806. Its author bore the failure with rare equanimity and good humour—even to joining in the hissing—and soon struck into new and more successful fields of literary exertion. Before, however, passing to these it should be mentioned that he made various efforts to earn money by journalism, partly by humorous articles, partly as dramatic critic, but chiefly as a contributor of sarcastic or funny paragraphs, "sparing neither man nor woman," in the *Morning Post,* principally in 1803.

In 1807 appeared *Tales founded on the Plays of Shakespeare,* written by Charles and Mary Lamb, in which Charles was responsible for the tragedies and Mary for the comedies; and in 1808, *Specimens of English Dramatic Poets who lived about the time of Shakespeare,* with short but felicitous critical notes. It was this work which laid the foundation of Lamb's reputation as a critic, for it was filled with imaginative understanding of the old playwrights, and a warm, discerning and novel appreciation of their great merits. In the same year, 1808, Mary Lamb, assisted by her brother, published *Poetry for Children,* and a collection of short school-girl tales under the title *Mrs. Leicester's School;* and to the same date belongs *The Adventures of Ulysses,* designed by Lamb as a companion to *The Adventures of Telemachus.* In 1810 began to appear Leigh Hunt's quarterly periodical, *The Reflector,* in which Lamb published much (including the fine essays on the tragedies of Shakespeare and on Hogarth) that subsequently appeared in the first collected edition of his *Works,* which he put forth in 1818.

Between 1811, when *The Reflector* ceased, and 1820, he wrote almost nothing. In these years we may imagine him at his most social period, playing much whist and entertaining his friends on Wednesday or Thursday nights; meanwhile gathering that reputation as a conversationalist or inspirer of conversation in others, which Hazlitt, who was at one time one of Lamb's closest friends, has done so much to celebrate. When in 1818 appeared the *Works* in two volumes, it may be that Lamb considered his literary career over. Before coming to 1820, and an event which was in reality to be the beginning of that career as it is generally known—the establishment of the *London Magazine*—it should

be recorded that in the summer of 1819 Lamb, with his sister's full consent, proposed marriage to Fanny Kelly, the actress, who was then in her thirtieth year. Miss Kelly could not accept, giving as one reason her devotion to her mother. Lamb bore the rebuff with characteristic humour and fortitude.

The establishment of the *London Magazine* in 1820 stimulated Lamb to the production of a series of new essays (the *Essays of Elia*) which may be said to form the chief corner-stone in the small but classic temple of his fame. The first of these, as it fell out, was a description of the old South Sea House, with which Lamb happened to have associated the name of a "gay light-hearted foreigner" called Elia, who was a clerk in the days of his service there. The pseudonym adopted on this occasion was retained for the subsequent contributions, which appeared collectively in a volume of essays called *Elia,* in 1823. After a career of five years the *London Magazine* came to an end; and about the same period Lamb's long connection with the India House terminated, a pension of £450 (£441 net) having been assigned to him. The increased leisure, however, for which he had long sighed, did not prove favourable to literary production, which henceforth was limited to a few trifling contributions to the *New Monthly* and other serials, and the excavation of gems from the mass of dramatic literature bequeathed to the British Museum by David Garrick, which Lamb laboriously read through in 1827, an occupation which supplied him for a time with the regular hours of work he missed so much. The malady of his sister, which continued to increase with ever shortening intervals of relief, broke in painfully on his lettered ease and comfort; and it is unfortunately impossible to ignore the deteriorating effects of an over-free indulgence in the use of alcohol, and, in early life, tobacco, on a temperament such as his. His removal on account of his sister to the quiet of the country at Enfield, by tending to withdraw him from the stimulating society of the large circle of literary friends who had helped to make his weekly or monthly "at-homes" so remarkable, doubtless also tended to intensify his listlessness and helplessness. One of the brightest elements in the closing years of his life was the friendship and companionship of Emma Isola, whom he and his sister had adopted, and whose marriage in 1833 to Edward Moxon, the publisher, though a source of unselfish joy to Lamb, left him more than ever alone. While living at Edmonton, whither he had moved in 1833 so that his sister might have the continual care of Mr. and Mrs. Walden, who were accustomed to patients of weak intellect, Lamb was overtaken by an attack of erysipelas brought on by an accidental fall as he was walking on the London road. After a few days' illness he died on Dec. 27, 1834. The sudden death of one so widely known, admired and beloved, fell on the public as well as on his own attached circle with all the poignancy of a personal calamity and a private grief. His memory wanted no tribute that affection could bestow, and Wordsworth commemorated in simple and solemn verse the genius, virtues and fraternal devotion of his early friend.

Charles Lamb is entitled to a place as an essayist beside Montaigne, Sir Thomas Browne, Steele and Addison. He unites many of the characteristics of each of these writers—refined and exquisite humour, a genuine and cordial vein of pleasantry and heart-touching pathos. His fancy is distinguished by great delicacy and tenderness; and even his conceits are imbued with human feeling and passion. He had an extreme and almost exclusive partiality for earlier prose writers, particularly for Fuller, Browne and Burton, as well as for the dramatists of Shakespeare's time; and the care with which he studied them is apparent in all he ever wrote. It shines out conspicuously in his style, which has an antique air and is redolent of the peculiarities of the 17th century. Its quaintness has subjected the author to the charge of affectation, but there is nothing really affected in his writings. His style is not so much an imitation as a reflection of the older writers'; for in spirit he made himself their contemporary. A confirmed habit of studying them in preference to modern literature had made something of their style natural to him; and long experience had rendered it not only easy and familiar but habitual. It was not a masquerade dress he wore, but the costume which showed the man to most advantage. With thought and meaning often profound, though clothed in simple language, every sentence of his essays is pregnant.

He played a considerable part in reviving the dramatic writers of the Shakespearian age, for he preceded Gifford and others in wiping the dust of ages from their works. In his brief comments on each specimen he displays exquisite powers of discrimination: his discernment of the true meaning of his author is almost infallible. His work was a departure in criticism. Former editors had supplied textual criticism and alternative readings: Lamb's object was to show how our ancestors felt when they placed themselves by the power of imagination in trying situations, in the conflicts of duty or passion or the strife of contending duties; what sorts of loves and enmities theirs were.

As a poet Lamb is not entitled to so high a place as that which can be claimed for him as essayist and critic. His dependence on Elizabethan models here also is manifest, but in such a way as to bring into all the greater prominence his native deficiency in "the accomplishment of verse." Yet it is impossible, once having read, ever to forget the tenderness and grace of such poems as "Hester," "The Old Familiar Faces," and the lines "On an infant dying as soon as born" or the quaint humour of "A Farewell to Tobacco." As a letter writer Lamb ranks very high, and when in his frequent nonsensical mood there is none to touch him. (A. Ar., E. V. L.)

See T. N. Talfourd, Charles Lamb's *Letters* (1837), *Final Memorials of Charles Lamb* (1848); Barry Cornwall, *Charles Lamb, A Memoir* (1866); P. FitzGerald, *Charles Lamb, his Haunts, his Friends and his Books* (1866), *Life, Letters and Writings of Charles Lamb* (the *Life* by Talfourd, 6 vols., 1895; later ed. 1924); W. Carew Hazlitt, *Mary and Charles Lamb* (1874); A. Ainger, *Charles Lamb* (1882); J. C. Thomson, *Bibliography of the Writings of Charles and Mary Lamb* (1908); E. V. Lucas, *Life of Charles Lamb* (1921); G. E. Wherry, *Cambridge and Charles Lamb* (1925). Editions of Lamb's works are numerous, among them those of Canon Ainger, W. Macdonald and E. V. Lucas.

LAMB, SIR HORACE (1849–1934), English mathematician, was born at Stockport on Nov. 27, 1849. He was educated at Owens college and Trinity college, Cambridge, where he was second Wrangler and second Smith's Prizeman. In 1872 he was made a fellow and assistant tutor of Trinity college, in 1875 professor of mathematics in Adelaide university, and in 1885 professor of mathematics in Manchester university, from where he retired in 1920. He became the recognized authority on hydrodynamics, publishing the *Mathematical theory of the motion of fluids* (Camb. 1878) and *Hydrodynamics* (Camb. 1895, 5th edition 1924), the standard work on this subject, to successive editions of which Lamb added results of his further researches. He has written many papers, principally on applied mathematics, his researches including, besides hydrodynamics, wave propagation, the elastic deformation of plates and shells, and electrical induction. (See *London Math. Soc. Proc., Roy Soc. Proc., Phil. Mag., Trans. Camb. Phil. Soc., Manchester Phil. Soc. Memoirs.*) On questions concerning the motions of the air involved by flying-machines, he has given valuable assistance to the Aeronautical Research committee. Lamb was made fellow of the Royal Society in 1884, and vice-president of the society in 1909 and 1920–22. He was awarded the Royal medal in 1902 for his researches in mathematical physics, and the Copley medal in 1923. He was president of the British Association in 1925. He was knighted in 1931.

His other publications include: *Infinitesimal Calculus* (Cambridge 1897, 3rd ed. 1926); *Dynamical theory of sound* (1910, 2nd ed. 1925); *Statics: including hydrostatics and elements of the theory of elasticity* (Camb. 1912, 2nd. ed. 1924); *Dynamics* (1914, 2nd ed. 1923); *Higher mechanics* (1920).

LAMB, the young of sheep. The Paschal Lamb or Agnus Dei is used as a symbol of Jesus Christ, the Lamb of God (John i. 29), and "lamb," like "flock," is often used figuratively of the members of a Christian church or community, with an allusion to Jesus' charge to Peter (John xxi. 15). The "lamb and flag" is an heraldic emblem, the dexter fore-leg of the lamb supporting a staff bearing a banner charged with the St. George's cross.

LAMBAESIS: *see* LAMBESSA.

LAMBALLE, MARIE THÉRÈSE LOUISE OF SAVOY-CARIGNANO, PRINCESSE DE (1749–1792), fourth daughter of Louis Victor of Carignano (d. 1774), was born at Turin on Sept. 8, 1749. In 1767 she was married to the prince de Lamballe, son of the duke of Penthièvre. Her husband dying the following year, she retired with her father-in-law to Rambouillet until she returned to court on the marriage of the dauphin. Marie Antoinette singled her out for a companion and confidante, and after her accession, in spite of the king's opposition, had her appointed superintendent of the royal household. Between 1776 and 1785 the Comtesse de Polignac succeeded in supplanting her, but when the queen became tired of the avarice of the Polignacs she turned again to Madame de Lamballe. From 1785 to the Revolution she was Marie Antoinette's closest friend and the instrument of her caprices. She came with the queen to the Tuileries and as her salon served as a meeting-place for the queen and the members of the Assembly whom she wished to gain over, the people believed her to be the soul of all the intrigues. After a visit to England in 1791 to appeal for help for the royal family she returned to the Tuileries and shared the queen's imprisonment in the Temple on Aug. 10. On Aug. 19 she was transferred to La Force, and having refused to take the oath against the monarchy, she was on Sept. 3 delivered over to the fury of the populace, after which her head was placed on a pike and carried before the windows of the queen.

See George Bertin, *Madame de Lamballe* (1888); Austin Dobson, *Four Frenchwomen* (1890); B. C. Hardy, *Princesse de Lamballe* (1908); Comte de Lescure, *La Princesse de Lamballe . . . d'après des documents inédits* (1864); some letters of the princess published by Ch. Schmidt in *La Révolution française* (vol. xxxix., 1900); L. Lambeau, *Essais sur la mort de madame la princesse de Lamballe* (1902); Sir F. Montefiore, *The Princesse de Lamballe* (1896); Docteur Cabanès, *La Princesse de Lamballe intime d'après les Confidences de son Médicin* (1922). *The Secret Memoirs of the Royal Family of France . . . now first published from the Journal, Letters and Conversations of the Princesse de Lamballe* (2 vols., 1826) appeared in editions in English and in French. They are attributed to Catherine Hyde, Marchioness Govion-Broglio-Solari, and are apocryphal.

LAMBALLE, a town of northwestern France in the department of Côtes-du-Nord, on the Gouessant 13 mi. E.S.E. of St. Brieuc by rail. Pop. (1936) 5,048. The Gothic church of Notre Dame (13th and 14th centuries) was once the chapel of the castle of the counts of Penthièvre, Lamballe being their capital. The church of St. Martin has work of the 11th, 15th and 16th centuries. Lamballe has an important *haras* (depot for stallions) and carries on trade in grain, tanning and leather-dressing. It manufactures wax candles and shoes.

LAMBAYEQUE, a coast department of northern Peru, bounded north by Piura, east and south by Cajamarca and Libertad. Area 4,615 sq.mi.; pop. (1940) 199,660. In the desert coast-zone, only irrigated river valleys are cultivated (about 150,000 ac.). Lambayeque is the centre of rice production, grown on small holdings, and second only to Libertad in sugar, grown on large estates. Cotton, maize, vegetables and fruits are also cultivated. Irrigation of the Pampa de Olmos was made possible through the completion of a large government project. Cattle are raised in the upper valleys. Five railways connect agricultural areas with the departmental capital (Chiclayo) and ports (Pimentel, Eten). The chief industry of Chiclayo, pop. (1940) 32,646, is rice-milling.

LAMBEAUX, JEF (JOSEF MARIE THOMAS) (1852–1908), Belgian sculptor, born at Antwerp, studied at the Antwerp Academy of Fine Arts, and was a pupil of Jean Geefs. His first work, "War," was exhibited in 1871, and was followed by a long series of humorous groups. He then went to Paris, where he executed for the Belgian salons "The Beggar" and "The Blind Pauper," and produced "The Kiss" (1881), generally regarded as his masterpiece. Other notable works are his fountain at Antwerp (1886), "The Triumph of Woman," "The Bitten Faun" (which created a great stir at the Exposition Universelle at Liége in 1905), and "The Human Passions," a colossal marble bas-relief, elaborated from a sketch exhibited in 1889. Of his numerous busts may be mentioned those of Hendrik Conscience and of Charles Bals, the burgomaster of Brussels. He died on June 6, 1908.

LAMBERMONT, AUGUSTE, BARON (1819–1905), Belgian statesman, was born at Limelette (Brabant) on March 25, 1819. He entered the seminary of Floreffe, but soon left the monastery for Louvain university, where he studied law, and prepared himself for the military examinations. On the outbreak of the Carlist War, Lambermont was entrusted with the command of two small cannon, and he also acted as A.D.C. to Colonel Durando. For his services he was decorated with the Cross of the highest military Order of St. Ferdinand. Returning to Belgium, he entered the Ministry for Foreign Affairs in 1842, where he served for sixty-three years. He was one of the very first Belgians to see the importance of developing the trade of their country, and at his own request he was attached to the commercial branch of the foreign office. The tolls imposed by the Dutch on navigation of the Scheldt strangled Belgian trade, for Antwerp was the only port of the country. The Dutch had the right to make this levy under treaties going back to the treaty of Münster in 1648. They clung to it still more tenaciously after Belgium separated herself in 1830–31 from the united kingdom of the Netherlands—the London Conference in 1839 fixing the toll payable to Holland at 1·50 florins (3s.) a sou. From 1856 to 1863 Lambermont devoted himself to the removal of this impediment. In 1856 he drew up a plan of action, and prosecuted it with untiring perseverance until he saw it embodied in an international convention at Brussels in 1863, and on July 15 the treaty freeing the Scheldt was signed. For this achievement Lambermont was made a baron, and a monument was erected by the city of Antwerp to his memory. Among other important conferences in which Lambermont took a leading part were those of Brussels (1874) on the usages of war, Berlin (1884–1885) on Africa and the Congo region, and Brussels (1890) on Central African Affairs and the Slave Trade. He was joint reporter with Baron de Courcel of the Berlin conference in 1884–1885, and on several occasions he was chosen as arbitrator by one or other of the great European powers. He died on March 6, 1905.

LAMBERT, DANIEL (1770–1809), an Englishman famous for his great size, was born near Leicester on March 13, 1770, the son of the keeper of the jail, to which post he succeeded in 1791. Though he had led an active and athletic life he weighed in 1793 thirty-two stone (448 lb.). He died on July 21, 1809, and at the time measured 5 ft. 11 in. in height and weighed $52\frac{3}{4}$ stone (739 lb.). His waistcoat, now in the Kings Lynn Museum, measures 102 in. round the waist. His coffin contained 112 ft. of elm and was built on wheels. His name has been used as a synonym for immensity. George Meredith describes London as the "Daniel Lambert of cities," and Herbert Spencer uses the phrase "a Daniel Lambert of learning." The best portrait of him, a large mezzotint, is preserved at the British Museum in Lyson's *Collectanea.*

LAMBERT, FRANCIS (*c.* 1486–1530), Protestant reformer, was the son of a papal official at Avignon, where, at 15, he entered the Franciscan monastery. After 1517 he was an itinerant friar, travelling through France, Italy and Switzerland. His study of the Scriptures shook his faith in Roman Catholic theology and by 1522 he had abandoned his order. He did not, however, identify himself either with Zwinglianism or Lutheranism; he disputed with Zwingli at Zurich in 1522 and then made his way to Eisenach and Wittenberg, where he married in 1523. He returned to Strasbourg in 1524 to preach among the French-speaking population of the neighbourhood. By the Germans he was distrusted and in 1526 his activities were prohibited by the city of Strasbourg. He was befriended by Jacob Sturm, who recommended him to the Landgraf Philip of Hesse, with whose encouragement he drafted his scheme of ecclesiastical reform. Its basis was essentially democratic and congregational, though it provided for the government of the whole church by means of a synod. Pastors were to be elected by the congregation and the whole system of canon law was repudiated. This scheme was far too democratic to commend itself to the Lutherans, who had by this time bound the Lutheran cause to the support of princes rather than to that of the people. Philip abandoned the scheme, but by his influence Lambert was appointed professor and head of the theological faculty in the Landgraf's new university of Marburg. Patrick

Hamilton (*q.v.*), the Scottish martyr, was one of his pupils; and it was at Lambert's instigation that Hamilton composed his *Loci communes* or *Patrick's Pleas* as they were popularly called in Scotland. Lambert took part in 1529 in the conference of Marburg when he definitely adopted the Zwinglian view of the Eucharist. He died of the plague on April 18, 1530, and was buried at Marburg.

A catalogue of Lambert's writings is given in Haag's *La France protestante. See* also lives of Lambert by Baum (Strasbourg, 1840); F. W. Hessencamp (Elberfeld, 1860), Stieve (Breslau, 1867) and Louis Ruffet (Paris, 1873); Lorimer, *Life of Patrick Hamilton* (1857); A. L. Richter, *Die evangelischen Kirchenordnungen des 16. Jahrh.* (Weimar, 1846); Hessencamp, *Hessische Kirchenordnungen im Zeitalter der Reformation;* Philip of Hesse's *Correspondence with Bucer,* ed. M. Lenz; Lindsay, *Hist. Reformation.*

LAMBERT, JOHANN HEINRICH (1728–1777), German physicist, mathematician and astronomer, was born at Mulhouse, Alsace, on Aug. 26, 1728. He was the son of a tailor; and the slight elementary instruction he obtained at the free school of his native town was supplemented by his own private reading. He became private tutor to a family and finally settled in Berlin, where he edited *Ephemeris.* He received many favours at the hand of Frederick the Great and was elected a member of the Royal Academy of Sciences of Berlin. He died of consumption on Sept. 25, 1777. His mathematical discoveries were extended and overshadowed by his contemporaries. In 1761 he proved the irrationality of π; a simpler proof was given somewhat later by Legendre. The introduction of hyperbolic functions into trigonometry was also due to him. His geometrical discoveries are of great value, his *Die freie Perspectiv* (1759–74) being a work of great merit. Astronomy was enriched by his investigations, and he was led to several remarkable theorems on conics which bear his name. In optics he developed photometry on theoretical lines.

Lambert's most important works are *Pyrometrie* (Berlin, 1779), *Photometria* (Augsburg, 1760), *Insigniores orbitae cometarum proprietates* (Augsburg, 1761), and *Beiträge zum Gebrauche der Mathematik und deren Anwendung* (Berlin, 1765–72).

See Baensch, *Lamberts Philosophie und seine Stellung zu Kant* (1902).

LAMBERT, JOHN (1619–1683), English general in the Great Rebellion, was born at Calton Hall, Kirkby Malham, in the West Riding of Yorkshire. His family was of ancient lineage, and long settled in the county. He studied law, but did not make it his profession. In 1639 he married Frances, daughter of Sir William Lister. At the opening of the Civil War he took up arms for the parliament, and in September 1642 was appointed a captain of horse in the army commanded by Ferdinando, Lord Fairfax. A year later he had become colonel of a regiment of horse, and he distinguished himself at the siege of Hull in October, 1643. Early in 1644 he did good service at the battles of Nantwich and Bradford. At Marston Moor Lambert's own regiment was routed by the charge of Goring's horse; but he cut his way through with a few troops and joined Cromwell on the other side of the field. When the New Model army was formed in the beginning of 1645, Colonel Lambert was appointed to succeed Fairfax in command of the northern forces. General Poyntz, however, soon replaced him, and under this officer he served in the Yorkshire campaign of 1645, receiving a wound before Pontefract. In 1646 he was given a regiment in the New Model, serving with Fairfax in the west of England, and he was a commissioner, with Fairfax in the west of England, and he was a commissioner, with Cromwell and others, for the surrender of Oxford in the same year.

When the quarrel between the parliament and the army began, Lambert threw himself warmly into the army's cause. He assisted Ireton in drawing up the several addresses and remonstrances issued by the army, both men having had some experience in the law, and being "of a subtle and working brain." Early in August 1647 Lambert was sent by Fairfax as major-general to take charge of the forces in the northern counties. His wise and just managing of affairs in those parts is commended by Whitelocke. He suppressed a mutiny among his troops, kept strict discipline and hunted down the moss-troopers who infested the moorland country.

When the Scottish army under the marquis of Hamilton invaded England in the summer of 1648, Lambert, who was engaged in suppressing the Royalist rising in his district, was obliged to retreat. He then harassed the invaders until Cromwell came from Wales, and joined him in destroying the Scottish army in the three days' fighting from Preston to Warrington. After the battle Lambert's cavalry finally surrounded the Scots at Uttoxeter, where Hamilton surrendered on Aug. 25. He then led Cromwell's army into Scotland, where he was left in charge on Cromwell's return. From December 1648 to March 1649 he was besieging Pontefract Castle, and was thus absent from London at the time of Pride's Purge and the trial and execution of the king.

In July 1650 Lambert went with Cromwell to Scotland as major-general and second in command, and had a share in the victory of Dunbar. He defeated the "Protesters," or "Western Whigs," at Hamilton on Dec. 1, 1650. In July 1651 he was sent into Fife to force the Scottish army near Falkirk into decisive action by cutting off their supplies. This mission, in the course of which Lambert won an important victory at Inverkerthing, was executed with entire success, whereupon Charles II., as Lambert had foreseen, made for England. For the events of the Worcester campaign which followed *see* GREAT REBELLION. Lambert played a brilliant part in the general plan, and at Worcester he commanded the right wing of the English army and had his horse shot under him. Parliament conferred on him a grant of lands in Scotland worth £1,000 per annum.

In October 1651 Lambert was made a commissioner to settle the affairs of Scotland, and succeeded Ireton as lord deputy of Ireland on the latter's death in January 1652. Parliament, however, soon afterwards reconstituted the Irish administration, and Lambert refused to accept office on the new terms. Henceforward he began to oppose the Rump. In the council of officers he headed the party desiring representative government, as opposed to Harrison, who favoured a selected oligarchy of "God-fearing" men, but both joined in urging Cromwell to dissolve the Long parliament by force. At the same time Lambert was consulted by the parliamentary leaders as to the possibility of dismissing Cromwell from his command, and on March 15, 1653, Cromwell referred to him contemptuously as "bottomless Lambert." On April 20, however, Lambert accompanied Cromwell when he dismissed the council of state, on the day of the forcible expulsion of the parliament. Lambert now favoured the formation of a small executive council, to be followed by an elective parliament with powers limited by a written instrument of government. Some looked on him as a possible rival of Cromwell for the chief executive power, while the royalists for a short time had hopes of his support. He sat, with Cromwell, Harrison and Desborough, in the nominated parliament of 1653; when the unpopularity of that assembly increased Cromwell drew nearer to him. In November 1653 Lambert presided over a meeting of officers to discuss the constitutional settlement and the forcible expulsion of the nominated parliament. On Dec. 1 he urged Cromwell in vain to assume the title of king. On Dec. 12 the parliament resigned its power to Cromwell, and on the 13th the officers consented to the Instrument of Government, Lambert being one of the seven officers on the council which it created. In the foreign policy of the protectorate he advocated alliance with Spain and war with France (1653). He also strongly opposed an expedition to the West Indies.

In the parliamentary debates on the Instrument of Government (1654), Lambert's proposal that the office of protector should be made hereditary was defeated. Lord Lambert, as he was now styled, represented the West Riding in the parliaments of 1654 and 1656. In August 1655 he organized the militia who were to keep order in the ten districts of England, and was one of the major-generals appointed to a command. Gardiner conjectures that the instructions to the major-generals were the origin of the divergence of opinion between Lambert and Cromwell. In February 1657 Lambert, who had previously urged Cromwell to take the title of king, opposed this proposal when it was made by parliament, and with Fleetwood headed a deputation of officers to persuade Cromwell to stop the proceedings. Their

complete estrangement followed, and Lambert refused to take the oath of allegiance. He was deprived of his commission, but received a pension of £2,000 a year, with which he retired to Wimbledon. Cromwell sought a reconciliation before his death.

When Richard Cromwell was proclaimed protector his chief difficulty lay with the army, over which he exercised no effective control. It was very generally believed that Lambert, who was popular with the army, though holding no military commission, would install himself in Oliver's seat of power. Richard's adherents tried to conciliate him, and the royalist leaders made overtures to him, even proposing that Charles II. should marry Lambert's daughter. Lambert at first gave a lukewarm support to Richard Cromwell. He was a member of the parliament which met in January 1659, and after its dissolution was restored to his commands. He headed the deputation to Lenthall in May inviting the return of the Rump, which led to the retirement of Richard Cromwell into obscurity; and he was appointed a member of the committee of safety and the council of state. Lambert was one of the council of seven charged by the parliament with the duty of nominating officers. Parliament's distrust of the soldiers caused discontent in the army, and the royalists were encouraged to make overt attempts to restore Charles II., the most serious of which, under Sir George Booth and the earl of Derby, was crushed by Lambert near Chester on Aug. 19. The republican party in the House took offence at a petition from Lambert's army that Fleetwood might be made lord-general and himself major-general. The Commons (Oct. 12, 1659) cashiered Lambert and other officers, and retained Fleetwood as chief of a military council under the authority of the Speaker. On the next day Lambert kept the members out of the House. On the 26th a "committee of safety" was appointed, of which he was a member. He was also appointed major-general, and Fleetwood general, of the forces in England and Scotland. Lambert was sent with a large force to meet Monk, who was in command of the English forces in Scotland, either to negotiate with him or force him to terms, but his army fell away before Monk's southern advance, and Monk marched to London unopposed. The "excluded" Presbyterian members were recalled. Lambert was sent to the Tower (March 3, 1660). He escaped a month later, and tried to rekindle the civil war, but was recaptured on April 24. On the Restoration he was exempted from danger of life by an address of both Houses to the king, but the next parliament (1662) charged him with high treason. He was first kept in custody in Guernsey, but was later removed to St. Nicholas's Island, Plymouth Sound, where he died in 1683.

See S. R. Gardiner, *History of the Great Civil War, 1642–49* (4 vols., 1886), and authorities cited under Charles II. and Cromwell. The best life of Lambert is that contained in T. D. Whitaker's *History of Craven* (1805; 2nd ed., 1812).

LAMBERT (NICHOLSON), **JOHN** (d. 1538), English Protestant martyr, was born at Norwich and educated at Cambridge. He took orders, but fell under suspicion of heresy and escaped to Antwerp, where he met Frith and Tyndale. He returned to England in 1531, and lived quietly in London teaching Greek and Latin until 1538 when he challenged Dr. John Taylor on Roman Catholic doctrine. Archbishop Cranmer condemned his opinions, but Henry VIII., to whom Lambert appealed, heard his case in person (Nov. 16, 1538). As he denied the doctrine of transubstantiation he was condemned by Cromwell, and was burnt at the stake at Smithfield on Nov. 22, 1538.

LAMBERT OF HERSFELD (d. *c.* 1088), German chronicler, was probably a Thuringian by birth and became a Benedictine at Hersfeld in 1058. As he was ordained priest at Aschaffenburg he is sometimes called Lambert of Aschaffenburg or Schafnaburg. His *Annales* for the period from 1040 to their conclusion in 1077 are interesting for the history of Germany and the papacy. Their tone is hostile to Henry IV. and friendly to the papacy; their Latin style is excellent. The *Annales* are printed in the *Monumenta Germaniae historica,* vols. iii. and v. (Hanover and Berlin, 1826 fol.).

Lambert is also regarded as the author of the *Historia Hersfeldensis,* the extant fragments of which are published in Band v. of the *Monumenta* of a *Vita Lulli,* Lullus, archbishop of Mainz, being the founder of the abbey of Hersfeld; and of a *Carmen de bello Saxonico.* His *Opera* have been edited with an introduction by O. Holder-Egger (Hanover, 1894).

See H. Delbrück, *Über die Glaubwürdigkeit Lamberts von Hersfeld* (Bonn, 1873); A. Eigenbrodt, *Lampert von Hersfeld und die neuere Quellenforschung* (Cassel, 1896); L. von Ranke, *Zur Kritik frankisch-deutscher Reichsannalisten* (Berlin, 1854); W. Wattenbach, *Deutschlands Geschichtsquellen* Band ii. (Berlin, 1906) and A. Potthast. *Bibliotheca Historica* (Berlin, 1896).

LAMBERTVILLE, city of Hunterdon county, N.J., U.S.A., on the Delaware river, 15 mi. above Trenton. It is served by the Pennsylvania railroad and bus lines. The population was 4,578 in 1930 and 4,447 in 1940. Its principal products are silverware, luggage, silk hosiery, lace, furniture, machinery. It is the only city in Hunterdon county.

LAMBESSA, the ancient Lambaesis, a village of Algeria, in the arrondissement of Batna and department of Constantine, 7 mi. S.E. of Batna and 17 W. of Timgad. Pop. (1936) 1,736. The modern village, centre of an agricultural colony founded in 1848, has a great convict establishment (built about 1850). The remains of the Roman town, and more especially of the Roman camp are among the most interesting ruins in northern Africa. They are now preserved by the *Service des Monuments historiques* and excavations have resulted in many interesting discoveries. The ruins are situated on the lower terraces of the Jebel Aures, and consist of triumphal arches (one to Septimius Severus, another to Commodus), temples, aqueducts, vestiges of an amphitheatre, baths and an immense quantity of masonry belonging to private houses. To the north and east lie extensive cemeteries with the stones standing in their original alignments; to the west is a similar area, from which the stones have been largely removed for building the modern village. Of the temple of Aesculapius only one column is standing, though in the middle of the 19th century its façade was entire. The capitol or temple dedicated to Jupiter, Juno and Minerva, which has been cleared of débris, has a portico with eight columns.

On level ground about two-thirds of a mile from the centre of the ancient town stands the camp, its site now partly occupied by the penitentiary and its gardens. It measures 1,640 ft. north to south by 1,476 ft. east to west, and in the middle rise the ruins of a building commonly called, but incorrectly, the praetorium, which dates from A.D. 268 (92 ft. long by 66 ft. broad and 49 ft. high), its southern façade has a splendid peristyle half the height of the wall, consisting of a front row of massive Ionic columns and an engaged row of Corinthian pilasters. Behind this building (which was roofed) is a large court giving access to the arsenal and other buildings. In it have been found many thousands of projectiles. To the south-east are the remains of the baths. The ruins of both city and camp have yielded many inscriptions (Renier edited 1,500, and there are 4,185 in the *Corpus Inscr. Lat.* vol. viii.); and, though a very large proportion are epitaphs of the barest kind, the more important pieces supply an outline of the history of the place. Over 2,500 inscriptions relating to the camp have been deciphered. In a museum in the village are inscriptions and statues; and fine mosaics found in 1905 near the arch of Septimius Severus.

Lambaesis was a military foundation. The camp of the third legion (Legio III. Augusta), to which it owes its origin, appears to have been established between A.D. 123 and 129, in the time of Hadrian, whose address to his soldiers was found inscribed on a pillar in a second camp to the west of the great camp still extant. By 166 mention is made of the decurions of a vicus, 10 curiae of which are known by name; and the vicus became a municipium probably at the time when it was made the capital of the newly founded province of Numidia. The legion was removed by Gordianus, but restored by Valerianus and Gallienus; and its final departure did not take place till after 392. The town soon afterwards declined. It never became the seat of a bishop, and no Christian inscriptions have been found among the ruins.

About 2 m. S. of Lambessa are the ruins of Markuna, the ancient Verecunda, including two triumphal arches.

See S. Gsell, *Les Monuments antiques de l'Algérie* (Paris, 1901) and *L'Algérie dans l'antiquité* (Algiers, 1903); L. Renier, *Inscriptions*

romaines de l'Algérie (Paris, 1855); Gustav Wilmann, "Die röm. Lagerstadt Afrikas," in *Commentationes phil. in honorem Th. Mommseni* (Berlin, 1877); Sir L. Playfair, *Travels in the Footsteps of Bruce* (London, 1877); A. Graham, *Roman Africa* (London, 1902).

LAMBETH, a southern metropolitan borough of London, England. Pop. (1938) 272,800. Area, 6.6 sq.mi. Brixton and Kennington are mentioned in Domesday; and in Vauxhall is concealed the name of Falkes de Breauté, an unscrupulous adventurer of the time of John and Henry III. The manor of North Lambeth was given to the bishopric of Rochester in the time of Edward the Confessor, and the bishops had a house here till the 16th century, but the manor was acquired by the see of Canterbury at the end of the 12th century. The palace of the archbishops, of which the oldest part is the Early English chapel, is still there. The so-called Lollard's Tower, which retains evidence of its use as a prison, dates *c.* 1440. There is a fine Tudor gatehouse of brick, and the hall, dated 1663, now houses the valuable library. The roof and interior were damaged somewhat in World War II. The portion now inhabited by the archbishops was erected in 1834. Among the portraits of archbishops are examples by Holbein, Van Dyck, Hogarth and Reynolds. The church of St. Mary was rebuilt *c.* 1850, though the ancient monuments preserved give it an appearance of antiquity. The name is commonly confined to the northern part of the borough, bordering the river; but the principal districts included are Kennington and Vauxhall (north central), Brixton (central) and part of Norwood (south). Four road-bridges cross the Thames within the limits of the borough, namely Waterloo, Westminster, Lambeth and Vauxhall. St. Thomas' hospital fronts the Albert embankment. It received extensive damage in World War II. The original foundation dated from 1213, was situated in Southwark, and was connected with the priory of Bermondsey. The new headquarters (1937) of the London fire brigade on Albert embankment is the most notable new building. In the northern part of the borough are the Doulton pottery works. The parliamentary borough of Lambeth has four divisions, North, Kennington, Brixton and Norwood, each returning one member.

LAMBETH CONFERENCES, the name given to the periodical assemblies of bishops of the Anglican Communion (Pan-Anglican synods), which since 1867 have met at Lambeth Palace, the London residence of the archbishop of Canterbury. The idea of these meetings was first suggested in a letter to the archbishop of Canterbury by Bishop Hopkins of Vermont in 1851, but the immediate impulse came from the colonial Church in Canada. In 1865 the synod of that province, in an urgent letter to the archbishop of Canterbury (Dr. Longley), represented the unsettlement of members of the Canadian Church caused by recent legal decisions of the Privy Council, and their alarm lest the revived action of Convocation "should leave us governed by canons different from those in force in England and Ireland, and thus cause us to drift into the status of an independent branch of the Catholic Church." They therefore requested him to call a "national synod of the bishops of the Anglican Church at home and abroad," to meet under his leadership. After consulting both houses of the Convocation of Canterbury, Archbishop Longley assented, and convened all the bishops of the Anglican Communion (then 144 in number) to meet at Lambeth in 1867. Many Anglican bishops (amongst them the archbishop of York and most of his suffragans) felt so doubtful as to the wisdom of such an assembly that they refused to attend it, and Dean Stanley declined to allow Westminster Abbey to be used for the closing service, giving as his reasons the partial character of the assembly, uncertainty as to the effect of its measures and "the presence of prelates not belonging to our Church." Archbishop Longley said in his opening address, however, that they had no desire to assume "the functions of a general synod of all the churches in full communion with the Church of England," but merely to "discuss matters of practical interest, and pronounce what we deem expedient in resolutions which may serve as safe guides to future action." Experience has shown how valuable and wise this course was. The resolutions of the Lambeth Conferences have never been regarded as synodical decrees, but their weight has increased with each conference. Apprehensions such as those which possessed the mind of Dean Stanley have long passed away.

BIBLIOGRAPHY.—*See* art. ENGLAND, CHURCH of; REUNION, CHURCH; and for history of the first three conferences, R. T. Davidson (Archbishop), *The Lambeth Conferences of 1867, 1878 and 1888* (London, 1896).

LAMBINUS, DIONYSIUS, the Latinized name of DENIS LAMBIN (1520–1572), French classical scholar, born at Montreuil-sur-mer in Picardy. He was professor of Latin, and afterwards of Greek, in the Collège de France, and his death (Sept. 1572) is said to have been caused by his apprehension that he might share the fate of his friend Peter Ramus (Pierre de la Ramée), who had been killed in the massacre of St. Bartholomew. Lambinus was one of the greatest scholars of his age, and his editions of classical authors are still useful. In textual criticism he was a conservative, but by no means a slavish one; his chief defect is a vagueness in specifying the sources of his readings. But his commentaries, with their wealth of illustration and parallel passages, are a mine of information, although his countrymen have coined the word *lambiner* to express trifling and diffuseness.

His chief editions are: Horace (1561); Lucretius (1564), on which *see* H. A. J. Munro's preface to his edition; Cicero (1566); Cornelius Nepos (1569); Demosthenes (1570), completing the unfinished work of Guillaume Morel; Plautus (1576).

See Peter Lazer, *De Dionysio Lambino narratio,* printed in Orelli's *Onomasticon Tullianum* (i. 1836), and *Trium disertissimorum virorum praefationes ac epistolae familiares aliquot: Mureti, Lambini, Regii* (Paris, 1579); also Sandys, *Hist. of Classical Scholarship* (1908, ii. 188), and A. Horawitz in Ersch and Gruber's *Allgemeine Encyclopädie.*

LAMBOURN, a town in Berkshire, England, 65 mi. W. of London. Pop. (1931) 2,316. It lies high up the valley of the Lambourn, a tributary of the Kennet, among the Berkshire Downs. The church of St. Michael is cruciform and principally late Norman. The inmates of an almshouse founded by John Estbury, *c.* 1500, by his desire still hold service daily at his tomb in the church. A Perpendicular market-cross stands outside the church. The town has agricultural trade, but its chief importance is derived from training stables. To the north of the town is a large group of *tumuli* known as the Seven Barrows.

LAMB'S QUARTERS, one of the names most commonly given to the widely diffused cosmopolitan weed, *Chenopodium album*, of the goosefoot family (Chenopodiaceae), growing in moist soil throughout all agricultural regions, except in the extreme north. It is an erect, usually slender, much branched, pale green annual, 1 ft. to 10 ft. high, with somewhat lance-shaped, more or less lobed or toothed leaves, 1 in. to 4 in. long, commonly white-mealy beneath. The very numerous small green flowers are borne in dense terminal or axillary clusters. The seeds, which are usually matured in great profusion, are very small, black and somewhat glossy. While exceedingly abundant and of rapid growth, this weed is readily controlled in fields in which the growing crop is frequently cultivated, and, because of its later germination, does not usually become injurious in fields of growing grain. The young shoots of this plant are sometimes used as pot-herb, like spinach. Lamb's quarters and also *Amaranthus retroflexus* and *A. hybridus,* likewise of very wide distribution, are also called pigweed. (*See* CHENOPODIUM.)

BY COURTESY OF THE IOWA EXPERIMENTAL STATION

LAMB'S QUARTERS (CHENOPODIUM ALBUM), SHOWING DETAILS OF FLOWER CLUSTERS AND ROOT

LAMÉ, GABRIEL (1795–1870), French mathematician, was born at Tours on July 22, 1795, and educated at the Polytechnic school, Paris. He went to Russia as an engineer; returned to France in 1832, and was appointed professor of physics in the Polytechnic school. He contributed many memoirs to *Liouville's*

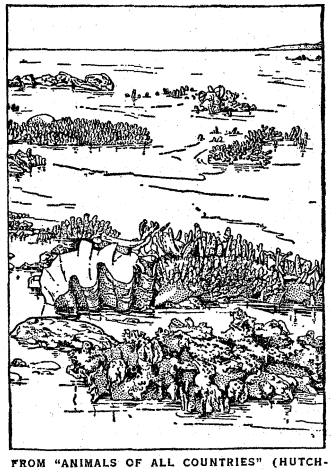
Journal, mostly dealing with theories of elasticity and heat. He solves the problem concerning the equilibrium of temperature in an ellipsoid by introducing functions now known as Lamé's functions (*Liouville's Journal,* 1836). He died in Paris on May 1, 1870.

His works include: *Cours de physique* (3 vols., Paris, 1st ed., 1837); *Leçons sur la théorie mathématique de l'élasticité* (1852, 1st ed.); *Les fonctions inverses des transcendantes et les surfaces isothermes* (1857); *Les co-ordonnées curvilignes* (1859); *La théorie analytique de la chaleur* (1861).

LAMECH appears in the genealogy of Gen. iv. 17–24 as a descendant of Cain, in that of Gen. v. as a descendant of Seth. Unsuccessful attempts have been made to identify Lamech with a name in the Babylonian lists of ante-diluvians. According to the story of Gen. iv. Lamech had two wives, Adah and Zillah, that is, "Dawn" and "Shadow." His three sons are Jabal, Jubal and Tubal, such assonances being a regular feature of legendary genealogies. As the story now stands Tubal appears at Tubal-cain, but, as the break away from the assonance suggests, the double name is probably due to an attempt to identify two different figures. To these three brothers are attributed the development of pastoral civilization, music and metal work, respectively. The sister Naamah—the name may be also that of a deity—is probably a later addition to the legend. The song ascribed to Lamech is often called a "sword-song," and is supposed to express Lamech's joy at possessing the new weapon forged by Tubal: but really the song is quite independent of its context. It is a jubilation over the practice of blood-revenge. The way in which the sevenfold revenge of Cain is depreciated is quite unlikely if Cain were an ancestor of Lamech, and would be much more likely if the Cain referred to were a contemporary. The song may well be based on some actual incident. (W. L. W.)

LAMEGO, a city of northern Portugal 6 mi. by road S. of the river Douro and 42 mi. E. of Oporto. Pop. (1940) 10,698. Lamego is an ancient and picturesque city, in the midst of a beautiful mountain region. Its principal buildings are the 14th century Gothic cathedral, Moorish citadel, Roman baths and a church which occupies the site of a mosque, and, though intrinsically commonplace, is celebrated in Portugal as the seat of the legendary cortes of 1143 or 1144. The principal industries are viticulture and the rearing of swine, which furnish the so-called "Lisbon hams." Lamego was captured from the Moors in 1057 by Ferdinand I of Castile and Leon.

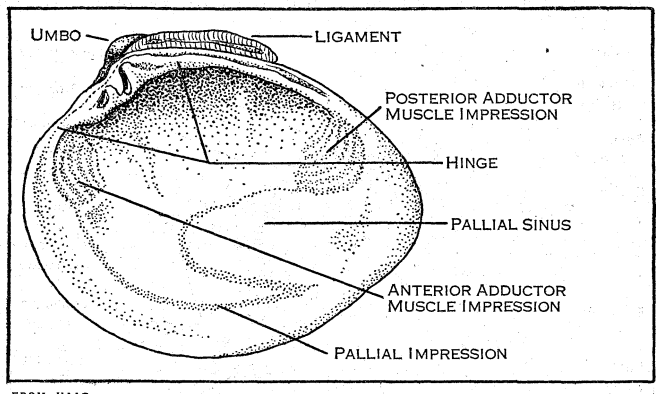
LAMELLIBRANCHIA, a group of aquatic invertebrate animals forming a class of the phylum Mollusca (*q.v.*). The most familiar examples of these animals are the oyster, the mussel and the clams, and these popular names are sometimes given to various families and genera of the class. The name "bivalves" is also applied to these animals (Bivalvia), and the group as a whole has also been named Pelecypoda. The majority of the Lamellibranchia live in the sea, but a few families of the group have penetrated into brackish and fresh water. They are internally and externally symmetrical and are distinguished from other Mollusca by the possession of a shell formed in two pieces (valves) which are joined by a tough cuticular ligament and mostly, in addition, by a system of interlocking teeth. They are further distinguished by the rudimentary development of the head and the presence of two symmetrical gills which are subject to very complex modification and, in addition to their normal respiratory function, play an important part in the process of feeding. The foot is usually well developed and modified for burrowing in sand and mud, and in many cases it secretes a tuft of adhesive threads (the byssus) by which the animal can anchor itself.



FROM "ANIMALS OF ALL COUNTRIES" (HUTCHINSON)

FIG. 1.—GIANT CLAMS (TRIDACNA) ON CORAL REEFS IN A TROPICAL SEA

With very few exceptions the Lamellibranchia are sedentary animals which live buried in sand or mud and feed on minute plankton (floating plants and animals) and organic débris. A few groups have taken to burrowing in rock or wood and certain genera are permanently fixed down by the byssus or by one valve of the shell. The group as a whole exhibits less diversity of habitat than the other large group of molluscs, the Gastropoda (*q.v.*).

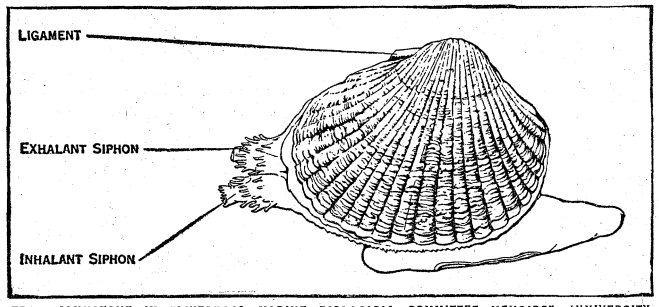


FROM HAAS

FIG. 2.—SHELL OF THE LAMELLIBRANCH, DIONE ROSEA, SHOWING HINGE, LIGAMENT AND MUSCLE IMPRESSIONS

The Lamellibranchia comprise some 7,000 species belonging to more than 100 families. They range in size from species of Condylocardia a millimetre in length, to species of Pinna and Tridacna (the giant clam) which attains a length of over a metre. They have a considerable vertical range in the sea and are of almost universal distribution. Like the Gastropoda they first appear in the Lower Cambrian.

This class of molluscs has been united in the past with the Gastropoda and Scaphopoda to form a sub-phylum, the Prorhipidoglossomorpha. This arrangement emphasizes certain points in which those groups differ from the Cephalopoda and Amphineura. As far as the Lamellibranchia are concerned, however, the association seems to exaggerate their resemblance with the Gastropoda and Scaphopoda, and to attach too little importance to the very marked specialization of this class. This specialization is apparent in the most primitive members of the Lamellibranchia and seems to suggest very early divergence from the rest of the Mollusca.



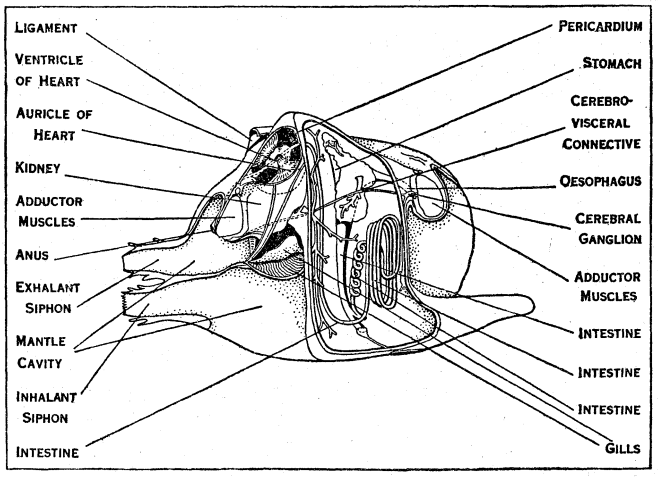
FROM JOHNSTONE IN "LIVERPOOL MARINE BIOLOGICAL COMMITTEE MEMOIRS" (UNIVERSITY PRESS OF LIVERPOOL)

FIG. 3.—EXTERNAL APPEARANCE OF CARDIUM. THE TONGUE-LIKE FOOT IS ON THE RIGHT

CLASSIFICATION

One of the outstanding features of the Lamellibranchia is the structural uniformity which is found in many of their internal and external parts. This has made it peculiarly difficult to distinguish satisfactory subdivisions of the group and its classification has, as a result, been a source of much controversy in the past. Palaeontologists and the students of living molluscs have differed as to the basis upon which the main subdivisions should be established. The main groups recognized by zoologists depend upon the structure of the gills. The latter are not preserved in fossil remains and, thus, the palaeontologist has had recourse to the shell and its essential features, such as the hinge-line and the hinge-teeth.

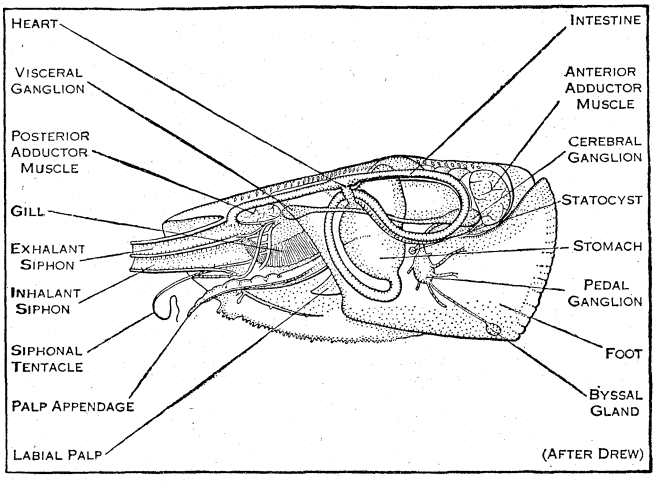
The schemes of classification produced by these different methods are somewhat different; but they can in some cases be reconciled, as the divisions proposed contain more or less the same families. Thus the classification proposed by Pelseneer and based on the gill structure is very largely equivalent to that suggested by Dall who used the hinge-line as a basis. More radical differences are found between Pelseneer's system and that of Bernard, and on two points



FROM JOHNSTONE IN "LIVERPOOL MARINE BIOLOGICAL COMMITTEE MEMOIR" (UNIVERSITY PRESS OF LIVERPOOL)

FIG. 4.—DISSECTION OF THE COCKLE (CARDIUM EDULE), A FORM OF LAMELLIBRANCHIA USUALLY FOUND IN ESTUARIES WHERE SALINITY IS MILD

the zoologist has some difficulty in accepting the latter: (1) Several important features (the structure of the foot, coelom and gills) indicate that forms such as *Yoldia* and *Solemya* (Protobranchia of Pelseneer) are the most primitive Lamellibranchs; but Bernard places them as a suborder of his Pleurodonta apparently more specialized than the Mytilidae, Pectinidae, etc., and associates with them forms otherwise more specialized such as the Arcidae and Pectunculidae. (2) Nothing seems more certain than that the special bionomic and structural characters of the Septi-



FROM LANKESTER, "TREATISE ON ZOOLOGY" (A. & C. BLACK, LTD.)

FIG. 5.—DISSECTION OF YOLDIA LIMATULA (PROTOBRANCHIA), AN ARCTIC TYPE. SEEN FROM THE RIGHT SIDE

branchia are of basic importance. Yet Bernard puts them in a Heterodonta subdivision without any special distinction. It is far from desirable to ignore the palaeontologist's point of view in this question, especially as it involves a study of the embryological development of the hinge; but on the whole it seems better, until a more satisfactory system is produced, to accept the zoological classification. Though it is primarily based upon the structure of the gills, it takes other organs into account.

LAMELLIBRANCHIA (Pelseneer, 1906)

Order 1 Protobranchia.
Suborder 1 Solemyacea.
2 Nuculacea.

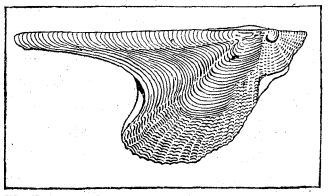
Order 2 Filibranchia.
Suborder 1 Arcacea.
2 Trigoniacea.
3 Mytilacea.
4 Pectinacea.
5 Dimyacea.

Order 3 Eulamellibranchia.
Suborder 1 Ostreacea.
2 Submytilacea.
3 Tellinacea.
4 Veneracea.
5 Cardiacea.
6 Chamacea.
7 Myacea.
8 Adesmacea.
9 Anatinacea.

Order 4 Septibranchia.
Suborder 1 Poromyacea.

ANATOMY AND PHYSIOLOGY

The body of a Lamellibranch is divisible into three main areas—the visceral mass, the mantle and the foot. There is no specially differentiated head such as is found in other molluscs. The animal is bilaterally symmetrical and the main axis is occupied by the visceral mass. The mouth is situated at the anterior end of the latter and, though it is provided with lips which are generally continued on each side as lobes (labial palps), this area is not marked off from the rest of the body and except in *Nucula* and *Poromya*, is not furnished with sense organs and tentacles.



FROM "ANIMALS OF ALL COUNTRIES" (HUTCHINSON)

FIG. 6.—AVICULA BRUNNEA, THE INDIAN WING-SHELL OYSTER

The visceral mass is covered over by a sheath of integument, the mantle, which hangs down on each side like the skirt of a coat. Between the free part of the mantle on each side and the visceral mass is the mantle cavity. The foot projects as a highly muscular prominence from the under side of the visceral mass.

The mantle and its derivatives are in a sense the most important feature of Lamellibranch organization and as such its rôle is comparable with that of the mantle of the Decapod Cephalopoda (*q.v.*). Not only does it secrete the shell, but its edges are produced into inhalant and exhalant siphons, and its derivatives, the gills, perform respiratory, nutritional and incubatory functions.

The shell first appears in the embryo as a single structure. In the course of subsequent development two separate calcified plates are secreted by the right and left areas of the shell-gland. With very few exceptions these valves are joined together by a series of interlocking teeth which project from the inner dorsal border of the valves (hinge-line).

The arrangement, shape and development of these teeth are variously differentiated and afford, as has been shown, a basis of classification. Munier-Chalmas and Bernard have devised a method of representing the different types by means of formulae and symbols. The two valves are additionally joined by an elastic ligament which is a persistent rudiment of the larval shell. The action of the ligament is to pull the top edges of the two valves together so that the lower edges "gape" and expose the animal within. The gaping of the valves is counteracted and the valves are closed by the contraction of strong adductor muscles. These muscles, which are usually two in number (anterior and posterior adductors), are developed from the mantle. Their fibres are dis-

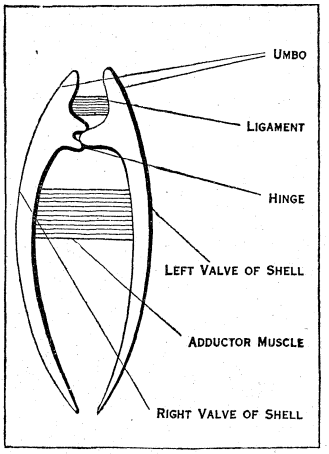
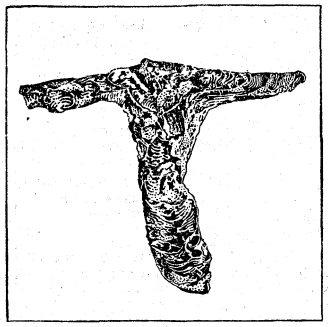


FIG. 7.—DIAGRAM OF A TRANSVERSE SECTION OF A LAMELLIBRANCH SHELL, SHOWING LIGAMENT AND ADDUCTOR MUSCLE

posed transversely to the main axis of the body and they join the mantle-lobes to the valves on each side. By contraction of these muscles the resistance of the hinge is overcome and the valves are closed. Thus, as long as the valves are closed, the muscles are in a state of tonus and when this is relaxed the valves are separated.

The shell varies very considerably in shape. In some genera the two valves are unequal in size and of a different shape (*Pecten, Ostrea*), and some forms are permanently fixed in the sea-bottom by the adhesion of one valve to the latter (*Chama, Spondylus*). In certain species of *Pinna, Anodonta,* etc., the valves are fused along the hinge-line. In *Ensis* (the razor shell) the shell is long and tubular; in *Brechites* and *Teredo* (the shipworm) it is reduced to a rudimentary shell. A variety of ornamentation is formed by the interruption of the growth-lines of the shell by ribs radiating from the umbo (apex of the dorsal border) and by development of spines and scales.



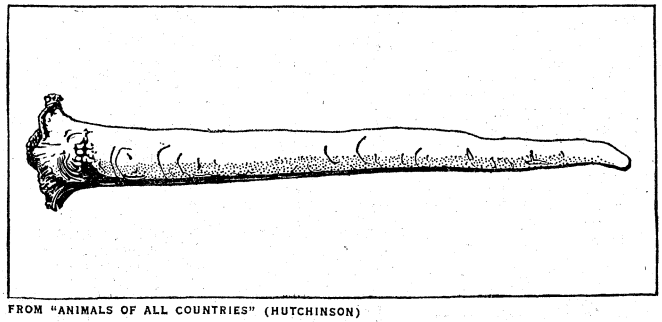
FROM "ANIMALS OF ALL COUNTRIES" (HUTCHINSON)

FIG. 8.—MALLEUS, THE HAMMER-OYSTER, A MEMBER OF THE SAME FAMILY AS THE PEARL OYSTERS

As in the Gastropoda the mantle may become reflected over the surface of the shell (Galeommatidae) and finally in *Scioberetia* and a few other genera it completely covers the shell.

The mantle hangs down on each side of the visceral mass as two loose folds and in the most primitive Lamellibranchia the ventral edges of their folds are entirely free and unattached (*Nucula, Arca,* etc.). In all other members of the class the two lobes of the mantle are united with each other at one or more points below the ventral surface of the visceral mass.

In a large number of forms there is one junction only. This is at the posterior end of the animal and it forms an aperture adjacent to the anus. This is known as the exhalant orifice and serves for the passage of faeces and stale water from the mantle cavity to the exterior. Among a second large group of families there is a second junction close to the first. Three apertures are thus formed in the mantle-edge: the posterior or exhalant aperture (already described), a median or inhalant aperture (by which water is drawn into the mantle cavity) and a larger anterior orifice from which the foot projects (pedal orifice). A fourth orifice is produced, *e.g.,* in certain of the family Solenidae, by a third fusion of the mantle-edges. The exhalant and inhalant orifices are in many genera prolonged as tubes or "siphons." Elongate



FROM "ANIMALS OF ALL COUNTRIES" (HUTCHINSON)

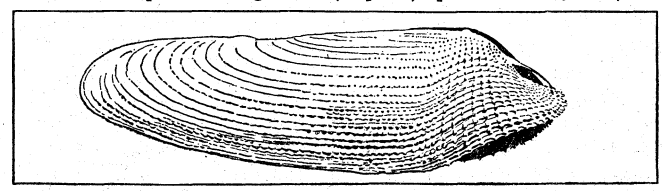
FIG. 9.—BRECHITES JAVANUS, THE WATERING-POT SHELL

These molluscs either burrow in sand or adhere to solid bodies by means of the tubular projections of the "rose," the expanded end of the tube in which the valves of the true shell are embedded

siphons are characteristic of burrowing forms as they enable the mollusc, when burrowing below the surface, to maintain communication with the water upon which it depends for food and oxygen and also to get rid of its waste products. Forms like *Cumingia, Pholas, Mactra* have very long siphons, twice or three times as long as the shell. In *Teredo* the siphons form the larger part of the total bulk and secrete a calcareous tube. Similar large siphons which secrete a calcareous sheath are seen in *Clavagella.*

The gills, which are an even more distinctive feature of Lamellibranch organization, are described under "Respiratory System."

The foot is usually very muscular and in some primitive forms (*Yoldia, Solemya*) among the Protobranchia it has a flat sole which allows of a creeping mode of locomotion. This is, however, of rare occurrence and in *Nucula* (an otherwise primitively organized Protobranch), Hirasaka has recently shown that the foot is, as in most other Lamellibranchia, a burrowing organ. The foot of certain more specialized genera (*Lepton,* species of *Erycina*) has



BY COURTESY OF F. MARTIN DUNCAN, ESQ.

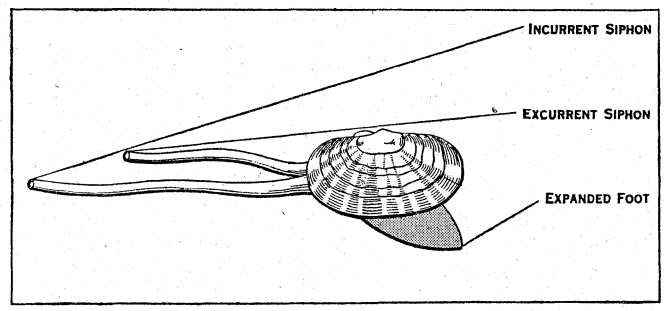
FIG. 10.—VIEW OF THE SHELL OF THE PIDDOCK (PHOLAS) SHOWING ROWS OF SPINES USED FOR GRINDING ROCK

a creeping surface. Usually, however, it is laterally compressed and its lower edge is keeled so that the whole foot is somewhat like the blade of an axe—hence the name Pelecypoda (axe-foot; Gr. πέλεκυς, axe), which is sometimes given to the class.

In the middle line of the surface of the foot is an orifice corresponding with the ventral pedal pore of the Gastropoda. This leads into a cavity in which is secreted a mass of a hard substance, *conchyolin* (which constitutes the organic matrix in the shell) in the form of long bristles or hairs. This mass is gradually pushed to the exterior where it hardens on contact with water and serves to attach the animal to rocks, stones and masses of sand. This structure, the byssus, is of considerable importance to forms which live on open beaches (*see* section "Bionomics"). It is imperfectly developed in the Protobranchia and is large and highly efficient in *Anomia* (in which it is calcified and passes through a hole in the right valve), *Arca, Mytilus, Pecten,* etc.

INTERNAL ORGANIZATION

Alimentary System.—The situation of the mouth has already been described. It leads through a short oesophagus directly into the stomach. In the Nuculidae (Protobranchia) alone is there any special expansion of a pharyngeal nature. In the embryo of *Cardium* Lovén observed a small protuberance in the stomodaeal wall which may be a vestige of a radular coecum. This observation has never been recorded in other Lamellibranchia and in no adult representative of this class is there a radula (the rasping tongue characteristic of the rest of the Mollusca). The stomach is thin-walled and lined with hard cuticle. It has a well-marked pyloric coecum which in some forms communicates with the initial part of the intestine by a longitudinal slit as in certain Gastropoda. This coecum secretes the crystalline style, a gelatinous rod which contains a digestive enzyme. The physiological action of the style has been recently studied by several workers. In *Mya* Yonge shows that its ferment reduces starch and glycogen. The liver is



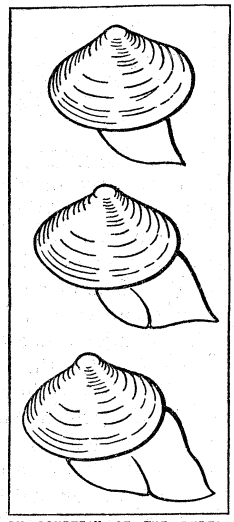
AFTER OWEN, FROM LANKESTER, "TREATISE ON ZOOLOGY" (A. & C. BLACK, LTD.)

FIG. 11.—THE RIGHT SIDE OF A PSAMMOBIA FLORIDA

bilobed and usually communicates with the stomach by several orifices. It contains (*e.g.,* in *Mya*) amylolytic, proteolytic and lipolytic enzymes and is the principal organ of digestion. It seems also to have an absorptive function. The intestine is usually long and provided with a typhlosole. It traverses the ventricle of the heart (as in the Rhipidoglossate Gastropoda) in most cases; but in *Nucula* and some Filibranchia it passes below the ventricle.

It should be mentioned here that the tracts of cilia on the gills and palps are an important adjunct to the alimentary system. By their vibration the food particles which are drawn into the mantle-cavity, when water is taken in, are sorted out into appropriate sizes and driven towards the palps from which they are passed to the mouth.

Circulatory System.—The blood is usually colourless; but haemoglobin is found in it in sundry forms which live in sand and mud (Arcidae, *Solen,* etc.) and haemocyanin in some others (species of *Venus* and *Cardium*). The blood is contained in vessels which are usually capacious cavities (sinuses). The heart is situated on the dorsal side of the body and consists of a medium ventricle and two lateral auricles. In most Lamellibranchia there are two aortae (anterior and posterior). In the ramifications of these the blood is carried to the tissues. It is ultimately collected into certain large sinuses and passes thence to the gills in afferent vessels. After oxygenation it is carried from the gills in efferent vessels to the auricles of the heart.



BY COURTESY OF THE BUREAU OF PRINTING, CALIFORNIA

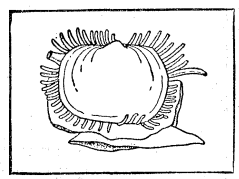
FIG. 12.—DIAGRAMS OF TIVELA, SHOWING EXTENT AND APPEARANCE OF THE FOOT

The Gills.—There are two gills in all Lamellibranchia, except the Septibranchia, situated one on each side of the body as prolongations from the upper surface of the mantle-cavity. Each gill is in its primitive form comparable with those of other molluscs, in that it is composed of a central vascular axis carrying on its opposite sides a series of filaments. This simple feather-like structure is found in the Protobranchia. From this structure are evolved a number of types of gill which exhibit progressive complexity and remarkable divergences from the primitive type, of which only a short account can be given.

1. The rows of filaments, instead of being opposed as they are in the Protobranchia, become parallel to each other and hang downwards in the mantle-cavity and the extremities of the individual filaments are bent upwards so that each row of filaments is doubled. The gill thus consists of four series of filaments (lamellae). Of these the two lamellae adjacent to the axis are called the direct lamellae, those formed by the upturned portions of the filaments being known as the reflected lamellae.

2. The next advance in complexity is the development of discs of cilia which face each other on adjacent filaments. The masses of cilia of the opposed discs fit into each other rather like the bristles of two brushes, and the discs thus lock the adjacent filaments together.

3. The direct and reflected lamellae are joined by "interlamellar junctions." This stage of development is found in the Filibranchia (*e.g., Pecten*). In the Eulamellibranchia there are vascular interlamellar and interfilamentary junctions.



FROM FORBES AND HANLEY

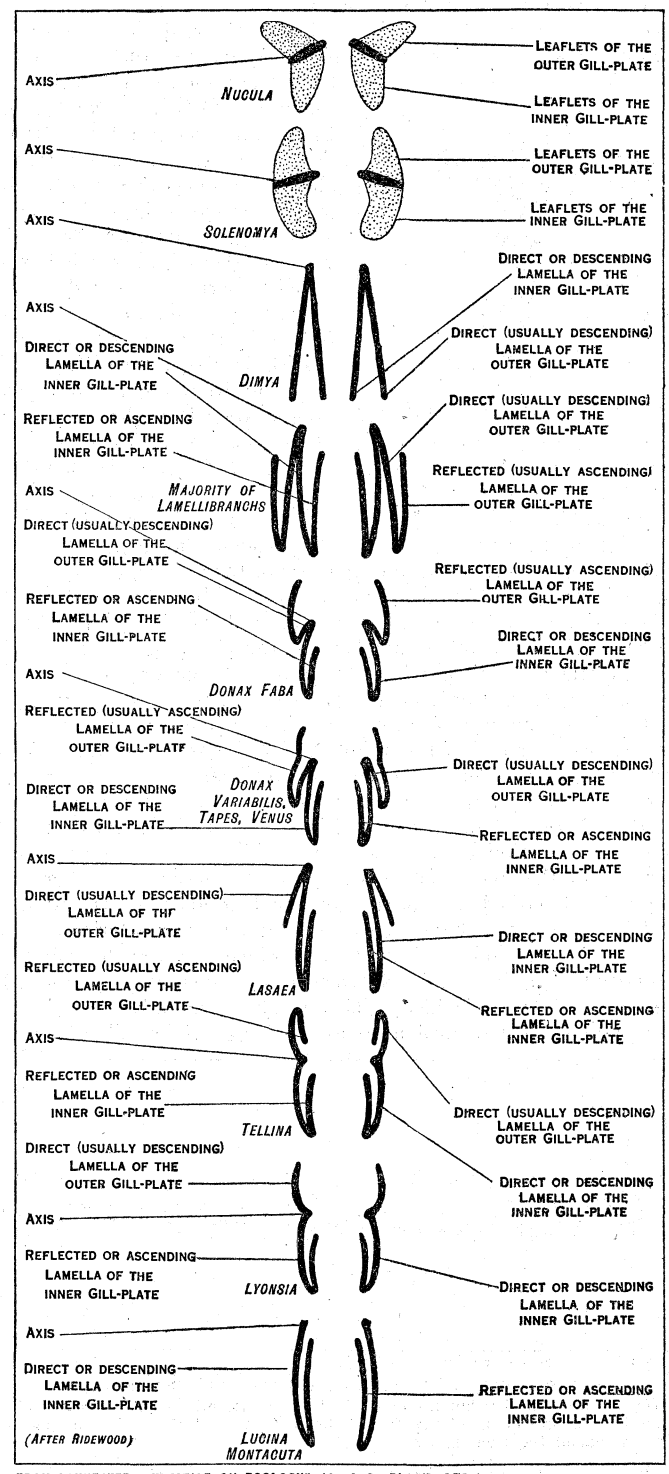
FIG. 13.—LEPTON SQUAMOSUM, SHOWING THE TENTACLE-LIKE APPENDAGES OF THE MANTLE; 1½ NATURAL SIZE

4. The lamellae may be thrown into folds and the extremities of the filaments which are free in primitive forms may fuse with the mantle. The result is that the mantle-cavity becomes subdivided by the partition thus formed by the gills into an upper and a lower chamber and the respiratory and nutritive currents of water are canalized. The water enters at the inhalant orifice, passes into the lower chamber, thence through the meshwork of filaments into the upper chamber, and is expelled by the exhalant siphon.

5. In the Septibranchia the gills are profoundly modified. Their respiratory function is suppressed by the development of muscular tissue in their substance and the gills are converted into a contractile partition.

The rôle of the gills in providing an incubatory chamber is expanded in another section of this article.

Coelom and Excretory Organs.—In the Protobranchia the primitive connection between the pericardium and the gonadial coelom is retained as the reproductive organs open into the reno-pericardial canals. In the Filibranchia, such as *Pecten,* the genera-



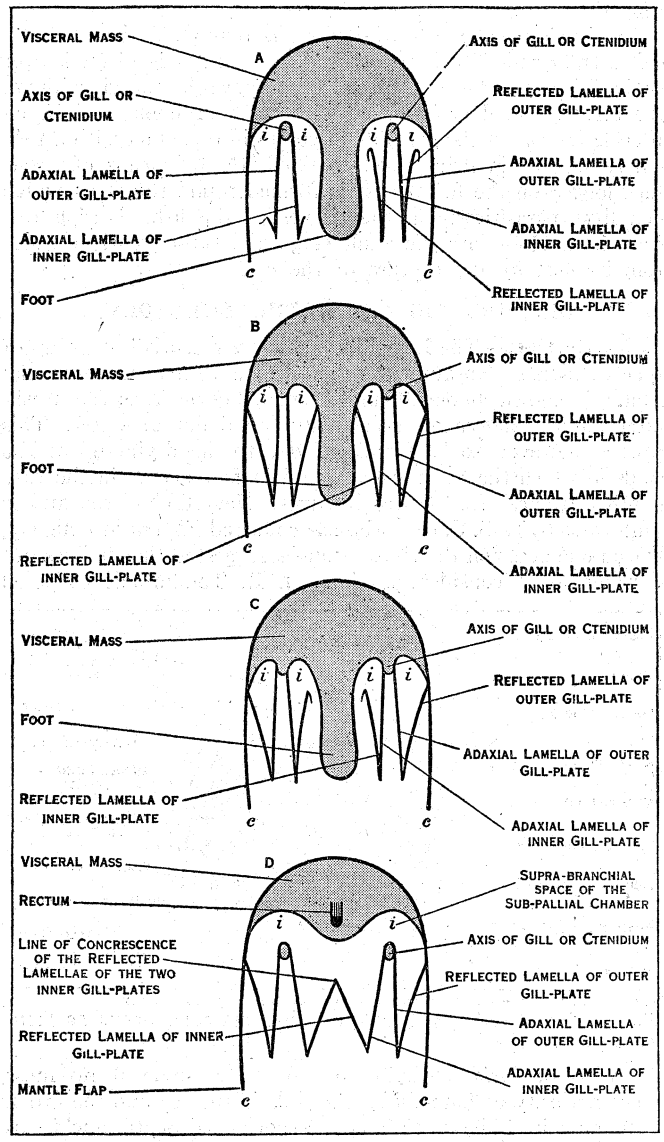
FROM LANKESTER, "TREATISE ON ZOOLOGY" (A. & C. BLACK, LTD.)

FIG. 14.—DIAGRAMMATIC TRANSVERSE SECTIONS THROUGH THE GILLS OF VARIOUS LAMELLIBRANCHS TO SHOW POSITION OF THE LAMELLAE

tive ducts open into the kidneys, and in the Eulamellibranchia they have separate orifices. The kidneys are symmetrical and ramified and in certain specialized forms they communicate with each other. The excretion of hippuric acid is carried out by the pericardial glands.

Nervous System.—The nervous system consists of pairs of ganglia (connected by commissures), nerve cords and sense organs.

With one exception the ganglia are separate from each other and the extreme condensation of the nervous system arising from the juxtaposition of the ganglia which is found in Gastropoda and Cephalopoda is not found. In the Protobranchia the pleural, cerebral, pedal and visceral ganglia are all distinct. In all other Lamellibranchia the cerebral and pleural ganglia are fused together. The visceral commissure is always long. The pedal ganglia are



FROM LANKESTER, "TREATISE ON ZOOLOGY" (A. & C. BLACK, LTD.)

FIG. 15.—DIAGRAM OF TRANSVERSE SECTIONS OF A LAMELLIBRANCH TO SHOW THE ADHESION OF THE GILL LAMELLAE TO THE MANTLE FLAPS, TO THE FOOT AND TO ONE ANOTHER

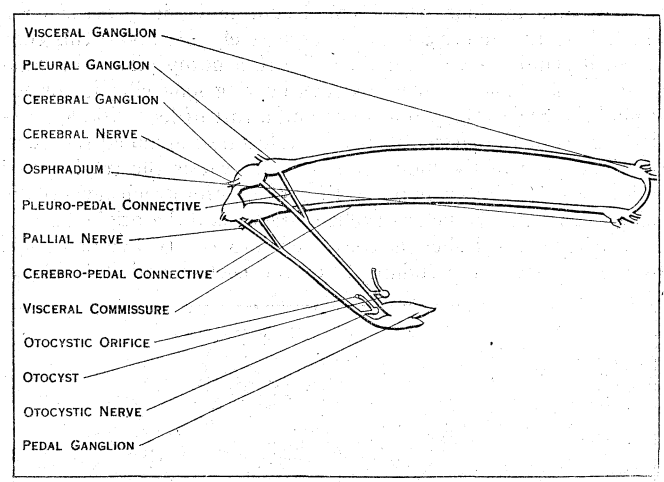
A, two types of free gill axis. B, condition at foremost region in *Anodonta*. C, hind region of foot in *Anodonta*. D, region posterior to foot in *Anodonta*

closely approximated. The visceral ganglia are usually placed on the surface of the posterior adductor muscle and in most Eulamellibranchia are more or less attached to each other. There is no stomatogastric system such as is found in the Gastropoda, the alimentary canal being innervated from the visceral commissure. Sense organs consist of eyes, statocysts, osphradia and tactile organs. In a very few genera eyes are found on the head (*e.g.*, in the Mytilidae). It is to be inferred that, in general, eyes in such a position would be useless, as this region is completely covered over by the shell. Eyes are consequently found on parts which can be extended from the latter, viz., on the siphons and the edge of the mantle. In their most simple form these are simple pigment-spots. But in certain groups they are more complex and in *Pecten* and *Spondylus* they attain the maximum complexity, consisting of a cornea, conjunctiva, lens, retina, deep pigment layer and tapetum. The optic nerve divides into two branches just below the optic cup and one branch passes round the latter to enter the retina. The extremities of the retinal cells (rods) are turned towards the interior of the optic globe (*i.e.*, away from the direction in which the light-rays enter the latter).

Reproductive Organs.—The sexes are usually separate in the Lamellibranchia; but all the members of the Anatinacea and of sundry other groups, *e.g.*, *Poromya*, *Kellya* and the parasitic genera, as well as individual species of *Ostrea*, *Cardium* and the Cyrenidae are hermaphrodite. Sexual dimorphism is very little developed and is only evident as a slight difference of proportion. In *Astarte* the border of the male shell is smooth, that of the female shell is undulating. The reproductive organs are simple and consist of the ovary in females, the testis in males and the ovotestis or hermaphrodite gland in bisexual forms, together with a generative duct. The latter, however, is not found in the Protobranchia and many Filibranchia, the ova and spermatozoa being liberated to the exterior through the kidney. In the Lucinidae, *Ostrea* and *Sphaerium*, the gonad and kidney open into a common cloaca. When the gonad acquires its own aperture this is situated either together with the renal duct on a common papilla or in close proximity to it. In certain hermaphrodite forms the ovary and testis are completely separate from each other and open by separate ducts (Anatinacea, *Poromya*). There is no copulatory organ in the male and no accessory glands or organs, except in the male of *Cuspidaria*. Fertilization is usually external but it may take place in the cloacal chamber or (as in the common oyster, *Ostrea vulgaris*) in the oviduct itself.

REPRODUCTION AND DEVELOPMENT

Breeding Habits: Oviposition.—Marine Lamellibranchia usually discharge their eggs into the water, fertilization is external and the embryo develops as a free-swimming larva. In a few marine forms and in fresh-water groups the eggs are retained within the maternal body or shell where they are fertilized and incubated. Incubation is a distinctive feature of fresh-water Lamellibranchs and attains a far greater development in this class than in any other molluscan group. In incubatory forms the eggs are retained as a rule after fertilization in the spaces between the gill-lamellae, which are often modified to serve as brood-chambers (*Unio*, *Anodonta*, *Pisidium*, *Sphaerium*, etc.). It has been more than once observed that the embryos eat the epithelial cells of



FROM LANKESTER, "TREATISE ON ZOOLOGY" (A. & C. BLACK, LTD.)

FIG. 16.—NERVOUS SYSTEM OF NUCULA NUCLEUS FROM LEFT SIDE

the maternal gills during incubation. In certain species of *Ostrea* the embryos are incubated in the mantle-cavity outside the gills.

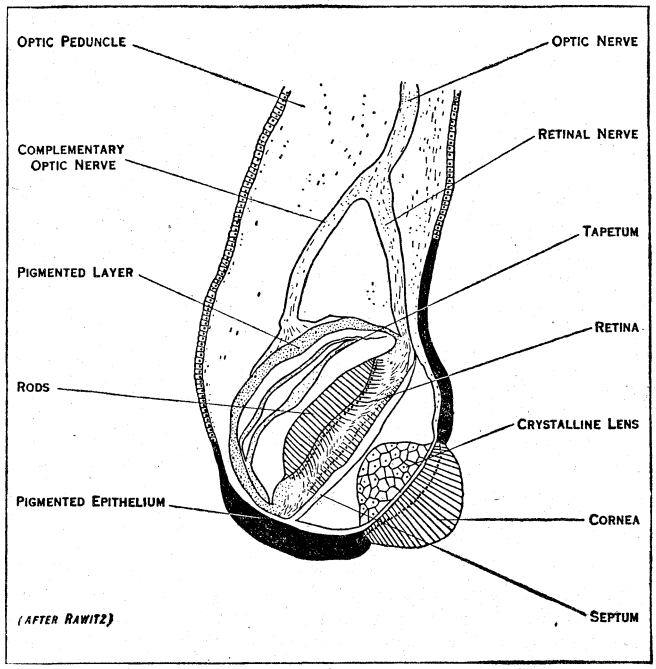
There is not much doubt but that marine Lamellibranchs which live in cold seas are more prone to adopt some form of incubation than those inhabiting warm or temperate seas.

One of the most curious devices for tending the young is found in *Thecalia concamerata*, the shell-valves of which are modified to form a kind of inner chamber in which the eggs are lodged.

Development.—The development of the Lamellibranchia is best known from Meisenheimer's study of the freshwater mussel

Dreissenia polymorpha. With two important exceptions the course of development in such other forms as have been studied is more or less similar.

In *Dreissenia* the first two cleavage divisions produce four macromeres of which one is very much larger than the rest. Successive divisions of the macromeres yield "quartettes" of micromeres, and these are also divided until the micromeres form a cap

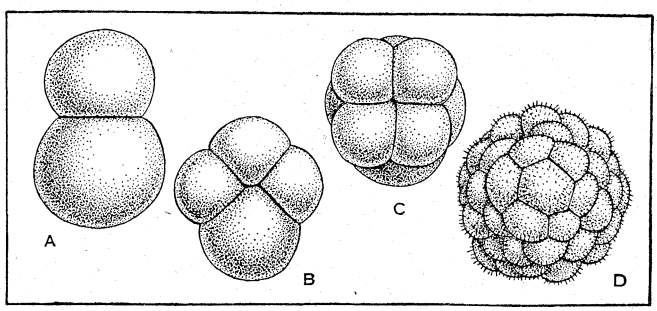


FROM LANKESTER, "TREATISE ON ZOOLOGY" (A. & C. BLACK, LTD.)

FIG. 17.—SECTION THROUGH THE PALLIAL EYE OF PECTEN PUSIO

overlying the macromeres. This type of cleavage is spiral, *i.e.*, like that found in Gastropoda, but the radial symmetry resulting from cleavage is modified very early in development.

Of the mass of cells thus formed those which subsequently give rise to the mid-gut and the mesoderm are invaginated in the course of development. The larval stomach is developed and is joined by two invaginations, the stomodaeum and the proctodaeum, which form the mouth and anus respectively. At about this time the shell gland appears and gives rise to a horny plate, the rudiment of the shell. A girdle of cells bearing long cilia is formed around the larva (the prototroch) and a tuft of long cilia appears at the apex of the larva. The embryo has now assumed the characteristic form of the molluscan larva known as the trochophore and starts its free-swimming life. The prototroch eventually enlarges to form the velum (veliger stage) and the original horny plate of the larval shell is converted into the two-valved shell. Before this stage the rudiments of the coelom and the kidneys



FROM DREW IN "JOHNS HOPKINS UNIVERSITY MEMOIRS"

FIG. 18.—FIRST FOUR CLEAVAGES OF EGG AND CILIATED LARVA OF YOLDIA LIMATULA; GREATLY MAGNIFIED

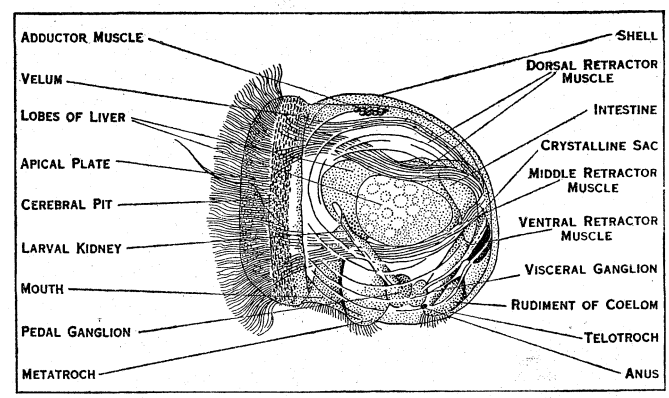
are recognizable. During the veliger stage the nervous system, musculature, statocysts, gills and foot of the adult are laid down. The larva metamorphoses into the adult with great rapidity. The cells of the velum are cast off, the larval musculature disintegrates and the area of the larval mouth shrinks to the proportion characteristic of the adult.

One of the most notable modifications of this developmental history occurs in the Protobranchia in which the veliger has an enormous velum consisting of rows of large ciliated cells conferring on the larva a barrel-shaped appearance. In the fresh-water incubatory forms such as *Sphaerium* and *Unio* there is no free-swimming stage and neither prototroch nor velum is developed.

The development of the Unionidae is remarkable in that part of the embryonic life is parasitic. The embryo is ejected after incubation as a larva of a special type known as the glochidium. The bivalved shell is furnished with teeth or hooks and if, on entering the water, the glochidium comes into contact with a fish, it may succeed in fixing itself to the latter by means of these. Once lodged on the fish a cyst is formed round the larva which then lives parasitically in the tissues of the fish. During this phase it develops into the adult stage and subsequently escapes from its host by the rupture of the cyst.

DISTRIBUTION AND NATURAL HISTORY

Distribution.—The Lamellibranchia are essentially a group of aquatic animals. No authentic record of a permanent terrestrial habitat is known among them. A small South American fresh-water mussel *Eupera* is occasionally found out of water. This appears, however, to be fortuitous due to the drying-up of the ponds in which the mollusc lives, and in fact occurs in the case of other tropical fresh-water bivalves. Nevertheless the author is informed by G. S. Carter, who has collected *Eupera* in Uruguay, that on one occasion the circumstances suggested that it lives out of water for a considerable time. J. R. Tomlin has collected



FROM MACBRIDE, "TEXT-BOOK OF EMBRYOLOGY" (MACMILLAN & CO., LTD.)

FIG. 19.—YOUNG VELIGER LARVA OF DREISSENIA POLYMORPHA AS SEEN FROM THE SIDE

specimens of *Pisidium* living out of water upon damp moss.

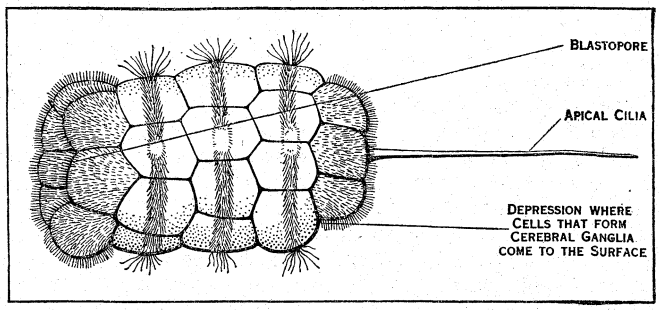
The majority of Lamellibranchia live in the sea and the orders Protobranchia, Filibranchia and the specialized Septibranchia are almost exclusively marine in distribution. Among the Filibranchia *Scaphula* lives in the rivers of India and of the Eulamellibranchia the Unioniacea, the *Sphaeriacea* and a few isolated genera such as the aloidid *Erodona* and the mytilid *Sinomytilus* are inhabitants of fresh water. The Unionidae, which are most plentiful in America, are one of the largest families of fresh-water animals.

There are in addition a certain number of forms which constitute a population intermediate between the truly marine and fresh-water fauna. These are found in the estuaries of large rivers and in tidal ditches and lagoons. The cockles (*Cardium*) seem to thrive in a salinity midway between that of the sea and of fresh water and are usually found in estuaries. Other forms which are "euryhaline" (*i.e.*, tolerate a wide range of salinity) or require intermediate conditions are found among the Arcidae, Limnocardiidae, Mytilidae, Scrobiculariidae, *Macoma*, etc.

Marine Lamellibranchia are widely distributed and are found in all seas and at almost all depths. As in other marine animals, certain areas are characterized by certain genera. Thus, *Mya*, *Yoldia* and *Astarte* are found largely in arctic seas. As regards the vertical distribution, *Solen*, *Cardium*, *Ostrea*, for example, live principally in shallow water. The Septibranchia as a whole

inhabit deep water and with them are found species of *Pecten, Abra* and *Callocardia.* Species of the two last-named genera have been found at a depth of 2,900 fathoms, the greatest depth at which a lamellibranch has been recorded.

Freshwater Lamellibranchia have been found in all the great river systems of the world. The larger forms (*Unio* and *Anodonta*)

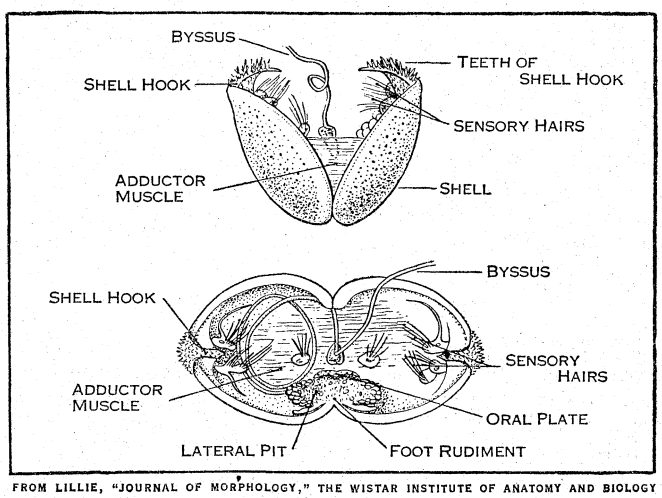


AFTER DREW, IN LANKESTER, "TREATISE ON ZOOLOGY" (A. & C. BLACK, LTD.)

FIG. 20.—SURFACE VIEW OF A 45-HOUR EMBRYO OF YOLDIA LIMATULA

tend to keep to rivers, lakes and large ponds; but the smaller forms (*Pisidium, Sphaerium,* etc.) occur in pools, ditches, streams and marshes. As examples of regional localization we may cite *Iridina* and *Mutela* which are exclusively found in Africa, where *Corbicula* is also well represented; and *Scaphula* and *Parallelipepedum* which are peculiar to India. The dispersal of marine lamellibranchs is mainly effected in the free-swimming larval stage during which they drift about in currents. Such freshwater forms as are parasitic in the larval stage (*vide ante*) no doubt owe their dispersal to the fish on which they live. Others may be carried from one river or lake to another by birds or are transported by water beetles; examples of *Sphaerium* and *Pisidium* have been found clinging by their valves to the legs of those animals.

The habitats of the individual species of a genus tend either to be more or less distinct or to overlap to some extent. Thus in a survey of a certain part of the English Midlands *Pisidium casertanum* is reported as occupying a great variety of habitats and *P. obtusale* is only found in ditches and marshes. Johansen in his survey of Randers Fjord in Denmark found that *Anodonta cygnea* ranged into 2–3 promille salinity and *A. complanata* was restricted to .2–.6 promille. Nevertheless we are far from knowing with certainty to what extent the members of species diagnosed from their structural characters occupy identical habitats over the whole of their range. (*See* GASTROPODA and SPECIES.)

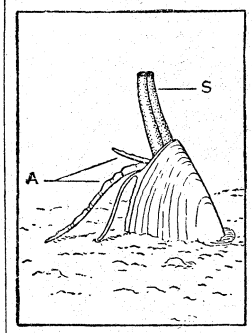


FROM LILLIE, "JOURNAL OF MORPHOLOGY," THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY

FIG. 21.—TWO STAGES IN THE DEVELOPMENT OF ANODONTA

Both figures represent the glochidium stage. Above, not yet attached larva, with the two dentigerous valves wide open. Below, a later stage, after fixture to the fin of a fish

Habits, Food, etc.—The Lamellibranchia are for the most part sedentary animals and their locomotor activities are in the main specialized for making way through the semi-solid medium constituted by sand and mud rather than for rapid progression in less restricted circumstances. A few, indeed, are capable of quick darting movement through the water and all the more sedentary forms do not live actually below the surface of the bottom. Nevertheless a large proportion of them are burrowers and although their range may be limited and their rate of progression slow, we should not overlook how much effort is expended and what activity must be necessary in order to make way through sand and mud. Moreover, in those forms which live on the open coast where sand is continuously being washed away or bedded up, especially in rough weather, considerable exertion is necessary to keep the animal in the right position for feeding and to prevent it from being either buried or washed out and flung high up the beach. In several families this danger is averted by permanent fixation to some solid object (rocks or stones) by means of the byssus or, in more specialized forms, of one valve of the shell.

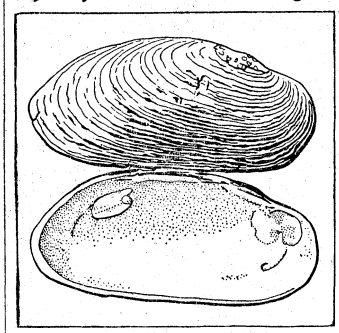


FROM DREW IN "JOHNS HOPKINS UNIVERSITY MEMOIRS"

FIG. 22.—YOLDIA LIMATULA, SHOWING SIPHON (S) AND APPENDAGES OF THE VELA (A); ⅔ NATURAL SIZE

Most burrowing forms keep within a few inches or less of the surface, the distance to which they burrow being largely determined by the lengths of the siphons, for, as a rule, the orifices of both the exhalant and inhalant siphons are kept more or less at the surface. Thus *Mya arenaria,* which has rather long siphons, lives about six or eight inches below the surface. Weymouth states that the pismo clam (*Tivela stultorum*) of California usually lies with the hinge-line directed towards the oncoming surf and the open edge of the valves towards land. Forms which cannot readily orientate themselves in the unstable bottom of the open beach are found in situations where they can form a semi-permanent burrow and the substratum is more solid. Such conditions are realized in the quieter reaches of slow estuaries or in deep bays where the mud is less liable to disturbance. It is here that *Mya, Scrobicularia, Cardium, Macoma* are found in the northern hemisphere.

There are a good many lamellibranchs which burrow into hard material and become adapted to this existence. *Pholas, Lithodomus, Saxicava, Clavagella,* etc., live in holes excavated either by acid secretions or the shell itself. In certain places on the south coast of England the flat slabs of chalk débris at the foot of cliffs are riddled by the holes made by *Pholas. Teredo* (*q.v.*) and *Xylotrya* burrow in submerged timber in which they excavate long passages and such wood may often be honeycombed with these holes. The name "shipworm," which is given to *Teredo* and its allies, indicates that in the past wooden ships were very prone to the attacks of this mollusc (*see* "Economic Importance").



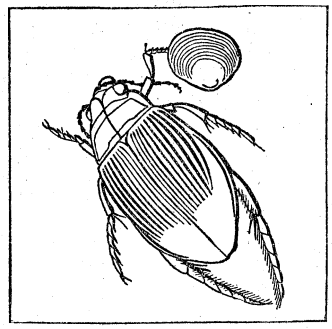
FROM "ANIMALS OF ALL COUNTRIES" (HUTCHINSON)

FIG. 23.—THE FRESHWATER MUSSEL (MARGARITIFERA)

The young, after leaving the parent shell, are parasites on fish for two to six weeks. Freshwater mussels often yield pearls

The Lamellibranchia live almost exclusively upon plankton and particles of organic débris that float in the water. The mode of feeding characteristic of this group has already been described. It is probable that the larger proportion of the food taken in is of a vegetable nature. But as minute animals and the eggs and larvae of larger forms occur in the plankton we should not regard those molluscs exclusively as vegetable feeders. The stomach contents of *Mya* analysed by Yonge contained Diatoms, Foramenifera, minute (probably larval) bivalves, Ostracods and other small Crustacea, spores and eggs of various kinds, sponge-spicules, etc., though "the largest mass of material consisted of small sand grains." There were also fragments of organic débris, *e.g.,* strips of Algae. The Septibranchia are usually regarded as carnivores. Living at great depths from which plants are normally excluded

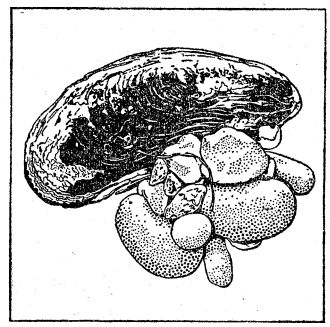
by the absence of sunlight they obviously cannot obtain living plant tissue for food. The very profound modification of the gills deprives them of the apparatus for fine sorting found in other classes. Lastly their intestine is very short and of a carnivorous type. As a matter of fact they must subsist very largely on animal plankton and coarse particles of animal carrion, though in all probability a good deal of vegetable débris finds its way at least into the less profound depths of the oceanic abyss. Among those lamellibranchs which bore into the solid material the shipworm has recently been shown to be practically independent of plankton for food and to live upon the wood into which it bores.



FROM KEW, "DISPERSAL OF SHELLS" (KEGAN PAUL, TRENCH TRUBNER & CO., LTD.)

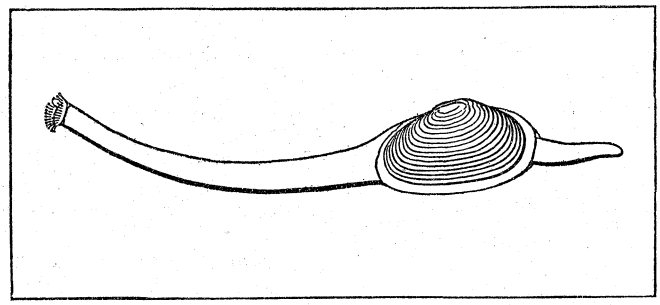
FIG. 24.—SPHAERIUM CORNEUM UPON THE LEG OF A WATER-BEETLE

The chief defences of the Lamellibranchia against enemies are the valves of the shell and the burrowing habit. Without this protection such slow-moving animals deprived of weapons of active defence would be entirely at the mercy of more aggressive enemies. As it is they are preyed upon by a great variety of animals, some of which rely almost entirely on them for food and have developed special modes of attack. Various sorts of whelk (*Buccinum, Purpura, Nassa*) and *Natica* drill holes through the valves by means of an acid secretion of the alimentary canal and the radula and by the aid of the extensible proboscis feed on the animal contained therein. *Scaphander* and other Gastropoda, which have gizzards armed with masticatory plates, swallow small bivalves whole and crunch them up in the gizzard. Birds, fish and other aquatic animals deal with them in the same way. Walruses feed on clams of various kinds which they are said to dig up with their tusks. Fishery investigations have emphasized the importance of Lamellibranchia as an element in the food of edible fishes and the work of Davis on the bottom fauna of the Dogger Bank, where the small clams *Spisula subtruncata* and *Mactra stultorum* predominate over all other large invertebrate animals of the sea bottom, shows how in a particular area the Lamellibranchia are the most important constituent of the food. Davis has shown that *Spisula subtruncata* occupies rather local patches on the south end of the Dogger Bank. These are of vast extent and dense population, one such patch having an area of 700sq.m. and probably carrying a population of 4,500,000,000,000 clams.



BY COURTESY OF S. C. JOHNSON, ESQ.

FIG. 25.—THE COMMON MUSSEL (MYTILUS EDULIS), ATTACHED TO PEBBLES BY MEANS OF ITS BYSSUS



FROM KÜKENTHAL, "HANDBUCH DER ZOOLOGIE" (WALTER DE GRUYTER & CO.)

FIG. 26.—MYA ARENARIA, SHOWING ELONGATED SIPHON AND FOOT

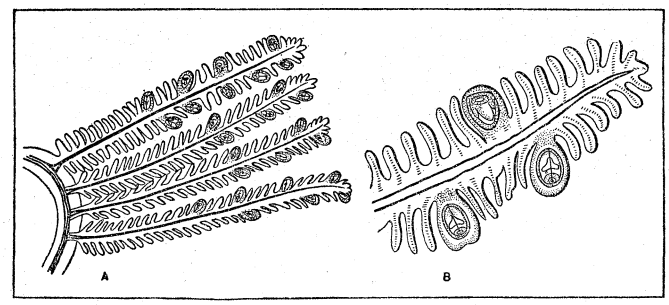
It is stated that certain carnivorous Gastropoda use the spines of teeth situated on the shell-aperture for forcing open the shell of Lamellibranchs. Thus a species of *Murex* is said to grasp an *Arca* with its foot and to drive one of its spines between the valves of the latter. *Sycotypus* is said to use the edge of its own shell for this purpose.

The Lamellibranchia are regularly or periodically exposed to other dangers. The special risks which are run by forms living in sand on open coasts have already been described. Freshwater forms in most parts are regularly exposed to the dangers of low or high temperature. The water in which they live may be frozen over, its temperature may be lowered or it may be dried up by excessive heat. These dangers are met in most cases by the habit of hibernation or of aestivation.

The Lamellibranchia are probably as tenacious of life as Gastropoda (*q.v.*) though less is known concerning them in this respect. An Australian pond mussel is recorded as having lived for nearly 500 days out of water.

Commensalism, or the food-sharing association of one non-parasitic animal with another, is of rather common occurrence among Lamellibranchs. *Lepton squamosum* lives thus in the burrows of Crustacea and marine worms. *Jousseaumia* inhabits the chamber of a Sipunculid and species of *Montacuta* and *Scioberetia* live on Echinoderms. Other bivalves are more closely associated with certain animals. *Modiolaria marmorata* lives embedded in the test of Ascidians and *Vulsella* in the tissues of sponges. *Entovalva* is parasitic in *Synapta*.

The age to which these animals live varies considerably. *Mytilus* and *Cardium* attain their full size in a year, the common oyster in five years. The latter is said to live as long as ten years under cultivated conditions. The giant clam (*Tridacna gigas*) lives for eight years (probably a very low estimate). The swan mussel (*Anodonta*) is recorded as attaining an age of 20–30 years and Weymouth has calculated that the pismo clam (*Tivela stultorum*) lives as long as 26 years.



FROM KORSCHELT, ON "PERLEN" IN "FORTSCHITTE DER NATURWISSENSCHAFTLICHEN FORSCHUNG" (URBAN & SCHWARZENBERG)

FIG. 27.—GLOCHIDIA ON THE GILLS OF FRESHWATER MUSSELS

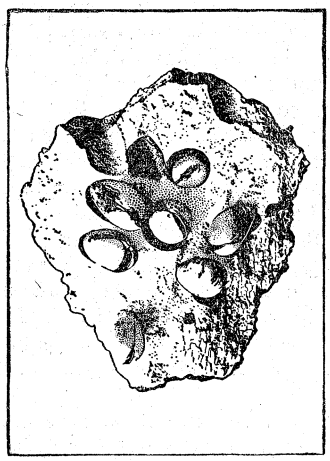
A, gill leaflets with numerous glochidia. B, a single gill leaflet with three glochidia of *Margaritifera*. The glochidium is the larva of the freshwater mussels; during the first part of their development they inhabit the interlamellar spaces of the maternal gill chamber, after which they are extruded and complete their growth as a parasite of fishes

ECONOMIC IMPORTANCE

Like the Gastropoda among other Mollusca the Lamellibranchia have supplied man with food since a very early stage in his evolution. Oysters, cockles, mussels and clams have been found in large quantities in Palaeolithic and Neolithic middens in Europe and elsewhere. The oyster was cultivated under the Roman republic, the celebrated beds in the Lucrine lake being established about 100 B.C. During the empire British oysters, which were very much in favour, were brought from Rutupiae (Richborough) where there was apparently a fishery. At the present time oysters are cultivated in the British Isles, France, the United States, Australia and elsewhere. The principal English beds are at Whitstable, Colchester, Burnham-on-Crouch and Conway (*see* OYSTER). The cockle, scallop and mussel are likewise caught for human consumption in European countries, and a variety of other forms (including those of freshwater) are eaten in most parts of the world. In the Gulf of Naples *Psammobia, Solen,* and *Donax* are fished for the market. The importance of Lamellibranchia as food for edible fishes has already been discussed.

The shells of certain genera are regularly cultivated for the

mother-of-pearl which is used for inlaying, various kinds of ornaments, knife-handles, buttons, etc. The Orient pearl oyster *Meleagrina margaritifera* is fished for this purpose and for the pearls of various kinds obtained from it. The most important pearl fisheries are in Ceylon, Australia and Japan. In the latter country pearls are produced artificially in the pearl oyster by a grafting operation (*see* PEARL). From Roman times onwards the pearls of the European freshwater mussel (*Margaritifera margaritifera*) were sought especially in Scotland, though this industry no longer exists. The large river mussels (Unionidae) of the United States are largely cultivated in connection with button-making.



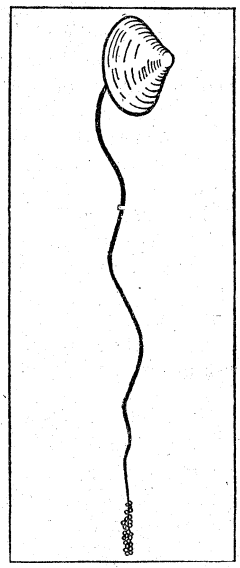
FROM "ANIMALS OF ALL COUNTRIES" (HUTCHINSON)

FIG. 28.—DATE SHELLS (LITHODOMUS) INHABITING CORAL
The holes are bored by means of an acid secretion contained in the mantle

Shell-money is made from clams in various parts of the world and the "wampum" of eastern North America consisted largely of beads made from the shell of *Venus mercenaria.*

In southern India and parts of China the "window-pane oyster" *Placuna placenta* is still used for glazing the windows of houses. The byssus of the large species of *Pinna* was at one time used as a substitute for silk in southern Italy.

Lamellibranchia have proved themselves obnoxious to man in two ways. (1) In the past the cultivation of oysters and cockles in unsanitary situations near sewage-outfalls has led to serious epidemics of typhoid fever, though better cultivation has practically eliminated this danger in England. (2) The shipworm and its allies have been from time immemorial a source of considerable loss through their destruction of the timber of ships, piers, jetties, etc. The damage to ships has, of course, been minimized by the introduction of iron-plated hulls; but *Teredo* is still a cause of trouble to marine engineers and does a considerable amount of damage to submarine wooden structures and much time and money have been devoted to combating this pest.



BY COURTESY OF THE BUREAU OF PRINTING, CALIFORNIA

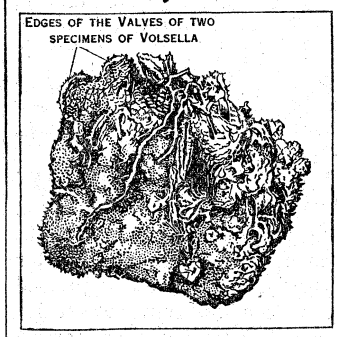
FIG. 29.—YOUNG TIVELA, SHOWING LONG BYSSUS ATTACHED TO SAND GRAINS

EVOLUTION AND PALAEONTOLOGY

The recognition of Lamellibranchia in the oldest fossiliferous rocks is somewhat difficult owing to their unsatisfactory preservation and the similarity between Lamellibranch shells of a certain kind and those of Ostracoda (Crustacea). *Glyptarca* which occurs in Upper Cambrian strata is certainly a Lamellibranch but the exact position of *Fordilla* and *Modioloides* (Lower Cambrian) which have been referred to this class is very uncertain. In the Ordovician *Ctenodonta* and *Modiolopsis* are recognizable as representatives of the Protobranchia and Filibranchia; but the class is not well represented at this epoch. In the Silurian, however, there is a rich Lamellibranch fauna containing representatives of the chief orders except in the Septibranchs, and the modern Aviculidae are recognizable. In the lake beds of Devonian age (Old Red Sandstone) are found shells which resemble those of modern freshwater mussels and are referred to the genus *Archanodon.* These forms and apparently brackish water bivalves are well developed in the Carboniferous and a good many marine genera represented at the present time are recognizable at this period, *e.g., Trigonia, Astarte* and *Lucina.*

A marked alteration of the class took place in Triassic and Jurassic times. Many Palaeozoic genera died out and were replaced by other genera which have persisted to the present time (*Anatina, Isocardia* and *Perna*). The Pernidae and Astartidae were particularly well represented in the seas of this date.

Reef-building forms such as *Chama* and the Rudistae and the large genus *Inoceramus* are characteristic of the Cretaceous fauna. In the Tertiary we find a fauna very like that of modern times. The Rudistae and other secondary families have disappeared and the Anisomyaria (*Avicula, Pinna,* etc.) shows retrogressive tendencies. Specialized genera such as *Pholas, Clavagella* and *Gastrochaena* make their appearance and both in the representative genera and in the distribution of the latter, the evolution of the present fauna is clearly foreshadowed.



BY COURTESY OF THE TRUSTEES OF THE BRITISH MUSEUM

FIG. 30.—VOLSELLA SP. IN A SPONGE

It will be seen that very little is to be learnt from fossil remains concerning the origin of the Lamellibranchia and their relation to other Mollusca and the poverty of well authenticated and satisfactorily preserved lamellibranchs in Cambrian strata makes it equally difficult to glean any information from this source as to the relationships of the more primitive members of the class.

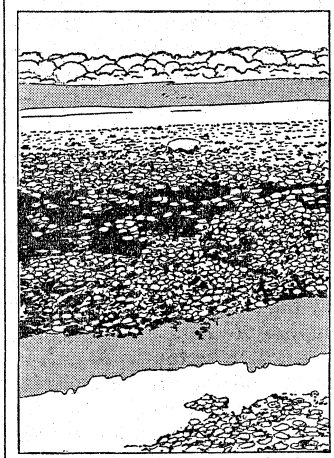


FIG. 31.—AN OYSTER REEF, WITH OYSTERS (OSTREAE) FORMING BEDS

A recent study of the Pliocene fauna of the lower Kakegawa beds in Japan has led Makiyama to point out that the late Tertiary Lamellibranchia evolved at a much slower rate than did the Gastropoda of the same horizon. If this observation is in accordance with other data it will constitute an interesting confirmation of the impression received after a study of living Lamellibranchia, viz., that owing either to their highly specialized mode of life or to some fundamental constitutional peculiarity, this class of molluscs seems deficient in organic energy when compared with the Gastropoda.

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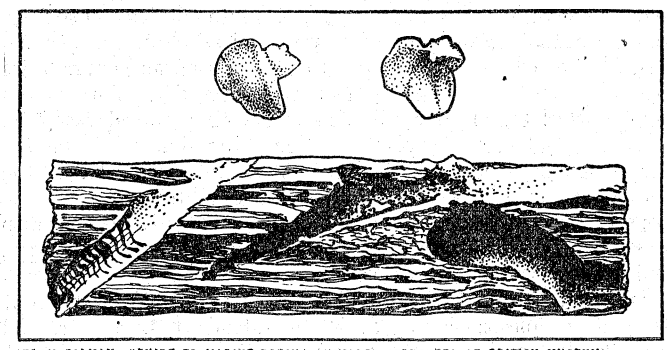

FROM CALMAN, "GUIDE TO MARINE-BORING ANIMALS" (TRUSTEES OF BRITISH MUSEUM)

FIG. 32.—ABOVE, SHELL VALVES OF THE BRITISH SHIP-WORM TEREDO MEGOTARA; BELOW, A PIECE OF WOOD BORED BY THE SAME, SHOWING CALCAREOUS LINING OF BURROW; ABOUT TWICE NATURAL SIZE

nomic Series 10, 1919 (*Teredo*); R. H. Burne, "Anatomy of Pelecypoda," *British Antarctic "Terra Nova" Expedition, Natural History, Zoology II.* 10 (1920); P. Pelseneer, "Les Lamellibranches," *Siboga Expedition, Zoologie 53a,* and "Les Variations et leur hérédité chez les Mollusques," *Mem. 8vo. Ac. Roy. Belg.* (1921); C. T. Simpson, *A Catalogue of the Naiades,* pt. 1 (Detroit, 1914); J. Thiele, "Bivalvia"

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LAMENNAIS, HUGUES FÉLICITÉ ROBERT DE (1782–1854), French priest, and philosophical and political writer, was born at Saint Malo, in Brittany, on June 19, 1782. He was the son of a shipowner of Saint Malo ennobled by Louis XVI. for public services. Of a sickly and sensitive nature, and impressed by the horrors of the French Revolution, his mind was early seized with a morbid view of life, and this temper characterized him throughout all his changes of opinion and circumstance. He was at first inclined towards rationalistic views, but his philosophical and historical studies convinced him that belief was indispensable to action and religion the most powerful leaven of the community. His *Réflexions sur l'état de l'église en France pendant le 18ième siècle et sur sa situation actuelle* (1808) was seized by Napoleon's police as dangerously ideological, with its eager recommendation of religious revival and active clerical organization. It awoke the ultramontane spirit which was to play so great a part in politics.

Lamennais devoted most of 1809 to a translation, in exquisite French, of the *Speculum Monachorum* of Ludovicus Blosius (Louis de Blois) which he entitled *Le Guide spirituel* (1809). In 1811 he received the tonsure and became professor of mathematics in an ecclesiastical college founded by his brother at Saint Malo. After the conclusion of the Concordat he published, with his brother, *De la tradition de l'église sur l'institution des évêques* (1814). The book was occasioned by the emperor's nomination of Cardinal Maury to the archbishopric of Paris. During the Hundred Days he escaped to London, where he taught French in a school founded by the abbé Jules Carron for French émigrés; he also became tutor at the house of Lady Jerningham. In 1815 he returned to Paris, and in 1816 he was ordained priest by the bishop of Rennes.

The first volume of his great work, *Essai sur l'indifférence en matière de religion* (1817; Eng. trans. by Lord Stanley of Alderley, 1898), made him a power in Catholic Europe. Lamennais denounced toleration, and advocated a Catholic restoration to belief. The right of private judgment, introduced by Descartes and Leibnitz into philosophy and science, by Luther into religion and by Rousseau and the Encyclopaedists into politics and society, had, he contended, terminated in practical atheism and spiritual death. The sole hope of regenerating the European communities lay in the acceptance of ecclesiastical authority. Three more volumes (1818–24) followed, and met with a mixed reception from the Gallican bishops and monarchists, but with the enthusiastic adhesion of the younger clergy. The work received the formal approval of Leo XII. Lamennais visited Rome at the pope's request, and was offered a place in the Sacred College, which he refused. On his return to France he took part in political work, and in ultramontane journalism.

He retired to La Chênaie and gathered round him a group of brilliant disciples, including C. de Montalembert, Lacordaire and Maurice de Guérin, his object being to form an organized body of opinion to persuade the French clergy and laity to throw off the yoke of the State connection. He denounced the liberties of the Gallican church. His health broke down and he went to the Pyrenees to recruit. After his recovery from a second dangerous illness, he believed that he had only been dragged back to life to be the instrument of Providence. *Les Progrès de la révolution et de la guerre contre l'église* (1828) marked Lamennais's complete renunciation of royalist principles, and henceforward he dreamt of the advent of a theocratic democracy. He now founded *L'Avenir,* the first number of which appeared on Oct. 16, 1830, with the motto "God and Liberty." The paper combined extreme democratic views on civil questions with a demand for complete liberty for the church from civil domination. With the help of Montalembert, he founded the *Agence générale pour la défense de la liberté religieuse,* which noted any violations of religious freedom and reported them to headquarters. The opposition of the Conservative bishops checked the success of *L'Avenir,* and Lamennais, Montalembert and Lacordaire resolved to suspend it for a while. They set out to Rome in Nov. 1831 to obtain the approval of Gregory XVI. The "pilgrims of liberty" were received in audience by the pope on condition that the object of their visit was not mentioned. A few days after the audience, Cardinal Pacca advised their departure from Rome and suggested that the Holy See, whilst admitting the justice of their intentions, would like the matter left open. Lacordaire and Montalembert obeyed; Lamennais remained in Rome, but after the issue of Gregory's letter to the Polish bishops, in which the Polish patriots were reproved and the tsar was affirmed to be their lawful sovereign, he "shook the dust of Rome from off his feet." At Munich, in 1832, he received the encyclical *Mirari vos,* condemning his policy; as a result *L'Avenir* ceased and the *Agence* was dissolved.

Lamennais, with his two lieutenants, submitted, and deeply wounded, retired to La Chênaie. The famous *Paroles d'un croyant* (1834) marks Lamennais's severance from the church. "A book, small in size, but immense in its perversity," was Gregory's criticism in a new encyclical letter. The work had an extraordinary circulation and was translated into many European languages. Henceforth Lamennais was the apostle of the people alone. *Le Livre du peuple* (1837), *De l'esclavage moderne* (1839), *Politique à l'usage du peuple* (1839), three volumes of articles from the journal of the extreme democracy, *Le Monde,* reveal him as a missionary of liberty, equality and fraternity. *Le Pays et le gouvernement* (1840) caused him a year's imprisonment. He struggled through difficulties of lost friendships, limited means and personal illnesses, faithful to the last to his hardly won dogma of the sovereignty of the people, and, to judge by his contribution to Louis Blanc's *Revue du progrès,* was ready for something like communism. He was named president of the "Société de la solidarité républicaine," which counted half a million adherents in 15 days. The Revolution of 1848 had his sympathies, and he started the short-lived *Peuple constituant* and the equally short-lived *Révolution démocratique et sociale.* In the constituent assembly he sat on the left till the *coup d'état* of 1851 ended all hopes of popular freedom. While deputy he drew up a constitution, but it was rejected as too radical. A translation of Dante chiefly occupied him till his death (Feb. 27, 1854), in Paris. He refused to be reconciled to the church, and was buried according to his own directions at Père La Chaise without funeral rites, being mourned by a countless concourse of democratic and literary admirers.

During the most difficult time of his republican period he found solace for his intellect in the composition of *Une voix de prison* (1846) written during his imprisonment in a similar strain to *Les paroles d'un croyant.* He also wrote *Esquisse de philosophie* (1840). Of the four volumes of this work the third, which is an exposition of art as a development from the aspirations and necessities of the temple, remains the best evidence of his thinking power and brilliant style.

There are two so-called *Oeuvres complètes de Lamennais* (1836; 1844). The most noteworthy of his writings subsequently published are: *Amschaspands et Darvands* (1843), *Le Deuil de la Pologne* (1846), *Mélanges philosophiques et politiques* (1856), *Les Évangiles* (1846) and *La Divine Comédie*—translations of the Gospels and of Dante.

Part of his voluminous correspondence has also appeared. The most interesting volumes are the following: *Correspondance de F. de Lamennais,* edit. by E. D. Forgues (2 vols., 1855–58), *Oeuvres inédites de F. Lamennais,* edit. by Ange Blaize (2 vols., 1866); *Correspondance inédite entre Lamennais et le baron de Vitrolles,* edit. by E. D. Forgues (1819–53); *Confidences de Lamennais, lettres inédites de 1821 à 1848,* edit. by A. du Bois de la Villerabel (1886); *Lamennais d'après des documents inédits,* by Alfred Roussel (Rennes, 2 vols., 1892); *Lamennais intime, d'après une correspondance inédite* by A. Roussel

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LAMENTATIONS (LAMENTATIONS OF JEREMIAH). A book of the Old Testament, placed in the Hebrew Bible amongst the five "Megilloth" or "Rolls" in the third canon (Hagiographa), and in the LXX, Vulgate and most modern Bibles, after the Book of Jeremiah.

Structure and Form.—The book consists of five "dirges," or poetical elegies. Such poems were properly composed on the death of individuals, but all these deal with the fall and desolation of Jerusalem. Hebrew metres are scanned by the number of strongly accented syllables that the lines contain; and as the phonetic principles of the language require that each independent and significant word should carry one such accent, it is the thought as much as the sound which gives to each form of metre its peculiar character. Each line is divided into two (or, occasionally, three) parts, which frequently correspond to one another in general sense, the second half being a repetition or an echo of the first. The two commonest metres are (*a*) those in which a line contains six significant terms —six "word-accents," each part having three, though sometimes, especially in prophetic poetry, we find 2:2:2; (*b*) the so-called "Qīnah," in which each line has either five or four word-accents, divided as 3:2, 2:2 or (somewhat rarely) 2:3. This last was commonly used for dirges, and is the metre of the first four poems in Lamentations; the fifth is written in 3:3.

There is another striking difference between Lam. i.–iv. and Lam. v. The former are "alphabetic acrostics," that is to say they are divided into short "stanzas," or equal groups of lines, and each group begins with a characteristic letter, the whole being arranged in twenty-two groups in the order of the Hebrew alphabet. The peculiarities may be illustrated by the following rough attempt at a translation of the first few verses of Lam. i.:

v. 1. Ah! Lonely she sitteth —the populous town;
Mighty 'mid nations —a widow is she;
Queen among cities —a subject is turned.

v. 2. By night doth she weep—weep! —with her tears on her cheeks;
None doth console her —of all that did love her;
All her comrades have played her false —foes have they turned.

v. 3. Captive is Judah for sorrow —for weight of slave-toil;
Among heathen sitteth she —she findeth no rest;
All that hunt her have caught her —in midst of sore straits.

v. 4. Drear are the ways to Zion —no pilgrims keep feast;
All her gates are wasted —her priests do moan;
Grief-stricken her virgins —and bitter her lot.

v. 5. Exalted on high are her rivals —her lovers are stilled;
For Yahweh hath grieved her —for her many transgressions;
Exiles her babes are gone —in front of her foes.

(In the above the order of the English alphabet is followed; the Hebrew is rather different.)

Lam. iii. differs from i., ii. and iv., in that each of the three lines of the "stanza" begins with the appropriate letter, instead of the first only as in the example quoted. Ch. iv., again, is peculiar, in that it has two lines to the "stanza" instead of three. Chs. ii., iii. and iv. are also peculiar in their arrangement of the alphabet. In the normal Hebrew reckoning of the letters the sixteenth is "Pe" and the seventeenth "Ayin," and this is the order now found in Lam. i., but in the next three poems these two letters are transposed. Finally Lam. v., though it contains twenty-two verses (the Hebrew alphabet has twenty-two letters), is written in 3:3 metre and has little trace of the acrostic.

Date and Authorship.—The traditional ascription of these poems to Jeremiah seems to rest on a misunderstanding of II Chron. xxxv. 25, which states that Jeremiah sang a dirge over Josiah, and that this was included with a number of others on the same king, all being preserved in a book of dirges. But none of these poems deals with Josiah, and while "dirges" over the kings of Judah from Jehoahaz onwards are preserved in Jer. xxii., none of them in the least resembles any of the poems in Lamentations.

It seems to be clear that all five were composed in the period during which the walls of Jerusalem lay in ruins, *i.e.,* between the time of Zedekiah and that of Nehemiah. The artificial form suggests that the first pangs of the agony inflicted by the fall of the city had given place to a steady grief, and the poems vary among themselves alike in the keenness of the sorrow which they express and in their poetic quality. There is no certainty that they were the work of the same author; on the contrary, they were more probably from different hands, though there is enough similarity between Lam. ii. and iv. to suggest to some students that both are to be attributed to the same poet. In any case these are probably the two earliest of the five; next in order, alike of merit and of time, stands Lam. i. Lam. iii. may come from the end of the exile or even from a time after the return, while Lam. v. is not strictly a dirge at all, but a prayer for deliverance from the government of a foreign oppressor, and would suit any period between the destruction of the city and the rebuilding of the walls in 444 B.C. (T. H. R.)

LAMETH, ALEXANDRE THÉODORE VICTOR, COMTE DE (1760–1829), French soldier and politician, was born in Paris on Oct. 20, 1760. He served in the American War of Independence, and in 1789 was elected to the States General. In the Constituent Assembly he formed with Barnave and Adrien Duport an association called the "Triumvirate," which controlled a group of about forty deputies forming the advanced left of the Assembly. He presented a famous report in the Constituent Assembly on the organization of the army, but is better known by his speech on Feb. 28, 1791, at the Jacobin Club, against his personal enemy, Mirabeau, whose relations with the court were beginning to be suspected. After the flight of the king to Varennes, Lameth became reconciled with the court. He served in the army as *maréchal-de-camp* under Luckner and Lafayette, but was accused of treason on Aug. 15, 1792, fled the country, and was imprisoned by the Austrians. Returning to France under the Empire he was made prefect successively in several departments and created a baron (1810). In 1814 he attached himself to the Bourbons, and under the Restoration was appointed prefect of Somme, deputy for Seine-Inférieure and finally led the Liberal opposition as deputy for Seine-et-Oise. He died in Paris on March 18, 1829. He was the author of an important *History of the Constituent Assembly* (2 vols., 1828–1829).

Of his two brothers, THÉODORE LAMETH (1756–1854) served in the American war, sat in the Legislative Assembly as deputy from the department of Jura, and became *maréchal-de-camp;* and CHARLES MALO FRANCOIS LAMETH (1757–1832), who also served in America, was deputy to the States General of 1789, but emigrated early in the Revolution, returned to France under the Consulate, and was appointed governor of Würzburg under the Empire. Like Alexandre, Charles joined the Bourbons, succeeding Alexandre as deputy in 1829.

See F. A. Aulard, *Les Orateurs de l'Assemblée Constituante* (1905); also M. Tourneux, *Bibliog. de l'histoire de Paris* (vol. iv., 1906, *s.v.* "Lameth").

LAMETTRIE, JULIEN OFFRAY DE (1709–1751), French physician and philosopher, was born at St. Malo on Dec.

25, 1709. After studying theology in the Jansenist schools for some years, he went (1733) to Leyden to study under Boerhaave, and in 1742 returned to Paris, where he obtained the appointment of surgeon to the guards. During an attack of fever he made observations on himself with reference to the action of quickened circulation upon thought, which led him to the conclusion that psychical phenomena were to be accounted for as the effects of organic changes in the brain and nervous system. This conclusion he worked out in his earliest philosophical work, the *Histoire naturelle de l'âme* (*c.* 1745). The outcry caused by its publication drove Lamettrie back to Leyden, where he developed his doctrines still more boldly and completely, and with great originality, in *L'Homme machine* (Eng. trans., 1750; ed. with introd. and notes, J. Assézat, 1865), and *L'Homme plante,* treatises based upon principles of the most consistently materialistic character. The ethics of these principles were worked out in *Discours sur le bonheur, La Volupté,* and *L'Art de jouir,* in which the end of life is found in the pleasures of the senses, and virtue is reduced to self-love. Atheism is the only means of ensuring the happiness of the world, which has been rendered impossible by the wars brought about by theologians. The soul is only the thinking part of the body, and with the body it passes away. When death comes, the farce is over (*la farce est jouée*), therefore let us take our pleasure while we can. Lamettrie has been called "the Aristippus of modern materialism." In 1748 he was compelled to leave Holland for Berlin, where Frederick the Great appointed him court reader. He died on Nov. 11, 1751. His collected *Oeuvres philosophiques* appeared after his death in several editions, published in London, Berlin and Amsterdam, respectively.

LAMIA, a female demon who devoured children. According to late myths she was a queen of Libya, beloved by Zeus; when Hera robbed her of her children, out of jealousy, she killed every child she could get into her power (Diod. Sic. xx, 41; Schol. Aristophanes, *Pax.,* 757); or a queen of the Laestrygonians of whom a similar story was told, Schol., Theo. xv, 40.

She was also known as a sort of fiend who, in the form of a beautiful woman, enticed young men to her embraces in order that she might devour them. *See* Philostratus, *Vita Apollonii,* iv, 25. What the Lamia's tower was (Tertullian, *adv. Valent.* 3) is unknown.

See Stoll in Roscher's *Lexikon, s.v.*

LAMMAS, the festival of the wheat harvest, originally celebrated in England on Aug. 1, O.S. (O. Eng. *hlafmaesse,* from *hlaf,* loaf, and *maesse,* mass, "loaf-mass"). It was one of the old quarter-days, being equivalent to midsummer, the others being Martinmas, equivalent to Michaelmas, Candlemas (Christmas) and Whitsuntide (Easter). The name is derived from the custom of each worshipper presenting in the church a loaf made of the new wheat, as an offering of the first-fruits.

LAMMASCH, HEINRICH (1853–1920), Austrian jurist, was born at Seitenstetten, Lower Austria, May 21, 1853. He was appointed professor at the University of Vienna in 1889, became eminent as a teacher of criminal and international law and his publications on these subjects deeply influenced their practice. Four times a member of the International Court of Arbitration at the Hague, being president three times, he helped to settle, among other cases, the dispute between Great Britain and the U.S. on the fishery rights off the north coast of America in 1910. As a pacifist during World War I he incurred bitter hostility in the Austrian Herrenhaus, to which he had belonged since 1899, but he inspired confidence elsewhere, and presided over the final ministry which liquidated the central administration of the older Austria (Oct. 26–Nov. 13, 1918). He died at Salzburg on Jan. 6, 1920.

His works include: *Auslieferungspflicht und Asylrecht* (1887); *Grundriss des Strafrechts* (1899, 5th ed., 1926). *See* M. Lammasch and H. Sperl, *Heinrich Lammasch* (Vienna, 1919).

LAMMAS LANDS. A relic of the old "open-field" system of agriculture survives in the so-called "Lammas Lands." These were lands enclosed and held in severalty during the growing of grain and grass and thrown open to pasturage during the rest of the year for those who had common rights. The opening of the fields by throwing down the fences took place on Lammas Day (Aug. 1) for grain-lands and on Old Midsummer Day (July 5) for grass. They remained open until the following Lady Day.

See further F. Seebohm, *The English Village Community;* C. I. Elton, *Commons and Waste Lands;* P. Vinogradoff, *Villainage in England.* (*See* also AGRICULTURE: A GENERAL SURVEY.)

LAMMERGEYER or BEARDED VULTURE, the largest old world bird of prey, intermediate between vultures (*q.v.*) and eagles (*q.v.*), by some placed in the old world vulture subfamily Aegypiinae, family Accipitridae, or held to constitute the subfamily Gypaëtinae in the Falconidae. It has a tuft of long bristly hairs on the chin, and stiff bristles hide the nostrils. It is blackish-gray above, otherwise pale tawny; the white cap is bordered black; the iris is light orange; the "white" of the eye, scarlet. The common bearded vulture (*Gypaëtus barbatus aureus*), 40 to 46 in. long, has a wingspread of nearly 10 ft. It is confined to high mountain ranges of southern Europe (practically extinct in Pyrenees and Alps), Mediterranean islands, and central Asia east to northern China and south to southern Arabia and the Himalayas. Despite the name lämmergeyer (lamb-vulture), it is not known to attack or carry off live animals. It feeds on carrion, often dropping it from great height to break bones, which it can apparently digest with ease. A huge mass of sticks, lined with sheep's wool and goat's hair, is placed on a ledge or in a cave in a cliff, with one or two whitish eggs stained or mottled rusty, nearly 4 by 3 in. Young are covered with dirty white down. An allied race (*G. b. barbatus*) inhabits the Atlas mountains of north-west Africa, another (*G. b. meridionalis*), the mountains of Ethiopia and South Africa. (G. F. Ss.)

LAMMERMUIR HILLS, a range of round backed hills forming the western boundary of Berwickshire in Scotland with an average height of about 1,000 ft.; the highest summit being Says Law, 1,749 ft. The name is also given to the upland district in which the hills are situated. (*See* BERWICKSHIRE.)

LAMOIGNON, a French family, which takes its name from Lamoignon, a place said to have been in its possession since the 13th century. One of its several branches is that of Lamoignon de Malesherbes. GUILLAUME DE LAMOIGNON (1617–1677), attained eminence as a lawyer and became president of the parlement of Paris in 1658. He presided at the earlier sittings of the trial of Fouquet, whom he regarded as innocent. Lamoignon tried to simplify the laws of France. Guillaume's second son, NICOLAS DE LAMOIGNON (1648–1724), took the surname of Basville. He was intendent of Montauban, of Pau, of Poitiers and of Languedoc before his retirement in 1718. In Languedoc he took strong measures against the Camisards and other Protestants. Following the example of Colbert, he encouraged agriculture and industry generally and did something towards improving the means of communication. CHRÉTIEN-FRANCOIS DE LAMOIGNON (1735–1789) was one of the assistants of Loménie de Brienne, whose unpopularity and fall he shared.

LAMONT, JOHANN VON (1805–1879), Scottish-German astronomer and magnetician, was born at Braemar, Aberdeenshire, on Dec. 13, 1805. He was sent at the age of 12 to be educated at the Scottish monastery in Regensburg. His strong bent for scientific studies was recognized by the head of the monastery, P. Deasson, on whose recommendation he was admitted in 1827 to the then new observatory of Bogenhausen (near Munich), where he worked under J. Soldner. After the death of his chief in 1835 he was appointed director of the observatory. In 1852 he became professor of astronomy at the university of Munich, and held both these posts till his death on Aug. 6, 1879. Lamont was a member of many learned corporations. Among his contributions to astronomy may be noted his eleven zone-catalogues of 34,674 stars, his measurements, in 1836–37, of nebulae and clusters, and his determination of the mass of Uranus from observations of its satellites (*Mem. Astron. Soc.* xi, 51, 1838). A magnetic observatory was equipped at Bogenhausen in 1840 through his initiative; he executed comprehensive magnetic surveys 1849–58; announced the magnetic decennial period in 1850, and his discovery of earth-currents in 1862. His *Handbuch des Erdmagnetismus* (Berlin, 1849) is a standard work on the

subject.

See *Allgemeine Deutsche Biographie* (S. Günther); V. J. Schrift, *Astr. Gesellschaft*, xv. 60; *Monthly Notices Roy. Astr. Society*, xl. 203; *Nature*, xx. 425; *Quart. Journal Meteor. Society*, vi. 72; *Proceedings Roy. Society of Edinburgh*, x. 358; *The Times* (Aug. 12, 1879); Sir F. Ronalds's *Cat. of Books relating to Electricity and Magnetism*, pp. 281–283; *Royal Society's Cat. of Scientific Papers*, vols. iii. vii.

LAMONT, THOMAS WILLIAM (1870–), American banker, was born at Claverack, N.Y., on Sept. 30, 1870. He was educated at Phillips academy, Exeter, N.H., and at Harvard where he graduated in 1892. He was for two years with the New York *Tribune*. Entering banking in 1903, he was with the Bankers' Trust Company in New York, as secretary and treasurer, and after 1905, as vice president. In 1909 he was elected vice president of the First National Bank of New York city, serving for two years. On Jan. 1, 1911 he entered the firm of J. P. Morgan and Company. He took part in the work of the firm in floating British, French and other Allied loans in America during and after the World War. From 1918–22 he was proprietor of the New York *Evening Post*. In 1919 he was one of the financial and economic advisors of the American delegation to the Peace Conference in Paris. As chairman of the American group of the International Banking Consortium for the assistance of China, he visited the Far East in 1920 and again in 1927. In 1920 he acted as chairman of the American committee which remitted almost $8,000,000 to China for relief of the starving populace. He is chairman of the International Committee of Bankers on Mexico.

LAMORICIÈRE, CHRISTOPHE LÉON LOUIS JUCHAULT DE (1806–1865), French general, born at Nantes on Sept. 11, 1806, was one of the most distinguished and efficient of Bugeaud's generals in Algeria, rendered special service at Isly (August 14, 1844), acted temporarily as governor-general of Algeria, and finally effected the capture of Abd el-Kader in 1847. Lamoricière was a member of the chamber of deputies in 1848. Under the régime of General Cavaignac he was for a time minister of war. From 1848 to 1851 Lamoricière was one of the most conspicuous opponents of the policy of Louis Napoleon, and at the *coup d'état* he was arrested and exiled. In 1860 he accepted the command of the papal army, which he led in the Italian campaign of 1860. On Sept. 18, 1860, he was defeated by the Italian army at Castelfidardo. He died at Prouzel (Somme) on Sept. 11, 1865.

See E. Keller, *Le Général de Lamoricière* (Paris, 1873).

LA MOTHE LE VAYER, FRANÇOIS DE (1588–1672), French writer, born in Paris of a noble family of Maine, was an *avocat* at the parlement of Paris. His *Considérations sur l'éloquence française* (1638) procured him admission to the Academy, and his *De l'instruction de Mgr. le Dauphin* (1640) attracted the attention of Richelieu. In 1649 Anne of Austria entrusted him with the education of her second son and subsequently with the completion of Louis XIV.'s education. The king rewarded his tutor by appointing him historiographer of France and councillor of state. His other works include: *Jugement sur les anciens et principaux historiens grecs et latins* (1646); a treatise entitled *Du peu de certitude qu'il y a en histoire* (1668), which in a sense marks the beginning of historical criticism in France; and sceptical *Dialogues*, published posthumously under the pseudonym of Orosius Tubero.

See Bayle, *Dictionnaire critique*, *s.v.* "Vayer"; L. Étienne, *Essai sur La Mothe Le Vayer* (Paris, 1849).

LA MOTTE, ANTOINE HOUDAR DE (1672–1731), French author, was born in Paris. In 1693 his comedy *Les Originaux* proved a complete failure, which so depressed the author that he contemplated joining the Trappists, but four years later he again began writing operas and ballets, *e.g.*, *L'Europe galante* (1697), and tragedies, one of which, *Inès de Castro* (1723), was produced with immense success at the Théâtre Français. He was a champion of the moderns in the revived controversy of the ancients and moderns. Madame Dacier had published (1699) a translation of the *Iliad*, and La Motte, who knew no Greek, made a translation (1714) in verse founded on her work. The nature of his work may be judged from his own expression: "I have taken the liberty to change what I thought disagreeable in it." He defended the moderns in the *Discours sur Homère* prefixed to his translation, and in his *Réflexions sur la critique* (1716). The controversy was conducted on La Motte's side with a wit and politeness which compared very favourably with his opponent's methods. He was elected to the Academy in 1710, and soon after became blind. He corresponded with the duchesse du Maine, and was the friend of Fontenelle. He died in Paris on Dec. 26, 1731.

His *Oeuvres du théâtre* (2 vols.) appeared in 1730, and his *Oeuvres* (10 vols.) in 1754. *See* A. H. Rigault, *Histoire de la querelle des anciens et des modernes* (1859).

LAMOUREUX, CHARLES (1834–1899), French conductor and violinist, was born at Bordeaux on Sept. 28, 1834. He studied at the Pau Conservatoire, was engaged as violinist at the Opéra, and in 1864 organized a series of concerts devoted to chamber music. A visit to a Handel festival in England led him to found the "Société de l'Harmonie Sacrée," and in 1873 he conducted the first performance in Paris of Handel's *Messiah*. He also gave performances of Bach's *St. Matthew Passion*, Handel's *Judas Maccabaeus*, Gounod's *Gallia*, and Massenet's *Eve*. He became *chef d'orchestre* at the Opéra Comique in 1876. In 1881 he founded the Lamoureux concerts, at which he gave performances of Wagner's music, then little known in Paris. He then took the Eden Theatre, and on May 3, 1887 conducted the first performance of *Lohengrin* in the French capital. Chauvinist opposition prevented the repetition of the performance, but the taboo was broken. Lamoureux was successively second *chef d'orchestre* at the Conservatoire, first *chef d'orchestre* at the Opéra Comique, and twice first *chef d'orchestre* at the Opéra. He conducted in London on several occasions. He died in Paris on Dec. 21, 1899.

LAMP, the general term for an apparatus in which some combustible substance, generally for illuminating purposes, is held. Lamps are usually associated with lighting, though the term is also employed in connection with heating (*e.g.*, spirit-lamp); and as now employed for oil, gas and electric light they are dealt with in the article on LIGHTING. From the artistic point of view, in modern times, their variety precludes detailed reference here; but their archaeological history deserves a fuller account.

ANCIENT

Though Athenaeus states (xv. 700) that the lamp was not an ancient invention in Greece, it had come into general use there for domestic purposes by the 4th century B.C., and no doubt had long before been employed for temples or other places where a permanent light was required in place of the torch of Homeric times. Herodotus (ii. 62) sees nothing strange in the "festival of lamps," *Luchnokaie*, which was held at Sais in Egypt, except in the vast number of them. Each was filled with oil so as to burn the whole night. Again he speaks of evening as the time of lamps (vii. 215). Still, the scarcity of lamps in a style anything like that of an early period, compared with the immense number of them from the late Greek and Roman age, seems to justify the remark of Athenaeus. The commonest sort of domestic lamp was of terra-cotta and of the shape seen in figs. 1 and 2, with a spout or nozzle in which the wick burned, a round hole on the top to pour oil in and a handle with which to carry it. Some lamps had two or more spouts and there was a large class with numerous holes for wicks but without nozzles. Decoration was confined to the front of the handle, or more commonly to the circular space on the top of the lamp, and it consisted almost always of a design in relief, taken from mythology or legend, from objects of daily life or scenes such as displays of gladiators or chariot races, from animals and the chase. A lamp in the British Museum has a view of the interior of a Roman circus with spectators looking on at a chariot race. In other cases the lamp is made altogether of a fantastic shape, as in the form of an animal, a bull's head, or a human

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FIGS. 1 AND 2.—ROMAN TERRA-COTTA LAMPS (LATE PERIOD)

foot. Naturally colour was excluded from the ornamentation except in the form of a red or black glaze, which would resist the heat. The typical form of hand lamp (figs. 1, 2) is a combination of the flatness necessary for carrying steady and remaining steady when set down, with the roundness evolved from the working in clay and characteristic of vessels in that material. In the bronze lamps this same type is retained, though the roundness was less in keeping with metal. Fanciful shapes are equally common in bronze. The standard form of handle consists of a ring for the forefinger and above it a kind of palmette for the thumb. Instead of the palmette is sometimes a crescent, no doubt in allusion to the moon. It was only with bronze lamps that the cover protecting the flame from the wind could be used, as was the case out of doors in Athens. Such a lamp, because of this protection, was in fact a lantern.

Apparently it was to the lantern that the Greek appellation *lampas,* a torch, was first transferred, probably from a custom of having guards to protect the torches also. Afterwards it came to be employed for the lamp itself. When Juvenal (*Sat.,* iii. 277)

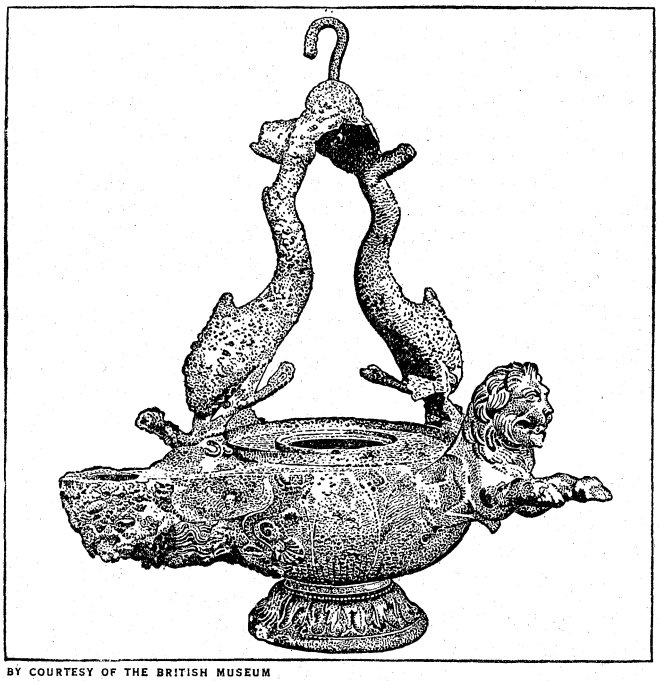

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FIG. 3.—ROMAN BRONZE LAMP, FOUND IN BATHS OF JULIAN, PARIS

speaks of the *aenea lampas* he may mean a torch with a bronze handle, but more probably either a lamp or a lantern. Lamps used for suspension were mostly of bronze, and in such cases the decoration was on the under part, so as to be seen from below. Of this the best example is the lamp at Cortona, found there in 1840 (engraved, *Monumenti d. inst. arch.,* iii. pls. 41, 42, and in Dennis, *Cities and Cemeteries of Etruria,* 2nd ed. ii. p. 403). It is set round with 16 nozzles ornamented alternately with a siren and a satyr playing on a double flute. Between each pair of nozzles is a head of a river god, and on the bottom of the lamp is a large mask of Medusa, surrounded by bands of animals. These designs are in relief, and the workmanship, which appears to belong to the beginning of the 5th century B.C., justifies the esteem in which Etruscan lamps were held in antiquity (Athenaeus, xv. 700). Of a later but still excellent style is a bronze lamp in the British Museum found in the baths of Julian in Paris (fig. 3). The chain is attached by means of two dolphins very artistically combined. Under the nozzles are heads of Pan; and from the sides project the foreparts of lions. To what extent lamps may have been used in temples is unknown. Probably the Erechtheum on the Acropolis of Athens was an exception in having a gold one kept burning day and night, just as this lamp itself must have been an exception in its artistic merits. It was the work of the sculptor Callimachus, and was made apparently for the newly rebuilt temple a little before 400 B.C. When once filled with oil and lit it burned continuously for a whole year. The wick was of a fine flax called Carpasian (now understood to have been a kind of cotton), which proved to be the least combustible of all flax (Pausanias, i. 26. 7). Above the lamp a palm tree of bronze rose to the roof for the purpose of carrying off the fumes. But how this was managed it is not easy to determine unless the palm be supposed to have been inverted and to have hung above the lamp, spread out like a reflector, for which purpose the polished bronze would have served fairly well. The stem if left hollow would collect the fumes and carry them out through the roof.

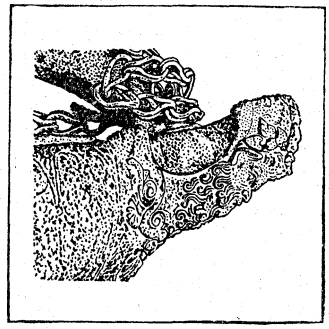

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FIG. 4.—ROMAN HANGING LAMP

This lamp was refilled on exactly the same day each year, so that there seems to have been an idea of measuring time by it, such as may also have been the case in regard to the lamp stand capable of holding as many lamps as there were days of the year, which Dionysius the Sicilian tyrant placed in the Prytaneum of Tarentum. At Pharae in Achaia there was in the market-place an oracular statue of Hermes with a marble altar before it to which bronze lamps were attached by means of lead. Whoever desired to consult the statue went there in the evening and first filled the lamps and lit them, placing also a bronze coin on the altar. A similar custom prevailed at the oracle of Apis in Egypt (Pausanias, vii. 22. 2). At Argos he speaks of a chasm into which it was a custom continued to his time to let down burning lamps, with some reference to the goddess of the lower world, Persephone (ii. 22. 4). At Cnidus a large number of terra-cotta lamps were found crowded in one place a little distance below the surface, and it was conjectured that there must have been there some statue or altar at which it had been a custom to leave lamps burning at night (Newton, *Discoveries at Halicarnassus, etc.,* ii. 394). These lamps are of terra-cotta, but with little ornamentation and so like each other in workmanship that they must all have come from one pottery, and may have been brought on one occasion to the spot where they were found, probably the funeral of a person with many friends, or the celebration of a festival in his honour, such as the *parentalia* among the Romans, to maintain which it was a common custom to bequeath property. For example, a marble slab in the British Museum has a Latin inscription describing the property which had been left to provide among other things that a lighted lamp with incense on it should be placed at the tomb of the deceased on the kalends, nones and ides of each month (*Mus. Marbles,* v. pl. 8, fig. 2). For birthday presents terra-cotta lamps appear to have been frequently employed, the device generally being that of two figures of Victory holding between them a disc inscribed with a good wish for the new year: ANNV NOV FAVSTV FELIX. This is the inscription on a lamp in the British Museum, which besides the Victories has among other symbols a disc with the head of Janus. As the torch gave way to the lamp in fact, so also it gave way in mythology. In the earlier myths, as in that of Demeter, it is a torch with which she goes forth to search for her daughter, but in the late myth of Cupid and Psyche it is an oil lamp which Psyche carries, and from which, to her grief, a drop of hot oil falls on Cupid and awakes him. Terra-cotta lamps have very frequently the name of the maker stamped on the foot. Clay moulds from which the lamps were made have been discovered in considerable numbers.

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FIG. 5.—NEAR VIEW OF LION ON ROMAN BRONZE LAMP IN FIG. 3

(A. S. M.)

MODERN

A new element was introduced in the last part of the 19th century into interior decoration. For centuries men beautified their homes by the use of rugs, furniture, tapestries and other wall hangings, and during all this time the lamp consisted of a torch, a small cup of oil in which floated a wick, a candle in an ornamental candlestick or a kerosene lamp. Only since the discovery of electric light which did away with the necessity of considering ventilation and fire risk, and which at the same time made possible great candle-power in small space, has the art of the designing of lamps and shades come into being, if we except the beautiful mosque lamps and Chinese and Japanese lanterns.

DESIGN

There is a distinct trend in modern decoration toward the elimination of unnecessary art objects, a reaction against the crowding of the 19th century. Yet lamps are necessarily art objects which demand prominent settings in order to fulfil properly their function of distributing light. Therefore, in order not to run counter to the tendencies of the day it is necessary in the designing of lamps to merge them into their backgrounds as much as possible.

A work of art should have unity of line, structure and colour, and the trend in modern lamp design is to make the texture of the shade harmonize with the texture of the base. Thus velvets may be employed in conjunction with bronze and pottery vases. Thin silks, satins and taffetas may be used with porcelain vases, the sheen of the material matching the glaze of the vase.

It is interesting to note that because we have used oil lamps for centuries the eye, accustomed to an oil container, demands something of the sort even when it is entirely unnecessary in the electric lamp. We may break away from tradition, but should not do so too abruptly and without reason, and therefore lamps which are constructed with the slender stems adequate to carry an electric wire are often less satisfactory to the eye than those constructed with a larger and more substantial base. Moreover, through the use of high candle-power demanded in the modern home, the lamp shade must be large enough to eliminate glare (*see* LIGHTING AND ARTIFICIAL ILLUMINATION) and should therefore have a large and massive base to support it.

In order that lamp bases may harmonize with the furnishings of the home, they must be chosen from potteries, porcelains and bronzes of appropriate periods, conforming in colour and design with the rugs, wall hangings, furniture and general architectural treatment. Reading-light areas should be laid out in planning the arrangement of the lamp units in a room. When the radius of one of these reading-light areas has been established and the base selected for the lamp, the shade can be designed without

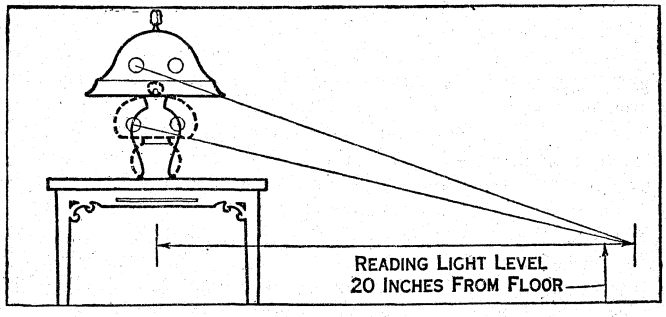

FIG. 1.—DIAGRAM SHOWING TWO LAMPS OF DIFFERENT SHAPES AND SIZES THAT ARE PROPERLY MOUNTED IN RELATION TO THE READING LIGHT AREA
The larger lamp, with shade, is in solid lines; the smaller, in dotted lines

regard to the light area and only when the mountings are planned should the light area be brought into consideration. The diagram in fig. 1 shows a table on which stands a large lamp with a shade of one shape in solid lines and a small lamp with a shade of another shape in dotted lines, and it will be seen that when a line is drawn from the circumference of the reading-light area this establishes the location of the electric bulbs on the mountings. The problem of lighting is considered separately; the present article is therefore concerned solely with the design and construction of a new type of art object which is to be moulded into the interior and made harmonious with it, giving it a proper accent in the form of a high light when the lamp is in use, and casting over it a tint or wash that will establish the mood of the interior at night.

When the other furnishings of the room are antique the lamp should be antique. When they are modern it should be modern, but of whatever style or period, there are certain fundamental rules of design which will help to make the unit beautiful. There should not be a too abrupt change from the design and colouration of the vase to the design and colouration of the shade.

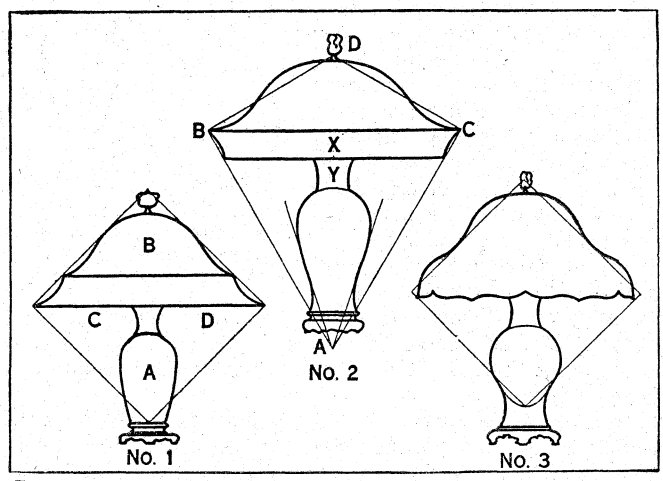

FIG. 2.—DIAGRAMS ILLUSTRATING PROPORTION OF LINE MEASUREMENTS
No. 1. Lamp built within a square, standing upon one corner so that dimensions A:B=C:D. No. 2. Lamp built within an equilateral triangle, ABC, above which is another simple triangle, BCD. No. 3. Lamp with the same proportions as No. 1, except that the square, in accordance with the downward curves of the vase, has been lifted so that it does not touch the bottom

The elements to be considered in knitting them are: (1) proportion, (2) the quality of the curve, (3) texture and (4) colour.

Proportion.—In designing a lamp shade the proportions must be so simple that the eye can measure them and take pleasure in them.

Often a lamp can be built within a square standing upon one corner (fig. 2, No. 1), which gives an interesting simple proportion between the ratios of the height of the vase and the height of the shade, and what may be termed the two wings of the shade divided by the centre line of the symmetrical form. Thus dimensions $A:B=C:D$.

Other arrangements may also be used. In fig. 2, No. 3, the same proportions have been used, except that the square has been lifted so that the lower point does not touch the bottom of the vase.

In fig. 2, No. 2, a different arrangement has been adopted. The focal point of the base in this case was felt by the artist to be a short distance below the actual base. By erecting from this point *A* two lines at an angle of 60° from the horizontal and connecting them with the line *B–C*, the height of which was established at a distance above the mouth of the vase equal to the distance between the top of the shoulder of the vase and its mouth, an equilateral triangle was formed, above which was erected another simple triangle with base angles of 30°.

The distance from the apex of this triangle to the shoulder of the vase is equal to the radius of the shade. Thus there is no limitation other than that of the use of simple proportions based upon simple geometric forms.

Aside from the proportions of line, we should consider the proportions of area of front elevation which may be built upon any simple ratio.

Thus, many shades are twice the size of the vases, while others are three times the size. Any of these simple proportions may be used, creating a feeling of satisfaction and architectural structure. (*See* DRAWING.)

At times the point to be selected from which to work is not at the exact bottom of the vase. The establishment of this starting

point depends on the curves of the vase as they approach the bottom. It will be seen that these curves in fig. 2, No. 2 sweep in a downward direction more strongly than do those in fig. 2, No. 3. In the first vase the curves of the shoulders drop into straight lines which establish point *A*. The other vase with an egg-shaped body establishes this point well above the bottom at the point of the egg or the convergence of the more rounded curves. In fig. 3 will be seen two contrasting vases, one a bottle shape with a distinctly downward movement because the weight of the body is so low that it seems to sag, while the other seems to stand on tip-toe. In the first, the position of the base is fixed by the rounded curves at a fraction of an inch below the bottom, while in the second it is projected some distance below giving a thrust upward. In the first, the shade should be designed in heavy sagging lines. In the second, it should be like the wings of a bird.

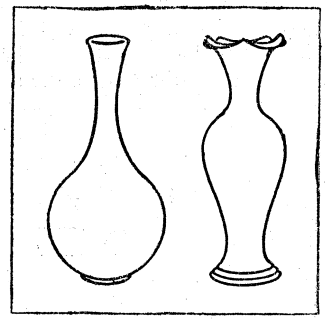

FIG. 3.—CONTRASTING VASES OF DISTINCTLY DOWNWARD (LEFT) AND UPWARD (RIGHT) LINES

The study of the movement upward or downward of fine vases is fascinating, and many of the best forms are so perfectly balanced that they have a dignity fitting them for a temple or a palace.

Quality of the Curve.—Not only must the proportions be carefully thought out, but the curves themselves must be so established as to help the work of art upon which they are to be grafted. At times the designer may simply repeat in the shade, the curves of the vase, giving them a broader sweep, in harmony with the larger area.

Subtleties of curve in the vase may be so accented that attention is called to them. In the study of these curves the designer should have a knowledge of the architecture and other arts of the countries from which his lamp bases have been selected. There is a prim puritanical quality in Chinese art up to the Ming dynasty, which is never duplicated in the softer, rounder curves of the art of the near east.

These characteristics should be accented rather than contradicted in making the design.

In the treatment of the necessarily strong horizontal line at the bottom of the shade the sensitive artist feels, if he has studied the curves of the vase and followed them up to its mouth, that there is a too abrupt stop before arriving at the curves of the shade. That many designers have felt this is shown by the tendency to attempt to soften this line with fringe or some other decorative treatment.

Fringe is bad, as there are very few vases, even including those of the Italian Renaissance, which could be associated with textiles so finished. The architectural severity of the base, be it pottery, bronze or wood, demands that the shade be treated more or less architecturally, but this line may frequently be softened by the design alone.

The softening is accomplished by curving the wires which drop into the bottom circumference of the shade, and sometimes by treating the line itself in various scalloped forms, as may be seen in flowers with rounded or pointed petals; and though the designer of a vase seldom uses petals, because they are too easily broken, the designer of the shade may use them, as they do not weaken the shade.

Texture of Shade.—Texture, the third element to be considered must be very carefully thought out. At times the rough wheel marks on an early glazed pottery are best simulated by using a thin glossy fabric lined with heavily woven crude fabric so stretched that the heavy weave runs on the horizontal. Often soft mat glazes can be simulated by the use of dull crêpes over which are stretched a thin chiffon or georgette crêpe. These fabrics are useful in approaching the two-tone textures of some glazes such as powder blue, robin's egg soufflé, etc. Nothing in a fabric comes closer, if properly treated, to give the feeling of weight and richness necessary in the shading of a fine heavy pottery or bronze than does velvet, but the type of velvet chosen, its density of weave, and its treatment must all be considered. The traditions of old Spain and Italy have taught us the association of vellum with iron, and the slender delicate though strong curves of wrought iron work lend themselves beautifully to the type of curve found in the illumination of old missals. Many other substances such as wool may be used, but as a rule it is wise to eliminate those harsh substances such as glass which are very difficult to make harmonious with any sort of base.

The colour of the vase is as a rule carried up into the shade, but at times the vase may be too strong in a colour to permit the shade to give the desired light if it were predominant in this colour. Therefore at times contrasted hues are more attractive, and permit a more pleasant colour of light.

A careful and conscientious study of the laws of colour is in fact necessary in order to handle successfully colour in the making of lamps. Errors in judgment will be doubly accentuated when the lamp is lighted, and not only must the artistic conception be thought of, but the psychological effect of the colour used must also be constantly kept in mind. (*See* LIGHTING AND ARTIFICIAL ILLUMINATION; especially the section on *Fundamental Principles of Proper Lighting.*)

Mounting.—Modern lamp mounting includes a variety of crafts. Experts with the modern lathe must be able to bore wood or bronze stems, sometimes a number of feet in length, and handle other equipment for the grinding out of holes in the bottom of porcelain and pottery vases. This boring is required in even the most expensive pieces and must be done with a certainty that no breakage will occur. Many bases are spun on the machine lathe over a wooden chuck of the exact shape and size desired. Afterwards these spun bases may be treated by the processes of repoussé, chasing, inlaying, etc.

The casting is usually carried on in large plants and the rough castings finished by hand in the lamp-mounter's shop. These castings, due to the fact that they stand in a bright illumination just below the eye, must be very carefully "cleaned." (For the various finishing processes *see* SCULPTURE TECHNIQUE; ORMOLU, etc.)

It is necessary to have a cluster of sockets which hold the electric lamps and these sockets should be mounted on either short or long goose-neck arms depending upon the size of the shade. Great care must be taken to have the lamps at the proper distance above the top of the vase so that the reading light will be exactly what is required by the lamp designer. There should be an adjustable shade-rest made by a tightly fitting post within a collar which is set with a thumbscrew at various heights, allowing a play of about two inches. This adjustment is not for the purpose of allowing more or less light but for the purpose of slightly raising the shade, if the lamp is placed on a low table, or slightly lowering it, if placed on a high table, in order that the proportions originally designed will be kept constant.

The wiring must be carefully done and it is often an advantage to have a small switch-box in the base as well as the pull-chain sockets under the shade. This switch enables one to turn the current on or off with greater convenience.

Shade-making.—After the design of the shade has been carefully worked out (usually to quarter scale) a drawing in full size is made and sent to the framemaker who specializes in the bending and welding together of wires into the exact forms desired. These wires are usually bent over rollers of various diameter or made to conform to curves established by the arrangement of short iron pegs fitting into holes in a heavy iron plate, and the craftsmen who do this work are experts in the art of obtaining the exact curve indicated on the drawing. Not many years ago all frames were soldered together with soft solder but it was found that these frames had large joints which were easily broken and in the modern plants electric welding has taken the place of the soldering process. The shade-rest consists of a heavy washer usually of brass about a quarter of an inch thick which is set within a small ring of wire to which the cover can be sewn and to which it is attached by three or four very short posts.

Sometimes the shade-rest is sunk slightly below the level of the top of the shade so that the mounting of the finial is not prominent. The mountings of finials, however, were improved in design so that they were no longer unsightly, and therefore it became customary to leave the shade-rest flush with the top.

When the shade frame is returned from the framemaker's it is first carefully checked with the drawing and then set upon the lamp in order to make sure that the desired result has been obtained. Often, slight corrections at this point lead to a great enhancement of the beauty of the finished product. The frame is then wrapped carefully and tightly with a thin binding-tape to which the lining and outside coverings are sewn. If this binding-tape is not very securely in place the covers are likely to slip and cause wrinkles in the shade. The sewing of the covers to the tape must be done with very fine stitches entirely hidden underneath by the wire and finally hidden on the outside by the narrow braid or ribbon used in finishing. Often the lining is given a coat of shellac or water-proof varnish and when this is dried so that it is no longer sticky but still soft enough for a needle to penetrate easily, the cover is sewn into place. When this process is followed and the cover properly sized it is possible to paint directly on the shade with oils, water-colours or inks.

If this outside cover is to be executed off the shade it should first be pinned into place and the design carefully drawn in soft pencil, each panel being marked with a key number corresponding to a small number attached to the frame so that the panels can be put in place after the work is accomplished in the correct order and with a perfect matching of the design at the seams. In accomplishing this work certain allowance must be made for the slight shrinkage due to the repeated dyeings and it must be remembered that the shrinkage occurs on the long and crossways of the material, while the bias will permit sufficient stretching to overcome it. It may be said here that the linings and covers should always be put on with the centre axis of the panel running true with the length of the material and with the cross-threads running as nearly horizontal as possible. Finally, in the finishing, the narrowest possible braid or ribbon should as a rule be employed to hide the seams and often tiny folds of the material of which the shade was made are pressed into service, though these are seldom as satisfactory as the other edging materials, for often the design demands a slight deepening contrast in the framing of the panels.

The method of making parchment or vellum shades is very similar to that already described, except that as a rule no lining is necessary unless the design involves incisions in the cover. Usually these shades are put together with the assistance of an adhesive and nearly every lampmaker has his favourite glues or cements for this purpose. However, it has been found that the use of an adhesive alone is not sufficient to make sure that the panels will not expand and contract from the heat of the bulbs in the lamp, from moisture, and various other causes enough to tear them loose from the frame. It is therefore necessary either to water-proof the joints and panels with shellac, or some similar substances, or to sew them as well as cement them into place. In the making of real vellum shades special attention must be paid to this work, and the frames must be far heavier than those employed in ordinary work, for real vellum being a split rawhide, expands and contracts to a tremendous degree, often buckling on the frame or contracting so that it is distorted out of shape. It is therefore wise to cement and sew this material into place and to treat it with oil so that moisture has a lessened effect.

Glass, mica and capa shell should be avoided as well as uncovered varnished silk, for these substances are too harsh and too translucent to knit in well with the average interior and no matter how carefully treated permit a harsh glare of light which is unpleasant. If, however, the lamps happen to be made for distant effects such as stage sets, these materials may help to procure admirable effects.

Almost any graphic art can be employed in the decoration of the various materials used. Painting with translucent colours, batik, etching, woodblock printing and all other methods have their advantages and disadvantages which must be studied carefully. A dry-point panel may be used to which colour and gold leaf are added. The gold leaf though opaque should be handled in small areas so that it seems a natural part of the lacy design of the original print.

When the lamp is lit, and in the daytime also, the glint from these gilded areas adds richness which could not otherwise be obtained. Care must be used, however, in the employment of this medium to have it well distributed in a delicate pattern or used in properly designed masses for silhouette effects so that the opacity helps rather than hinders the motive.

Many lithographs or four-colour prints have been employed successfully but it is very difficult to obtain exactly the type of print which will be most suitable to the lamp and to the surroundings of the lamp. However, at times, certain typical period designs can be so employed, and of course, when printed in quantity, they give a beautiful result at a considerably reduced cost for manufacture.

It is also necessary to mention briefly the finial or crest mounted upon what is known as the shade-binder. This may consist of the cover or part of the cover of the original vase, a small casting which recalls the design of the mounts, or of a decorative piece of semi-precious stone (suitable for Chinese lamps). This finial should always be considered a part of the design and should carry out the feeling of the lines of the lamp. (W. E. Cx.)

LAMP-BLACK, a deep black pigment consisting of carbon in a very fine state of division, obtained by the imperfect combustion of highly carbonaceous substances. It is manufactured from scraps of resin, pitch refuse, inferior oils and fats and other similar combustibles rich in carbon, the finest lamp-black being procured by the combustion of oils obtained in coal-tar distillation (*see* COAL TAR). Lamp-black is extensively used in the manufacture of printing ink, as a pigment for oil painting and also for "ebonizing" cabinet work, and in the waxing and lacquering of leather. It is the principal constituent of China ink.

LAMPEDUSA, a small Italian island in the Mediterranean, 112 mi. south-southwest from the town of Girgenti, Sicily. Pop. (1936) 1,977 (town), 3,146 (commune). The nearby island of Linosa (pop. [1936] 336) and Lampedusa are now known as the Isole Pelagie, and are reached by steamer from Porto Empedocle. Lampedusa's greatest length is about 7 mi., its greatest width about 2 mi.; the highest point is 400 ft. above sea level. It stands on the edge of the submarine platform of the east coast of Tunisia, from which (at Mahadia) it is 90 mi. distant eastwards. The soil is calcareous; it was covered with scrub (chiefly the wild olive) until comparatively recent times, but this has been cut, and the rock is now bare. The valleys are, however, fairly fertile. On the south, near the only village, is the harbour, dredged to a depth of 13 ft. and good for torpedo boats and small craft. There are prehistoric hut-foundations, also Punic tombs and Roman buildings near the harbour. The island is the Lopadusa of Strabo, and the Lipadosa of Ariosto's *Orlando Furioso*, the scene of the landing of Roger of Sicily and of his conversion by the hermit. In 1436 it was given by Alfonso of Aragon to Don Giovanni de Caro, baron of Montechiaro. A thousand slaves were taken from its population in 1553. In 1661, Ferdinand Tommasi, its then owner, received the title of prince from Charles II of Spain. In 1737 the earl of Sandwich found only one inhabitant upon it; in 1760 some French settlers established themselves there. In 1843 onwards Ferdinand II of Naples established a colony there. Eight miles west is the islet of Lampione. Linosa, some 30 mi. to the north-northeast, measures about 2 by 2 mi., and is entirely volcanic; its highest point is 610 ft. above sea level. It has landing-places on the south and west and is more fertile than Lampedusa, but suffers from lack of springs. Fragments of Roman pottery and Roman coins have been found there.

After the Allied victory in North Africa in World War II, British and U.S. planes bombed Lampedusa and Pantelleria with fury. The latter surrendered June 11, 1943, and Lampedusa the next day. Linosa and Lampione submitted to the Allies June 13.

See T. Ashby, "Lampedusa, Linosa and Lampione," in *Annals of Archaeology and Anthropology*, iv., 11 *sqq.* (Liverpool, 1911).

LAMPERTHEIM, a town in Hesse, Germany, and 8 mi. N. from Mannheim by the railway to Frankfort-on-Main via Biblis, and at the junction of lines to Worms and Weinheim. It has chemical and cigar factories. Pop. (1939) 13,793.

LAMPETER, municipal borough, Cardiganshire, Wales, on the Teifi, and at the convergence of roads from Aberayron, Tregaron, Llandilo, Carmarthen and Newcastle Emlyn and on the Carmarthen to Aberystwyth branch of the G.W.R. Pop. (1938), 2,114. Area, 2.7 sq.mi. As an outpost on the upper Teifi, Lampeter possessed a castle which was demolished by Owen Gwynedd in the 12th century. The town was first incorporated under Edward II, but the earliest known charter dates from the reign of Henry VI. Further charters were granted in 1814 and 1884. In post-mediaeval times Lampeter was an important centre for cattle to be driven through the hill passes to England. This activity ceased after the advent of the railway, but Lampeter still remained important for its fairs, especially Dalis horse fair. In 1822 St. David's college, for the training of students for the Welsh church, was founded by Bishop Burgess of St. David's. The college possesses by charter the privilege of conferring the bachelor degrees in arts and divinity. Lampeter's position at a convergence of routes led to its becoming an assize town after 1886; and after 1918, an important bus centre.

LAMPONGS (THE), a residency in southeast Sumatra, Dutch East Indies, bounded on the north and west by Palembang and Benkulen (Benkoelen), on the south by Sunda strait and on the east by the Java sea; area 28,784 sq.km.; pop. (1930) 361,563 (888 Europeans, 9,297 Chinese and other foreign Asiatics). The southwestern part of the residency, right up to the Benkulen border, is mountainous, with heights of nearly 7,000 ft., and from these highlands several rivers flow eastward to the sea, the ground about the coast being very flat. In the extreme south the coast is deeply indented, forming two large bays—Semangko bay and Lampong bay—the latter providing a good harbour. At the head of the bay is Teluk Betong, the capital and the chief port, pop. 25,170. Other towns are Kota Agung and Tandjongkarang on the south coast, and Menggala, Kotabumi and Sukodano, riverine towns. The principal rivers are the Sekamrung, Seputi, Terusan, Tulangbawang, and the Mesuji, which divides the Lampongs from Palembang. Rice, tobacco, rubber, pepper and coco-nuts are the principal crops, and pepper (black) and rubber are the chief articles of export. The rubber is mostly produced on estates, but pepper cultivation is in native hands, and proprietors of large gardens are men of wealth and big employers of labour. Foreign trade (1939): imports, 1,187,000 guilders; exports, 10,947,000 guilders. There is a good road system in the southern part of the residency. A railroad runs from Oosthaven (Teluk Betong) northwest through the Lampongs to Baturaja in Palembang residency and from there north to Palembang city. The Tulangbawang is navigable for ocean steamers to Menggala, to which there are regular services; there is frequent steamer communication between Teluk Betong and Merak in north Java.

The Lampongs (people) form part of the indigenous population of Sumatra, and are probably of Malay-Polynesian origin: their proximity to northern Java has resulted in some admixture of Javanese and Sundanese blood. Their alphabet and stage of civilization denote Hindu influence; in religion they are wholly Mohammedan, and their language has some affinity with Batak and Sundanese. They are an agricultural folk. Marriage among them is a patriarchal institution, with wife purchase, often at a very high figure, the woman becoming the absolute property of the husband. Though this is general among the lower classes, the notables preserve the matriarchal institutions of the Menangkabau Malays. Dress consists of *sarong* and *kabayah,* or *baju,* both sexes file the teeth, and the women are very fond of ornaments. Titles and social distinctions are much sought after, and expensive feasts are customary. The country is thinly peopled and villages are small. For years the Netherlands Indies government made attempts to relieve the population pressure on Java by encouraging migration to the Lampongs. In the decade before the Japanese invasion in 1942 there was considerable colonization between Teluk Betong and Kota Agung. In 1939 there were 29 Javanese settlements, with 116,865 colonists.

To acquire control of its valuable pepper trade, the sultan of Bantam established his jurisdiction over the Lampongs, and when his rule succumbed to the Dutch, in 1809, the Lampongs went with it, for the Dutch had traded in Lampong pepper from their earliest days in Malayan waters, and knew its great value. The residency was occupied by Japan in Feb. 1942. (E. E. L.; J. O. M. B.)

LAMPOON, a virulent satire either in prose or verse; the idea of injustice and unscrupulousness seems to be essential to its definition. The word is used by Evelyn in 1645, "Here they still paste up their drolling lampoons and scurrilous papers," and soon after it is a verb—"suppose we lampooned all the pretty women in Town." Both of these forms, the noun and the verb, have been preserved ever since in English, without modification, for violent and reckless literary censure. Tom Brown (1663–1704) was a past master in the art of lampooning. As a rule, the lampoon possessed no poetical graces, and in its very nature was usually anonymous. The notorious *Essay on Woman* (1764) of John Wilkes was a lampoon, and was successfully proceeded against as an obscene libel. The progress of civilization and the discipline of the law made it more and more impossible for private malice to take the form of baseless and scurrilous attack, and the lampoon, in its open shape, died of public decency in the 18th century.

LAMPREY, an eel-shaped, scaleless fish which, with the similar hagfishes and slime eels, forms a distinct primitive class of vertebrates, the Cyclostomata. The lamprey has a single nostril on the top of its head, seven round gill-openings on the side of the neck, and no jaws but, instead, a round sucker beset with horny teeth. The typical or parasitic kind of lamprey feeds on fish, rasping a hole in the flesh with the comblike teeth on the tongue, while it holds on securely with its sucking mouth. A chemical that is injected into the wound prevents the coagulation of the blood, which flows freely until the straight intestinal canal is filled to capacity. The nonparasitic type of lamprey never feeds when adult, is smaller and has degenerate teeth and shrunken alimentary canal. All lampreys, of both types, spawn in fresh water in gravel nests which they prepare, whereupon they promptly die. For several years the young live in the stream bottom as toothless, nearly blind, wormlike larvae, known as ammocetes, which in late summer or fall metamorphose rapidly into the adult type. The nonparasitic species pass one winter without food, whereas the parasitic ones grow rapidly for a year, in either salt or fresh water. All spawn in the spring. About 28 species are known from the temperate rivers and coastal seas of both hemispheres. In North America 19 species of lamprey occur, and in Eurasia, South America, New Zealand and Australia a few others are found. Lampreys, especially the sea lamprey (*Petromyzon marinus*), are esteemed in Europe as food, but their flesh is not easily digested. Henry I of England is said to have fallen a victim to this, his favourite dish. The larvae are extensively used as bait. (*See* CYCLOSTOMATA; FISHES.) (C. L. Hs.)

LAMPROPHYRES, a group of rocks containing phenocrysts, usually of biotite and hornblende (with bright cleavage surfaces), often also of olivine and augite, but not of felspar. They are thus distinguished from the porphyries and porphyrites in which the felspar has crystallized in two generations. They are essentially "dike rocks," occurring as dikes and thin sills, and are also found as marginal facies of plutonic intrusions. They are named from Gr. λαμπρός, bright, and the terminal part of the word porphyry (meaning rocks containing bright porphyritic crystals), and furnish a good example of the correlation which often exists between petrographical types and their mode of occurrence, showing the importance of physical conditions in determining the mineralogical and structural characters of rocks. They are usually dark in colour, owing to the abundance of ferro-magnesian silicates, of relatively high specific gravity and liable to decomposition. For these reasons they have been defined as a *melanocrate* series (rich in the dark minerals); and they are often accompanied by a complementary *leucocrate* series (rich in the white minerals felspar and quartz) such as aplites, porphyries and felsites. Both have been produced by differentiation of a parent magma, and if the two complementary sets of rocks could be mixed in the right proportions, a mass of similar chemical composition to the parent magma would be produced.

Although the porphyritic structure is almost universal, it is sometimes not very marked. The large biotites and hornblendes are not sharply distinct from those of intermediate size, which in turn graduate into the small crystals of the same minerals in the ground mass. As a rule all the ingredients have rather perfect crystalline forms (except quartz), hence these rocks have been called "panidiomorphic." In many lamprophyres the pale quartz

and felspathic ingredients tend to occur in rounded spots, or *ocelli,* in which there has been progressive crystallization from the margins towards the centre. These spots may consist of radiate or brush-like felspars (with some mica and hornblende) or of quartz and felspar.

There are two great groups of lamprophyres differing in composition while retaining the general features of the class. One of these accompanies intrusions of granite and diorite and includes the minettes, kersantites, vogesites and spessartites. The other is found in association with nepheline-syenites, essexites and teschenites, and is exemplified by camptonites, monchiquites and alnöites. The complementary facies of the first group is the aplites, porphyrites and felsites; that of the second group includes bostonites, tinguaites and other rocks.

The *granito-dioritic-lamprophyres* (the first of these two groups) are found in many districts where granites and diorites occur, *e.g.,* the Highlands and Southern Uplands of Scotland, the Lake district, Ireland, the Vosges, Black Forest, Harz, etc. As a rule they do not proceed directly from the granite, but form separate dikes which may be later than, and consequently may cut, the granites and diorites. In other districts where granites are abundant no rocks of this class are known. It is rare to find only one member of the group present, but minettes, vogesites, kersantites, etc., all appear and there are usually transitional forms. For this reason these rock species must not be regarded as sharply distinct from one another. The group as a whole is well-characterized and shows few transitions to porphyries, porphyrites and other dike types; its subdivisions, however, tend to merge into one another and especially when they are weathered are hard to distinguish. The presence or absence of the four dominant minerals, orthoclase, plagioclase, biotite and hornblende, determines the species. Minettes contain biotite and orthoclase; kersantites, biotite and plagioclase. Vogesites contain hornblende and orthoclase; spessartites, hornblende and plagioclase. Each variety of lamprophyre may and often does contain all four minerals, but is named according to the two which preponderate; they contain also iron oxides (usually titaniferous), apatite, sometimes sphene, augite and olivine, and as all lamprophyres are prone to alteration by weathering a great abundance of secondary minerals is usually found in them, the principal being calcite and other carbonates, limonite, chlorite, quartz and kaolin.

A feature of these rocks is the presence of large foreign crystals or xenocrysts of felspar and of quartz. Their forms are rounded, indicating partial resorption by the solvent action of the lamprophyric magma; and the quartz may be surrounded by corrosion borders of minerals such as augite and hornblende, produced where the magma is attacking the crystal. These crystals are of doubtful origin; they are often of considerable size and may be conspicuous in hand-specimens of the rocks. It is supposed that they did not crystallize in the lamprophyre dike but in some way were caught up by it. Other enclosures, more certainly of foreign origin, are often seen, such as quartzite, schists, garnetiferous rocks, granite, etc. These may be baked and altered or in other cases partly dissolved. Cordierite may be formed either in the enclosure or in the lamprophyre, where it takes the shape of hexagonal prisms which in polarized light break up into six sectors, triangular in shape, diverging from the centre of the crystal.

The second group of lamprophyric dike rocks (the camptonite-monchiquite-alnöite series) is much less common than those above described. As a rule they occur together, and there are transitions between the different sub-groups as in the granito-dioritic lamprophyres. In Sweden, Brazil, Portugal, Norway, the north of Scotland, Bohemia, Arkansas and other places this assemblage of rock types has been met with, always presenting nearly identical features. In most cases, though not in all, they have a close association with nepheline or leucite-syenites and similar rocks rich in alkalis. This indicates a genetic affinity like that which exists between the granites and the minettes, etc., and further proof of this connection is furnished by the occasional occurrence in those lamprophyres of leucite, haüyne and other felspathoid minerals.

The camptonites (called after Campton, New Hampshire) are dark brown, nearly black, rocks, often with large hornblende phenocrysts. Their essential minerals are alkali hornblende and augite, olivine and plagioclase felspar. They have the porphyritic and panidiomorphic structures described in the rocks of the previous group, and like them also have an ocellar character, often very conspicuous under the microscope. The accessory minerals are biotite, apatite, iron oxides and analcite. They decompose readily and are then filled with carbonates. Many of these rocks prove on analysis to be exceedingly rich in titanium; they may contain 4 or 5% of titanium dioxide.

The monchiquites (called after the Serra de Monchique, Portugal) are fine-grained and devoid of felspar. Their essential constituents are olivine and augite. Hornblende, like that of the camptonites, occurs in many of them. Analcite is present in the base, either colourless or turbid through alteration. Some monchiquites contain haüyne; while in others small leucites are found. Ocellar structure is occasionally present, though less marked than in the camptonites.

The alnöites (called after the island of Alnö, Sweden) are rare rocks found in Sweden, Montreal and other parts of North America and in the north of Scotland. They contain olivine, augite, biotite, perofskite and melilite. They are free from felspar, and contain very low percentages of silica. The rocks from the type area and Montreal contain monticellite.

The chemical composition of some of these rocks will be indicated by the analyses of certain well-known examples:

*	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	CaO	Na_2O	K_2O
I.	52·70	1·71	15·07	8·41	..	7·23	5·33	3·12	4·81
II.	52·12	1·20	13·52	2·56	4·53	6·36	5·78	2·34	5·36
III.	45·15	..	15·39	2·76	5·64	6·38	8·83	2·67	2·77
IV.	54·67	..	12·68	11·68	2·13	6·11	4·96	3·85	3·65
V.	41·96	4·15	15·36	3·27	9·89	5·01	9·47	5·15	0·19
VI.	43·74	2·80	14·82	2·40	7·52	6·98	10·81	3·06	2·90
VII.	29·25	2·54	8·80	3·92	5·42	17·66	17·86	0·77	2·45

*I. Minette (Weiler, Alsace). II. Kersantite (Neubrunn, Thuringia). III. Vogesite (Castle Mountain, Montana). IV. Spessartite (Waldmichael, Spessart). V. Camptonite (Campton Falls). VI. Monchiquite (Ria do Ouro, Serra de Tingua). VII. Alnöite (Alnö, Sweden).

In addition to the oxides given these rocks contain small quantities of water (combined and hygroscopic), CO_2, S, MnO, P_2O_5, etc.

(J. S. F.)

LAMPS, ELECTRIC: *see* ELECTRIC LAMPS AND VALVES, MANUFACTURE OF; LIGHTING AND ARTIFICIAL ILLUMINATION.

LAMPSACUS, an ancient Greek colony in Mysia, Asia Minor, known as Pityusa or Pityussa before its colonization by Ionian Greeks from Phocaea and Miletus, was situated on the Hellespont, opposite Callipolis (Gallipoli) in Thrace. It possessed a good harbour; and the neighbourhood was famous for its wine, so that, having fallen into the hands of the Persians during the Ionian revolt, it was assigned by Artaxerxes I. to Themistocles to provide him with wine, as Percote did with meat and Magnesia with bread. After the battle of Mycale (479 B.C.), Lampsacus joined the Athenians, but, having revolted from them in 411, was reduced by force. It was defended in 196 B.C. against Antiochus the Great of Syria, after which its inhabitants were received as allies of Rome. Lampsacus was the chief seat of the worship of Priapus, a gross nature-god closely connected with the culture of the vine. The ancient name is preserved in that of the modern village of Lapsaki, but the Greek town possibly lay at Chardak immediately opposite Gallipoli.

LAMP SHELLS, a popular term applied to brachiopod shells on account of the supposed resemblance of certain forms, such as *Terebratula,* to an ancient Etruscan lamp. When resting upon its ventral valve the shell corresponds in form to the body of the lamp, and the slender pedicle, protruding from a perforation in the beak of the ventral valve, bears a fancied likeness to a wick. The family Terebratulidae, which dates from the Triassic, contains 63 genera.

LAMPSTAND, a pillar, tripod or figure extending to the floor for supporting or holding a lamp. The lampstand (*lampa-*

dère) is probably of French origin; it appears to have been in use in France before the end of the 17th century. With electricity, the lampstand was supplanted by the floor-lamp. The floor-lamp is the subject of various designs, the shade of which may be made of one of several materials and the colour suited to the surroundings.

(*See* LIGHTING AND ARTIFICIAL ILLUMINATION.)

LANARK, a royal and small burgh and county town of Lanarkshire, Scotland, standing on high ground about half a mile from the right bank of the Clyde, 31 mi. S.E. of Glasgow by the L.M.S. railway. Pop. (est. 1938) 6,027. Area, .8 sq.mi. It is the point from which the falls of the Clyde are usually visited. The industries include hosiery manufacturing and a tannery, and there are frequent markets for cattle, horses and sheep. Kenneth II held a parliament at Lanark in 978, and it was sometimes the residence of the Scottish kings, one of whom, William the Lion (d. 1214), granted it a charter. William Wallace, who is said to have lived here in his early days, burned the town and slew the English sheriff, William Hezelrig. About 1 mi. N.W. are Cartland Craigs, where Mouse Water runs through a precipitous red sandstone ravine. The stream is crossed by a bridge of single span, supposed to be of Roman origin, and by a three-arched bridge, designed by Thomas Telford. On the right bank, near this bridge, is the cave in which Wallace concealed himself after killing Hezelrig and which still bears his name. Lanark was the centre of much activity in the days of the Covenanters. William Lithgow (1582–1645), the traveller, William Smellie (1697–1763), the obstetrician, and Gavin Hamilton (1730–97), the painter, were born at Lanark.

New Lanark, 1 mi. S., is famous in connection with the socialist experiments of Robert Owen in 1814–29. His agricultural "villages of unity and co-operation" were to be built in rectangular formation, each for 1,000 persons who were to be dressed in Roman or Highland costume. The village was founded by David Dale (Owen's father-in-law) in 1785, with the support of Sir Richard Arkwright, inventor of the spinning frame. Braxfield, on the Clyde, gave the title of Lord Braxfield to Robert Macqueen (1722–99), who was born in the mansion and acquired on the bench the character of the Scottish Jeffreys. Robert Baillie, the patriot who was executed for conscience' sake (1684), belonged to Jerviswood, an estate on the Mouse. Lee house, the home of the Lockharts, is 3 mi. N.W. The old castle was largely rebuilt in the 19th century. It contains some fine tapestry and portraits, and the Lee Penny, familiar to readers of Sir Walter Scott's *Talisman.* It is a cornelian encased in a silver coin, which was brought from Palestine in the 14th century by a crusading knight.

LANARKSHIRE, southern county of Scotland, bounded N. by the shires of Dumbarton and Stirling, E. by West Lothian, Midlothian and Peebles, S. by Dumfries and W. by the counties of Ayr, Renfrew and Dumbarton. Land area, 892.1 sq.mi. It embraces the valley of the Clyde. The shire is divided into three wards, the Upper, comprising all the southern section, or more than half the whole area; the Middle, with Hamilton its chief town; and the Lower, the smallest, in the north. The highest hills are nearly all on or close to the borders of Peeblesshire and Dumfriesshire, and include Culter fell and Lowther hill. The loftiest heights exclusively belonging to Lanarkshire are Green Lowther and Tinto. Here the county includes a small part of the Silurian southern uplands of Scotland, flanked on the north by an Ordovician belt of graptolites and grits, and of conglomerates in which are found the lead workings of Leadhills. Northward again the Old Red Sandstone occupies an irregular tract, with contemporary porphyries. The north of the county belongs to the Carboniferous area which includes the important coal measures extending east from Glasgow. Volcanic necks and intensive basalts appear in this area. Principal rivers are the Clyde and its headwaters and affluents. There are no large lochs, the few sheets of water in the north mainly feeding the Monkland and the Forth and Clyde canals. Famous natural features are the falls of Clyde (*q.v.*) in the Old Red Sandstone area. Kames and deposits of gravel, sand and boulder clay give evidence of the glacial period.

History.—At an early period Lanarkshire was inhabited by a Celtic tribe, the Damnonii, whose territory was divided by the wall of Antoninus between the Forth and Clyde (remains of which are found in the parish of Cadder), but who were never wholly subjugated by the Romans. Traces of their fortifications, mounds and circles exist, while bronze and stone objects belonging to their age are occasionally unearthed. Of the Romans there are traces in the camp on Beattock summit near Elvanfoot, in the bridge over the Mouse near Lanark, in the road to the south of Strathaven, in the wall mentioned and in coins and other relics. After their departure the country which included Lanarkshire formed part of the kingdom of Strathclyde, which, in the 7th century, was subdued by Northumbrian Saxons, when great numbers of Celts migrated into Wales. The county once embraced a portion of Renfrewshire, but this was disjoined in the time of Robert III. The shire was then divided into two wards, the Over (with Lanark its chief town) and the Nether (with Rutherglen its capital). The present division into three wards was not effected till the 18th century. Independently of Glasgow, Lanarkshire has not borne any part continuously in the general history of Scotland, but has been the scene of several exciting episodes. Many of Wallace's daring deeds were performed in the county, Queen Mary met her fate at Langside (1568) and the Covenanters received constant support from the people, defeating Claverhouse at Drumclog (1679), but suffering defeat at Bothwell Brig (1679).

Agriculture and Industries.—Oats, with 31,824 ac. in 1938, is the principal crop, turnips and swedes coming next with 7,712 ac. Potatoes and wheat are also grown. A large amount of market gardening is carried on in the Lower ward. Fruit growing is an ancient industry, the county with 493 ac. of orchards leading the Scottish production; strawberries and other small fruits are widely grown. The sheep walks in the Upper and Middle wards are heavily stocked and there are many cattle (83,459 in 1938). Dairy farming and cheese making are carried on. Clydesdale draft horses are of high class. Most of the horses are kept for agricultural work, but a considerable number of unbroken horses and mares are maintained for stock. Pigs are numerous (13,298), being extensively reared by the miners. More than half the 2,818 holdings in 1938 were over 50 ac., the largest farms being in the Upper ward, and the general holding ran from 100 to 300 ac. Nearly half the Upper ward is mountain and heath.

The leading industries are those in connection with the extensive coal and iron field to the east and southeast of Glasgow; the shipbuilding on the Clyde; the textiles at Airdrie, Hamilton, Lanark, New Lanark and Glasgow; engineering at Cambuslang, Carluke, Coatbridge, Airdrie, Blantyre and Motherwell and Wishaw; brick and fireclay works in many places; paraffin oil at Airdrie and Lanark; and the large and varied manufactures centred in Glasgow and neighbouring places, such as Rutherglen.

Communications.—In the north, where population is most dense, railway facilities are highly developed. The L.M.S. company's main line to the south runs through the length of the shire, sending off branches at several points, especially at Carstairs junction. The L.N.E. company serves various towns in the Lower and Middle wards and its lines to Edinburgh cross the northwestern corner and the north of the county. The Monkland canal in the far north and the Forth and Clyde canal in the north and northwest carry a considerable goods traffic.

Population and Administration.—Pop. (est. 1938) 1,635,937. In 1931 Gaelic and English were spoken by 1,575 persons. Though only tenth in point of extent, Lanarkshire is much the most populous county in Scotland, containing within its bounds about one-third of the population of the country. There are six large burghs—Airdrie (est. 1938 pop. 28,134), Coatbridge (45,045), Glasgow (1,127,825), Hamilton (39,315), Motherwell and Wishaw (67,696) and Rutherglen (25,441). The small burghs are Biggar (1,301) and Lanark (6,027). Glasgow, Lanark and Rutherglen are royal burghs. There are nine county districts, and the county is divided into seven parliamentary divisions called Bothwell, Coatbridge, Hamilton, Lanark, Motherwell, Northern and Rutherglen, each returning one member. The county of the city of Glasgow returns 15 members to parliament. Lanarkshire is a sheriffdom. For advanced education, besides the university and many

other institutions in Glasgow, there are schools in Hamilton, Motherwell and Wishaw, Lanark, etc.

LANCASHIRE, a north-western county of England, bounded on the north by Cumberland and Westmorland, east by Yorkshire, south by Cheshire and west by the Irish sea. The area is 1,878.1 sq.mi. The coast is generally flat with low boulder-clay cliffs at places and broken by great inlets, with wide expanses of sandy foreshore at low tides. The chief inlets, from north to south are:— the estuary of the river Duddon; Morecambe bay; and the estuaries of the Ribble and the Mersey. Morecambe bay receives the rivers Crake and Leven in a common estuary, and the Kent from Westmorland; while the Lune and the Wyre discharge into Lancaster bay, which is only partially separated from Morecambe bay by the promontory of Red Nab. Morecambe bay also detaches from the rest of the county the district of Furness (*q.v.*), having off its coast the island of Walney, 8 m. long, and several small isles within the strait between Walney and the mainland. The principal seaside resorts and watering-places from south to north are Southport, Lytham-St. Annes, Blackpool, Fleetwood and Morecambe; while at the head of Morecambe bay are several villages frequented by visitors, such as Arnside and Grange.

Of the rivers the Mersey (*q.v.*) separating the county from Cheshire is the principal, and receives from Lancashire the Irwell, Sankey and other small streams. The Ribble, which rises in the mountains of the West Riding of Yorkshire, forms for a few miles the boundary with that county, and then flows south-west to Preston, receiving the Hodder from the north and the Calder and Darwen from the south. Furness, entirely hilly except for a narrow coastal tract, extends north to include the southern part of the Lake District (*q.v.*); it contains Coniston lake and borders Windermere, which lie upon Silurian rock, and which are drained respectively by the Leven and Crake, with some smaller lakes and such mountains as the Old Man and Wetherlam. Another elevated district, forming part of the Pennine (*q.v.*) uplands, runs along the whole eastern boundary of the county, and to the south of the Ribble occupies more than half the area, stretching west nearly to Liverpool. The moorlands in the southern district are generally bleak and covered with heather. Towards the north the scenery is frequently beautiful, the green rounded elevated ridges being separated by pleasant cultivated valleys variegated by woods and watered by rivers. The more elevated parts of Lancashire are formed of Carboniferous rocks with Silurian and Ordovician in the Furness and Sedbergh districts. The coastal plain from the mouth of the Lune to Liverpool and stretching up the Mersey valley to beyond Manchester is formed of red Triassic sandstones. The finest scenery is found in the limestone area in the northern half of the county, while the moorlands of the southern district are formed of Millstone Grit and Coal-Measure shales and sandstone. None of the summits of the range within Lancashire attains an elevation of 2,000 ft., the highest being Blackstone Edge (1,323 ft.), Pendle hill (1,831 ft.) and Boulsworth hill (1,700 ft.).

Along the sea coast from the Mersey to Lancaster there is a continuous plain, formerly occupied by peat mosses, many of which have been reclaimed, the bad drainage being due to deposits of boulder clay. The largest is Chat Moss between Liverpool and Manchester. A large district in the north belonging to the duchy Lancaster was at one time occupied by forests, but these have wholly disappeared, though their existence is recalled in nomenclature, as in the forest of Rossendale, near the Yorkshire boundary somewhat south of the centre. The shore near Formby, etc., shows traces of submerged forests.

On the south Lancashire coal-basin are situated the most important towns of the district, while part of the Ingleton coal-field also lies in the county. Large pockets of iron-ore (haematite), occur in the Carboniferous limestones of the Furness district. The available coal supply of the Lancashire coal-field has been proved at 4,238,500,000 tons. In addition to coal and fire-clay, quantities of limestone, sandstone, slate and salt, which is also obtained from the brine, are raised. The haematite obtained in the Furness district is very valuable. Metals, excepting iron are unimportant.

History and Early Settlement.—Many small flint implements occur, especially on the moorlands around Rochdale. Flat bronze axes found near Warrington are perhaps a hint of an ancient port there. A hoard of bronze implements including socketed axes has been collected near Winmarleigh; a tanged bronze dagger like those from Arreton Down (I. of Wight) was found near Colne. Winwick near Warrington has important early Bronze Age burials while Bleasdale has burial circles. Furness is richer than the rest of Lancashire. There are remains of two stone circles in Furness, of two others in the moors north of Bolton and of still two more south of Burnley. Warrington, Manchester, Wigan, Ribchester and Lancaster were Roman centres.

In post-Roman times the northwestern section of the county was possibly little better than a waste. It was not until the victory of Aethelfrith, near Chester in 613 cut off the Britons of Wales from those of Lancashire and Cumberland that even Lancashire south of the Ribble was conquered. The part north of the Ribble was not absorbed in the Northumbrian kingdom till the reign of Ecgfrith (670–685). During the 9th century Lancashire was invaded by the Danes, and after the peace of Wedmore (878) was included in the Danish kingdom of Northumbria. There are various sculptured crosses, mostly of the 8th century or later, and a few traces of Celtic art. Scandinavian place names abound and indicate a wedge driven in between the Welsh of Wales and of Strathclyde. The *A.S. Chronicle* records the reconquest of the district between the Ribble and the Mersey in 923 by the English King, when it appears to have been united to Mercia, but the district north of the Ribble still belonged to Northumbria until its incorporation with the kingdom of England. William the Conqueror gave the lands between the Ribble and Mersey, and Amounderness to Roger de Poictou, but at the time of the Domesday Book these again belonged to the king.

The name Lancashire does not appear in Domesday; the lands between the Ribble and Mersey were included in Cheshire and those north of the Ribble in Yorkshire. Roger de Poictou soon regained his lands, and Rufus added the rest of Lonsdale south of the sands, and, as he had the Furness fells, he owned all that is now known as Lancashire. In 1102 he finally forfeited all his lands, which Henry I. held till, in 1118, he created the honour of Lancaster, and bestowed it upon his nephew Stephen, afterwards King. During Stephen's reign difficulties arose, for David of Scotland held lands north of the Ribble for a time, and in 1147 the earl of Chester held the district between the Ribble and the Mersey. Henry II. gave the whole honour to William, Stephen's son, but in 1164 it came again into the king's hands until 1189, when Richard I. granted it to his brother John. In 1194, it was confiscated and the honour remained with the crown till 1267. In 1229, however, all the crown demesne between the Ribble and Mersey was granted to Ranulf, earl of Chester, and on his death in 1232 came to William Ferrers, earl of Derby. The Ferrers held it till 1266, when it was confiscated. In 1267 Henry III. granted it to his son Edmund, who was created earl of Lancaster. His son, earl Thomas, married the heiress of Henry de Lacy, earl of Lincoln, and thus obtained the great estates belonging to the De Lacys in Lancashire. On the death of Henry, first duke of Lancaster, in 1361, the estates, title and honour fell to John of Gaunt, and by the accession of Henry IV., John of Gaunt's only son, to the throne, the duchy became merged in the crown.

The county of Lancaster is mentioned in 1169, as first contributing to the Royal Exchequer. The creation of the honour decided the boundaries. Ecclesiastically the whole of the county originally belonged to the diocese of York, but in 923 the district between the Ribble and the Mersey was placed under the Bishop of Lichfield. Up to 1541 the district north of the Ribble belonged to the diocese of York. In 1541 the diocese of Chester was created and Lancashire was divided into two archdeaconries. In modern times bishoprics have been established at Manchester, Liverpool and Blackburn and they divide the county between them, save that Furness and Cartmel were transferred to the diocese of Carlisle soon after that of Manchester was created.

No shire court was ever held for the county, but as a duchy and county palatine it has its own special courts. It may have

enjoyed palatine jurisdiction under earl Morcar before the Conquest, but the first record of such privileges being exercised was in 1351, under Henry, duke of Lancaster. In 1377 the county was erected into a palatinate for John of Gaunt's life, and in 1396 these rights of jurisdiction were extended and settled in perpetuity on the dukes of Lancaster. The county palatine courts consist of a chancery which dates back at least to 1376, a court of common pleas, the jurisdiction of which was transferred in 1873 by the Judicature act to the high court of justice, and a court of criminal jurisdiction which in no way differs from the king's ordinary court. In 1407 the duchy court of Lancaster was created, in which all questions of revenue and dignities affecting the duchy possessions are settled. The chancery of the duchy has been for years practically obsolete. The duchy and the county palatine have each its own seal. The office of chancellor of the duchy and county palatine, a crown office, dates back to 1351.

At the close of the 12th and during the 13th century there was a considerable advance in the importance of the towns; in 1199 Lancaster became a borough, in 1207 Liverpool, in 1230 Salford, in 1246 Wigan, and in 1301 Manchester. The Scottish wars drained the county of some of its best blood. In 1349 the county was visited by the Black Death and in ten parishes between September 1349 and January 1350, 13,180 persons perished. From the effects of this plague Lancashire was apparently slow to recover; its boroughs ceased to return members early in the 14th century and trade had not yet made any great advance. The drain of the Wars of the Roses on the county must also have been heavy. Its poverty is shown by the fact that out of £40,000 granted in 1504 by parliament to the king, Lancashire's share was only £318. Under the Tudors the county prospered.

Stuart Period.—In the assessment of ship money in 1636 the county was put down for £1,000, towards which Wigan was to raise £50, Preston £40, Lancaster £30 and Liverpool £25 (*cf.* Hull £140 and Leeds £200). On the eve of the Great Rebellion in 1641, parliament resolved to take command of the militia, and Lord Strange, Lord Derby's eldest son, was removed from the lord lieutenancy. On the whole, the county was royalist, and the moving spirit among the Royalists was Lord Strange, who became Lord Derby in 1642. Manchester was the headquarters of the Parliamentarians, and was besieged by Lord Derby in September 1642 for seven days, but not taken. Lord Derby took up his headquarters at Warrington and garrisoned Wigan. At the opening of 1643 Sir Thomas Fairfax made Manchester his headquarters. Early in this year the parliamentarians from Manchester successfully assaulted Preston, and then captured Hoghton Tower and Lancaster. Lord Derby made an unsuccessful attack on Bolton from Wigan. In March Lord Derby captured the town of Lancaster but not the castle, and marching to Preston regained it for the king, but was repulsed in an attack on Bolton. In April, Wigan, one of the chief Royalist strongholds in the county, was taken by the parliament forces, who also again captured Lancaster, and Warrington fell after a week's siege. Lord Derby also failed in an attempt on Liverpool, and the tide of war had clearly turned against the Royalists in Lancashire. In June Lord Derby went to the Isle of Man, which was threatened by the king's enemies. Soon after, the parliamentarians captured Hornby castle and later Thurland castle. In February 1644 the parliamentarians besieged Lathom house, the one refuge left to the Royalists, which was bravely defended by Lord Derby's wife, Charlotte de la Trémoille. The siege lasted nearly four months and was raised on the approach of Prince Rupert, who marched to Bolton and was joined outside the town by Lord Derby. Bolton was carried by storm; Rupert ordered that no quarter should be given. He advanced without delay to Liverpool and took it after a siege of three weeks. After Marston Moor, Prince Rupert again appeared in Lancashire and small engagements took place at Ormskirk, Upholland and Preston; in November Liverpool surrendered to the parliamentarians. Lathom house, again the only strong place in Lancashire left to the Royalists, in December 1645 surrendered after a five months' siege, and was almost entirely destroyed. For the moment the war in Lancashire was over. In 1648, however, the Royalist forces under the duke of Hamilton and Sir Marmaduke Langdale marched through Lancaster to Preston, hoping to reach Manchester; but near Preston were defeated by Cromwell in person. The remnant retreated through Wigan towards Warrington where they surrendered. In 1651 Charles II. advanced through Lancaster, Preston and Chorley on his southward march.

During the Rebellion of 1715 Manchester was the chief centre of Roman Catholic and High Church Toryism. On Nov. 7 the Scottish army entered Lancaster, where the Pretender was proclaimed king, and advanced to Preston, at which place a considerable body of Roman Catholics joined it. The rebels remained at Preston a few days, apparently unaware of the advance of the government troops, until Gen. Wills from Manchester and Gen. Carpenter from Lancaster surrounded the town, and on Nov. 13 the town surrendered. In 1745 Prince Charles Edward passed through the county and was joined by about 200 adherents called the Manchester regiment and placed under the command of Col. Townley, who was afterwards executed.

Growth of Industries.—The first industry established in Lancashire was that of wool, and with the founding of Furness abbey in 1127 wool farming on a large scale began here, but the bulk of the wool was exported not worked up in England. In 1282, however, there was a mill for fulling or bleaching wool in Manchester, and by the middle of the 16th century there was quite a flourishing trade in worsted goods. In an act of 1552, Manchester "rugs and frizes" are specially mentioned, and in 1566 another act regulated the fees of the aulnager who was to have his deputies at Manchester, Rochdale, Bolton, Blackburn and Bury; the duty of the aulnagers was to prevent "cottons, frizes and rugs" from being sold unsealed, and it must be noted that by cottons is meant woollen-goods. The 17th century saw the birth of the class of clothiers, who purchased the wool in large quantities or kept their own sheep, and delivered it to weavers who worked it up into cloth in their houses and returned it to the employers. The earliest mention of the manufacture of real cotton goods is in 1641, but the industry did not develop to any extent until after the invention of the fly shuttle by John Kay in 1733, of the spinning jenny by James Hargreaves of Blackburn in 1765, of the water frame throstle by Richard Arkwright of Bolton in 1769 and of the mule by Samuel Crompton of Hall-in-the-Wood, near Bolton, in 1779. So rapid was the development of the cotton manufacture that in 1787 there were over 40 cotton mills in Lancashire, all worked by water power. In 1789 steam power was applied to the industry. The increase of the import of raw cotton from 3,870,000 lb. in 1769 to 1,083,600,000 in 1860 shows the growth of the industry. The rapid growth was accompanied with intermittent periods of depression, which in 1819 in particular led to the formation of various political societies and to the Blanketeer's meeting and the Peterloo massacre. During the American Civil War the five years' cotton famine caused untold misery.

During the 18th century the only town where maritime trade increased was Liverpool, where in the last decade about 4,500 ships arrived annually of a tonnage about one-fifth that of the London shipping. The prosperity of Liverpool was closely bound up with the slave trade. With the increase of trade, means of communication also improved. The latter half of the 18th century saw the period of canal construction and in 1830 the first passenger railway in England was opened between Manchester and Liverpool, and other railways rapidly followed.

The first recorded instance of parliamentary representation in Lancashire was in 1295, when two knights were returned for the county, and two burgesses each for the boroughs of Lancaster, Preston, Wigan and Liverpool. Lancaster ceased to send members in 1331, but renewed its privileges in 1529; from 1529 to 1547 there are no parliamentary returns, but from 1547 to 1867 Lancaster continued to return two members. Preston similarly was excused after 1331, but in 1529 and from 1547 onwards returned two members. Liverpool and Wigan sent two members in 1295 and 1307, but not again until 1547. In 1559 Clitheroe and Newton-le-Willows first sent two members. Thus in all Lancashire returned 14 members. By the Reform act of 1832 Lancashire was assigned four members, two for the northern and two for the southern division. Lancaster, Preston, Wigan and Liverpool con-

tinued to send two members, Clitheroe returned one and Newton was disfranchised. The following new boroughs were created: Manchester, Bolton, Blackburn, Oldham, returning two members each; Ashton-under-Lyne, Bury, Rochdale, Salford and Warrington, one each. In 1861 a third member was given to South Lancashire and in 1867 the county was divided into four constituencies, to each of which four members were assigned, from 1885 to 1918 the county returned 23 members and since 1918, 18 members. The boroughs returned from 1867 to 1885, 25 members, from 1885 to 1918, 34 members and from 1918, 48 members.

FEATURES OF THE COUNTY

Ecclesiastical Antiquities.—The Cistercians had abbeys at Furness (*q.v.*) and, for a short time, at Wyresdale and also one at Whalley which had been founded at Stanlawe, in Cheshire, in 1178 and removed thither in 1296. There are well-known remains at Whalley and those at Furness are very impressive. Priories of Black Canons were founded at Conishead in the time of Henry II, at Burscough in that of Richard I and at Cartmel. There are remains of these houses at Burscough and Cartmel. There were friaries of Dominicans at Lancaster, of Franciscans at Preston and of Augustinians at Warrington. An Austin priory existed at Cockerham; and at Cockersand, a hospital founded in the reign of Henry II was changed to a Praemonstratensian abbey in 1190 and still shows its chapter house. Hornby had a Praemonstratensian priory. Remains exist of Upholland (changed from a college of secular priests, 1318), Benedictine priory, and the order had a priory at Lancaster (1094), a cell at Lytham (temp. Richard I) and a priory at Penwortham. There was a Cluniac cell at Kensal.

Besides the churches discussed under the several towns the more interesting include Aldingham; Aughton; Cartmel priory church mentioned above (and *see* also FURNESS); Garstang; Halsall; Hawkshead; Heysham (which has a pre-Conquest chapel dedicated to St. Patrick and an ancient cross); Hornby; Huyton; Kirkby, which has a very ancient font; Kirkby Ireleth, late Perpendicular, with Norman doorway; Leyland; Melling (in Lonsdale), Perpendicular; Middleton, rebuilt in 1524, but containing part of the Norman church and several monuments; Ormskirk; Overton, with Norman doorway; Radcliffe; Ribchester; Sefton, Perpendicular, with fine brass and recumbent figures of the Molyneux family, also a screen exquisitely carved; Stidd, near Ribchester, much Norman work; Tunstall, late Perpendicular; Upholland priory church, Urswick; Walton-le-Dale; Warton, with old font; Whalley parish church with fine stalls from the abbey.

Castles.—The principal old castles are those of Lancaster; Dalton, a small rude tower; two towers of Gleaston castle, built by the lords of Aldingham in the 14th century; Clitheroe (Norman keep); Hornby and Thurland; the ruins of Greenhalgh castle, built by the first earl of Derby; the ruins of Fouldrey in Piel island near the entrance to Barrow harbour, erected in the reign of Edward III, now almost dilapidated.

Climate and Agriculture.—The climate in the hilly districts is frequently cold, but in the more sheltered parts to the south and west it is mild and genial. There is a high rainfall in the hilly districts. The soil after reclamation and drainage is fertile; but is for the most part a strong clayey loam. In some, especially the upland districts, it is more of a peaty nature and in the Trias districts of the Mersey it forms light sandy loam, well adapted for wheat and potatoes. In many districts the ground has been rendered unfit for agriculture by the rubbish from coal-pits. A low proportion, about 57% of the total area, was under cultivation in 1939 and of this nearly three-fourths was in permanent pasture. Cows are largely kept for the supply of milk to the towns, while in the uplands many sheep are reared. The acreage under oats (the chief crop, with 54,911 ac.) occupied over two-thirds of the area under grain crops. Of green crops the potato (32,454 ac.) was much the most important.

Industries and Trade.—South Lancashire is the principal seat of the cotton manufacture in the world, the trade centring upon Manchester. The worsted, woollen, artificial silk and silk manufactures, flax, hemp and jute industries are also important. The manufacture of machines, appliances, conveyances, locomotives, motor vehicles, etc., is very important, especially in supplying the needs of the immense weaving and spinning industries. For the same purpose there is a large branch industry in the manufacture of wooden bobbins. The manufacture of iron and steel is carried on at Barrow-in-Furness, there are great glass works at St. Helens, watch-making works at Prescot and leather and soap works at Warrington. Printing, bleaching, dyeing works, paper and chemical works, rubber and tobacco manufactures are also important activities of this great industrial region.

Besides the port of Liverpool, of world-wide importance, the principal ports are Manchester, brought into communication with the sea by the Manchester Ship canal (*q.v.*) (opened 1894), Barrow-in-Furness, Fleetwood, Heysham, Preston and Lancaster. The sea fisheries, for which Fleetwood and Liverpool are the chief ports, are of considerable value.

Communications.—Apart from the Manchester Ship canal, canal traffic is still important in the industrial area. In 1760 the Sankey canal, 10 mi. long, the first canal opened in Britain (apart from early works), was constructed from St. Helens to Liverpool. Other similar enterprises followed; the Bridgwater canal from Manchester to Worsley (1761), the Leeds and Liverpool canal (130 mi. long, begun 1770), the Rochdale canal, the Manchester (to Huddersfield) canal, Lancaster canal (connecting Preston and Kendal) and the Ulverston canal. A network of railways, principally of the L.M.S. system, connects the industrial centres. Many suburban lines have been electrified. There were 2,962 mi. of roads in the county in 1942.

On July 18, 1934, King George V opened a tunnel under the River Mersey which had been constructed for vehicular traffic at a cost of about £7,000,000. This important link between Liverpool and Birkenhead is over two miles long and at the time of its completion was the largest under-water tunnel in the world. It was named "Queensway." (*See* BIRKENHEAD.)

Population and Administration.—The area of the administrative county is 1,622 sq.mi., with a population (est. 1938) of 1,880,600. Between Sept. 1939 and Feb. 1941, war time movements caused a decrease of 6% in the county population, mainly owing to evacuation. The ancient county was divided into four divisions which were as follows:—the *northern division,* which embraces all the country north of the Ribble, including Furness and a small area south of the Ribble estuary, is the largest of the divisions; the *northeastern division,* which lies east of Preston, is the smallest division; the *southwestern division,* which represents roughly the quadrant with a radius of 20 mi. drawn from Liverpool, and the *southeastern division,* which has about the same area as the southwestern and is the heart of the industrial region. The following table shows the distribution of the principal administrative bodies in the four divisions of the county.

Division	Parliamentary divisions, each returning one member	Parliamentary boroughs	Members returned for the parliamentary boroughs	County boroughs (excluding Stockport)
North	4	3	4	3
Northeastern	2	5	6	2
Southwestern	5	7	17	6
Southeastern	7	8	21	6
Totals for county	18	23	48	17

The county returns in all 66 members to parliament.

There are three cities in the county, Liverpool, Manchester and Salford and three cathedral towns, Manchester, Liverpool and Blackburn. The county borough of Stockport is partly in Cheshire and partly in Lancashire. Besides the county boroughs, there are 26 municipal boroughs, 68 urban districts and 15 rural districts. Preston is the seat of the county council. The National Trust owned 4,262 ac. in the county in 1942.

Lancashire is one of the counties palatine, comprises six hundreds, is in the northern circuit, and assizes are held at Lancaster, Liverpool and Manchester. There are four quarter sessional divisions (Lancaster, Preston, Liverpool and Manchester) and 32 petty sessional divisions. The boroughs of Blackburn, Bolton, Burnley, Liverpool, Manchester, Oldham, Salford and Wigan have

separate commissions of the peace and courts of quarter sessions. All the municipal boroughs, with the exception of Bacup, Chorley, Crosby, Farnworth, Fleetwood, Radcliffe, Rawtenstall, Stretford and Swinton and Pendlebury, have separate commissions of the peace. Lancashire is mainly in the diocese of Manchester, but parts are in those of Liverpool, Blackburn, Carlisle, Ripon, Chester and Wakefield.

Manchester and Liverpool are both seats of universities and of other important educational institutions. Within the county there are many denominational colleges, and near Clitheroe is the famous Roman Catholic college of Stoneyhurst. There are training departments for teachers in connection with the Manchester and Liverpool universities, and also at Edgehill, near Liverpool (mistresses), Liverpool (masters, Roman Catholic), Warrington (mistresses, Church of England) and Manchester (municipal, day).

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LANCASTER, HOUSE OF. The name House of Lancaster is commonly used to designate the line of English kings immediately descended from John of Gaunt, the fourth son of Edward III. But the history of the family and of the title goes back to the reign of Henry III., who created his second son, Edmund, earl of Lancaster in 1267. This Edmund received in his own day the surname of Crouchback, from having worn a cross upon his back in token of a crusading vow. His son Thomas, who inherited the title, took the lead among the nobles of Edward II.'s time in opposition to Piers Gaveston and the Despensers, and was beheaded for treason at Pontefract. At the beginning of the next reign his brother Henry was appointed guardian to the young king Edward III. and assisted him to throw off the yoke of Mortimer. Meantime the attainder had been reversed and the earldom restored. On this Henry's death in 1345 he was succeeded by a son, sometimes known as Henry Tort-Col or Wryneck, a very valiant commander in the French wars, whom the king advanced to the dignity of a duke. Only one duke had been created in England before—the king's son Edward, the Black Prince, duke of Cornwall. Henry Wryneck died in 1361 without male heir. His second daughter, Blanche, became the wife of John of Gaunt, who thus succeeded to the duke's inheritance in her right; and on Nov. 13, 1362, when King Edward attained the age of 50, John was created duke of Lancaster, his elder brother, Lionel, being at the same time created duke of Clarence. It was from these two dukes that the rival houses of Lancaster and York derived their respective claims to the crown. As Clarence was King Edward's third son, while John of Gaunt was his fourth, in ordinary course on the failure of the elder line the issue of Clarence should have taken precedence of that of Lancaster in the succession. But the rights of Clarence were conveyed in the first instance to an only daughter, and the ambition and policy of the house of Lancaster, profiting by advantageous circumstances, enabled them not only to gain possession of the throne but to maintain themselves in it for three generations before they were dispossessed by the representatives of the elder brother. (*See* LANCASTER, JOHN OF GAUNT, DUKE OF.)

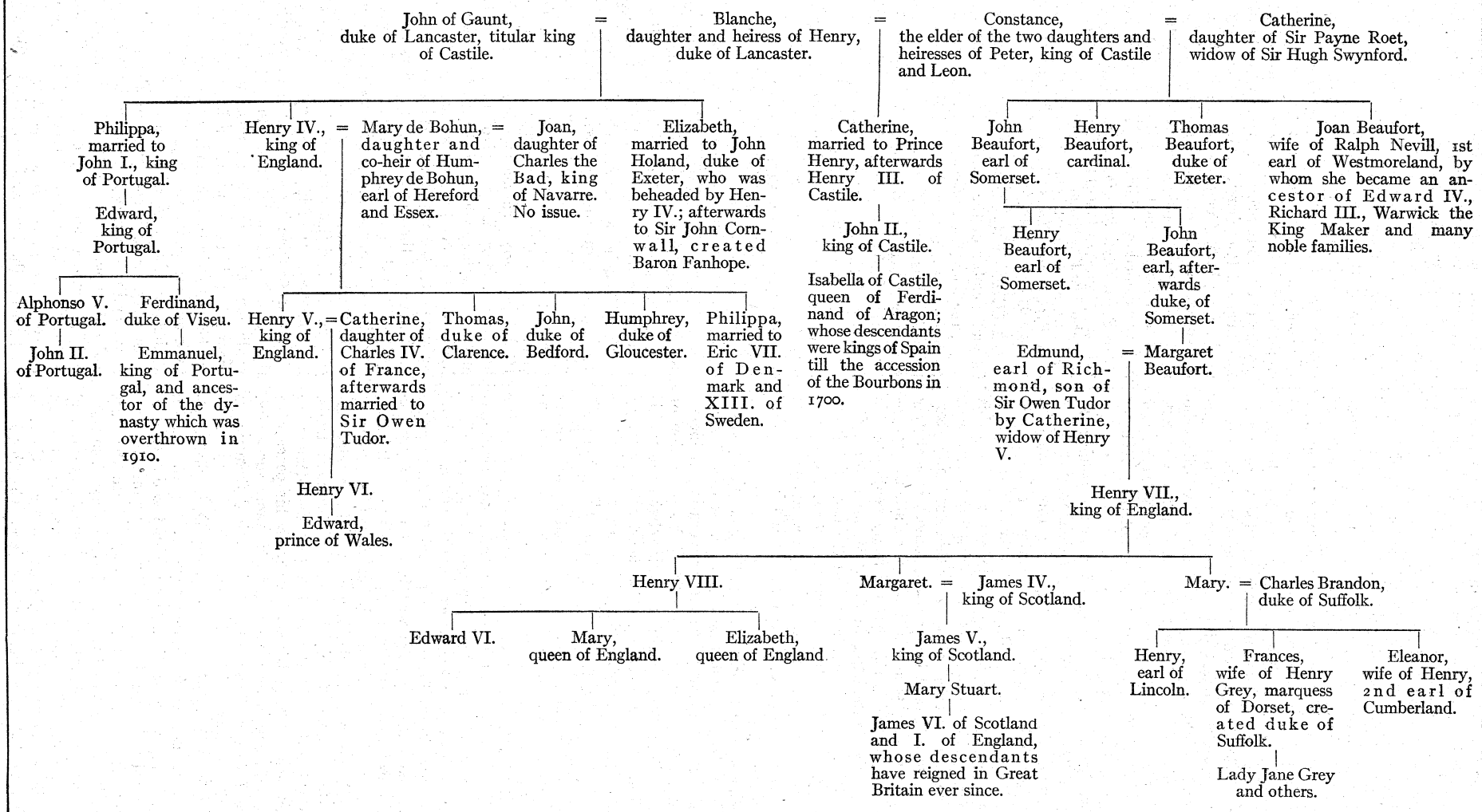
LANCASTER, HENRY, 1ST DUKE OF (*c.* 1300–1361), the son of Henry, earl of Lancaster (*q.v.*), was a soldier of unusual distinction. Probably from his birthplace in Monmouthshire he was called Henry of Grosmont. He fought in the naval fight off Sluys and in the one off Winchelsea in 1350; he led armies into Scotland, Gascony and Normandy; he served frequently under Edward III. himself; and he may be fairly described as one of the most brilliant and capable of the English warriors during the earlier part of the Hundred Years' War. During a brief respite from the king's service he led a force into Prussia and he was often employed on diplomatic business. In 1354 he was at Avignon negotiating with Pope Innocent VI., who wished to make peace between England and France, and one of his last acts was to assist in arranging the details of the treaty of Brétigny in 1360. In 1337 he was made earl of Derby; in 1345 he succeeded to his father's earldoms of Lancaster and Leicester; in 1349 he was created earl of Lincoln, and in 1351 he was made duke of Lancaster. He was steward of England and one of the original knights of the order of the garter. He died at Leicester on the 13th of March 1361. He left no sons; one of his daughters, Maud (d. 1362), married William V., count of Holland, a son of the emperor Louis the Bavarian, and the other, Blanche (d. 1369), married Edward III.'s son, John of Gaunt, who obtained his father-in-law's titles and estates and formed the royal house of Lancaster.

LANCASTER, JOHN OF GAUNT, DUKE OF (1340–1399), fourth son of Edward III. and Queen Philippa, was born in March 1340 at Ghent, whence his name. On Sept. 29, 1342, he was made earl of Richmond; as a child he was present at the sea fight with the Spaniards in August 1350, and his military service was in 1355, when he was knighted. On May 19, 1359, he married his cousin Blanche, daughter and ultimately sole heiress of Henry, duke of Lancaster. In her right he became earl of Lancaster in 1361, and next year was created duke. His marriage made him the greatest lord in England, but for some time he took no prominent part in public affairs. In 1366 he joined his eldest brother, Edward the Black Prince, in Aquitaine, and in the year after led a strong contingent to share in the campaign in support of Pedro the Cruel of Castile. With this began his long connection with Spain. John fought in the van at Najera on April 13, 1367, when the English victory restored Pedro to his throne. He returned home at the end of the year. Pedro was finally overthrown and killed by his rival, Henry of Trastamara, in 1369. The disastrous Spanish enterprise led directly to renewed war between France and England.

In August 1369 John had command of an army which invaded northern France without success. In the following year he went again to Aquitaine, and was present with the Black Prince at the sack of Limoges. Edward's health was broken down, and he soon after went home, leaving John as his lieutenant. For a year John maintained the war at his own cost. His wife died in the autumn of 1369 and John married Constance (d. 1394), the elder daughter of Pedro the Cruel, and in her right assumed the title of king of Castile and Leon. For sixteen years the pursuit of his kingdom was the chief object of John's ambition. No doubt he hoped to achieve his end, when he commanded the great army which invaded France in 1373. But the French would not give battle, and though John marched from Calais right through Champagne, Burgundy and Auvergne, it was with disastrous results; only a shattered remnant of the host reached Bordeaux.

When John got back to England he was soon absorbed in domestic politics. The king was prematurely old, the Black Prince's health was broken. John, as head of the court party, had to bear the brunt of the attack on the administration made by the Good Parliament in 1376. As soon as the parliament was dissolved he had its proceedings reversed, and next year secured a more subservient assembly. There came, however, a new development. The duke's politics were opposed by the chief ecclesiastics, and in resisting them he had made use of Wycliffe. With Wycliffe's religious opinions he had no sympathy. Nevertheless when the bishops arraigned the reformer for heresy John would not abandon him. The conflict over the trial led to a violent quarrel with the Londoners, and a riot in the city during which John was in danger of his life from the angry citizens. The situation was entirely altered by the death of Edward III. Though his enemies had accused him of aiming at the throne, John was without any taint of disloyalty. Though he took his proper place in the ceremonies at Richard's coronation, he withdrew for a time from any share in the government. In 1378, he commanded in an unsuccessful attack on St. Malo. During his absence some of his supporters violated the sanctuary at Westminster. He vindicated himself somewhat bitterly in a parliament at Gloucester, and accepted the command on the Scottish border. He was there engaged when his palace of the Savoy in London was burnt during the peasants' revolt in June 1381. Against his will he was forced into an unfor-

TABLE OF THE PRINCIPAL DESCENDANTS OF JOHN OF GAUNT



tunate campaign on the Scottish border in 1384. His ill-success renewed his unpopularity, and the court favourites of Richard II. intrigued against him. Finally the difficulties of his position at home strengthened his foreign ambitions.

Spanish Expedition.—In July 1386 John left England with a strong force to win his Spanish throne. He landed at Corunna, and during the autumn conquered Galicia. Juan, who had succeeded his father Henry as king of Castile, offered a compromise by marriage. John of Gaunt refused, hoping for greater success with the help of the king of Portugal, who now married the duke's eldest daughter Philippa. In the spring the allies invaded Castile. They could achieve no success, and sickness ruined the English army. The conquests of the previous year were lost, and when Juan renewed his offers, John of Gaunt agreed to surrender his claims to his daughter by Constance of Castile, who was to marry Juan's heir. After some delay the peace was concluded at Bayonne in 1388. The next eighteen months were spent by John as lieutenant of Aquitaine, and it was not till November 1389 that he returned to England.

By his absence he had avoided implication in the troubles at home. Richard, still insecure of his own position, welcomed his uncle, and created him duke of Aquitaine. During four years John exercised his influence in favour of pacification at home, and abroad was chiefly responsible for the conclusion of a truce with France. Then in 1395 he went to take up the government of his duchy; but the Gascons had from the first objected to government except by the crown, and secured his recall within less than a year. Constance of Castile had died in 1394 and almost immediately after his return John married as his third wife Catherine Swynford. Catherine had been his mistress for many years, and his children by her, who bore the name of Beaufort, were now legitimated. Though John presided at the trial of the earl of Arundel in September 1397, he took no further active part in affairs. The exile of his son Henry in 1398 was a blow from which he did not recover. He died on Feb. 3, 1399, and was buried in St. Paul's cathedral near the high altar.

John was neither a great soldier nor a statesman, but he was a chivalrous knight and loyal to what he believed were the interests of his family. In spite of opportunities and provocations he never lent himself to treason. He deserves credit for his protection of Wycliffe, though he had no sympathy with his religious or political opinions. He was also the patron of Chaucer, whose *Boke of the Duchesse* was a lament for Blanche of Lancaster.

See Froissart, the maliciously hostile *Chronicon Angliae* (1328–88), and the eulogistic *Chronicle* of Henry Knighton (both the latter in the Rolls Series). Fuller information is to be found in the excellent biography by S. Armytage-Smith, published in 1904. For his descendants *see* the table.

LANCASTER, HENRY, Earl of (*c.* 1281–1345), was the second son of Edmund, earl of Lancaster (d. 1296), and consequently a grandson of Henry III. Edward II. made him earl of Leicester, but refused him the Lancaster title and estates of his brother Thomas. When Queen Isabella took up arms against her husband in the year 1326 she was joined at once by the earl, who took a leading part in the proceedings against the king and his favourites, the Despensers, being Edward's gaoler at Kenilworth castle. When Edward III. ascended the throne, Leicester secured the earldom of Lancaster and his brother's lands, becoming also steward of England. In 1328 his attempt to overthrow Mortimer failed, and he quietly made his peace with the king; a second essay against Mortimer was more successful. About this time Lancaster became blind; he retired from public life and died Sept. 22, 1345.

LANCASTER, SIR JAMES (*fl.* 1591–1618), English navigator and statesman, one of the foremost pioneers of the British Indian trade and empire. In early life he fought and traded in Portugal. On April 10, 1591 he started from Plymouth, with Raymond and Foxcroft, on his first great voyage to the East Indies; this fleet of three ships is the earliest of English oversea Indian expeditions. Reaching Table Bay (Aug. 1, 1591), and losing one ship off Cape Corrientes on Sept. 12, the squadron refitted at Zanzibar (February 1592), rounded Cape Comorin in May, and was off the Malay Peninsula in June. Crossing later to Ceylon, the crews insisted on returning home, but only 25 officers and men reached England in 1594. Lancaster himself reached Rye on May 24, 1594; his Indian voyage was an important factor in the foundation of the East India Company. In 1600 he was given command of the company's first fleet (which sailed from Torbay towards the end of April 1601).

Going by the Cape of Good Hope (Nov. 1, 1601) Lancaster visited the Nicobars (from April 9, 1602), Achin and other parts of Sumatra (from June 5, 1602), and Bantam in Java; an alliance was concluded with Achin, a factory established at Bantam and a commercial mission despatched to the Moluccas. The return voyage (Feb. 20 to Sept. 11, 1603) was prosperous, and Lancaster was knighted (October, 1603). He was one of the chief directors of the East India Company till his death in May 1618; most of the voyages of the early Stuart time both to India and in search of the North-West passage were undertaken under his direction; Lancaster Sound, on the north-west of Baffin's Bay (in 74° 20′ N.), was named by William Baffin after Sir James (July 1616).

See R. Hakluyt, *Principal Navigations,* vol. ii. pt. ii. pp. 102–110, vol. iii. pp. 708–715 (1599); S. Purchas, *Pilgrims,* vol. i. pt. ii. pp. 147–164; also *The Voyages of Sir James Lancaster . . . to the East Indies . . .*, ed. Sir Clements Markham, Hakluyt Soc. (1877) *Calendars of State Papers, East Indies.* The original journals of Lancaster's voyage of 1601–03 have disappeared, and here we have only Purchas to go on.

LANCASTER, JOSEPH (1778–1838), English educationist and member of the Society of Friends, born in Southwark in 1778, the son of a Chelsea pensioner. In his school in the Borough, he taught over a thousand children on a system devised by himself. Other schools on similar lines were established. But Lancaster quarrelled with the committee of the Royal Lancastrian institution (afterwards called the British and Foreign School Society) which was founded in 1808, and in 1818, he emigrated to America. He lectured widely and founded a school at Montreal, but the school failed and Lancaster was again involved in debt. Though in great poverty, he formed a plan to return to England to give a new impetus to his "system," but it was never realized, for he died on Oct. 24, 1838, in New York.

See his own *Epitome of the Chief Events and Transactions of My Own Life* (1833), and D. Salmon, *Lancaster's Writings* (3 pts., 1912).

LANCASTER, THOMAS, Earl of (*c.* 1277–1322), was the eldest son of Edmund, earl of Lancaster and titular king of Sicily, and a grandson of the English king, Henry III.; while he was related to the royal house of France both through his mother, Blanche, a granddaughter of Louis VIII., and his stepsister, Jeanne, queen of Navarre, the wife of Philip IV. A minor when Earl Edmund died in 1296, Thomas received his father's earldoms of Lancaster and Leicester in 1298; he became prominent in English affairs after the accession of his cousin, Edward II., in July 1307. Having married Alice (d. 1348), daughter and heiress of Henry Lacy, earl of Lincoln, and added the earldom of Derby to those which he already held, he was marked out both by his wealth and position as the leader of the barons in their resistance to the new king. With his associates he secured the banishment of the royal favourite, Piers Gaveston, in 1308; compelled Edward in 1310 to surrender his power to a committee of "ordainers," among whom he himself was numbered; and took up arms when Gaveston returned to England in Jan. 1312. Lancaster, who had just obtained the earldoms of Lincoln and Salisbury on the death of his father-in-law in 1311, drove the king and his favourite from Newcastle to Scarborough, and was present at the execution of Gaveston in June 1312. After lengthy efforts at mediation, he made his submission and received a full pardon from Edward in Oct. 1313; but he refused to accompany the king on his march into Scotland, which ended at Bannockburn, and took advantage of the English disaster to wrest the control of affairs from the hands of Edward.

In 1315 he took command of the forces raised to fight the Scots, and was soon appointed to the "chief place in the council," while his supporters filled the great offices of State, but he proved totally incompetent. The capture of Berwick by the Scots in April 1318 led to a second reconciliation with Edward. A formal treaty, made in the following August, having been ratified by parliament, the king and earl opened the siege of Berwick; but

the undertaking was quickly abandoned. Lancaster was suspected of intriguing with the Scots, and his lands were spared when Robert Bruce ravaged the north of England. In 1321, when the Despensers were banished, war broke out again between himself and the king. He surrendered after a skirmish at Boroughbridge. Taken to his own castle at Pontefract, where the king was, he was condemned to death as a rebel and a traitor, and was beheaded near the town on March 22, 1322. He left no children.

Although a coarse, selfish and violent man, Lancaster's memory was long cherished, especially in the north of England, as that of a defender of popular liberties.

See *Chronicles of the Reigns of Edward I. and Edward II.*, ed. W. Stubbs (1882–83); and W. Stubbs, *Constitutional History*, vol. ii. (Oxford, 1896).

LANCASTER, city, municipal borough, river port, county town, Lancaster parliamentary division, Lancashire, England, 230 mi. N.W. of London by the L.M.S. railway. It has two railway stations, Castle and Green Ayre. Pop. (1938) 47,540. Area 7.9 sq.mi. It lies at the head of the estuary of the river Lune, mainly on its south bank, 7 mi. from the sea. The site slopes sharply up to an eminence, crowned by the castle and the church of St. Mary, and overlooks the rich valley and Morecambe bay. St. Mary's church was originally attached, in the 11th century, by Roger de Poictou to his Benedictine priory. It has a Decorated doorway, but is mainly 15th century, with a tower built in 1754–5 and a clock dated 1759. Lancaster was created a city in 1937.

The castle occupies the site of a Roman *castrum*. The Saxon foundations remain, and the tower at the southwest corner is supposed to have been erected during the reign of Hadrian. The Dungeon tower, also supposed to be of Roman origin, was taken down in 1818. Of the old portion of the present structure, the keep was built by Roger de Poictou, who utilized some of the Roman towers and the old walls. In 1322 much damage was done to the castle by Robert Bruce, but it was restored and strengthened by John of Gaunt, who added the greater part of the Gateway tower as well as a turret on the keep or Lungess tower, named "John o' Gaunt's Chair." During the Civil War the castle was captured by Cromwell. Shortly after this it was put to public use and now, largely modernized, contains the assize courts and gaol. Other buildings include the Storey institute with art gallery, technical and art schools, museum and library, presented to the borough by Sir Thomas Storey in 1887, and an observatory in Williamson Park. The Ashton Memorial in Williamson Park, built by Lord Ashton (1842–1930) as a family memorial, is a lofty domed structure. The impressive municipal buildings, including a large hall, were the gift of Lord Ashton. The grammar school dates from the 15th century, and in its former Jacobean house William Whewell and Sir Richard Owen were educated.

The chief industries are cotton-spinning, cabinet-making, oilcloth and linoleum making, railway wagon-building and engineering. Glasson Dock, 5 mi. down the Lune, with a graving dock, is accessible to vessels of about 700 tons. The Kendal, Lancaster and Preston canal crosses the Lune by an aqueduct and the river is also crossed by a handsome bridge dated 1788.

History.—Lancaster (Lone-caster or Lunecastrum) was an important Roman station, and traces of the Roman fortification wall remain. The Runic Cross is Anglo-Saxon, but the Danes left few memorials of the occupation. At the Conquest the place became a possession of Roger de Poictou, who founded or enlarged the present castle on the old site. The town and castle had a somewhat chequered ownership till in 1266 they were granted by Henry III. to his son Edmund, first earl of Lancaster, and have since been part of the duchy of Lancaster. A town gathered around the castle, and in 1193 John, count of Mortain, afterwards king, granted it a charter, and another in 1199 after his accession, by which charters the burgesses claimed the right of electing a mayor, of holding a yearly fair at Michaelmas and a weekly market on Saturday. John of Gaunt in 1362 obtained a charter for the exclusive right of holding the sessions of pleas for the county in Lancaster itself, and up to 1873 the duchy appointed a chief justice and a puisne justice for the court of common pleas at Lancaster.

In 1322 the Scots burnt the town, the castle alone escaping; the town was rebuilt but removed from its original position on the hill to the slope and foot. Again in 1389, after the battle of Otterburn, it was destroyed by the same enemy. At the outbreak of the Great Rebellion the burgesses sided with the king, and the town and castle were captured in Feb. 1643 by the Parliamentarians. In March 1643 Lord Derby assaulted and took the town, but the castle remained in the hands of the Parliamentarians. In May and June, 1643 and in 1648 the castle was again besieged, but each time in vain. During the rebellion of 1715 the northern rebels occupied Lancaster for two days. During the 1745 rebellion Prince Charles Edward's army passed through the town in its southward march and again in its retreat, but the inhabitants stood firm.

Two chartered markets are held weekly on Wednesday and Saturday and three annual fairs in April, July and October. A merchant gild existed here, which was ratified by Edward III.'s charter (1362), and in 1688 six trade companies were incorporated. The chief manufactures used to be sailcloth, cabinet furniture, candles and cordage. The borough returned two members to parliament from 1295 to 1331 and again from some time in Henry VIII.'s reign before 1529 till 1867, when it was merged in the Lancaster division of north Lancashire.

LANCASTER, a village of Erie county, N.Y., U.S.A., 7 mi. E. of Buffalo. It is served by the Erie, the Lackawanna, Lehigh Valley and the New York Central railways. The population in 1940 was 7,236. The village manufactures machine knives, glass, aircraft accessories, steel castings, battery rectifiers and steel cabinets. The village was settled early in the 19th century and was incorporated in 1849.

LANCASTER, a city of Ohio, U.S.A., 30 mi. S.E. of Columbus, on the Hocking river; the county seat of Fairfield county. It is served by the Chesapeake and Ohio and the Pennsylvania railways. The population was 18,716 in 1930 (96·4% native white) and was 21,940 in 1940 by the federal census. In the heart of the city is a park of 70 ac., surrounding Mt. Pleasant, a hill rising 200 ft. above the plain, about which cluster many Indian legends. The courthouse stands on another hill. Lancaster is the trade centre of a rich agricultural region. There are coal fields and natural gas fields near by, and oil was discovered in 1907. The city has railroad shops and important manufactures, including glass, shoes and machinery. Industrial pay roll of its major industries was in excess of $6,000,000 in 1940. Lancaster was founded in 1800 by Ebenezer Zane (1747–1811), who received a section of land here as part compensation for opening a road ("Zane's Trace") from Wheeling, W.Va., to Maysville, Ky. Some of the early settlers came from Lancaster, Pa. The village was incorporated in 1831, and in 1851 it became a city.

LANCASTER, a city of southeastern Pennsylvania, U.S.A., on the Conestoga river, 65 mi. W. of Philadelphia; the county seat of Lancaster county. It is on the Lincoln highway and several other federal and state roads, and is served by the Pennsylvania and the Reading railways, and by trolley and bus lines radiating in every direction. The population was 59,949 in 1930 and 61,345 in 1940. The city has an area of 3.9 sq.mi. and a general elevation of 375 ft., and is set in beautiful country. Lancaster county is one of the most highly cultivated districts in the United States, and ranks first among all the counties in the value of its farm products per acre. In 1939 the aggregate value of the agricultural products was $13,174,740, and they included 33,976,800 lb. of tobacco, 5,295,540 bu. of corn, 2,021,400 bu. of wheat, 30,722,320 gal. of milk and 14,956,320 doz. eggs. The stockyards, one of the largest cattle markets east of Chicago, handled in 1939 animals representing a value of $23,452,156. Chief among the city's manufactures are linoleum, cork, watches, cigars, coffee, candy, cotton and silk goods and metal products. The aggregate factory output in 1937 was $42,398,917. Hydro-electric power is supplied from an immense plant on the Susquehanna river, at Holtwood, 25 mi. S. There are 142 wholesale houses and over 1,300 retail establishments in the city, which have transactions amounting annually to about $25,000,000 and $36,000,000 respectively. Bank debits in 1940 totalled $310,309,394; the assessed valuation of property in 1941 was $90,401,150.

Lancaster is the seat of the Theological seminary of the Reformed church, opened at Carlisle in 1825 and moved here in 1871 after some years in York and in Mercersburg; of Franklin and Marshall college (Reformed church), formed in 1852 by the union of Franklin college, founded at Lancaster in 1787, and Marshall college, established at Mercersburg in 1836; and of the Thaddeus Stevens trade school, established by bequest of Thaddeus Stevens (who lived here after 1842) and now a state institution. At Millersville, 4 mi. S.W., is a state normal school; at Lititz, 8 mi. N., is Linden Hall seminary, established by the early Moravian settlers, one of the oldest schools for girls in the country.

There are many buildings and spots with historic associations in and near the city, including: "Wheatland," the home of President Buchanan; Trinity Lutheran church, built in 1736 and rebuilt in 1785; the Landis Valley museum, with an interesting collection of 200,000 rare Pennsylvania Dutch articles; the Christian Herr house, built in 1719, the oldest house in the county; the tombs of Buchanan, Stevens, Thomas Mifflin (first governor of Pennsylvania), Gen. John F. Reynolds (who fell at Gettysburg) and George Ross, signer of the Declaration of Independence; Ephrata cloisters (at Ephrata, 14m. N.E.), built by the Seventh Day Adventists in the 18th century, and used as a hospital during the Revolution; the quaint town of Manheim (10m. N.), where Baron Steigel made his famous iron and glass, and the Cornwall mines (15m. farther on), from which he got ore for the cannon for Washington's army; and (22m. S.) the birthplace of Robert Fulton, inventor of the steamboat.

Lancaster county was settled early in the 18th century, by English Quakers and Episcopalians, Scottish and Irish Presbyterians, Welsh Dissenters, German Lutherans, Brethren, Dunkards, Mennonites and Amish. Some of the sects still keep their distinctive customs and costumes, and on market days add a picturesque note to the city streets. Lancaster was settled about 1717, laid out in 1730, incorporated as a borough in 1742 and chartered as a city in 1818. During the colonial period it was the largest inland city on the continent. An important treaty with the Iroquois Indians was negotiated here in June, 1744; and here in 1780 some of Gen. Burgoyne's troops were confined after the surrender at Saratoga. Lancaster was the national capital for one day, when the Continental Congress, driven from Philadelphia, sat here on Sept. 27, 1777; and it was one of the places seriously considered when the choice of a permanent seat for the Federal Government was made. From 1799 to 1812 it was the capital of Pennsylvania.

LANCE, a form of spear used by cavalry. The date of its introduction into civilized armies is difficult to trace. Its employment can definitely be traced to the Assyrians and Egyptians. The Greeks and Romans also appear to have used lances, no standard pattern and common to both horse and foot.[1] An act of Henry II., in 1181, referring to military organization, states that: "All burgesses and the whole community of freemen shall have a wambais (*i.e.*, a leather doublet padded with cotton), a chaplet of iron and a lance." The purpose of the lance in the latter part of the 16th century is described by Barnaby Rich in his *Pathway to Military Practice* (published 1587), thus: "Cavalry hath been divided into foure kinds, the first men at armes, themselves armed complet, and theyr horses likewise barded, and were to give the first charge, to discover the squadrons or battalions of pikes. The second launces, lighter armed with corselets. . . . The third light horsemen, commonly armed with a coat of plate, with a light staffe charged on the theigh. . . . The fourth and last called shot-on-horsebacke, but now lately called Carbines . . . these carbines may skyrmidge loosely, and delivering theyr volleies are not able to stand any charge, but must retire to the launce for his safety." As the "weapon of chivalry" it was about 16ft. long,[2] but with the passing of the mail-clad knight it disappeared from the armies of Europe for a few centuries, though Cromwell's troops are recorded as having suffered severely from "Scottish lancers" at the battle of Dunbar in 1650. In 1655 some Spanish lancers at San Domingo put to flight many times their number of English not so armed. The introduction of firearms revolutionized the tactics of cavalry, as of other arms, and when Frederick the Great reorganized his cavalry in 1744, he introduced a lancer troop into each of his hussar regiments. Lancer regiments in the modern sense date from 1807, when Napoleon raised a regiment of Polish lancers. In fact, lances were used much more in eastern Germany, Poland and Russia than elsewhere in Europe. In 1811 Napoleon converted nine dragoon regiments into lancers, whose success against the British at Waterloo (1815) led directly to the formation of the first British lancer regiments in 1816. Under a General Order dated 19th Sept., 1816, the 9th, 12th, 16th and 23rd Light Dragoons were converted into "Lancers." The 17th Light Dragoons were similarly converted in 1822 and the 21st Hussars in 1896. The 5th Dragoons were disbanded in 1799 but were reembodied in 1859 as the 5th Lancers (which now forms, with the 16th Lancers, a composite regiment known as the 16th–5th Lancers).

Since 1816 there has been a perennial controversy—sword *v.* lance. Though Montecucculi called it "the queen of weapons" its chief disadvantage has been that it is not adapted for swift parries; it was useful in the "first shock" but not in the "melée" that might follow. This led to the lancer being armed with a sword as well as a lance, thus adding weight to the horse, and as the opportunities for shock action in modern warfare are now so few, this increased burden is hardly justified. Further, the present day thrusting sword practically takes the place of the lance, without the latter's disadvantage in the melée. Moreover, the lance was always in the way when dismounting for fire action. The charge of the 21st Lancers at Omdurman in Sept. 1898 demonstrated the value of the weapon against a savage or semi-civilized enemy. In the British service it was abolished in 1927 (Army Order 392) except for ceremonial purposes. The World War provides very few instances of charges with the lance, those of the 12th Lancers at Cerizy and the 9th at Moncel, in Aug. and Sept. 1914, being practically the only instances in France; the 21st Lancers delivered an effective charge against the Mohmands on the North-west Frontier of India in 1916, and in Palestine, the 2nd (Indian) Lancers brought off a very successful charge against the Turks at Lejjun in Allenby's final advance over the Plain of Esdraelon in Sept. 1918.

In the Japanese army the lance is only carried by the Guard cavalry regiment and that only for ceremonial purposes. It is not taken to the field. In Europe the lance still survives in (*a*) Poland, where the front rank personnel below the rank of sergeant carry lances as well as swords; (*b*) Estonia, where 50% of each squadron carries lances; (*c*) Latvia; and (*d*) Lithuania, where a proportion of cavalry carry lances. All other European countries have abolished it as a fighting weapon.

As regards design, in 1816 it was 16ft. long and had a small Union flag below the point. The length was reduced to 9ft. 1in. in 1829 and the familiar red and white pennon substituted for the Union flag. The point or head has varied from time to time. The small pike point, the broad spear point and a leaf-shaped point have all been tried, but a triangular point was finally adopted. The staff was originally made of ash, impregnated with a mixture of linseed oil and tar, but was superseded in 1868 by the male bamboo, which is tough and elastic. However, difficulties arose in connection with the supply of bamboos and the ash was reintroduced in 1885 and the two types were used together, until 1926, when bamboo was alone used. The lance always had a sling of hide, and a leather protector was added in 1883 to prevent the carbine from chafing the staff when slung. The butt was carried in a leather "bucket" attached to the stirrup. (T. J. E.)

LANCELOT (Lancelot du Lac, or Lancelot of the Lake), a famous figure in Arthurian romance. There is no knight of Arthur's court whose name is so familiar to the great majority of English readers as that of Sir Lancelot. The secret loves of Lancelot and the queen are the dominating theme of later Arthurian romance. Lancelot, however, is not an original member of Arthur's court, and the development of his story is still a source of considerable perplexity to the critic.

In the earliest extant version, the *Lanzelet* of Ulrich von Zat-

[1] Alexander Adam, in *Antiquities of the Romans,* calls lances "long javelins."

[2] On the George of the Order of the Garter a long lance is shown.

zikhoven (the translation of a French original, now lost), the hero is nephew to Arthur, but has no illicit relations with the queen; on the contrary, he indulges in a series of amorous adventures, of which three, at least, end in marriage. Here, as elsewhere, he is the son of Ban de Benoic (Pant von Genewîs), who is driven from his kingdom by the revolt of his subjects and dies of a broken heart. The queen lays her child on the bank of a lake, while tending her dying husband, and a water maiden, rising from the lake, carries off the babe to her mysterious kingdom, peopled by 10,000 maidens, where no man ever enters. There she brings up the youth, with the object of avenging her upon an enchanter who has robbed and dispossessed her son. The lad returns to earth, fulfills his mission, and after various adventures, not only wins a wife and a kingdom, but regains his paternal inheritance. There he reigns in peace with his wife, begets a numerous family, and dies in a good old age.

The French original of this poem must have been composed some time in the 12th century, as the ms. from which von Zatzikhoven worked was the property of Hugo de Morville, one of the hostages who replaced Richard Coeur de Lion in his Austrian prison in 1194. In the succeeding century, when the tradition of Lancelot's relations with the queen was firmly established (*see* GUENEVERE), the story was worked over and elaborated into the prose *Lancelot*, which eventually, by incorporating the Grail *Queste* and the *Mort Artus*, became the most important member of the Arthurian cycle. Here the primitive folklore elements of the *Lanzelet* have completely disappeared: the lake has become a mirage, and the education of Lancelot, with that of his cousins, Lionel and Bohort, equally protégés of the Lady of the Lake, differs in no way from that of any other youth of his rank and period.

It is by no means easy to discover how Lancelot came to occupy the commanding position finally assumed by him in Arthurian story. He certainly does not belong to the early pseudo-historic tradition; he is never mentioned in any of the chronicles. In the earlier romances he is either ignored, or occupies a position subordinate to that of Gawain, Erec, Yvain or even Perceval, who was, of course, not an original Arthurian hero. He suddenly appears as Guenevere's lover in the poem of *Le Chevalier de la Charrette*, of which he is the hero, to disappear from the scene again in Chrétien's subsequent work *Le Chevalier au Lion* (Yvain); nor is he among the knights figuring on the doorway of Modena cathedral. The real cause for his apparently sudden and triumphant rise to popularity is thus extremely difficult to determine. What appears the most probable solution is that which regards Lancelot as the hero of an independent and widely diffused folktale, which, owing to certain special features, was brought into contact with, and incorporated in, the Arthurian tradition. This much has been proved: certain of the adventures recounted in the *Lanzelet*—the theft of an infant by a water maiden; the appearance of the hero at a tournament on three consecutive days, in three differing suits of armour; the rescue of a queen, or princess, from an other world prison—all belong to one well-known and widely spread folktale, variants of which are found in almost every land, and of which numerous examples have been collected alike by M. Cosquin in his *Contes Lorrains*, and by J. F. Campbell in his *Tales of the West Highlands*.

Now, as noted above (*see* GUENEVERE), Arthur's queen was certainly the heroine of such an other world adventure, and it seems probable that when the process of literary evolution, and the social taste of the time, demanded a love story in the Arthurian cycle which should parallel that of Tristan and Iseult, the hero of this immensely popular story was pressed into the service of Arthurian tradition, and assigned this leading rôle. We cannot ignore the fact that his first appearance (in the *Charrette*) is precisely in connection with this adventure. The name of Lancelot is certainly Continental (*see* Dr. Brugger's discussion of the proper names in Marie de France, *Zeitschrift für Franz. Sprache*, xlix), and any attempt to claim him as an original Celtic hero must be dismissed as ungrounded. It is certainly curious that Lancelot, as a figure of romance, possesses none of the characteristic traits which make Gawain, Perceval and Tristan all genuine figures of Celtic tradition, well-marked individuals. Compared with these heroes Lancelot is a peg on which to hang romantic adventures, nothing more. The story of the loves of Lancelot and Guenevere has about it nothing spontaneous and genuine; in no way can it be compared with that of Tristan and Iseult. The language of the prose *Lancelot* is good, easy and graceful, but the adventures lack originality and interest, and the situations repeat themselves in the most wearisome manner. Those readers who know the story only through the medium of Malory's noble prose and Tennyson's melodious verse carry away an impression entirely foreign to that produced by the original literature. The *Lancelot* story, in its rise and development, belongs exclusively to the later stage of Arthurian romance; it was a story for the court, not for the folk, and it lacks alike the dramatic force, and human appeal, of the genuine "popular" tale.

BIBLIOGRAPHY.—The prose *Lancelot* was frequently printed; Brunet chronicles editions of 1488, 1494, 1513, 1520 and 1533—of this last date there are two, one published by Jehan Petit, the other by Philippe Lenoire. The latter is by far the better, being printed from a much fuller ms. There is, so far, no critical edition. Dr. H. O. Sommer, *The Vulgate Version of the Arthurian Romances* (1908–16), has included the text of the *Lancelot*. A Dutch verse translation of the 13th century was published by M. Jonckbloet in 1850, under the title of *Roman van Lanceloet*. This is not complete, all the part previous to Guenevere's abduction by Meleagant being lost, but the text is an excellent one, agreeing closely with Lenoire's 1533 edition. The books devoted by Malory to the story of Lancelot also belong to the latter section of the romance, and there is no sign of familiarity with the earlier incidents. His version of the *Charrette* adventure also differs from any extant form, and there are adventures which are found in no other *Lancelot* text. The precise character of Malory's *Lancelot* source is an interesting problem. *Le Chevalier de la Charrette* was published by Wendelin Foerster in his edition of Chrétien's works (*Der Karrenritter*, 1899). A Dutch version of a short episodic poem, *Lancelot et le Cerf au pied blanc*, will be found in Jonckbloet's volume, and a discussion of this and other *Lancelot* poems in vol. xxx of *Histoire Littéraire de la France*. For critical studies on the subject *see* Gaston Paris, articles in *Romania*, vols. x and xii; E. Wechssler, *Über die verschiedenen Redaktionen des Graal-Lancelot Cyklus* (1895); J. L. Weston, *The Legend of Sir Lancelot du Lac* (1901) and *The Three Days Tournament* (1902), an appendix to the previous volume; F. Lot, *Études sur le Lancelot en prose* (1918).

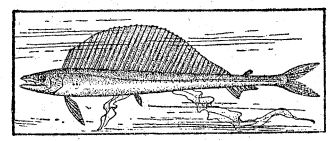
(J. L. W.)

LANCERS: *see* LANCE.

LANCET, in architecture, a form of pointed arch (*q.v.*) in which the centres from which the curves of the arch are described are outside the base of the arch, so that the arch is high and narrow; also a window with such an arch at the top. As this type of arch is the dominant form in Early English Gothic architecture, that style is sometimes known as the lancet style. (*See* EARLY ENGLISH PERIOD.)

In surgery (*q.v.*), the name is given to an instrument with a narrow, two-edged blade and a lance-shaped point.

LANCET FISH (*Alepisaurus*), an elongate, compressed, silvery fish, reaching a length of 3 ft. or more. The mouth is very large with unequal, formidable, knifelike teeth, suggesting those of a barracuda; a very high fin, suggesting that of a sailfish, extends along most of the back, and between this dorsal fin and the forked caudal (or tail), there is a small adipose fin like that of a trout or salmon. The few species of lancet fishes are much alike and not well known. They are supposed to swim at a considerable depth in the ocean, and are occasionally cast up on American North Pacific beaches. One (probably *A. aesculapius*) is rather common in Aleutian shore waters, and not infrequently becomes stranded, very likely in pursuit of smaller fishes. The commonest North Atlantic species is *A. ferox*. (J. T. N.)



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LANCET FISH (ALEPISAURUS AESCULAPIUS), A LARGE, PREDACEOUS SPECIES, COMMON ABOUT THE ALEUTIAN ISLANDS

LANCEWOOD, a straight-grained, tough, light, elastic wood obtained from the West Indies and Guiana. It is brought into commerce in the form of taper poles of about 20 ft. in length and from 6 to 8 in. in diameter at the thickest end. Lancewood was used by carriage builders for shafts. The smaller wood is used for whip-handles, for the tops of fishing rods, and for various minor purposes where even-grained elastic wood is a desideratum. The wood is obtained from two members of the family Annonaceae. The black lancewood or carisiri of Guiana (*Guatteria virgata*) grows to a height of 50 ft., is of remarkably slender form, and seldom yields wood more than 8 in. in diameter. The yellow lancewood tree (*Duguetia quitarensis*, yari-yari, of Guiana) is of similar dimensions, found throughout Guiana, and used by the Indians for arrow-points, as well as for spars and beams.

LANCHESTER, HENRY VAUGHAN (1863–), British architect, was born on Aug. 9, 1863, and educated privately. He set up in practice as an architect in 1889. In 1906 he became a fellow of the Royal Institute of British Architects, and in 1913 was elected vice-president. He held various lecturing posts on civic design and architecture, at University college, and elsewhere, and from 1910 to 1912 edited *The Builder*. In 1912 he acted as adviser to the government on the site of Delhi, and held successively the posts of town planning adviser to the governments of Madras (1915–16), the United Provinces (1918), Burma (1921), and the protectorate of Zanzibar (1922). From

1922 to 1923 he was president of the Town Planning Institute, and consulting architect to the University of London, 1929–31. His works include Cardiff City hall and Law courts, the Wesleyan Central hall, Westminster, and the Council hall, Lucknow.

His publications are: *Fischer von Erlach* (1924); *Talks on Town Planning* (1924); *Town Planning in Madras* (1918); *The Art of Town Planning* (1925).

LANCHOW-FU, the capital city of the Chinese province of Kansu, on the right bank of the Hwang-ho about 5,200 feet above sea-level (36° N. and 104° E.). The river in this part of its course is navigable only for small junks. The historical function of Lanchow from earliest times has been to serve as a bridge-point on the chief avenue of overland approach into China from the west. With the war Lanchow became a vital station on the Sinkiang route for Russian war materials and Chinese exports, a stopover on the new air route to Russia and a military air base. It was planned to extend to Lanchow the Lunghai railway which in 1944 reached Tienshui. An oil cracking plant and other industrial establishments indicated the beginning development of the northwestern industrial district. The population of Lanchow-hsien administrative area, according to the Post Office estimate, is 368,608; it comprises a considerable number of Mohammedans. (*See* KANSU.)

LANCIANI, RODOLFO AMADEO (1846–1929), Italian archaeologist, was born in Rome on Jan. 1, 1846. He was educated in that city and in 1872 became secretary of the archaeological commission. In 1878 he was appointed director of excavations and professor of ancient topography in the University of Rome. He made important discoveries in the House of the Vestals, the Basilica Julia, the imperial palace on the Palatine, the baths of Caracalla, the temple of Jupiter Capitolinus, Ostia, Trajan's harbour at Porto and Hadrian's villa below Tivoli. In 1911 he was created a senator. His works, some of which were written in English, include: *Ancient Rome in the Light of Recent Discoveries* (1888); *Pagan and Christian Rome* (1892); *The Ruins and Excavations of Ancient Rome* (1897); *Destruction of Ancient Rome* (1899); *New Tales of Old Rome* (1901); *Wanderings in the Campagna* (1909); *Ancient and Modern Rome* (1925). He died at Rome, May 22, 1929.

LANCIANO (anc. *Anxanum*), a town and episcopal see of the Abruzzi, Italy, province of Chieti, on three hills, 984 ft. above sea-level, about 8 mi. from the Adriatic coast and 12 mi. S.E. of Chieti. Pop. (1936) 10,654 (town), 23,367 (commune). It is connected by rail with S. Vito Lanciano on the coast railway, 19 mi. S.E. of Castellammare Adriatico, and also with Castel di Sangro, on the line between Sulmona and Isernia. It has broad, regular streets, and several fine buildings. The cathedral, an imposing structure with a fine clock-tower of 1619, is built upon bridges of brickwork, dating perhaps from the Roman period, that span the gorge of the Feltrino, and is dedicated to S. Maria del Ponte, Our Lady of the Bridge. The Gothic church of S. Maria Maggiore dates from 1227 and has a fine façade, with a portal of 1317.

LANCRET, NICOLAS (1690–1743), French painter, was born in Paris on Jan. 22, 1690, and became a brilliant depicter of light comedy which reflected the tastes and manners of French society under the regent Orleans. His first master was Pierre d'Ulin, but his acquaintance with and admiration for Watteau induced him to leave d'Ulin for Gillot, whose pupil Watteau had been. Two pictures painted by Lancret and exhibited on the Place Dauphin laid the foundation of his fortune. The number of his paintings (of which over 80 have been engraved) has been estimated at 787. The National Gallery, London, shows his paintings—the "Four Ages of Man." He died on Sept. 14, 1743.

See d'Argenville, *Vies des peintres* (1762); and Ballot de Sovot, *Éloge de M. Lancret* (1743, new ed. 1874). G. Wildenstein, *Lancret* 1924.

LAND. In economics, land is commonly treated as a separate factor or agent in production, differing from capital in that no increase of the price paid for its use will evoke an increased supply. What land furnishes is, first, room for productive operations or other activities, and second, location, as, *e.g.*, with respect to markets. The value of urban land is mostly a matter of room and location. In the third place, different tracts of land have different special qualities or characteristics which permanently affect their productivity. Among these characteristics are such things as climate, configuration, tillability, other general qualities of the soil or subsoil, situation (as in a valley or on the north or the south side of a hill), feasibility of drainage or irrigation, etc. Finally, different pieces of land have other special attributes, set apart from those which have already been mentioned by the circumstance that they are perishable, *i.e.*, that they are used up in the processes of production. Mineral deposits and native forest are examples of this last class. So too are those elements of the soil which are exhausted by crop-growing and which have to be replenished if the fertility of the land is to be maintained.

The value of any piece of land depends upon the serviceability and the scarcity of all of the particular attributes which it possesses. Economists, however, sometimes find it useful to make use of an abstract conception of land, in which only its permanent qualities are taken into account. Ricardo's statement that land rent is paid because of the "original and indestructible" powers of the soil has been challenged by a long series of critics, who point to the perfectly obvious facts that some of the valuable qualities of land have been imparted to it, as, *e.g.*, by fertilization or drainage, and that not all of its valuable qualities are indestructible. The critics miss the point, which is that it is important for some purposes to take separate account, not only of the element in the value of land which may be imputed to the capital which has been incorporated with the land in the form of improvements, but also of an element which reflects the gains which may be secured by appropriating and depleting some of the valuable attributes or constituents of the land. The rent of mines, for example, is in the nature of a royalty rather than a true rent, and the possibility of "mining the soil" is often an important element in the value of lands which have been newly opened for settlement.

Land, in the economic sense, need not be *terra firma.* Land under water (*e.g.*, oyster beds), and even tracts or bodies of water, as where valuable fishing rights are involved, may figure as land. It is often convenient, in fact, to regard land as synonymous with all that nature supplies, external to man, which is valuable, durable and appropriable, thus including, for example, waterfalls and other sources of water-power. Valuable rights to particular uses of land, such as the right of a privately-owned tramway to use a city street, may also be included, for the economic nature of land does not depend upon how it is owned or controlled. Only in respect of especially favoured spots or strips of land, which have unique uses or supply unique products, does land ownership or an exclusive right to a particular use of a piece of land constitute a monopoly. An important city street, the only practicable pass through a range of mountains, the only important deposit of a rare mineral, are examples. The circumstance that a particular piece of land is of high quality does not give its owner a monopoly if its uses and its products do not differ in kind from the uses and products of other pieces of land, even if these other pieces of land are of inferior quality. (*See* ECONOMICS; RENT.)

(A. Yo.)

LANDAU, a town in the Bavarian Palatinate, Germany, on the Queich, under the slope of the Hardt mountains, 32 mi. by rail S.W. from Mannheim, at the junction of lines to Neustadt an der Hardt, Weissenburg and Saarbrücken. Pop. (1939) 26,389. The Gothic Evangelical church dates from 1285, the chapel of St. Catherine from 1344 and the church of the former Augustinian monastery from 1405; the Augustinian monastery itself, founded in 1276, is now converted into a brewery. There are manufactures of cigars, beer, hats, furniture and machines, and a trade in wine, timber and cereals. Large cattle-markets are held here. Landau was founded in 1224, becoming an imperial city 50 years later.

LANDAULET, a four-wheeled horse-drawn vehicle corresponding to a brougham or coupé, with a collapsible leather hood; or a motor-car which has a leather hood for the rear seats. There can also be a hood, extending over the chauffeur for protection, integral with the hood over the rear seats.

LAND DRAINAGE: *see* DRAINAGE OF LAND.

LANDECK, a town and spa in the Prussian province of Silesia, Germany, on the Biele, 73 mi. by rail S. of Breslau and close to the Bohemian frontier. Pop. (1933) 4,749. It is situated at an altitude of 1,400 ft. It manufactures gloves. Landeck is visited on account of its warm sulphur baths, which have been known since the 13th century.

In the neighbourhood of Landeck are the ruins of the castle of Karpenstein.

LAND ECONOMICS: *see* AGRICULTURAL ECONOMICS.

LANDEN, JOHN (1719–1790), English mathematician, was born at Peterborough, in Northamptonshire, on Jan. 23, 1719, and died on Jan. 15, 1790, at Milton. He became known as a mathematician by his essays in the *Ladies' Diary* for 1744, and was elected F.R.S. in 1766. He made important researches on elliptic functions, being remembered for Landen's point and Landen's transformations. He produced the theorem known by his name (found in complete form in Landen's memoir of 1775, and reproduced in the first volume of his *Mathematical Memoirs,* 1780–89) for the expression of the arc of an hyperbola in terms of two elliptic arcs.

He also showed that the roots of a cubic equation can be derived by means of the infinitesimal calculus.

Other works by Landen include: Papers in the *Phil. Trans.* (1754–85); *Discourse concerning the Residual Analysis* (1758).

LANDER, RICHARD LEMON (1804–1834) and **JOHN** (1807–1839), English explorers of the Niger, were natives of Cornwall, sons of an innkeeper at Truro. At the age of 11 Richard went to the West Indies in the service of a merchant. Returning to England after an absence of three years he served various travellers. He was Clapperton's devoted servant and companion on his second expedition to west Africa and on Clapperton's death near Sokoto in April 1827 Richard Lander, after visiting Kano and other parts of the Hausa states, returned to the Guinea coast through Yoruba bringing with him Clapperton's journal. To this on its publication (1829) was added *The Journal of Richard Lander from Kano to the Coast,* and in the next year Lander published *Records of Captain Clapperton's Last Expedition to Africa . . . with the subsequent Adventures of the Author.* The British government then decided to send him out to determine the course of the lower Niger. He was accompanied by his brother John. The brothers landed at Badagry on the Guinea coast on March 22, 1830, and travelled to Bussa on the right bank of the Niger. Thence they ascended the river for about 100 miles. Going back to Bussa the travellers began, on Sept. 20, the descent of the river, not knowing whither it would lead them.

They journeyed in canoes accompanied by a few negroes, their only scientific instrument a common compass. They discovered the Benue river. At the beginning of the delta they were captured by the Ibos, from whom they were ransomed by "King Boy" of Brass Town; by him they were taken to the Nun mouth of the river, whence a passage was obtained to Fernando Po, reached on Dec. 1. The Landers were thus able to lay down with approximate correctness the lower course of the Niger—a matter till then as much in dispute as was the question of the Nile sources. The story of the expedition is told in *Journal of an Expedition to Explore the Course and Termination of the Niger* (3 vols., 1832). Richard went to Africa again as leader of an expedition organized by Macgregor Laird and other Liverpool merchants, and while going up the river in a canoe was attacked by the natives on Jan. 20, 1834, and wounded. He was removed to Fernando Po, where he died on Feb. 6. John Lander died in London on Nov. 16, 1839.

See, besides the books mentioned, the *Narrative* of the Niger expedition of 1832–34, published in 1837 by M. Laird and R. A. K. Oldfield.

LANDES, a department in the south-west of France, formed in 1790 of portions of the ancient provinces of Guyenne (Landes, Condomois, Chalosse), Gascony and Béarn, and bounded N. by Gironde, E. by Lot-et-Garonne and Gers, S. by Basses Pyrenees, and W. (for 68 mi.) by the Bay of Biscay. Pop. (1936) 251,436. Area, 3,615 sq.mi. The Landes, occupying three-fourths of the surface of the department, are sandy, pine-covered stretches north of the Adour separated from the coast by dunes which have so interfered with drainage as to enclose behind them a chain of lakes. The department stretches across the Adour southeastwards to include the more hilly Chalosse, drained by the left bank tributaries of the Adour, which receives the Midouze on the right. The Adour formerly reached the sea some miles farther north than now, at Capbreton, from which the discoverers of the Canadian island of that name set out; this is the only harbour in the department.

Only La Chalosse is fertile. The chief cereal is maize; next in importance are rye, wheat, millet and oats. Of vegetables, the bean is most cultivated. The vine and some tobacco are grown in the Chalosse, sheep are numerous, and the "Landes" breed of horses is well known. The resin of the maritime pine furnishes turpentine and resin to make varnish, tapers, sealing-wax and lubricants. Tar and charcoal for smelting purposes, are also obtained from the pine-wood. The cultivation of the cork tree is also important. The department has several mineral springs, the most important being those of Dax, famous in the time of the Romans, and of Eugénie-les-Bains and Préchacq. There are salt-workings and stone quarries. There are several iron-works in the department, notably those at Le Boucau. There are also saw-mills, distilleries, flour-mills, brick and tile works and potteries. Exports include resinous products, pine-timber, metal, brandy. Landes includes two arrondissements (Mont-de-Marsan and Dax), 28 cantons and 334 communes.

Mont-de-Marsan is the capital of the department, which comes within the circumscription of the appeal court of Pau, the académie (educational division) of Bordeaux and the archbishopric of Auch, and forms part of the region of the 18th army corps (Bordeaux). It is served by the Southern railway; there is some navigation on the Adour. Mont-de-Marsan, Dax, St. Sever and Aire-sur-l'Adour, the seat of a bishop, are the most noteworthy towns.

LANDES, an extensive natural region of southwestern France known more strictly as the Landes de Gascogne. It has an area of 5,400 sq.mi. The Landes, formerly a vast tract of moorland and marsh, now consist chiefly of fields and pine forests. They form a triangular shaped low plateau, the base of which is the Atlantic coast while the apex is situated slightly west of Nérac (Lot-et-Garonne). Its limits are, on the south the river Adour; on the east the hills of Armagnac, Eauzan, Condomois, Agenais and Bazadais; and on the north-east the Garonne, the hills of Médoc and the Gironde. The height of the plateau is from 130 to 260 ft.; the highest altitude (498 ft.) is found in the east near Baudignan (department of Landes), from which point there is a gradual slope in all directions. The soil is naturally sterile.

LANDESHUT, a town in the Prussian province of Silesia, Germany, at the foot of the Riesengebirge, and on the river Bober, 65 mi. southwest of Breslau. Pop. (1939) 14,240. The town dates from the 13th century, being originally a fortress built for protection against the Bohemians. Its industries are flax-spinning, linen-weaving and manufactures of cloth, shoes and cement.

LAND-GRANT COLLEGES AND UNIVERSITIES are also known as agricultural and mechanical colleges. Of the 69 institutions (1929) in the United States, including 26 State universities, one is situated in each State (two in Massachusetts), one in Porto Rico, one in Hawaii, one in Alaska and 17 exclusively for negro students in as many Southern States. These colleges are attended by approximately one-fifth of all resident college students in the United States. In 1927 the 52 land-grant colleges attended by white students employed 23,156 faculty members, enrolled 371,049 students (ratio seven men to three women) and awarded 21,095 baccalaureate or first degrees and 3,163 advanced degrees. The libraries included 6,996,291 volumes. New buildings costing $14,642,915 were erected, the property was appraised at $390,318,305 and the income and receipts totalled $133,075,872. In the 17 negro land-grant colleges there were 823 faculty members and 17,587 students; 327 degrees were conferred, property was valued at $10,340,698 and income and receipts amounted to $3,604,803.

The land-grant act of July 2, 1862, the first Morrill Act for the benefit of agriculture and the mechanic arts, authorized the establishment of these institutions. This bill granted Federal land to each State "for the endowment, support, and maintenance of at

least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." Each State received land equal to 30,000 ac. for each senator and representative then in Congress. This land was gradually sold off by each State, and the funds thus created were invested in securities, the income of which is regularly applied to the maintenance and support of each land-grant college. In 1927 the total fund amounted to $18,757,594, with $6,143,984 in unsold land, and provided an income of $1,028,288.

The Second Morrill Act of 1890 and the Nelson amendment of 1907 provided additional funds. Beginning with 1911 each State and Territory received $50,000 and the annual appropriation for 1927 amounted to $2,552,612, for the maintenance and support of land-grant colleges. Thus the Morrill Acts and the Nelson amendment authorized both the establishment of colleges of agriculture and mechanic arts and annual appropriations for the expense of instruction in certain prescribed curricula.

The success of these institutions is due largely to the support of the people of the States. Although Federal aid continues to be an important element in the financing of land-grant colleges, only 10% of the total income is now received from Federal sources, compared with 33% in 1892. In 1926–27 the States contributed 50% of the total income of these institutions. The University of California received the largest income ($12,237,273) while the Alaska Agricultural College and School of Mines received the smallest amount ($95,907). Between these two extremes the land-grant colleges and universities vary in size. (W. J. Gr.)

LANDGRAVE, a German title of nobility surviving from the times of the Holy Roman Empire (Ger. *Landgraf,* from *Land,* "a country," and *Graf,* "count"), which originally signified a count of more than usual power or dignity. In later times it was borne by the sovereign of Hesse-Homburg, the heads of the various branches of the house of Hesse, and by a branch of the family of Fürstenberg.

LAND LAWS: *see* Laws Relating to Real Property and Conveyancing.

LÄNDLER, a dance popular in the country districts of Germany, in the nature of a slow waltz. Beethoven, Schubert and other well known masters have left charming examples.

LANDLORD AND TENANT. In Roman law, the relationship of landlord and tenant arose from the contract of letting and hiring (*locatio conductio*), and existed also, with special incidents, under the forms of tenure known as *emphyteusis*—the long lease of Roman law—and *precarium,* or tenancy at will. (*See* Roman Law.)

In English law the legal relationship of landlord and tenant is constituted by a lease, or an agreement for a lease, by assignment, by attornment and by estoppel. And first of a lease and an agreement for a lease. All kinds of interests and property, whether corporeal, such as lands or buildings, or incorporeal, such as rights of common or of way, may be let. The Benefices Act, 1898, however, now prohibits the grant of a lease of an advowson. Titles of honour, offices of trust or relating to the administration of justice, and pensions granted by the Crown for military services are also inalienable. Generally speaking, any person may grant or take a lease. But there are a number of common law and statutory qualifications and exceptions. (*See* Alien; Convict; Corporation; Infant; Insanity in Law.) Powers of granting building and other leases have been conferred by modern legislation on municipal corporations and other local authorities.

A person having an interest in land can, in general, create a valid interest only to the extent of that interest. Thus a tenant for years, or even from year to year only, may stand in his turn as landlord to another tenant. If he profess, however, to create a tenancy for a period longer than that to which his own interest extends, he does not thereby give to his tenant an interest available against the reversioner or remainder man. The subtenant's interest will expire with the interest of the person who created it.

The Letting.—Whether a particular instrument is a lease, or an agreement for a lease, or a bare licence, is a question the answer to which depends to a large extent on the circumstances of individual cases; and the only general rule is that in a lease there must be an expression of intention on the part of the lessor to convey, and of the lessee to accept, the exclusive possession of the thing let for the prescribed term and on the prescribed conditions. The landlord must not part with the whole of his interest, since, if he does so, the instrument is not a lease but an assignment. Where a tenant enters under an agreement for a lease and pays rent, the agreement will be regarded as a lease from year to year. At common law a lease for a term of years (other than a lease by a corporation) might be made by parol. But under the Law of Property Act, 1925, s. 54, superseding ss. 1 and 2 of the Statute of Frauds (1677), leases, except those the term of which does not exceed three years, and in which the reserved rent is equal to two-thirds at least of the improved value of the premises, are required to be in writing signed by the parties or their lawfully authorized agents; and, under s. 52 of the same statute, a lease required by law to be in writing (unless made by deed) is void for the purpose of creating a legal estate.

Forms of Tenancy.—The following are the principal forms of tenancy: (i.) *Tenancy for Life.*—A lease for life must be made by deed, and the term may be the life of the lessee and the life or lives of some other person or persons, and in the latter case either for their joint lives or for the life of the survivor; also for the lives of the lessee himself and of some other person or persons, and this constitutes a single estate. A tenant for life under a settlement has extensive powers of leasing under the Settled Land Act, 1925. He may lease the settled land, or any part of it, for any time not exceeding (*a*) in the case of a building lease, 99 years; (*b*) in the case of a mining lease, 60 years; (*c*) in the case of any other lease, 21 years. He may also grant either a lease of the surface of settled land, reserving the mines and minerals, or a lease of the minerals without the surface. (ii.) *Tenancy for years, i.e.,* for a term of years.—This tenancy is created by an express contract between the parties and never by implication, as in the case of tenancy from year to year and tenancy at will. Here the tenancy ends on the expiry of the prescribed term, without notice to quit or any other formality. (iii.) *Tenancy from Year to Year.*—This tenancy may be created by express agreement between the parties, or by implication as, *e.g.,* where a person enters and pays rent under a lease for years, void either by law or by statute, or without any actual lease or agreement, or holds over after the determination of a lease whether for years or otherwise. In the absence of express agreement or custom or statutory provision (such as is made by the Agricultural Holdings Act, 1923), a tenancy from year to year is determinable on half a year's notice expiring at the end of some current year of the tenancy. Where there is no express stipulation creating a yearly tenancy, if the parties have contracted that the tenant may be dispossessed by a notice given at any time, effect will be given to this provision. The common-law doctrine of a six months' notice being required to terminate a tenancy from year to year of a corporeal hereditament, does not apply to an incorporeal hereditament such as a right to shoot. (iv.) *Tenancies for Shorter Periods.*—Closely associated with tenancies from year to year are various other tenancies for shorter periods than a year—weekly, monthly or quarterly. Questions of considerable importance frequently arise as to the notice necessary to terminate tenancies of this character. The issue is one of fact; the date at which the rent is payable is a material circumstance, but it may be said generally that a calendar week's notice, given on the day corresponding to that on which the tenancy commenced, should be given to determine a weekly tenancy, a month's to determine a monthly tenancy and a quarter's to determine a quarterly tenancy. It is chiefly in connection with the letting of lodgings, flats, etc., that tenancies of this class arise. (*See* Flat, Lodger and Lodgings.) (v.) *Tenancy at Will.*—A tenancy at will is one which endures at the will of the parties only, *i.e.,* at the will of both, for if a demise be made to hold at the will of the lessor, the law implies that it is at the will of the lessee also and vice versa. Any signification of a desire to terminate the tenancy, whether expressed as "notice"

or not, will bring it to an end. This form of tenancy, like tenancy from year to year, may be created either by express contract or by implication, as where premises are occupied with the consent of the owner, but without any express or implied agreement as to the duration of the tenancy, or where a house is lent rent free by one person to another. A tenancy at will is determined by either party alienating his interest as soon as such alienation comes to the knowledge of the other. (vi.) *Tenancy at Sufferance.*—A tenant who comes into possession by a lawful demise, but "holds over" or continues in possession after his estate is ended, is said to be a "tenant at sufferance." Properly speaking, tenancy at sufferance is not a tenancy at all, inasmuch as if the landlord acquiesces in it, it becomes a tenancy at will; and it is to be regarded merely as a legal fiction which prevented the rightful owner from treating the tenant as a trespasser until he had himself made an actual entry on or had brought an action to recover the land. The Distress for Rent Act, 1737, however, enables a landlord to recover double rent from a tenant who holds over after having himself given notice to quit; while another statute in the reign of George II.—the Landlord and Tenant Act, 1730—makes a tenant who holds over after receiving a notice from his landlord liable to the extent of double the value of the premises. There is no tenancy by sufferance against the Crown.

Form of a Lease.—The component parts of a lease are the parties, the recitals (when necessary) setting out such matters as the title of the lessor; the demise or actual letting (the word "demise" is ordinarily used, but any term indicating an express intention to make a present letting is sufficient); the parcels in which the extent of the premises demised is stated; the *habendum* (which defines the commencement and the term of the lease), the *reddendum* or reservation of rent, and the covenants and conditions. Unless a contrary intention is expressed, a lease of "land" is to be deemed to include all buildings, fixtures, easements, etc., appertaining to it; and, if there are houses or other buildings on the land demised, all outhouses, erections, etc., are to pass with the lease of the land. (*See* Law of Property Act, 1925, s. 62.) Rights which the landlord desires to retain over the lands let are excepted or reserved. Sporting rights will pass to the lessee unless reserved. (*See* GAME LAWS.) A grant or reservation of mines in general terms confers, or reserves, a right to work the mines, subject to the obligation of leaving a reasonable support to the surface as it exists at the time of the grant or reservation. It is not necessary that a lease should be dated. In the absence of a date, it will take effect from the day of delivery.

Covenants in leases may be roughly divided into four groups: (i.) *Implied Covenants.*—A covenant is said to be implied when it is raised by implication of law without any express provision being made for it in the lease. Thus a lessee is under an implied obligation to treat the premises demised in a tenant-like or "husband-like" manner. (ii.) *"Usual" Covenants.*—Where an agreement for a lease specifies only such essential conditions as the payment of rent, and either mentions no other terms, or provides that the lease shall contain the "usual" covenants, the parties are entitled to have inserted in the lease made in pursuance of the agreement such other provisions as are "usual" in leases of property of the same character, and in the same district, not being provisions tending to abridge or qualify the legal incidents of the estate intended to be granted to the lessee. The question what covenants are "usual" is a question of fact. A covenant by the lessor, limited to his own acts and those of persons claiming under or through him, for the "quiet enjoyment" by the lessee of the demised premises, and covenants by the lessee to pay rent, to pay taxes, except such as fall upon the landlord, to keep the premises in repair, and to allow the landlord to enter and view the condition of the premises may be taken as typical instances of "usual" covenants. Covenants by the lessee to build and repair, not to assign or under-let without licence, or to insure, or not to carry on a particular trade on the premises leased, have been held not to be "usual." Where the agreement provides for the insertion in the lease of "proper" covenants, such covenants only are pointed at as are calculated to secure the full effect of the contract, and a covenant against assignment or under-letting would not ordinarily be included. (iii.) *The Covenants running with the Land.*—A covenant is said to "run with the land" when the rights and duties which it creates are not merely personal to the immediate parties (in which case a covenant is said to be "collateral"), but pass also to their assignees. A covenant "runs with the land" if it relates either to a thing *in esse* which is part and parcel of the demise, *e.g.*, the payment of rent, the repair of houses or fixtures or machinery already built or set up, or to a thing not *in esse* at the time of the demise, but touching the land. A covenant relating to the land binds assignees though not specially named in the covenant (Law of Property Act, 1925, ss. 79, 80). All implied covenants run with the land. As instances of "collateral" covenants, we may take a covenant by a lessor to give the lessee a right of pre-emption over a piece of land adjoining the subject of the demise, or in the case of a lease of a beer-shop, not to keep any similar shop within a prescribed distance from the premises demised, or a covenant by a lessee to pay rates on premises not demised. A covenant not to assign without the lessor's assent runs with the land and applies to a reassignment to the original lessee. (iv.) *Restrictive Covenants.*—These may be subdivided into two classes—covenants not to assign or underlet without the lessor's consent (it may be noted that such consent must be applied for even if, under the covenant, it cannot be withheld); and covenants in restraint of trade, *e.g.*, not to use the demised premises for certain trading purposes, and in the case of "tied houses" a covenant by the lessees to purchase all beer required from the lessors. Covenants not to assign without the lessor's consent are subject to a proviso that such consent is not to be unreasonably withheld (Landlord and Tenant Act, 1927, s. 19 [3]).

Mutual Rights and Liabilities of Landlord and Tenant.—These are to a large extent regulated by the covenants of the lease. (i.) The landlord generally covenants—and, in the absence of such a proviso, a covenant will be implied from the fact of letting—that the tenant shall have quiet enjoyment of the premises for the time agreed upon. This obligation makes the landlord responsible for any lawful eviction of the tenant during the term, but not for wrongful eviction unless he is himself the wrongdoer or has expressly made himself responsible for evictions of all kinds. At common law no lease for years was complete till actual entry had been made by the lessee. Till then, he had only a right of entry or *interesse termini.* The doctrine of *interesse termini* was abolished by the Law of Property Act, 1925, which provided (s. 149) that all terms of years absolute should be capable of taking effect from the date fixed for the commencement of the term without actual entry. (ii.) The tenant, on his part, is presumed to undertake to use the property in a reasonable manner, according to the purposes for which it was let, and to do reasonable repairs. A landlord is not presumed to have undertaken to put the premises in repair, nor to execute repairs. But the respective obligations of parties where repairs are, as they always are in leases for years, the subject of express covenant, may vary indefinitely. The obligation is generally imposed upon the tenant to keep the premises in "good condition" or "tenantable repair." The amount and quality of the repairs necessary to fulfil the covenant are always relative to the age, class and condition of the premises at the time of the lease. A tenant is not responsible, under such a covenant, for deterioration due to diminution in value caused by lapse of time or by the elements. Where there is an unqualified covenant to repair, and the premises during the tenancy are burnt down, or destroyed by some other inevitable calamity, the tenant is bound to rebuild and restore them at his own expense, even although the landlord has taken out a policy on his own account and been paid by the insurance company in respect of it. A covenant to keep in repair requires the tenant to put the premises in repair if they are out of it, and to maintain them in that condition up to and at the end of the tenancy. A breach of the covenant to repair gives the landlord an action for damages which will be measured by the estimated injury to the reversion if the action be brought during the tenancy, and by the sum necessary to execute the repairs, if the action be brought later. (iii.) The improper use of the premises to the injury of the

reversioner is *waste* (*q.v.*). (iv.) Covenants by the tenants to insure the premises and keep them insured are also common; and if the premises are left uninsured for the smallest portion of the term, though there is no damage by fire, the covenant is broken. (v.) Covenants to bear and pay rates and taxes have been discussed above. (vi.) As to the tenant's obligation to pay rent. (*See* RENT.)

Assignment, Attornment, Estoppel.—The relationship of landlord and tenant may be altered either voluntarily, by the act of the parties, or involuntarily, by the operation of law, and may also be dissolved. The principal mode of voluntary alteration is an assignment either by the tenant of his term or by the landlord of his reversion. No fine is payable for licence to assign or sublet (Law of Property Act, 1925, s. 144). An assignment which creates the relationship of landlord and tenant between the lessor or lessee and the assignee, must be by deed (Law of Property Act, 1925, ss. 52, 53), but the acceptance by a landlord of rent from a tenant under an invalid assignment may create an implied tenancy from year to year; and similarly payment of rent by a tenant may amount to an acknowledgment of his landlord's title. This is one form of tenancy by estoppel. The principle of all tenancies of this kind is that something has been done by the party estopped, amounting to an admission which he cannot be allowed to contradict. "Attornment," or the agreement by a tenant to become tenant to a new landlord, is a term now often used to indicate an acknowledgment of the existence of the relationship of landlord and tenant.

Another form of alteration in a contract of tenancy is an underlease, which differs from assignment in this—that the lessor parts with a portion of his estate instead of, as in assignment, with the whole of it. There is no privity of contract between an underlessee and the superior landlord, but the latter can enforce against the former restrictive covenants of which he had notice; it is the duty of the underlessee to inform himself as to the covenants of the original lease, and, if he enters and takes possession, he will be considered to have had full notice of, and will be bound by, these covenants.

Dissolution of Tenancy.—Tenancy is dissolved by the expiry of the term for which it was created, or by forfeiture of the tenant's interest on the ground of the breach of some condition by the tenant and re-entry by the landlord. A breach of condition may, however, be waived by the landlord, and the legislature has made provision for the relief of the tenant from the consequences of such breaches in certain cases. Relief from forfeiture and rights of re-entry are regulated chiefly by the Law of Property Act, 1925. A right of re-entry or forfeiture is not to be enforceable unless and until the lessor has served on the lessee a written notice specifying the breach of covenant or condition complained of, and requiring him to remedy it or make compensation, and this demand has not within a reasonable time been complied with (s. 146); and when a lessor is proceeding to enforce such a right the court may, if it think fit, grant relief to the lessee. A forfeiture may be waived if the landlord elects not to take advantage of it—and shows his election either expressly or impliedly by some act, which acknowledges the continuance of the tenancy, *e.g.*, by the acceptance of, or even by an absolute and unqualified demand for, rent, which has accrued due since the forfeiture. But an actual waiver by the lessor of the benefit of any covenant is not to be treated as a general waiver of the benefit of such covenant, unless intended to be so (s. 148).

A tenancy may also be determined by merger, *i.e.*, where a greater and a less estate coincide and meet in one and the same person, without any intermediate estate, as, for instance, when a tenant for years obtains the fee simple. There may also be a surrender, either voluntary or by operation of law, which will determine a tenancy.

The land, on the expiration of the tenancy, becomes at common law the absolute property of the landlord, no matter how it may have been altered or improved during the occupation. In certain cases, however, the law has discriminated between the contending claims of landlord and tenant. (*See* FIXTURES; EMBLEMENTS.)

The law as to EJECTMENT is dealt with under that heading.

MODERN LAWS

Statutory Provisions.—Reference may be made, in conclusion, to a few modern statutes which have affected the law of landlord and tenant. The Agricultural Holdings Act, 1923, gives to an agricultural tenant, on quitting his holding, a right to compensation for (i.) certain specified improvements, *e.g.* (sched. I., pt. 1) erection or enlargement of buildings, laying down of permanent pasture, making of gardens or fences made by him with his landlord's previous consent in writing (ss. 1, 2); (ii.) drainage executed after written notice to the landlord (s. 3 and sched. I., pt. 1); (iii.) certain other improvements, *e.g.* (sched. I., pt. 3) chalking of land, clay burning, manuring, without the landlord's consent (s. 4). The statute also provides for compensation in respect of increased or diminished value of holding (s. 9), damage by game disturbance (s. 12); for the settlement of differences (s. 11); by arbitration (s. 16), and for the extension of tenancies under leases for two years or upwards (s. 23). Agricultural tenants, notwithstanding any custom and agreement, are at liberty to practice any reasonable system of cropping or disposal of produce (s. 30). The right to distrain for rent does not extend to rent due for more than a year before the distress (s. 34), and live-stock belonging to another person taken in by the tenant to be fed and protected (s. 35). There are special provisions as to market gardens (ss. 48 and 49). (*See* also ALLOTMENTS and the Allotments Act, 1922.) Any contract by a tenant, whether under seal or not, taking away and limiting his right to compensation, is to that extent void (s. 50).

Under the Increase of Rent and Mortgage Interest (Restriction) Acts, 1920–25, landlords of dwelling-houses to which those statutes apply were prevented, during their continuance, from raising, except by certain specified additions, the rents above what was termed "the standard rent," *i.e.*, the rents at which any such dwelling-house was let on, or last before, or first after, Aug. 3, 1914, and, save in certain cases, from recovering possession of such dwelling-houses on the termination of any tenancy.

Possession was recoverable where the landlord reasonably required the dwelling-house as a residence for himself or any son or daughter over 18 years of age, and the court was satisfied that, having regard to any alternative accommodation available for the landlord or tenant, there would be greater hardship in refusing an order for possession than in granting it (Prevention of Eviction Act, 1924, s. 1). The Rent Restriction Act, 1920, expired, as regards England, on Dec. 25, 1927, and, as regards Scotland, on March 28, 1928. Part 2 of the act of 1923, which deals with suspension of the recovery of premises, is continued in each case for five years from the date of expiry (act of 1925, s. 1).

The Landlord and Tenant Act, 1927, makes provision for compensation for improvements and goodwill on the termination of tenancies of business premises. In lieu of compensation, the grant of a new lease may be ordered in certain cases. The tribunal for the purposes of the act is the county court, acting on an enquiry and report by one of a panel of referees selected by a reference committee consisting of the lord chief justice of England, the master of the rolls, and the presidents of the Law Society and Surveyors' Institution. Any dispute may, however, be referred by agreement to arbitration. (A. W. R.)

Scots Law.—The law of Scotland as to landlord and tenant may be considered under two main heads:—I. *Ordinary Leases*, II. *Building or Long Leases.*

I. *Ordinary Leases.*—A verbal lease for a year is good. Such a lease for more than a year is not effectual even for a year, except where it has been acted on. At common law, while a lease was binding on the grantor and his heirs, it was not good against "singular successors," *i.e.*, persons acquiring by purchase or adjudication, and the lessee was liable to be ejected by such persons, unless (a precaution usually taken) sasine of the subjects demised was expressly conferred on him by the lease. To obviate this difficulty, the Scots Act, 1449, c. 18 made possession of the subjects of the lease equivalent to sasine. This enactment applies to leases of agricultural subjects, houses, mills, fisheries and whatever is *fundo annexum;* provided that (*a*) the lease, when for more than one year, must be in writing, (*b*) it must be definite

as to subject, rent (which may consist of money, grain or services, if the *reddendum* is not illusory) and term of duration, (*c*) possession must follow on the lease. Special powers of granting leases are conferred by statute on trustees (Trusts [Scotland] Act, 1921, s. 4), and heirs of entail (*cf.* Entail Act, 1882, ss. 5, 6, 8, 9). A life-renter can only grant a lease that is effectual during the subsistence of the life-rent. There is practically no limitation, but the will of the parties, as to the persons to whom a lease may be granted. A lease granted to a tenant by name will pass, on his death during the subsistence of the term to his heir-at-law, even if the lease contains no destination to heirs. The rights and obligations of the lessor and the tenant (*e.g.*, as to the use of the produce, the payment of rent, the quiet possession of the subjects demised, and as to the payment of rates and taxes) are similar to those existing under English law. An agricultural lease does not, apart from stipulation, confer any right to kill game, other than hares and rabbits (as to which, *see* the Ground Game Act, 1880) or any right of fishing.

A tenant is not entitled, without the landlord's consent, to change the character of the subjects demised. He is bound to quit the premises on the expiration of the lease. Ejection will not be authorized unless the tenant received 40 days' warning before the term of removal in the case of urban leases for a year or upwards, six months' warning in the case of agricultural leases for one year, and one year's warning in the case of agricultural leases for more than one year. In the absence of such notice, the parties are held to renew their agreement in all its terms, and so on from year to year till due notice is given. This renewal is called "tacit relocation." A lease may be transmitted (i.) in the case of an urban lease, unless assignees are expressly excluded, by "assignation," intimated to the landlord, and followed by possession on the part of the assignee; (ii.) by succession, as of the heir of a tenant; (iii.) in the case of agricultural holdings, by bequest (Agricultural Holdings [Scotland] Act, 1923, s. 28). An urban lease, unless subtenants are expressly excluded, may be sublet. A lease terminates (i.) by the expiration of its term or by advantage being taken by the party in whose favour it is stipulated of a "break" in the term; (ii.) by the occurrence of an "irritancy," either conventional, or statutory, *e.g.*, where a tenant's rent is in arrears or he fails to remove on the expiry of his lease (Act of Sederunt, Dec. 14, 1756: Agricultural Holdings Act, 1923, s. 25); (iii.) by the bankruptcy or insolvency of the tenant, at the landlord's option, if it is so stipulated in the lease; (iv.) by the destruction, *e.g.*, by fire, of the subject leased, unless the landlord is bound to restore it. Complete destruction of the subject leased, *e.g.*, where a house is burnt down, or a farm is reduced to "sterility" by flood or hurricane, discharges the tenant from the obligation to pay rent. The effect of partial destruction has given rise to some uncertainty. "The distinction seems to be that if the destruction be permanent, though partial, the failure of the subject let will give relief by entitling the tenant to renounce the lease, unless a deduction shall be allowed, but that if it be merely temporary or occasional, it will not entitle the tenant to relief" (Bell's *Principles*, s. 1208). Agricultural leases usually contain special provisions as to the order of cropping, the proper stocking of the farm, and the rights of the incoming and outgoing tenant with regard to the waygoing crop. Where the rent is in money, it is generally payable at Whitsunday and Martinmas—the two "legal terms." Sometimes the term of payment is *before* the crop is reaped, sometimes *after*. "The terms thus stipulated are called 'the conventional terms'; the rent payable by anticipation being called 'forehand rent,' that which is payable after the crop is reaped, 'back rent.' Where the rent is in grain, or otherwise payable in produce, it is to be satisfied from the produce of the farm, if there be any. If there be none the tenant is bound and entitled to deliver fair and marketable grain of the same kind" (Bell's *Principles*, ss. 1204, 1205). The general rule with regard to "waygoing crops" on arable farms is that the tenant is entitled to reap the crop sown before the term of removal (whether or not that be the natural termination of the lease), the right of exclusive possession being his during seed time. But he is not entitled to the use of the barns in threshing, etc., the corn.

The Agricultural Holdings (Scotland) Act, 1923, already referred to incidentally, contains provisions as to a tenant's right to compensation for unexhausted improvements, removal for non-payment of rent, notice to quit at the termination of a tenancy, and a tenant's property in fixtures. The Small Landholders (Scotland) Acts 1886 to 1911 confer on landholders special rights. A landholder is defined as a tenant of a holding—being arable or pasture land, or partly arable and partly pasture land—from year to year who resides on or within two miles of his holding which does not exceed 50 ac. in extent and £50 in rental. The landholder enjoys a perpetual tenure subject to the fulfilment of certain conditions as to payment of rent, non-assignment of tenancy, etc., and to defeasance at his own option on giving one year's notice to the landlord. A land court set up by the act of 1911 has jurisdiction to determine disputes between the landholder and the proprietor of the holding.

II. *Building or Long Leases.*—Under these leases, the term of which is usually 99 and sometimes 999 years, the tenant is to a certain extent in the position of a fee simple proprietor, except that his right is terminable, and that he can only exercise such rights of ownership as are conferred on him either by statute or by the terms of his lease. Extensive powers of entering into such leases have been given by statute to trustees (Trusts [Scotland] Act, 1921, s. 4) and subject to the authority of the court to heirs of entail (Entail Acts, 1840, 1849, 1882). Where long leases are "probative," *i.e.*, holograph or duly tested, and have an endurance of 31 years or upwards, they may be recorded for publication in the *Land Register* and such publication has the effect of possession (Registration of Leases [Scotland] Act, 1857). (J. W.)

Ireland.—The law of landlord and tenant was originally substantially the same as that described for England. But the modern Land Acts have readjusted the relation between landlords and tenants, while the Land Purchase Acts have aimed at abolishing those relations by enabling the tenant to become the owner of his holding. The way was paved for these changes by the existence in Ulster of a local custom having virtually the force of law, which had two main features—fixity of tenure, and free right of sale by the tenant of his interest. These principles, with the addition of that of fair rents settled by judicial means, were gradually established by the Land Acts of 1870 and subsequent years, and the whole system was remodelled by the Land Purchase Acts. The Land Act, 1923 (No. 42 of 1923) completes the work begun in 1870 to enable Irish agricultural tenants to become the owners of their holdings. (*See* IRELAND; IRELAND, NORTHERN; IRISH FREE STATE.)

Other Countries.—In France, the Code Civil recognizes two relationships between landlord and tenant, the letting to hire of houses (*bail à loyer*) and the letting to farm of rural properties (*bail à ferme*). To a certain extent, both forms of tenancy are governed by the same rules. The letting may be either written or verbal. But a verbal lease presents this disadvantage that, if it is unperformed and one of the parties denies its existence, it cannot be proved by witnesses. The party who denies the letting can only be put to his oath (Arts. 1714–15). It may further be noted that in the case of a verbal lease, notice to quit is regulated by the custom of the place (Art. 1736). The tenant or farmer has the right of underletting or assigning his lease, in the absence of prohibiting stipulation (Art. 1717). The lessor is bound by the nature of his contract and without the need of any particular stipulation (i.) to deliver to the lessee the thing hired in a good state of repair; (ii.) to maintain it in a state to serve the purpose for which it has been hired; (iii.) to secure to the lessee peaceable enjoyment during the continuance of the lease (Arts. 1719–20). He is bound to warrant the lessee against, and to indemnify him for, any loss arising from any faults or defects in the thing hired which prevent its use, even though he was not aware of them at the time of the lease (Art. 1721). If during the continuance of the letting, the thing hired is entirely destroyed by accident, the lease is cancelled. In case of partial destruction, the lessee may, according to circumstances, demand either a diminution of the

price, or the cancellation of the lease. In neither case is there ground for damages (Art. 1722). The lessor cannot, during the lease, change the form of the thing hired (Art. 1723). The lessee is bound, on his side (i.) to use the thing hired like a good head of a household (*bon père de famille*), in accordance with the express or presumed purpose of the hiring; (ii.) to pay the price of the hiring at the times agreed (Art. 1728). On breach of the former obligation, the lease may be judicially cancelled (Art. 1729). (As to the consequences of breach of the latter, *see* RENT.) If a statement of the condition of the property (*état des lieux*) has been prepared, the lessee must give it up such as he received it according to the statement, except what has perished or decayed by age or by means of *force majeure* (Art. 1730). In the absence of an *état des lieux*, the lessee is presumed to have received the thing hired in a good state of tenantable repair, and must so yield it up, saving proof to the contrary (Art. 1731). He is liable for injuries or losses happening during his enjoyment, unless he prove that they have taken place without his fault (Art. 1732); in particular, for loss by fire unless he show that the fire happened by accident, *force majeure*, or defect of construction, or through communication from a neighbouring house (Art. 1733). The lessee is liable for injuries and losses happening by the act of persons belonging to his house or of his sub-tenants (Art. 1735). A lease terminates (i.) at the expiration of the prescribed term (Art. 1737)—if at that period the lessee remains and is left in possession, there is, in the case of written leases, a tacit renewal (*tacite reconduction*) of the lease as a verbal lease (Arts. 1738–39); (ii.) by the loss of the thing hired and by the default of the lessor or lessee in the fulfilment of their respective obligations (Art. 1741), but (iii.) not by the death either of the lessor or of the lessee (Art. 1742). Conditions of EJECTMENT are stated under that heading. The special rules (Arts. 1752–62) relative to the hire of houses are touched upon in LODGER AND LODGINGS. It only remains here to refer to those applicable to leases to farm. The lessee is bound to stock the farm with the cattle and implements necessary for its husbandry (Art. 1766), and to stack in the places appointed for the purpose in the lease (Art. 1767). A lessee, who farms on condition of dividing the produce with the lessor, can only underlet or assign if he is expressly empowered to do so by the lease (Art. 1763). The lessee must give notice to the lessor of any acts of usurpation committed on the property (Art. 1768). The outgoing must leave for the incoming tenant convenient housing and other facilities for the labours of the year following; the incoming must procure for the outgoing tenant conveniences for the consumption of his fodder and for the harvests remaining to be got in. In either case the custom of the place is to be followed (Art. 1777). The outgoing tenant must leave the straw and manure of the year, if he received them at the beginning of his lease, and even where he has not so received them, the owner may retain them according to valuation (Art. 1778). A word must be added as to letting by cheptel (*bail à cheptel*)—a contract by which one of the parties gives to the other a stock of cattle to keep under conditions agreed on between them (Art. 1800). There are several varieties of the contract: (i.) simple cheptel (*cheptel simple*) in which the whole stock is supplied by the lessor—the lessee taking half the profit and bearing half the loss (Art. 1804); (ii.) cheptel by moiety (*cheptel à moietié*)—here each of the contracting parties furnishes half of the stock, which remains common for profit or loss (Art. 1818); (iii.) cheptel given to a farmer (*fermier*) or participating cultivator (*colon partiaire*)—in the cheptel given to the farmer (also called *cheptel de fer*) stock of the value equal to the estimated price of the stock given must be left at the expiry of the lease (Art. 1821); cheptel given to the participating cultivator resembles simple cheptel, except in points of detail (Arts. 1827–30); (iv.) the term "cheptel" is also improperly applied to a contract by which cattle are given to be housed and fed—here the lessor retains the ownership, but has only the profit of the calves (Art. 1831).

The French system just described is in force in its entirety in Belgium (Code Civil, Arts. 1713 *et seq.*) and has been followed to some extent in Italy (Civil Code, Arts. 1568 *et seq.*), Spain (Civil Code, Arts. 1542 *et seq.*), and Portugal (Civil Code, Arts. 1298 *et seq.*, 1595 *et seq.*). In all these countries there are varieties of emphyteutic tenure; and in Italy the *mezzadria* or *metayer* system (*see* Civil Code, Arts. 1647 *et seq.*) exists. The German Civil Code adopts the distinction between *bail à loyer* (Mietz, Arts. 535 *et seq.*) and *bail à ferme* (Pacht, Arts. 581 *et seq.*). Dutch law (Civil Code, Arts. 1583 *et seq.*) is similar to the French. (*See* also Argentine law of 1921 [Nos. 11, 125] as to leases of houses, apartments and shops.)

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UNITED STATES

Since the law of landlord and tenant in the United States developed from the English law, it is substantially identical with that law without the more recent statutory modifications of the latter. Certain statutory changes have, however, been made in some of the States and there seems a growing tendency to treat the relation between landlord and tenant more as one of contract and less as one of distinct and separate property ownership as was the traditional common law view. Statutes usually permit a letting for a period of one year or less by oral agreement. A lease for a longer period must be made by a formal instrument of conveyance, subject to the rule, as in England, that an oral contract of lease may be ordered specifically to be enforced if there has been part performance by the person seeking the remedy. Many State statutes also provide that a holding over by a tenant after the expiration of his lease shall only constitute a holding from month to month or at will and not, as at common law, for a like period as the original letting. The landlord is generally given a statutory remedy of a summary nature for quickly ejecting a tenant who has failed to perform the obligations of his lease or whose lease has terminated. The ancient remedy of distress whereby the landlord may enter, seize and retain personal property in the possession of the tenant until arrears of rent are paid is still available in many States, although in a considerable number it has been abolished, leaving as the landlord's remedies only the ordinary legal processes for the collection of a debt and the summary procedure for ejection of the tenant (*see* RENT).

The law concerning covenants contained in the lease is similar to the English law except that covenants seem to be held more freely assignable than in England and there is a greater tendency to treat the promises of each party as mutually dependent, so that non-performance by one excuses performance by the other. Thus many States hold a covenant by a landlord not to enter into a competing business with that of the tenant to be enforceable by an assignee of the tenant. The English "implied warranty of possession"—under which it is the duty of the landlord to deliver possession of the leased premises to the tenant—is enforced in many States though denied in some. There is a conflict of authority whether, as under the English law, there is an "implied warranty of habitability" of furnished premises let for dwelling purposes. Thus tenants have been excused from accepting premises infested by rats, cockroaches or bugs. The rule is, however, denied in many jurisdictions. There is also considerable authority in the United States to the effect that failure by a landlord to perform his covenants to repair or heat the premises excuses the tenant on his part from performance of his covenants and justifies him in

refusing to pay rent or in abandoning the premises (*see* cases collected in 28 American Law Reports 1333, 1448). Somewhat similar results follow also by application of the doctrine of "constructive eviction" whereby a tenant may treat as an act of eviction by the landlord any act of the landlord on neighbouring premises such as conducting a nuisance or creating a disturbance, or any omission of the landlord to perform a duty assumed by contract or otherwise, which renders the premises unfit for the tenancy. The tenant is, however, required to abandon the premises immediately or else no such eviction is shown. Beyond these situations the doctrine that a lease is more a contract than a conveyance has not as yet found very general acceptance. Thus if a part of the premises is destroyed, the tenant in the absence of agreement must still continue to pay rent and to perform his covenants. This rule has, however, been changed by statute in several States. The tenant is excused from further obligation under his lease by total actual eviction by the landlord, or by eviction by title paramount, or by taking by eminent domain. Where the eviction is from only a part of the premises, the tenant may, if it is by act of the landlord, either abandon his lease or remain in possession without paying rent. But where it is by title paramount he is not entitled to abandon his lease and must pay a proportionate part of the rent. The authorities are conflicting, where there is partial eviction by eminent domain, as to whether the tenant should pay rent and claim compensation for the taking, or receive a reduction in his rent without any share in such compensation.

The passage of the 18th (Prohibition) amendment to the U.S. Constitution raised many interesting problems in the law of landlord and tenant. Where the lease stated that the premises were let for saloon purposes, it has been ruled that such use is not designated as exclusive and the lease is still effective, the premises being available for other purposes. Where the lease expressly restricted the use of the premises to saloon purposes, some courts still hold that the tenant must bear the loss of the change in law made by the Government, while others hold that the tenant is excused from further performance of the lease (22 A.L.R. 819). In the Prohibition Enforcement (Volstead) Act (tit. 2, s. 23) it is provided that a violation of that act by a tenant shall, at the option of the lessor, work a forfeiture of the lease. It has been held that where a landlord lets premises to a tenant in order that the latter may violate the Prohibition Act, the landlord is a participant in the wrong so that the courts will not aid him in enforcing his lease.

The law of waste by a tenant is similar to the English law, except that in certain parts of the country it may be considered good husbandry for a tenant to work mines or to cut trees in order to develop the land. No technical distinction is made between voluntary and permissive waste; either may be actionable. Ancient statutes coming from the English law providing for treble damages for waste are usually strictly limited by the courts as not applicable to modern conditions.

See L. A. Jones, *Law of Landlord and Tenant* (1906); McAdam, *The Rights, Remedies and Liabilities of Landlord and Tenant* (4th ed. 1910); H. T. Tiffany, *Law of Landlord and Tenant* (1912); *Corpus Juris,* vols. xxxv., xxxvi. (1924), "Landlord and Tenant."

(C. E. CL.)

LAND NATIONALIZATION. Land as a commodity has certain special characteristics which distinguish it from any other commodity known to economics: (*a*) it is the source of all other forms of material wealth, beginning with foodstuffs; (*b*) it is not created by man, although it may be modified by human labour; (*c*) it is everlasting, and not subject to the processes which destroy other forms of wealth; and (*d*) it is limited in extent, this being true both of any individual country and of the whole surface of the globe.

Consequences of Characteristics.—For these reasons the claim to enjoy private ownership in land seems an exorbitant one, and history shows us that it was slow to win acceptance. Even to-day many economists, sociologists and philosophers, including some who are by no means socialistic, but rather belong to the individualist Liberal school, have denied that land can properly be subjected to private ownership, or at best, have accepted it, as John Stuart Mill and Herbert Spencer did, for purely pragmatic considerations. Indeed, since land is essential to all, the owner of it would, if the rights of property were taken in their strictest legal sense, become master of the lives of all other men.

Since land is limited in area, ownership of it necessarily becomes a monopoly as soon as the density of the population has passed a certain limit. This monopoly has long been established in the British Isles—a group of islands of comparatively small area—and would inevitably have checked the increase of the population had not the advent of free trade, in the middle of the 19th century, to some extent broken it down. Since land is everlasting, real property is everlasting also; thus the inequalities created between men by this form of property are much deeper and more permanent than any which can arise out of the possession of capital. The possession of capital, it is true, gives rise to inequalities as great, or even greater, measured in currency, than those arising out of real property; and the "power of the purse," so frequently denounced, has become more formidable than landlordism. Nevertheless, it must be noted that capital cannot be perpetuated without constant renewal, that the "power of the purse" is ephemeral, and that its effects are not incompatible with the existence of democracy. But if the theory that land should not be allowed to remain private property be accepted, what action should be taken? The answers are numerous and various. They can, however, be classified in two categories, each with its further subdivisions: *nationalization,* properly speaking, and *taxation.*

Nationalization.—This consists, as the word implies, in transferring land from the domain of private ownership to that of national ownership. It is thus a form of collectivist Socialism; but collectivism is principally and primarily applied to capital, and is even inclined to tolerate individual ownership of land, provided that this be limited to the area which the proprietor is able to cultivate by his own labour, while agrarian nationalization proposes to socialize the land alone, and to leave capital under the domain of private ownership. Its view is that all capital is the product of human agency; not only what is supplied by the normal processes of labour and saving, but also what is supplied by speculation, by exploitation or, according to Marx, by "appropriation of the unpaid labour of others," since all of these agencies, whether predatory or creative, are yet forms of human activity. This distinction was apparently first brought out by a Belgian sociologist named Colins (d. 1859), and with a remarkable force which ought to have given him a higher place in the history of economics than that which he actually occupies. Such nationalization of the land, however, presupposes expropriation of the existing owner. How is such expropriation to be effected—with or without indemnification?

Expropriation without indemnification. This is tantamount to confiscation, but the harshness of it may be mitigated by various expedients. Colins, who advocated this solution, proposed to effect it by abolishing the right of succession as regards real property, thus allowing the owner to retain the enjoyment of his estate for life; he even extended this concession still further to allow children born before the passage of the decree of nationalization the right of succession. The expropriation would thus affect only those born after the promulgation.

Expropriation with indemnification. This means the purchase of the land by the State. This system was proposed by a German named Gossen, who long remained unknown, and was rediscovered by the French professor Léon Walras, who felt that the State could not in justice confiscate real property, since this had been constituted and sanctioned under the guarantee of the law. The State had, however, the right, recognized under the legal codes of every country, to apply "expropriation for reasons of public utility on payment of a fair compensation," so it was only necessary to apply this law to real property in bulk. The financial operation of effecting such a purchase might, however, it was argued, end by ruining the State; for, obviously, to pay such compensation, it would have to borrow the equivalent sum; and the charges resulting from this colossal loan might far exceed the revenue which the State could derive from its ownership of the land. Walras did not take this view, and proved by elaborate calculations, which cannot be reproduced here, that the State, even if it lost at first, would soon begin to find the operation

profitable, by reason of the subsequent increased value of the revenues derived from the land.

Exploitation of Nationalized Land.—Let us assume the land nationalized, whether by confiscation or purchase. How is it to be exploited? Is the State to take direct control? This solution cannot be dismissed as impossible, since in every country the State is the owner and direct exploiter of certain lands, even if only forests. Nevertheless, the advocates of nationalization are unanimous in rejecting this solution; firstly, because it would impose on the State so vast a task as to absorb its entire activities, but principally because its effect would be to reduce all farmers to the position of simple State employees, and would thus most certainly entail a grievous falling-off in returns. The evil effects would be slightly mitigated if the management of the land, instead of being left to the State, were entrusted to the parish or other local authorities, but would still be formidable.

OBLIGATIONS TO THE STATE

All authorities therefore agree that the land should be placed by the State in the hands of professional agriculturists, who would, in the majority of cases, be none other than the previous owners. But then, it will be asked, where is the change? Will not the result simply be to term the owners of the land by a different name, to call them lessees instead of proprietors? Will not State ownership thus become a mere empty title, a *domaine éminente* as it was called in the old French law; a fiction like that existing in England, where even to-day, by a survival from feudal times, the king is deemed the owner of all lands in his realm?

No! For the new holder of the land will be subjected to obligations which will make his position more akin to that of a present-day tenant farmer, than of an owner. They are these: (*a*) He will have to pay the State an annual rent, the amount of which, to avoid all favouritism, will probably be fixed by auctioning. It may be objected that the result of this system would be that only the rich could obtain land, the poor being excluded. But no; for the lease will only be granted on condition of cultivation by the lessee's personal labour; thus only such persons as have the necessary strength and knowledge to make their tenure really profitable will compete for it; (*b*) such sale will be subject to periodical revision, but at intervals long enough to give the cultivators a certain security, *e.g.,* every ten years. Increases of rent, if any, will not be made on the ground of improvements created by the cultivator, but solely on the ground of surplus values created by social accidents, such as the increase of population, a rise in prices, development of transport, etc.; (*c*) the tenant will not be permitted to sell, sublet or mortgage his holding, but if he wishes to retire, must sell it to the State, which will provide him with a successor, indemnifying him for improvements, if any, made by him on his holding; (*d*) the tenant will not be permitted, under pain of forfeiting his title, to leave his land uncultivated; nor to cultivate it by the use of hired labour. If the area of his holding is too great for him to work himself, he must submit to a reduction of it; (*e*) the State must take advantage of this great operation to redistribute holdings generally, reassemble scattered strips, divide up estates of excessive size and promote combinations of cultivators or co-operative associations. It will even be advisable for the State, in granting leases, to give agricultural co-operative associations preference over individual cultivators.

This programme of nationalization is not a mere paper scheme; it is already in practice in the Zionist colonies in Palestine, where the Jewish National Fund (*Keren Kayemeth Leisrael*) is the sole proprietor of the land, and lets it out on the system indicated above. Similarly in Soviet Russia, private ownership having been abolished without indemnification, the whole vast soil of Russia belongs to the State, but has been restored to peasant tenure under the conditions described above; though these, indeed, are not always respected by the "Koulaki," or rich peasant. The same plan has further been put into practice in a certain number of communal colonies or "enclaves" in the United States. The oldest of these is the Fairhope colony on the Gulf of Mexico. There is also one such colony, a very small one, in France, in Liefra, department of Aube.

The Taxation System.—This system was suggested almost simultaneously (by a synchronism very frequent in the history of doctrines, both social and physical) by Henry George, the American, in his "single tax system," expounded in his *Progress and Poverty* (1879), and by a Frenchman, Paul Toubeau, whose name has remained almost unknown, even in France, in his *La répartition métrique de l'impôt* (1880). The two systems, as we shall see, present considerable differences.

Henry George was no Socialist; he wished neither to attack individual initiative nor to abolish free competition; on the contrary he desired to assure to every man the undiminished product of his labour. But real property seemed to him a formidable obstacle to the realization of free competition, since it constituted a monopoly and a denial of the principle "to every man the product of his labour" by allowing the proprietor to enrich himself in idleness. To eliminate the evil effects of ownership of land, was it, however, necessary to abolish it? What, he argued, is the essential fault in the system of real property? That it allows the owner of the soil the whole of the surplus values arising out of social accidents, such as the increase of population and demands, the growth of towns, rises in the price-level and, in general, all those things embraced under the name of progress. In so far as it arises out of circumstances outside the individual's control, rent of land is an injustice and should be abolished. But it can be abolished without abolishing property, simply by confiscating this increment through taxation. So justice will be satisfied, for everything that is the outcome of social factors will revert to society, while the owner will retain whatever is the result of his personal efforts.

Paul Toubeau's system is also a system of taxation, but not on the value of land or yield, simply *on its area,* so much the square metre, whether it be a garden or a sand-dune. At first sight such a system seems absurd. It is, however, based on the idea that space is the one factor absolutely independent of human labour; man cannot create space, he can only occupy it. By taxing space, or area, alone, man is given an incentive to make the best use possible of it; the frequent and scandalous case of the speculative owner who leaves arable land uncultivated or urban sites unoccupied in the expectation of a rise in values is avoided. On the other hand, as the metric tax is unaffected by the productivity of the soil, it leaves the owner the full benefit of this factor; the better use to which he can put it, the better for him. In a word, the object of this system is to ensure the maximum utilization of all space. If the owner finds that he cannot secure a return sufficient to pay the tax, he has always the resource of abandoning his land to the State, which will doubtless be able, sooner or later, to make a profit out of it, for as Cecil Rhodes said, "where there's space there's hope."

Toubeau's system has the disadvantage compared to that of Henry George, of leaving the owner the benefit of surplus-values not acquired by his own action; it thus fails to correct the main injustice of ownership of land. On the other hand, it escapes the principal objection to Henry George's system—the central difficulty of determining and distinguishing in the yield from the land what is due to personal labour and what to accident.

Nationalization Through Wider Ownership.—It does not appear as though any of these systems of nationalization were likely to be effected at present. The enormous response that Henry George's ideas met in the United States and, still more, in England, has almost died away. Since the World War all taxation, including that on land, has been so much increased as to make a further increase hardly practicable; the aim attempted has, in fact, been attained and more than attained, for landlords are abandoning their estates out of inability to support the charges on them.

The example that Soviet Russia has given of the system of universal expropriation by the State is not very encouraging, for this experiment has produced a reaction in all Russia's neighbours, driving them along a precisely opposite course—towards stabilization and the multiplication of small properties. The great agrarian reform which has been effected in eastern and Central Europe, almost simultaneously, has aimed at multiplying the num-

ber of small proprietors, of substituting peasant ownership for the large estates. It has resumed and extended the individualist work of the French Revolution of 1789. (C. G.)

LANDON, ALFRED MOSSMAN (1887–) American politician. Born Sept. 9, 1887, at West Middlesex, Pa., he migrated with his parents to Kansas where he became an independent in the oil industry, accumulating a fortune which justified his father's laconic remark, "I guess he is solvent". During the World War, he served as lieutenant in the Chemical Warfare Service. Mr. Landon in earlier years was a disciple of Theodore Roosevelt, and a strongly Progressive Republican. In 1928, he became Chairman of the State Republican Committee for Kansas and in 1933 he was elected Governor. His reputation for careful finance spread from coast to coast and in 1936, the Republican Presidential Convention, meeting at Cleveland, nominated him by acclamation to run against President Roosevelt. He was, however, badly defeated in the November election, carrying only two states, Maine and Vermont. On Jan. 9, 1915, he married Margaret Fleming, by whom he has a daughter Margaret (Peggy) Anne. Left a widower, he married (Jan. 15, 1930) Theodora Cobb, by whom he has a son and a daughter.

LANDON, LETITIA ELIZABETH (1802–1838), English poet and novelist, better known by her initials L. E. L., was descended from an old Herefordshire family, and was born at Chelsea on Aug. 14, 1802. About 1815 the Landons made the acquaintance of William Jerdan, and Letitia began her contributions to the *Literary Gazette* and to various Christmas annuals. She also published some volumes of verse. The gentle melancholy and romantic sentiment her writings embodied suited the taste of the period, and secured the sympathy of a wide class of readers. An engagement to John Forster, it is said, was broken off through the intervention of scandalmongers. In June 1838 she married George Maclean, governor of the Gold Coast, but her marriage was unhappy. She died on Oct. 15, 1838, at Cape Coast from a supposedly accidental overdose of prussic acid.

For some time L. E. L. was joint editor of the *Literary Gazette*. Her first volume of poetry appeared in 1820 under the title *The Fate of Adelaide,* and was followed by other collections of verses with similar titles. She also wrote several novels, of which the best is *Ethel Churchill* (1837). Various editions of her *Poetical Works* have been published since her death, one in 1880 with an introductory memoir by W. B. Scott. *The Life and Literary Remains of Letitia Elizabeth Landon,* by Laman Blanchard, appeared in 1841.

LANDOR, WALTER SAVAGE (1775–1864), English writer, eldest son of Walter Landor and his wife Elizabeth Savage, was born at Warwick on Jan. 30, 1775. He was sent to Rugby school, but was removed at the headmaster's request and studied privately with Mr. Langley, vicar of Ashbourne. In 1793 he entered Trinity College, Oxford. He adopted republican principles and in 1794 fired a gun at the windows of a Tory for whom he had an aversion. He was rusticated till the end of the term, and, although the authorities were willing to condone the offence, he refused to return. The affair led to a quarrel with his father in which Landor expressed his intention of leaving home for ever. He was, however, reconciled with his family through the efforts of his friend Dorothea Lyttelton. He entered no profession, but his father allowed him £150 a year, and he was free to live at home or not as he pleased.

In 1795 appeared in a small volume, divided into three books, *The Poems of Walter Savage Landor,* and, in pamphlet form of nineteen pages, an anonymous *Moral Epistle, respectfully dedicated to Earl Stanhope.* In 1798 appeared his first great work, *Gebir.* In 1800 he issued but suppressed *Poetry by the Author of "Gebir,"* with a postscript to that poem. The second edition of *Gebir* appeared in 1803, with a text corrected of grave errors and improved by magnificent additions. About the same time the whole poem was also published in a Latin form, which must always dispute the palm of precedence with the English version.

His father's death in 1805 put him in possession of an independent fortune. In 1808, Landor, then aged thirty-three, left England for Spain to serve against Napoleon at the head of a regiment supported at his sole expense. After some three months' campaigning came the affair of Cintra and its disasters; "his troop," in the words of his biographer, "dispersed or melted away, and he came back to England in as great a hurry as he had left it," but bringing with him the material in his memory for the sublimest poem published in our language between the last masterpiece of Milton and the first masterpiece of Shelley—one equally worthy to stand unchallenged beside either for poetic perfection as well as moral majesty—the lofty tragedy of *Count Julian,* which appeared in 1812, without the name of its author. The style of *Count Julian,* if somewhat deficient in dramatic ease and the fluency of natural dialogue, has such might and purity and majesty of speech as elsewhere we find only in Milton so long and so steadily sustained.

In May 1811 Landor had suddenly married Miss Julia Thuillier, with whose looks he had fallen in love at first sight in a ballroom at Bath; and in June they settled for a while at Llanthony Abbey in Monmouthshire, from whence he was worried in three years' time by the combined vexation of neighbours and tenants, lawyers and lords-lieutenant; not before much toil and money had been nobly wasted on attempts to improve the sterility of the land, to relieve the wretchedness and raise the condition of the peasantry. He left England for France at first, but after a brief residence at Tours took up his abode for three years at Como; "and three more wandering years he passed," says his biographer, "between Pisa and Pistoja, before he pitched his tent in Florence in 1821." In 1835 he had an unfortunate difference with his wife which ended in a complete separation.

In 1824 appeared the first series of his *Imaginary Conversations,* in 1826 "the second edition, corrected and enlarged"; a supplementary third volume was added in 1828; and in 1829 the second series was given to the world. Not until 1846 was a fresh instalment added, in the second volume of his collected and selected works. During the interval he had published his three other most famous and greatest books in prose: *The Citation and Examination of William Shakespeare* (1834), *Pericles and Aspasia* (1836), *The Pentameron* (1837). To the last of these was originally appended *The Pentalogia,* containing five of the very finest among his shorter studies in dramatic poetry. In 1847 he published his most important Latin work, *Poemata et inscriptiones,* comprising, with large additions, the main contents of two former volumes of idyllic, satiric, elegiac and lyric verse; and in the same golden year of his poetic life appeared the very crown and flower of its manifold labours, the *Hellenics of Walter Savage Landor,* enlarged and completed. Twelve years later this book was reissued, with additions of more or less value, with alterations generally to be regretted, and with omissions invariably to be deplored. In 1853 he put forth *The Last Fruit off an Old Tree,* containing fresh conversations, critical and controversial essays, miscellaneous epigrams, lyrics and occasional poems of various kind and merit, closing with *Five Scenes* on the martyrdom of Beatrice Cenci, unsurpassed even by their author himself for noble and heroic pathos, for subtle and genial, tragic and profound, ardent and compassionate insight into character, with consummate mastery of dramatic and spiritual truth. In 1856 he published *Antony and Octavius—Scenes for the Study,* twelve consecutive poems in dialogue which alone would suffice to place him high among the few great masters of historic drama.

In 1858 appeared a metrical miscellany bearing the title of *Dry Sticks Fagoted by W. S. Landor,* and containing among other things graver and lighter certain epigrammatic and satirical attacks which reinvolved him in the troubles of an action for libel; and in July of the same year he returned for the last six years of his life to Italy, which he had left for England in 1835. *W. Landor's Remarks . . .* 1859, of which a copy was owned by Swinburne, but of which no example in its issued state is now obtainable, was said by Swinburne to have been a complete vindication. He was advised to make over his property to his family, on whom he was now dependent. They appear to have refused to make him an allowance unless he returned to Fiesole. By the exertions of Robert Browning an allowance was secured. Browning settled him first at Siena and then at Florence, where in 1864 he was visited by Swinburne and received the dedication of *Atalanta in Calydon.* Embittered and distracted by domestic dissensions, if

brightened and relieved by the affection and veneration of friends and strangers, this final period of his troubled and splendid career came at last to a quiet end on Sept. 17, 1864. In the preceding year he had published a last volume of *Heroic Idyls, with Additional Poems, English and Latin,*—the better part of them well worthy to be indeed the "last fruit" of a genius which after a life of eighty-eight years had lost nothing of its majestic and pathetic power, its exquisite and exalted loveliness.

A complete list of Landor's writings, published or privately printed, in English, Latin and Italian, has been provided by T. J. Wise and S. Wheeler, 1919, and *The Complete Works,* edited by T. Earle Welby, began to be published in 1927. The one charge which can ever seriously be brought and maintained against his style is that of such occasional obscurity or difficulty as may arise from excessive strictness in condensation of phrase and expurgation of matter not always superfluous, and sometimes almost indispensable. His English prose and his Latin verse are perhaps more frequently and more gravely liable to this charge than either his English verse or his Latin prose. But from no former master of either tongue in prose or verse was ever the quality of real obscurity, of loose and nebulous incertitude, more utterly alien or more naturally remote. There is nothing of cloud or fog about the path on which he leads us; but we feel now and then the want of a bridge or a handrail; we have to leap from point to point of narrative or argument without the usual help of a connecting plank.

BIBLIOGRAPHY.—See *The Works and Life of Walter Savage Landor* (8 vols., 1876), the life being the work of John Forster, inaccurate and incomplete. Another edition of his works (1891–93), edited by C. G. Crump, is also incomplete. The first full and critical edition is that edited by T. Earle Welby. His *Letters and other Unpublished Writings* were edited by Stephen Wheeler (1897). There are many volumes of selections from his works, notably one (1882) for the "Golden Treasury" series, edited by Sidney Colvin, who also contributed the monograph on *Landor* (1881) in the "English Men of Letters" series. Some minor writings, including *Letters of a Canadian,* 1862, are lost; of his *Commentary on Memoirs of Chas. Jas. Fox* (1812; ed. by S. Wheeler, 1907), Lord Crewe's is the only copy known. A critical biography was prepared by T. Earle Welby. Robert Browning's *Some Records of Walter Savage Landor* was privately printed in 1919. Articles by Lord Houghton, Mrs. Lynn Linton, Sir Leslie Stephen (*Dictionary of National Biography*) and Arthur Symons (*The Romantic Movement in English Poetry*), 1909, should be consulted.

LANDOUR, a hill station and sanatorium in India, in Dehra Dun district of the United Provinces, adjoining Mussoorie. Pop. (1941) 1,206. Since 1827 it has been a station for European troops, with a school for their children.

LANDOWSKA, WANDA (1877–), Polish pianist and harpsichord player, was born in Warsaw in 1877. She studied music in her native place and in Berlin, and afterwards went to live in Paris, where she was recognized as the foremost interpreter of the early keyboard composers. She was the first pianist of front rank to realize the possibilities of the harpsichord in the concert-room, and her vivid rendering of the music of Bach and Händel on that instrument was a revelation to concert-goers. As the result of much research, she was able to reproduce the "graces" of the older composers with inimitable sprightliness and charm. From 1913–19 she was a professor at the *Hochschule,* Berlin, after which she again settled in Paris. Her books—*Bach et ses interprètes* (1906), *La musique ancienne* (1908, English edition, 1927), and *Les Allemands et la musique française en xviii. siècle* (1911)—form a valuable addition to musical literature.

LAND RECLAMATION, the improvement of land for agricultural or other uses, as by irrigating desert wastes, diking off the sea from submerged shorelands, draining marshes and filling lake or river front areas. The natural process of recovering land from the sea or estuaries is termed accretion.

Important reclamation undertakings are found on every continent. Notable among them are irrigation projects in India, Egypt and the United States, one of the largest of which is the Columbia Basin project in the state of Washington, which encompasses 1,200,000 ac. of arable land on which development was ready to proceed with the completion of Grand Coulee dam on the Columbia river in 1942; and the Zuider Zee project in the Netherlands, by which an area of 550,000 ac. was recovered from the sea through diking and draining. Land reclamation was known in biblical times, was practised by ancient dynasties in China, was the foundation of early Egyptian economy and was used by the cliff dwellers to grow corn in southwestern United States.

RECLAMATION IN THE UNITED STATES

The western third of the United States, except for the high mountains and a strip along the northern Pacific coast, is arid or semi-arid. More than 740,000,000 ac. lying west of the 100th meridian in 17 states receive an average rainfall of less than 20 in. annually, some as little as 3 in. In many areas of this arid region, only small proportions of the scant annual rainfall are received during the long, hot summers when crops might be produced.

Irrigation is essential to crop production in many parts of this region, and in many others it is most beneficial. Prehistoric Indians maintained their rude civilizations in the southwest through the practice of irrigation, and the Spanish missionaries who followed the Conquistadores into what is now Texas, New Mexico, Arizona and California diverted streams to water gardens around their missions. They taught their neophytes irrigation practices that were a part of the heritage of their Mediterranean culture. The economy of the area during Spanish and Mexican occupation, however, was founded on the grazing of cattle on the natural grasses of vast ranges. This is no longer true. Irrigation farming provides the foundation on which modern western development is based, and, of course, it has been required in order to sustain the growing population of the region.

The introduction of modern irrigation methods and practices was left to Anglo-Saxon immigrants, the Mormons, who on July 24, 1847, diverted water from City creek on the eastern shore of the Great Salt lake to irrigate a potato patch just reclaimed from the sagebrush. Some wonder that a people who had no racial experience in arid lands should have seen the possibilities of irrigation farming and so readily have seized them. Brigham Young, however, undoubtedly knew of the irrigated gardens that supported the people in the arid Holy Land. The polyglot Americans of 1847 had some experience with irrigation. Dutch settlers in Pennsylvania, according to the custom of their homeland, irrigated some of their fields, although the practice largely died out later because it was found to be unnecessary.

It is interesting to note in this connection that in 1943, in 29 humid states, nearly 8,000 farms had a total of more than 166,000 ac. that were irrigated. Most of these were in Florida, New York and New Jersey. A trend toward irrigation in humid areas that might have been expected to parallel the growth of intensive truck farming for concentrated markets was not revealed, however, by the census figures after 1900. Irrigation is undertaken in humid areas to provide insurance against freakish dry weather that might seriously damage a crop or reduce its value. It is different from the irrigation farming in the west that grew up after the Mormon settlement in Utah only in the degree of the dependence of the farmer on his irrigation water supply. In arid regions, without irrigation, there can be no cultivated agriculture and no close settlement of rural areas.

The arid western United States has high mountains that catch the moisture and hold it as snow, thus forming natural reservoirs for great rivers. Without the flow in streams arising in the mountains, and in large part fed by their snow, there would be insufficient water for such irrigation developments as have taken place in all the arid states. The estimates by the best informed United States government authorities are that there is in the western rivers sufficient water to provide irrigation supplies for about 42,000,000 ac. of land. Thus the arid third of the United States has an area potentially irrigable that is smaller than the state of Missouri. The development of the west through irrigation had progressed to the half-way mark near the close of the first century after the initial land was reclaimed in Utah.

During the period of westward migration that followed the Gold Rush to California, beginning in 1849, irrigation spread widely and rapidly over the west. By 1902, some 20,000 separate irrigation enterprises had been established and were serving farms having a total of about 9,500,000 ac. New institutions

had been devised in this period to meet the needs of the irrigators, which were not like those of farmers in the humid states. The youthful states and territories of the arid region had adopted laws under which their peoples could create and govern various types of quasi-public corporations, such as irrigation districts and water users associations, and had endowed these institutions with broad powers, including the powers to tax, to borrow money and to construct and operate engineering works, and including the power of eminent domain. These institutions were necessary to the task of developing irrigation supplies and distributing irrigation water. Individuals, cooperatives, private and public corporations all were operating in the field of the development of the water resources of the west for agricultural uses. The opportunities for new developments that could be made without major engineering works, however, were being exhausted. Nearly all the simple water diversions easily made by cutting a stream's bank with a fresno scraper had been made. Already some areas were in difficulties. Some water supplies had been overestimated, and more land had been plowed in various areas than could be irrigated continuously with the unregulated flow of the streams on which the new farms depended. Some financial failures had occurred and bonds had been defaulted. Private capital could not be obtained to make the additional improvements that were needed in the public interest.

The need for public funds to finance the more complex engineering works and to assume the greater risks involved in continuing the development by irrigation of the west led directly to the entrance of the federal government into the field through establishment in the department of the interior of the bureau of reclamation. This was done by the Federal Reclamation act of June 17, 1902, which laid down the policies subsequently applied in this work.

Principal policies which have governed the federal development of irrigation projects have included (a) a requirement that those who benefit should repay, without the assessment of interest charges, sums spent by the federal government on irrigation works; (b) settlement of the lands that have been improved in tracts only of sufficient size to support decently a single farm family; (c) continuing federal ownership of the major irrigation works; (d) the transfer of responsibility for operation and maintenance of the irrigation systems to local interests, usually to irrigation districts; (e) utilization of the water resources as widely and on as many fronts as possible, as, for example, in projects serving more than one use.

After the federal government entered this field, it dominated it. For more than two decades after the Federal Reclamation act was adopted, private-, cooperative-, and state-sponsored projects continued to be constructed, but after 1925, the federal government was responsible for most of the expansion of irrigated areas. Much of the expansion by others than the federal government between 1902 and 1925 was the result of the exploitation of ground water supplies through the drilling of wells by individuals or communities. In the gradual passing of the function of developing the water resources in the arid region of the United States from individuals to the national government, a pattern was followed which is as old as civilization. Since the time of Queen Semiramas (upon whose tomb in ancient Egypt was inscribed "I constrained the mighty river to flow according to my will and let its waters to fertilize lands that had before been barren and without inhabitants"), all nations have assumed as a governmental function the work of constructing the engineering works to irrigate their arid lands.

In 1943, about 21,000,000 ac. in the arid and semi-arid region of the United States were irrigated. The irrigated farms, of which there were more than 291,000, had a value of $3,467,116,512, or more than three times the $1,052,049,201 that had been invested in the irrigation works that had made them possible. These farms were served by 7,709 reservoirs with a combined capacity of approximately 75,000,000 ac.ft. of water.

Through works of the bureau of reclamation, nearly 4,000,000 ac. of land were served all or part of their water, and the federal government had built dams and created reservoirs providing for the storage of 61,600,000 ac.ft. of water. The public investment in these works was $870,000,000, more than 95% of which, under the terms of the law, was expected to be repaid to the government, although most of it was not to bear interest charges. The federal investment includes multiple purpose projects with important uses other than irrigation. For example, at structures included in this calculation are installed hydroelectric plants of the great capacity of 1,952,962 kilowatts.

Several persistent problems arose from the inexperience of the American people with irrigation and the undisciplined growth of western irrigated agriculture. Major among these was the knotty problem presented by conflicting doctrines with regard to water rights. The English common law doctrine of riparian rights was permitted to fasten itself on some of the unwary states in the arid region. The doctrine better adapted to arid regions, appropriation for beneficial use, with the force of the right determined by the priority in time of its establishment, was adopted to the exclusion of the other by most of the states which were organized late in the 19th and early in the 20th centuries. Several of the states continued to have the two doctrines existing side by side as a constant source of conflict and litigation.

Owing to the great economic importance of water in the arid region, it is extremely difficult to alter existing patterns of use.

About 1922, states found themselves in sharp conflict with other states over the waters of rivers common to several. Some of these conflicts were settled by interstate compacts, or treaties, but many remained for future resolution. These, for the most part, involved controversies over the division of the waters for use among geographical and political subdivisions of the river basins. In addition, the federal government asserted superior sovereignty and opened a new realm of conflict over water resources. An emergent source of conflict, in so far as western waters were concerned, was found in the uses to which the water might be put: for example, irrigation, generation of water power, flood control or navigation. Some of these conflicts had assumed political significance by 1934. They were reflected in a new outburst of the "state's rights" issues in succeeding campaigns.

The federal government, through the design and construction of multiple-purpose projects, made good progress in minimizing the danger inherent in the rivalries among economic interests in the water. Such projects as Boulder dam on the Colorado river and Grand Coulee dam on the Columbia river, through careful planning, made optimum use of the flow of great rivers for all the various uses.

Allegations that irrigated agricultures are transitory and therefore undesirable, seem to be disproved by experience in the United States, if such proof is, in fact, needed. Near El Paso on the Rio Grande are farms that have been cultivated under irrigation since Spanish days. In other parts of the world, irrigated lands have remained productive for much longer periods. Some reclaimed lands have reverted to their desert state, however, because of poor planning and failure of the irrigation systems which were meant to serve them; because of over-capitalization and bankruptcy; because of inherent lack of quality of the soil, or other deficiencies of the land itself; because of lack of water rights; because of seepage and waterlogging; because of failure of streams to maintain the flow erroneously expected of them; and because of exhaustion of ground water supplies which were pumped to irrigate them. Grave faults in the planning of projects and the failure of works of sufficient importance to threaten the continuity of the operation of irrigated farms have become rare. The extent of the problem represented by seepage and waterlogging is illustrated by the fact that nearly 900,000 ac. in irrigated farms were in need of drainage when the 1940 census was made. Many irrigation districts obtained financial relief through the refinancing of their obligations by the Reconstruction Finance corporation after 1933.

Exhaustion of ground water by 1933 was threatening some of the most highly developed areas in California, and during the next decade 60,000 ac. or more of orchards and other crop lands reverted to desert in that state. In Arizona, similar tragic ends

came to some projects along the Gila river. When the irrigation well goes dry, usually frantic efforts are made to discover and to develop surface water supplies to succour the farm or the community involved. Sometimes this leads to developments that otherwise would be considered uneconomic. Despite these facts, however, little progress had been made by 1943 toward the application in the arid states of legal devices such as rural zoning, to control and limit the use of ground water, and thus to prevent overdevelopment of ground water supplies for irrigation purposes. In all, 2,570,000 ac., about three-fifths of which were in California, were being irrigated from wells in 1943. In New Mexico, Utah, Nevada and east of the Cascades in Oregon, the states control the ground water in the same manner as the surface water, but elsewhere programs were non-existent or inadequate. In these four states, filings must be made on ground water with the state engineers.

The existence of problems connected with reclamation, however, merely served to emphasize the importance to the vast arid region of the conservation and utilization of its water resources. With little more than 5% of the area potentially useful for irrigation farming, the agricultural base of the region is at best small. The climate in many areas provides an extremely long growing season, however, and fine crops consistently can be grown by irrigation, which provides a control of the application of moisture to the plant that under ideal conditions can give optimum results both in quantity and quality of the product. These advantages in part make up for the sharp limit on the area that can be cropped. Los Angeles county, California, normally leads the counties of the United States in the value of the products of the lands that it farms and averages 6½ times the national per acre average value of farm production. As a whole, however, the arid region does not produce foodstuffs sufficient to meet the requirements of its population.

The bureau of reclamation by 1943 had constructed, or had under construction, more than 70 projects, large and small. Outstanding among these were: The Salt River project in Arizona; the Central Valley project and the All-American Canal project in California; the Boulder Dam project and the Parker Dam project on the Colorado river, the former between Arizona and Nevada and the latter between Arizona and California; the Deschutes project in Oregon; the Klamath project in Oregon and California; the Owyhee project in Oregon and Idaho; the Columbia Basin project (Grand Coulee dam) and the Yakima project in Washington; the Boise project and the Minidoka project in Idaho; the Newlands project in Nevada; the Provo River project in Utah; the Carlsbad project and the Tucumcari project in New Mexico; the Rio Grande project in New Mexico and Texas; the Lugert-Altus project in Oklahoma; the Grand Valley project and the Colorado-Big Thompson project in Colorado; the Kendrick project, the Shoshone project and the Riverton project in Wyoming; the North Platte project in Wyoming and Nebraska; the Belle Fourche project in Wyoming and South Dakota; the Sun River project, the Huntley project and the Milk River project in Montana; and the Yellowstone project in Montana and North Dakota.

These projects are of varied types. They include among them some of the most intricate and costly engineering enterprises undertaken by the federal government. Three of the dams that are features of these projects are outstanding in the world. These are Boulder, Grand Coulee and Shasta dams. Boulder dam is on the Colorado river about 25 mi. from Las Vegas, Nevada. It is 726.4 ft. high from foundation to crest. It created the world's largest reservoir, Lake Mead. Grand Coulee dam is on the Columbia river about 94 mi. north and west of Spokane, Washington, at a point immediately below the glacial age stream bed that is known as the Grand Coulee, from which the dam took its name. The concrete placed in the dam itself totaled 9,926,005 cu.yd., and in the dam and appurtenant structures (including the power houses and foundation for the pumping plant), 10,680,586 cu.yd. Shasta dam is on the Sacramento river about 9 mi. N. of Redding, California. Each of these dams has a large power plant, the largest at Grand Coulee, having places for 18 generators, each of a capacity of 108,000 kilowatts. The power from these and other reclamation dams aids not only by spreading the benefits of the public works more widely, but also, through sharing the repayment of costs, by reducing the charges for irrigation water.

The power obtained from Boulder dam and Grand Coulee dam is extremely low in cost, the firm power rate at Boulder being 1.190 mills per kilowatt hour in 1943.

One of the most complex and interesting projects is the Central Valley project in California, of which Shasta dam is the principal feature. This project covers the major parts of the Sacramento and San Joaquin valleys, an area 450 mi. long and 50 mi. wide, which forms the so-called Central valley. The falling water table in the southern section of the San Joaquin valley was by 1930 threatening 500,000 ac. of highly developed land that depended upon pumped water. Irrigators were having to pay more and more for pumping water as the depths of wells increased. Some groves and orchards had been abandoned and had died.

The Central valley lies between the Sierra and the Coast range and extends from the Tehachapi mountains in the south to Mount Shasta. The rainfall is much heavier in the northern drainage area, but most of the farm land lies in the south. The problem was to transfer the necessary part of the excess water of the northern section from the Sacramento basin to the San Joaquin basin, where there was not enough irrigation water. The plan was to build Shasta dam to regulate the Sacramento river, and Friant dam to regulate the San Joaquin river and divert part of its flow north and south of Fresno to supplement the overtaxed ground water supplies of the "orange belt"; to construct a channel to carry the excess of waters from the Sacramento river, impounded and regulated by Shasta dam, across the delta to the San Joaquin basin, and a pumping system to carry this water upstream to Mendota, a pool below Friant dam in the San Joaquin river channel, where this excess Sacramento river water would be available to substitute for the water taken out of the San Joaquin river at Friant dam for use elsewhere. The plan also included building of the Contra Costa canal to serve with irrigation, domestic and industrial water the south side of Suisun bay, which had been subject to salt water encroachment from San Francisco bay, of which it is an arm; and power plants at Shasta dam and at Keswick dam (which serves also to reregulate the Sacramento river) a few miles downstream from Shasta dam; and transmission lines. In addition to irrigation, this project serves to control floods; to improve navigation; to generate and distribute hydroelectric power; to repel salt water which encroaches at periods of low flow upon the channels from which 400,000 ac. of rich delta land is irrigated; and to provide a supply of fresh drinking water and industrial water to such cities as Antioch, Pittsburg and Martinez.

The Columbia Basin project, of which Grand Coulee dam is the major structure, was expected upon completion to transform an area as large as Delaware from a waste into a highly productive agricultural community. The power generated at the dam was expected to provide not only the energy needed to pump water on to these lands, but to provide in addition the means for a great industrialization program in the Pacific northwest. In part, this expectation was already realized in 1943, for the power from Grand Coulee dam was being utilized in shipbuilding and in light metals and other war plants situated in many parts of Washington and in the Portland area of Oregon. The settlement and improvement of the Columbia basin lands was planned as a means of meeting requirements for new opportunities in the adjustment period following World War II. It was estimated that when fully developed this project area would support 350,000 people, where prior to the development only a few thousand people were able to make their homes. (W. E. WA.)

LAND REGISTRATION: *see* LAND TITLES.

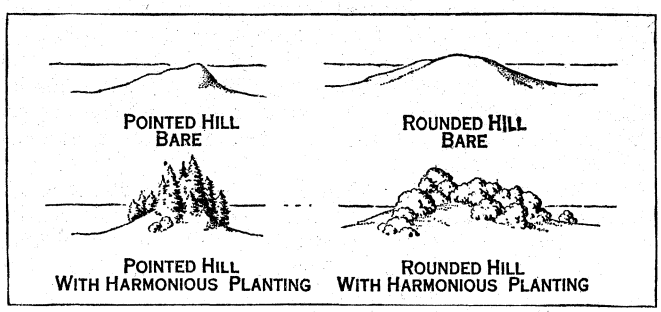
LANDSBERG AM LECH, a town in the *Land* of Bavaria, Germany, on the river Lech, 38 mi. by rail W. by S. of Munich. Pop. (1939) 10,125. Adolf Hitler was imprisoned here for several months after the failure of his Beer Hall Putsch on Nov. 9, 1923. Here he dictated part of *Mein Kampf* to Rudolf

Hess. Brewing, tanning and the manufacture of agricultural machinery are among the principal industries.

LANDSBERG-AN-DER-WARTHE, a town in the Prussian province of Brandenburg, Germany, at the confluence of the Warthe and the Kladow, 80 mi. E.N.E. of Berlin by rail. Pop. (1939) 47,447. It obtained civic privileges in 1257. It has important engine and boiler works and iron foundries; there are also manufactures of tobacco, jute, wire ropes, oils, sugar, carriages, spirits and leather. An active trade is carried on in wood, cattle and the produce of the surrounding country.

LANDSBERG BEI HALLE, a town in the Prussian province of Saxony, Germany, on the Strengbach, on the railway from Berlin to Weissenfels. Pop. (1933) 2,070. It was the capital of a small margraviate of this name, ruled in the 12th century by a certain Dietrich, who built the town. Later it belonged to Meissen and to Saxony, passing to Prussia in 1814. Its industries include quarrying and malting, and the manufacture of sugar and machinery.

LANDSCAPE ARCHITECTURE. "Landscape Architecture is primarily a fine art, and as such its most important function is to create and preserve beauty in the surroundings of human habitations and in the broader natural scenery of the country;



FROM HUBBARD AND KIMBALL, "LANDSCAPE DESIGN" (MACMILLAN)

DIAGRAM OF GROUND AND PLANTING SHOWING RELATION OF PLANT-FORM TO GROUND-FORM

but it is also concerned with promoting the comfort, convenience and health of urban populations." This famous definition by the late President Eliot of Harvard expresses the modern scope of the art and profession—the beautiful and efficient adaptation of land to human use—as distinguished from the earlier field of *landscape gardening,* which concerned itself largely with ornamental designing and planting of private estates and gardens, deriving its title from the "landscape school" of the 18th century. In England, where the term *landscape architecture* is at present little used, the term *landscape gardening* persists, partly because much institutional and public work included in the practice of American landscape architects is done there by architects.

In France the historic term is *l'art des jardins,* and the professional designer is called *architecte paysagiste.* In Germany *Landschaftsgärtnerei* corresponds in origin and use to the English *landscape gardening,* but the accepted term is *Gartenkunst,* although recently *Gartenarchitektur* has been applied to the formal work of German designers.

Theory.—A theory of landscape design, as of the other fine arts must be based on a subjective definition of beauty, which ultimately attributes to the individual the formation of ideals, taste and style in landscape materials, and which recognizes no standards of landscape beauty except as the collective expression of individual ideals under given conditions of environment and culture.

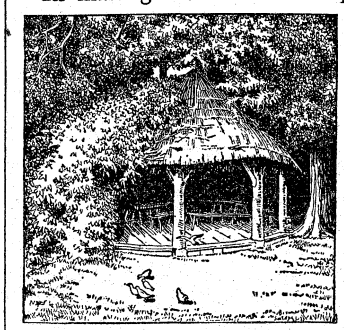
The review of historic styles will show a series of humanized treatments of landscape, most of which have in common the quality of man's dominance over nature. The landscape style of the Romantic period in Europe and of 19th century America suggests the other mode of design, in which man tries to emphasize certain natural characters, either by enhancement of existing landscape or by new creation, producing a result in which art appears only in the perfect unity of the natural scene. Taste in landscape compositions varies widely, but is tending away from the historic violent condemnation of the formal style by partisans of the natural and vice versa, to the more rational viewpoint which recognizes that each has its appropriate use and each its claim to appreciation.

In both the humanized and naturalistic modes of design, the great artist in landscape materials attempts to create a pervading landscape effect or sequence of effects, be it gaiety, repose, mystery or grandeur. In the 18th century, discussion of landscape appreciation distinguished especially "the beautiful" (or calm and smooth) and "the picturesque" (or striking and sharply contrasted).

In striving to kindle emotion, landscape architecture resembles the sister arts, architecture and sculpture, with which there exists a close relation in actual practice of design. But whereas the architect deals in rigid materials of brick and stone which can be constructed into a finished building, the landscape architect deals in living and growing materials, some of which may scarcely reach full maturity and beauty during his lifetime. Buildings, architectural details and statuary all play an important part in landscape design, but the special field of landscape architecture in which no other artist is trained to work remains the adaptation of ground forms to human purposes and the composition with these of trees and shrubs and herbaceous plants of multifarious shapes, textures and colours.

Although three-dimensional composition in landscape materials differs from two-dimensional landscape painting, because a garden or park design contains a *series* of pictorial compositions,—in which series there is often a super-compositional relation,—nevertheless in each of these pictures we find the familiar basic principles of unity, of repetition, sequence and balance, of harmony and contrast. While some part of a landscape design may be intended mainly to form a picture seen from a given point within the visual angle, there must be more often a unity of larger landscape composition which it is impossible to see at one time and which must be appreciated by sequential experiences. To give examples, in the first case we may be looking through an arched loggia (as at the Generalife in Granada) along a strongly marked axis to a vista point beyond, and this whole enframed picture with its symmetrical balance and its simple, formal disposition of elements, we can visually apprehend. In the other case, perhaps a large country estate in the English park style or an Italian Renaissance garden, the three-dimensional unity must be reconstructed in the mind from memories of a number of different views, related by consistency of scale, of style, of landscape character and of emotional effect. This larger unity may be expressed in formal or, often less obviously, in naturalistic terms, but its presence is essential to any successful landscape design.

In making his outdoor compositions the landscape architect, unlike the landscape painter, has to modify the position and characteristics of masses to produce pleasing compositional relations both in the various views which the observer gets as he moves about and in the resulting idea of the constructed whole. Also the shape, colour and texture of the objects used in composition are constantly modified by effects of light and shade, of atmosphere and aerial perspective; and these transitory effects often play a dominant part in the composition.



FROM HUBBARD AND KIMBALL, "LANDSCAPE DESIGN" (MACMILLAN)

AN INFORMAL THATCHED SHELTER

As elements of landscape design, the natural forms of ground, rock, etc., offer infinite variety to the designer. In large scale work he deals with hills which may be welded into the composition by harmonious or contrasted planting; with valleys which may be displayed by effective choice of viewpoints; and with bodies of water, which, when all boundaries are visible, constitute unified and dominating elements in landscape compositions, and when seen only enframed by a series of promontories, give incomparable effects of extent and mystery.

Lakes and ponds, islands, shores and beaches, streams and

stream banks, may all be included in large designs, or some part of one may form a striking feature in a smaller composition. In naturalistic gardens, often a brook with little waterfalls may be encompassed, the water falling over rocks laid in natural forms.

Rocks as boulders and ledges are often important elements in design, their colour and texture contrasting with the green of trees or shrubs or rock-garden plants, and their ruggedness serving as the motive of larger picturesque scenery.

Even in small designs the minor modelling of ground surface must be handled with artistry, and its effect in the composition studied in relation to planting and structures. Earth banks and slopes necessitated by construction of roads and buildings can be designed with smooth flow of surface which moulds them imperceptibly into the surrounding natural forms.

Plants as elements in composition are subject to seasonal variation, and the time factor in planting design makes the handling of trees, shrubs and herbaceous plants the most complicated problem of the designer. The intricate form of deciduous trees covered with foliage or bare in winter, the more constant shape of evergreens, the texture of leaf and bark, the colour of foliage and flower in garden border or shrubbery, are almost impossible to classify exactly; but certain typical sizes, shapes, colours and textures can be designated, which with time and season can be expected to fulfil the designer's schemes. A large body of garden literature has accumulated in which may be found lists of plants classified in every conceivable way for practical use in design.

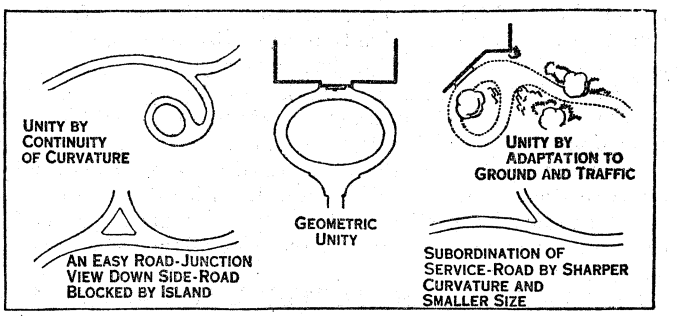
Not only must the compositional aspects of plants be studied, but their oecology, their suitability to the soil and situation. Also the expected amount of care and maintenance may preclude certain choices, as well as immediate questions of cost in selection.

Plantations fall naturally into several classes: boundary or enclosing plantations, including informal shrubberies, formal hedges and garden edgings; specimen trees and shrubs, selected for their individuality; tree and shrub groups composed within themselves and with the larger design; herbaceous beds and borders, either as parts of enclosed gardens or as units in bays of boundary plantings; and ground cover, whether turf on lawns, carpet bedding on parterres or plants as naturalistic surface texture.

Plantations may be considered primarily in relation to the other main elements of composition: to topography and to water features; to architectural structures, whether buildings or garden details; and to roads and paths. The composition of plants with buildings is one of the most common problems; and here planting may serve as enframement, as a transition between ground and structure or as decoration of wall or window.

The design of architectural structures in relation to landscape may involve either their subordination to natural character or the recognition of their dominance, according, for instance, to whether a building is an incident in the grounds, as in a park, or the grounds a setting for the building, as in a small estate. While form relations of buildings to their landscape surroundings are the most obvious, considerations of colour and texture are equally important; for example, compare a successful composition of a long, low stone house, with green slate roof, fitted to a rocky evergreen-clad hillside, with an unsuccessful combination of a high thin building of bright red brick staring out from the same situation. Similar considerations govern the appropriate use of shelters and pavilions in landscape settings, of terraces with their accompanying walls and parapets, of steps in formal or naturalistic compositions, of walls and fences of various materials and decorative qualities, of gates and gateways, and of the many garden details such as seats or sun-dials. Statuary may be incidental but it more usually marks a dominant point in the design; and fountains, pools and basins, and other architectural and sculptural water features are apt to occupy key positions because of their striking individuality.

Roads and paths are differently handled by the designer according as they form part of a humanized or a naturalistic composition. In formal landscape design, roads and paths are often important elements in the composition—as great approach avenues or as brick-paved walks among flower beds. In natural or naturalistic landscape, however, roads and paths are usually conveniences to be tolerated only as they reveal the beauties to be seen along their routes. The selection of their surface and the design of their form would be intended to make them as little conspicuous as possible. Road design in general must be carefully adjusted to topography, and sequence of curve carefully studied in relation to traffic. Views of and from roads and paths are important factors in the enjoyment of landscape designs. In



FROM HUBBARD AND KIMBALL, "LANDSCAPE DESIGN" (MACMILLAN)

PLANS OF CURVING ROADS FOR THE COUNTRY ESTATE

informal landscape there is usually to be secured a series of pictures along the way itself and between groups of plantings off across the country-side. In formal designs, roads and paths may mark important axes, constituting the basic pattern of formal park or garden; and, in any case, serving inevitably as boundaries between other units, their proportions must be carefully studied, as well as their colour and texture, in relation to other elements in the whole composition.

Practice.—In the actual designing of works of landscape architecture, purely aesthetic consideration such as those just considered are constantly being modified by economic aspects inherent in the proposed use of the land. These economic aspects are just as much part of the design as the aesthetic; and on their recognition and skilful embodiment depends the success of the result as a physical organism to be used by man. In some problems—such as the small house on a city lot or a low-cost housing development—economic considerations are paramount and leave to the designer little choice of the aesthetic form in which he shall express them; in others—such as a great formal garden for a wealthy client—economic limitations are slight, and the designer can build his work of art more out of his imagination.

Having composed the aesthetic and economic elements required by the problem, and recorded his scheme either by drawings or, less often, by verbal explanations, the designer must proceed to put the design into execution. If he is experienced, most of the possible difficulties of construction will have presented themselves as limiting economic factors and will have been provided for in the design. Design and construction, in landscape architecture even more than in architecture, cannot be divorced, since on the knowledge of what can actually be built and grown depends the designer's ability to produce real rather than theoretical solutions of the problems offered.

The relations of landscape architect to clients, contractors and collaborating practitioners are generally established in America, as well as the sequence of work on a given job, following from collection of topographic data and making of preliminary sketches, through representation of design in show plans and construction drawings, to superintendence on the ground of construction and maintenance.

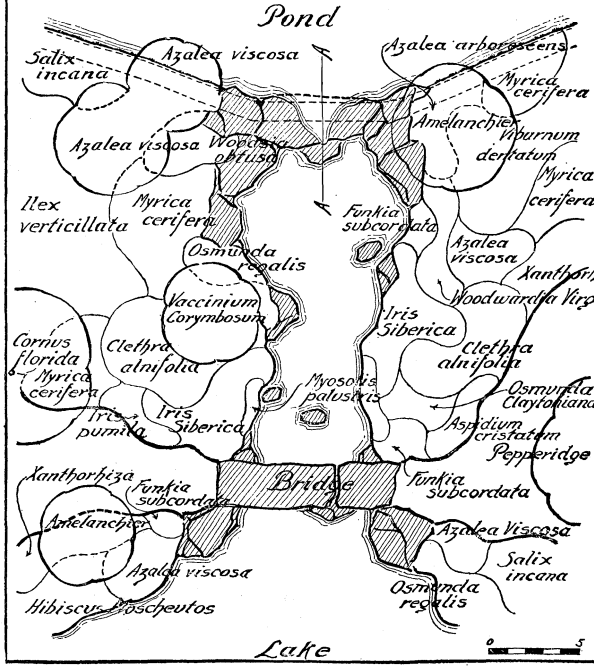
The types of problems now within the field of landscape architecture in various parts of the world, developing from the smaller range of historic examples and from multifarious modern needs, comprise private estates, urban and rural; country clubs, golf courses, hotels and camps; the grounds of hospitals and similar institutions, of universities, colleges and schools; the grounds of manufacturing plants and commercial establishments; railroad grounds; the grounds of national, State and civic buildings; expositions; fair grounds and amusement parks; open-air concert and tea gardens, beer gardens and outdoor restaurants; zoological parks, botanical gardens and arboretums; cemeteries; the whole range of outdoor recreation facilities—from great scenic or forest

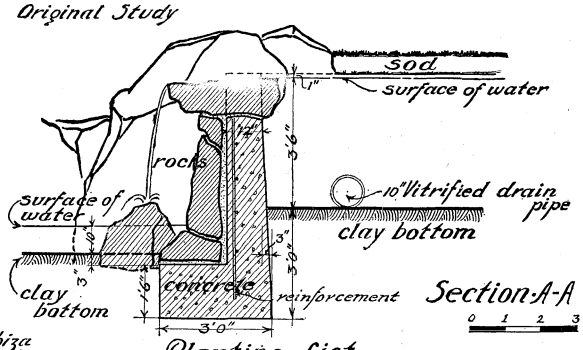
DRAWN FOR THE ENCYCLOPÆDIA BRITANNICA BY HELEN DAMROSCH TEE-VAN

DECIDUOUS TREES

Deciduous trees in landscape, while running in summer all the way from the delicate green of the weeping willow to the rich bronze green of the purple beech, nevertheless have an even greater variety in autumnal colour, which must be considered especially in the larger landscape design. In the mass of their foliage or the tracery of their bare branches, trees reveal their character and expression, which, equally for the evergreen or the deciduous tree, may carry associations—romantic or classic, climatic or geographic—making it appropriate or inappropriate in the composition

Original Study





Planting List

Pepperidge existing	Iris Siberica	
Cornus florida	Iris pumila	
Amelanchier	Funkia subcordata	
Vaccinium corymbosum	Myosotis palustris	
Viburnum dentatum	Osmunda regalis	
Ilex verticillata	Osmunda Claytoniana	Ferns
Azalea viscosa	Woodwardia Virginica	Ferns
Azalea arborescens	Aspidium cristatum	Ferns
Myrica cerifera	Woodsia obtusa	Ferns
Clethra alnifolia	Aquilegia	Among shrubs
Salix incana	Campanula carpatica	Among shrubs
Hibiscus Moscheutos	Aster alpinus	Among shrubs
Xanthorhiza	Hemerocallis flava	Among shrubs

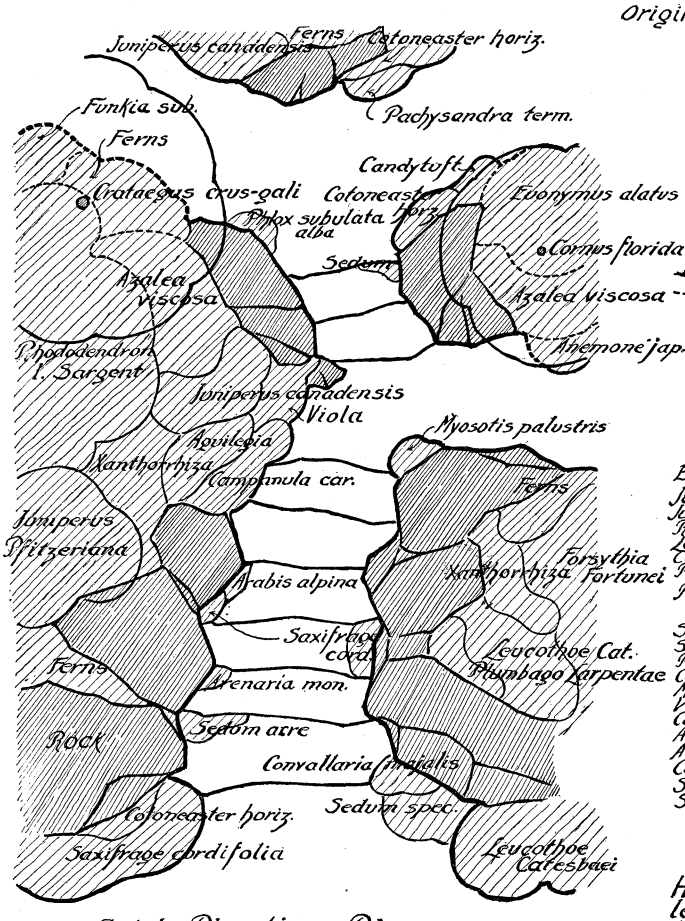
Manmade Naturalistic Composition through manipulation of natural materials and the transplanting of fully developed trees and plants collected in the neighbourhood.

A WATERFALL

On the estate of Myron C. Taylor, Locust Valley, Long Island.
Ferruccio Vitale and Alfred Geiffert, Jr., landscape architects

LANDSCAPE ARCHITECTURE

Original Study



Guide Planting Plan

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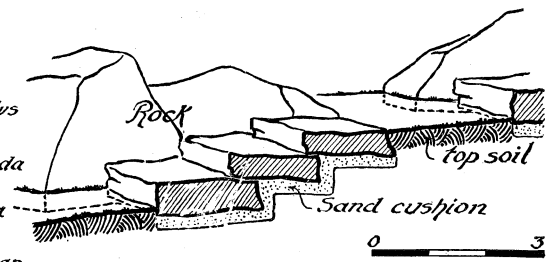


Typical Section through steps

Planting List

Evergreen	Deciduous
Juniperus Pfitzeriana	Crataegus crus-gali
Juniperus canadensis	Cornus florida
Rhododendron I. Sargent	Euonymus alatus
Leucothoe Catesbaei	Forsythia Fortunei
Cotoneaster horizontalis	Aza'ea viscosa
Pachysandra terminalis	Xanthorrhiza

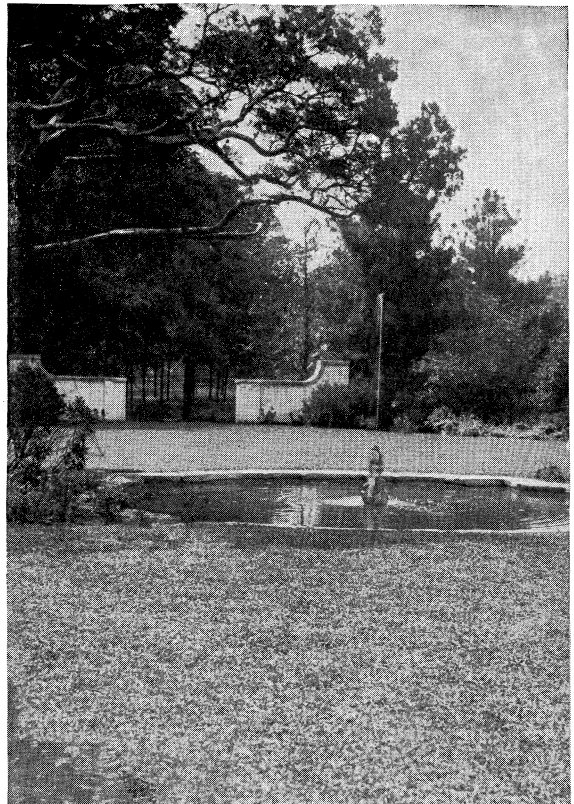
Plants used in cracks, along sides of steps and among rocks

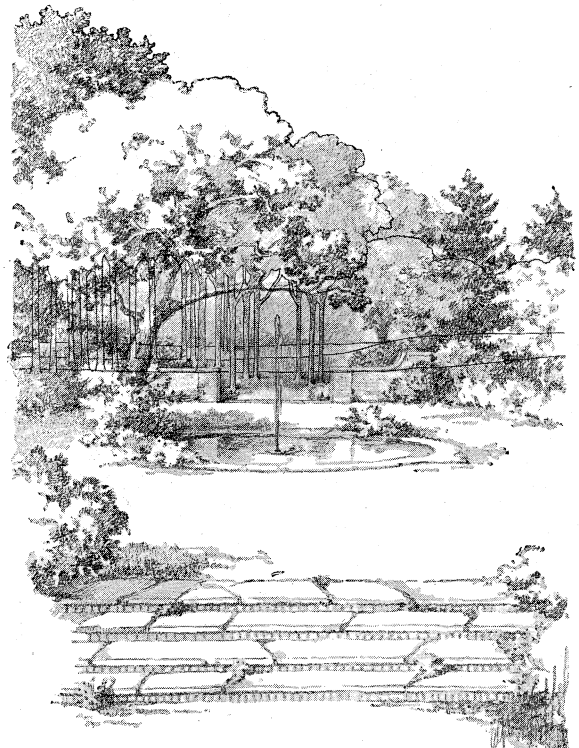
Sedum acre	Plumbago Larpentae	
Sedum Sieboldei	Aquilegia	
Phlox subulata alba	Anemone japonica	
Candytuft	Thymus Serphyllum	
Myosotis palustris	Veronica repens	
Viola	Funkia subcordata	
Campanula carpatica	Dicksonia punctilobula	Ferns
Arabis alpina	Aspidium acrostichoides	Ferns
Arenaria montana	Asplenium ebeneum	Ferns
Convallaria majolis	Woodsia obtusa	Ferns
Saxifrage cordifolia	Polypodium vulgare	Ferns
Sedum spectabile	Aubrietia Lavender	

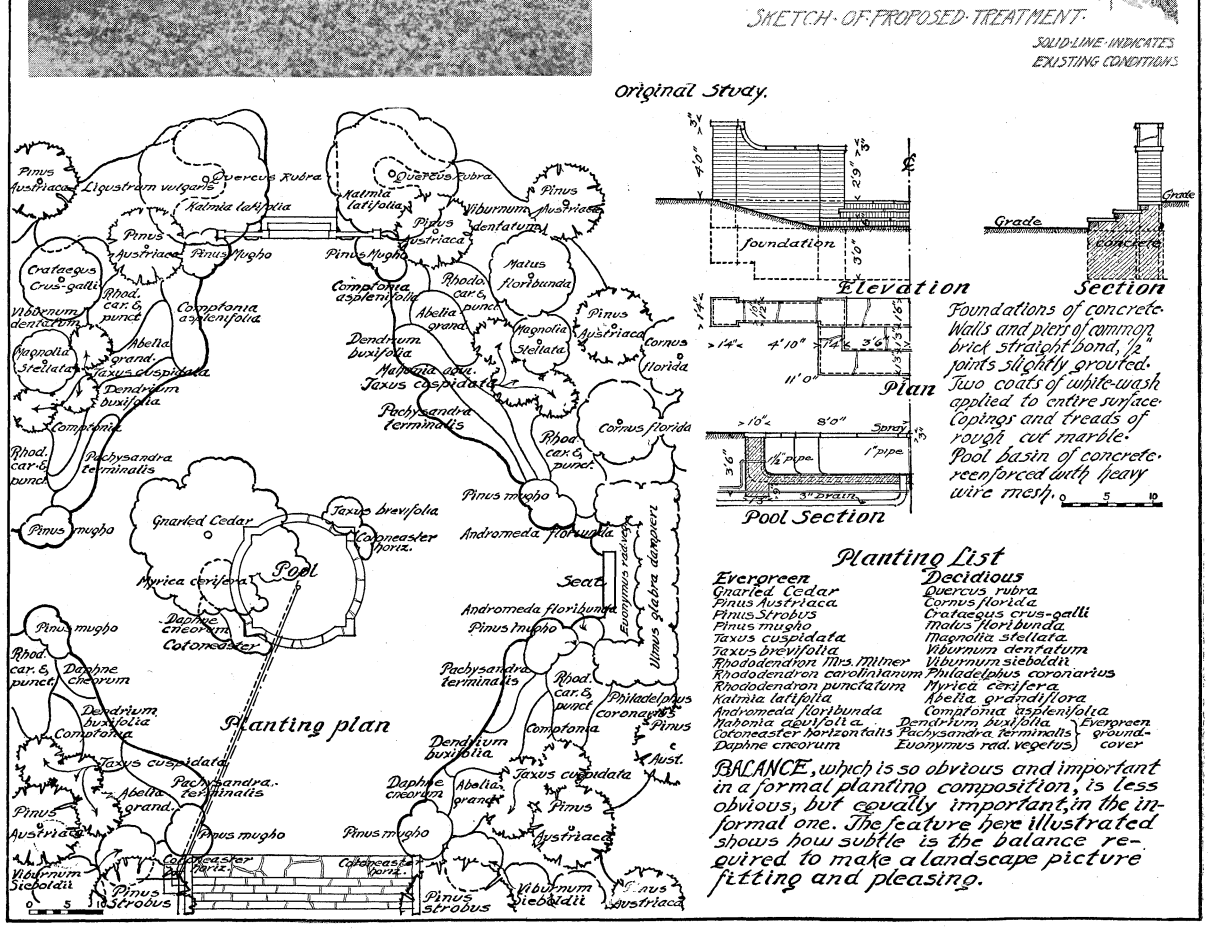
Harmony of tone and texture. The leaf and rock forms selected for their similarity in mass and striation.

STEPS IN A NATURALISTIC GARDEN

In the garden of Francis E. Drury, Cleveland. Ferruccio Vitale and Alfred Geiffert, Jr., landscape architects



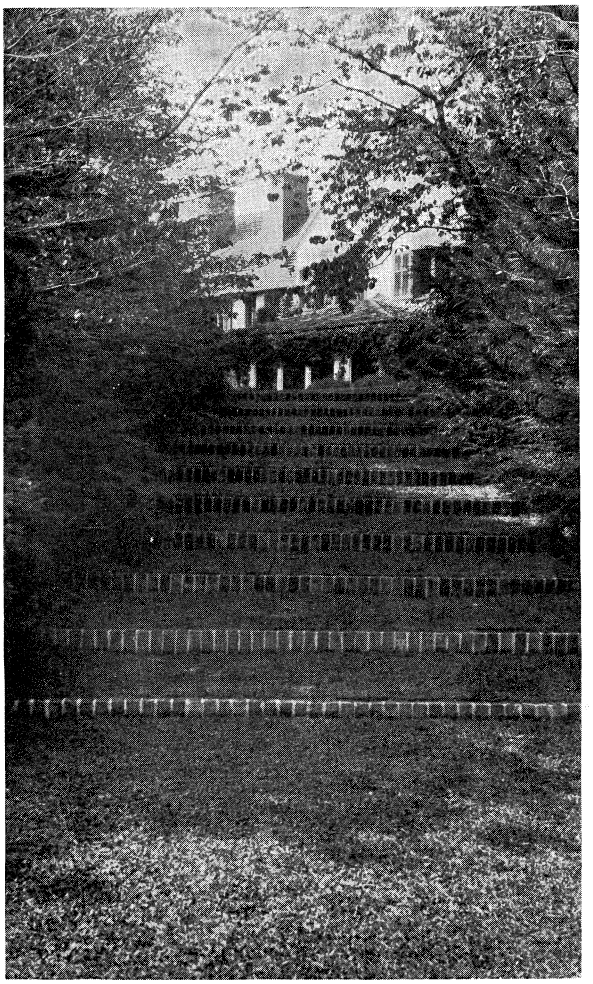


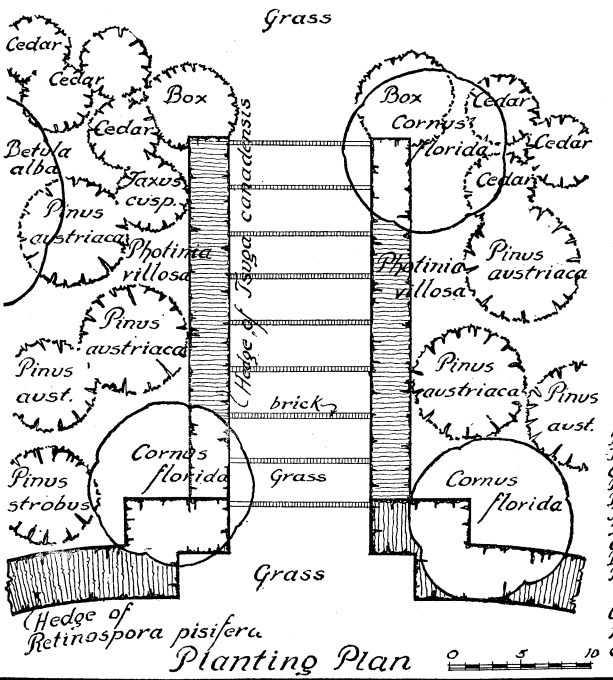


AN EVERGREEN GARDEN

On the estate of Myron C. Taylor, Locust Valley, Long Island.
Ferruccio Vitale and Alfred Geiffert, Jr., landscape architects

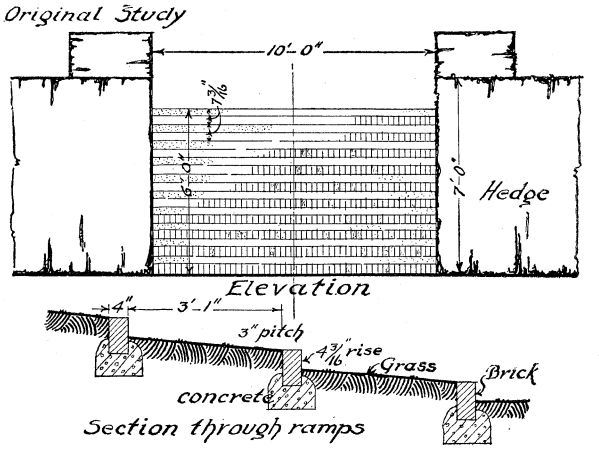
LANDSCAPE ARCHITECTURE





Planting Plan

Original Study



Section through ramps

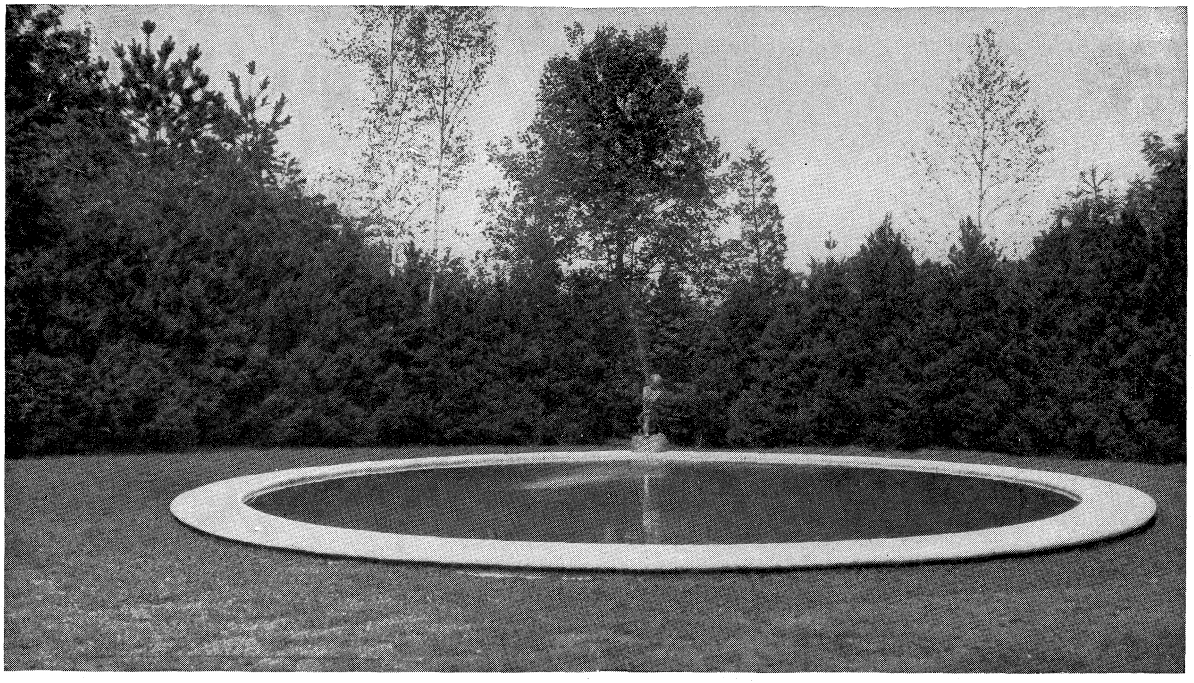
Planting List

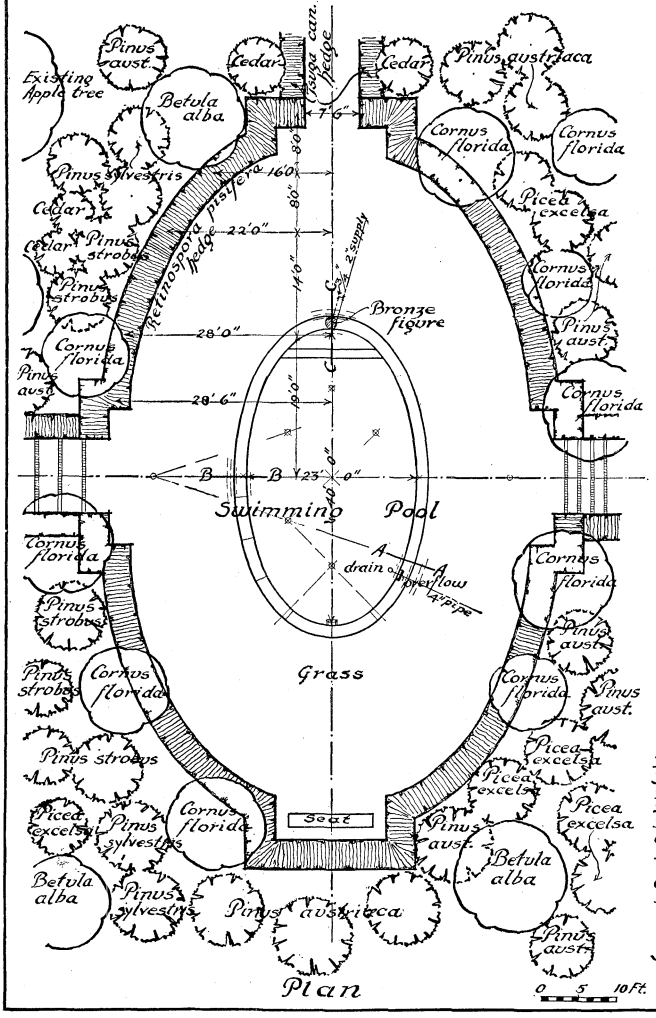
Retinospora pisifera	Hedge	
Tsuga canadensis	Hedge	
Cedar		Evergreen
Pinus austriaca		Evergreen
Pinus strobus		Evergreen
Taxus cuspidata		Evergreen
Box		Evergreen
Cornus florida		Deciduous
Betula alba		Deciduous
Photinia villosa		Deciduous

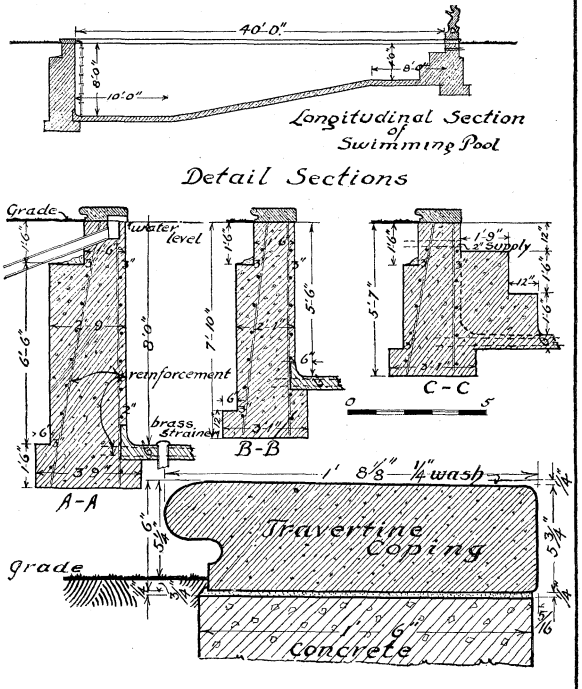
Use of brick and turf ramps, the brick repeating the brick trim of the house and evident only within the view of the house.

GRASS RAMPS LEADING TO A SWIMMING POOL

On the grounds of Bronson Winthrop, E. Norwich, Long Island.
Ferruccio Vitale and Alfred Geiffert, Jr., landscape architects







Planting List

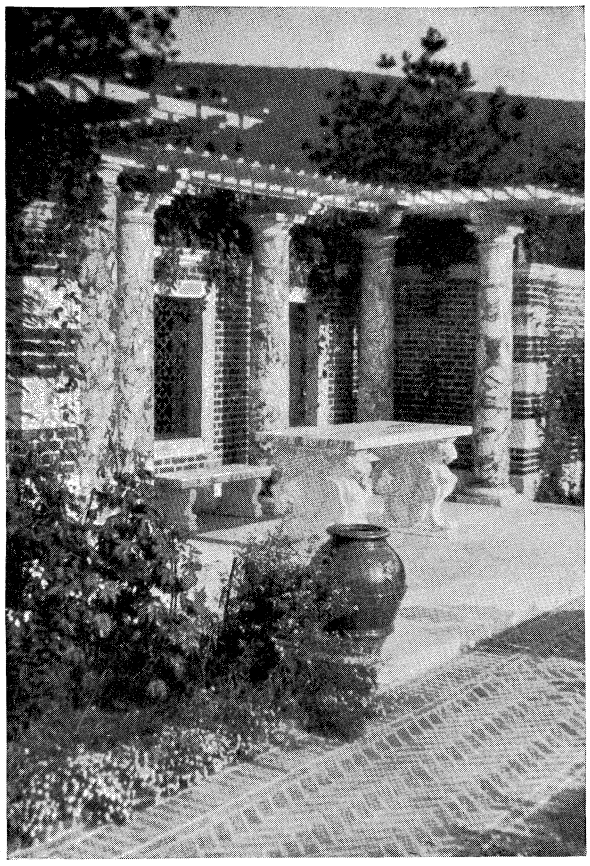
Retinospora pisifera	Hedges	Evergreen
Tsuga canadensis	Hedges	Evergreen
Pinus austriaca		Evergreen
Pinus strobus		Evergreen
Pinus sylvestris		Evergreen
Cedar		Evergreen
Picea excelsa		Evergreen
Cornus florida		Deciduous
Betula alba		Deciduous

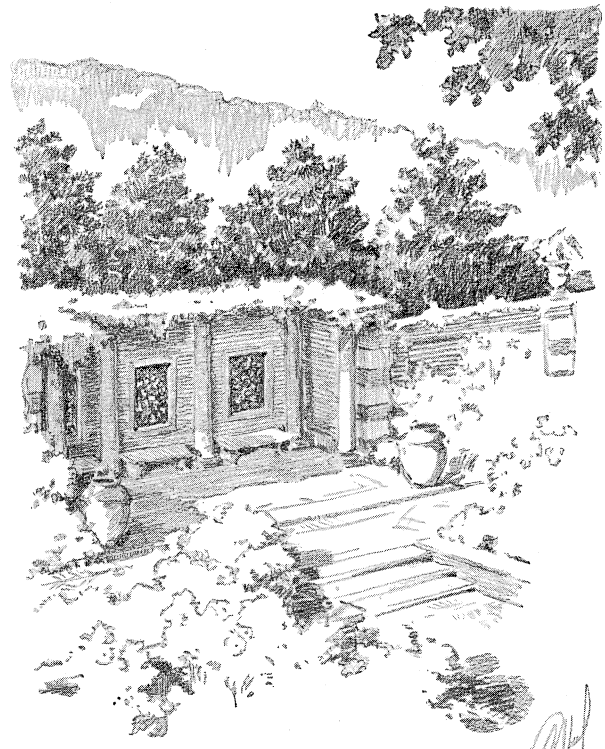
Seclusion enhancing the uniformity of mass and line.

SWIMMING-POOL

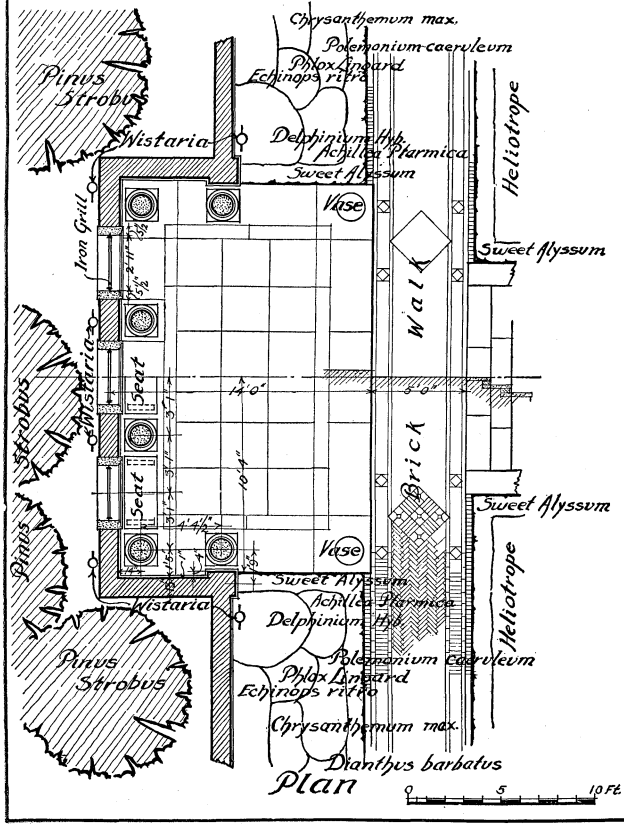
On the grounds of Bronson Winthrop, E. Norwich, L.I. Ferruccio Vitale and Alfred Geiffert, Jr., landscape architects

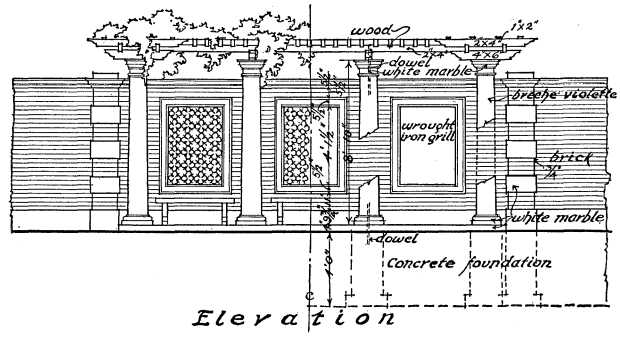
LANDSCAPE ARCHITECTURE





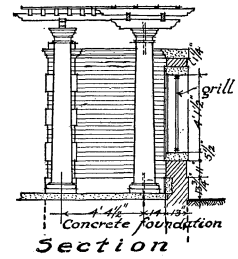
Original Study





Planting List.

Pinus Strobus	Evergreen tree
Delphinium hybrid	Perennials
Achillea Ptarmica	
Echinops ritro	
Chrysanthemum maximum	
Polemonium caeruleum	
Phlox Miss Lingard	
Dianthus barbatus	
Sweet Alyssum	Annuals
Heliotrope	
Wistaria	Vine



Subtle contrast of light and shade, leaf and metal tracery, massiveness of mountain and delicacy of architecture.

GARDEN DETAIL

In the garden of William H. Walker, at Great Barrington, Mass.
Ferruccio Vitale and Alfred Geiffert, Jr., landscape architects

reservations and national or State parks through naturalistic or formal urban parks, large and small, to the provision for active sports in playgrounds, athletic fields, "sport parks" and grounds for the special sports, such as flying, racing, polo, bowling, tennis or winter sports; and also to recreational waterfronts on sea, lake or river; in addition, land subdivision and larger problems of city, regional and even State and national planning, including systems of parks and parkways, of motor highways for pleasure and commercial traffic, and "zoning" of land for appropriate use.

In many of these larger problems the landscape architect collaborates with other professional practitioners,—engineers, architects, economists, sociologists or lawyers. In domestic problems the collaboration of architect and landscape architect is common in America, although in some of the best formal work Charles A. Platt has combined these functions; but in England and France architect, contractor and nurseryman frequently complete the estate without benefit of landscape architect.

Taking a general retrospective view, the problems which have most influenced the growth of the art and profession of landscape architecture are: the garden, because it offers the oldest and most numerous examples; the park, because in it developed the conscious adaptation of landscape for public enjoyment; the exposition, because from the Chicago World's Fair came a revival of the collaboration of artists; and in the past two decades, the land subdivision, because it has revealed fruitful opportunities in city building.

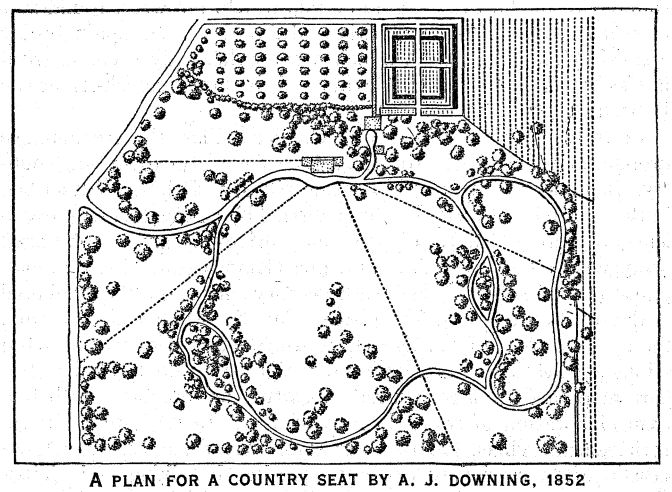
Nowhere is the profession of landscape architecture developed so highly as in the United States. Although in Germany two societies have been formed in this field, the Deutsche Gesellschaft für Gartenkunst and the Verband deutscher Gartenarchitekten, and in Japan a professional landscape architectural society published a magazine from 1925 to 1927 edited by Prof. Uyehara of Tokyo, nevertheless in England and France there have been no similar national organizations, while the American Society of Landscape Architects founded in 1899 contains 215 members (1928). Admission to this society is controlled by an examining board, guided by fixed standards as to professional qualifications. The society has published a code of ethics governing professional practice, and also a circular on methods of charges, which requires the fees of members to come from professional advice only and not from profits on construction. In several important regions, chapters of the American Society of Landscape Architects have been constituted. The co-operation of architect, landscape architect and sculptor on the National Commission of Fine Arts appointed by the President of the United States has been an important factor in raising the national standards in the fine arts.

Training for professional practice of landscape architecture is now well organized in the United States. The leading graduate school (course established in 1900) is at Harvard university. In addition, Cornell university, University of Illinois, University of Michigan, Massachusetts Agricultural college, Iowa State college, Ohio State university, University of California and University of Pennsylvania maintain schools; graduates are eligible (1928) to compete for the prize fellowships in the American academy at Rome. Harvard offers annually a travelling fellowship in landscape architecture and the Lake Forest institute, a collaborative travelling fellowship. The professional schools of landscape architecture exclusively for women are the Cambridge school and Lowthorpe-Simmons. National competition among both men and women students is promoted by the "Landscape Exchange" problems. Many colleges give courses in appreciation of landscape architecture or elementary problems, some of which join with the professional schools in the National Conference on Instruction in Landscape Architecture (founded 1920) which meets annually and works with the American Society of Landscape Architects in improving standards of instruction. The subject is not recognized by the profession as capable of being adequately taught by correspondence. Study tours in landscape architecture are conducted annually by officers of recognized American professional schools.

In France, where the number of professional practitioners is small, students are taught in ateliers. In Belgium a course of professional instruction in landscape architecture was established (1927) in the Institut supérieur des Arts décoratifs de l'État.

In Germany instruction in *Gartenkunst* is offered largely in schools of horticulture as at Pillnitz and Dahlem, but men trained primarily as architects are frequently concerned with the formal design of home grounds and parks.

In America public interest in landscape improvement—both of public areas and of home grounds—and in landscape preservation



A PLAN FOR A COUNTRY SEAT BY A. J. DOWNING, 1852

has been promoted by "Extension Services" maintained by State universities, by national organizations such as the American Park and Outdoor Art Association, now merged into the American Civic Association, the American Scenic and Historic Preservation Society, the Garden Club of America, the State federations of garden clubs, and above all by the Government's National Park Service and the National Conference on State Parks. In England there are the National Trust, Scapa, the Commons and Footpaths Preservation Society and the recent Council for the Preservation of Rural England; on the Continent, such organizations as the Rheinische Verein für Denkmalpflege und Heimatschutz and the Dutch Vereenigung tot Behoud van Natuur en Stedenschoon. In France and Belgium the movement, prior to the World War, for national preservation of landscape as distinct from historic monuments which were already cared for by their national Governments, has since merged into general planning programmes fostered by the Union Internationale des Villes. Too much emphasis cannot be laid on the importance of preserving and restoring typical natural landscape all over the world for the public benefit and for the true development of landscape architecture as an art.

HISTORY

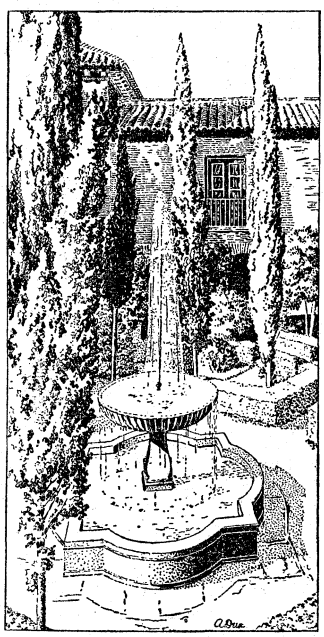
Of ancient gardens, Egypt supplies records of the earliest examples: in the fertile Nile valley even in the 4th dynasty horticulture and design of decorative enclosed gardens flourished. Ancient Persia and Assyria later developed in great hunting grounds an artistic treatment of nature from which sprang the conception of the park. Enclosed gardens too were cherished; and at Babylon trees and flowers crowning a lofty palace site are supposed to have formed the famous "Hanging Gardens." Although we know the Greeks had palace gardens in the Mycenaean age, few records remain except such as Homer's famous description of the gardens of Alcinous. Sacred groves were numerous. In the great age philosophers frequented quiet, shaded public gardens, as the Lyceum in Athens. Influenced by Greece and Asia Minor, Roman gardens blossomed with Lucullus into lavish magnificence, then flourished, with classical restraint, as *villa urbana* and *villa rustica,* pictured in Cicero and in Pliny's description of his splendid Laurentine and Tuscan establishments. The remains of Hadrian's villa at Tivoli and murals at Pompeii reveal to-day the importance of gardens in Roman life.

Mediaeval gardens on the Continent paralleled the development of those in England described in the following section. The monks in *hortus* and *herbularis* fostered horticulture—as we see from plans of the abbey of St. Gall of the 9th century—and in cloister garths made pleasant arrangements for outdoor meditation.

In Spain the flowering of garden art came with the Moors, who through Africa from Persia had brought the conception of sheltered arcaded pleasure grounds, sweetened by rare plants and cooled by deep shade and water in many forms. Between the 8th and 15th centuries great works of art were created in Cordova, Toledo and Granada, where the Alhambra and Generalife remain to suggest their original beauty. In Seville, the Moorish Alcazar suffered from the French grand style, which, however, found successful expression in La Granja and Aranjuez. In Spain to-day Spanish-Moorish tradition is being sympathetically revived, within the Maria-Luisa park at Seville and the new Spanish-American Exposition.

In Italy, with its tradition of classical villas, the Renaissance brought renewed desire for princely residence in town and country. Beginning with early Florentine villas, as Palmieri (described in Boccaccio) and Castello, characterized by simple terraces, excellent sculpture and water display, not motived by any general axial arrangement, we see in Villa Madama (Rome) transition to a generally unified scheme. The 16th century villas—best represented to-day by Lante (Bagnaia), d'Este (Tivoli), Medici (Rome) and the upper terrace of Farnese (Caprarola)—are evidently the conscious application of architectural design to outdoor settings, important points being recognized by statues or fountains, with fanciful elaboration of water in many forms. In the late 16th and 17th century villas, the Baroque style (*see* BAROQUE ARCHITECTURE), often carried to extremes, produced striking and picturesque contrasts in scheme and detail, as exemplified by Aldobrandini (Frascati), Garzoni (Collodi), Giovio (Como) and Isola Bella. Through these three centuries of Italian garden development, the great artists were architects, sculptors, painters or landscape designers, as occasion demanded: the villa was one design.

France, where from the 15th century, as security and wealth increased, chateau gardens in walled units had been gradually spreading out, succeeded Italy in the late 17th century as the central influence over European garden design. Le Nôtre seized and created elements to express in new terms the magnificence of Louis XIV. When he undertook Versailles, after successes at Vaux and Chantilly, he secured grandeur by effects of almost unlimited extent. From great open parterres, the view extended along allées cut through woodlands on vaster scale than ever before, intersecting allées offering a succession of vistas marked by one splendid axially-placed fountain after another. This simplicity and spaciousness, combined with multitudinous subordinate details, characterized the French grand style, which, in the hands of a great designer like Le Nôtre during his 50 years of practice, aided by many sculptors, gave us also St. Germain, Fontainebleau and St. Cloud. Although the grand style found numerous imitators, in less skilful hands it often degenerated into stiffness, barren decoration or inappropriate treatment of topography. The impatience with artificiality developing in the 18th century gave rise in France, following the English "landscape school," to a garden style in which nature and romantic detail were employed to arouse the emotions, as at Ermenonville. Under Napoleon III. the great public parks of Paris designed by M. Alphand exerted international influence.

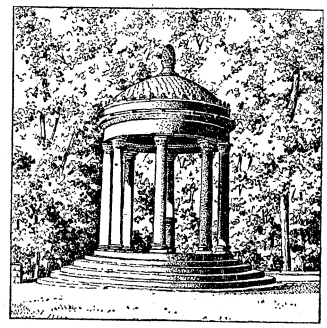


FROM GROMORT, "JARDINS D'ESPAGNE" (VINCENT TRÉAL ET CIE)

FOUNTAIN AND POOL IN THE DARAXA PATIO, IN THE ALHAMBRA

In Holland pre-eminence in cultivation of flowers joined to Italian Renaissance influences produced a style of garden design in which closely enclosed geometrically-designed areas on a small scale were filled with gay beds and specimens of topiary work, overlooked by tiny garden houses. In the 18th century the French grand style spread to Holland, where the expanse of fertile flat country lent itself to allées and parterres, usually richer in horticultural than in sculptural embellishment. Views of these, such as Loo, are fortunately preserved in contemporary albums, since many succumbed to the succeeding landscape craze.

Germany, where popular garden art is now consciously propagated, produced little indigenous design, but followed Dutch fashions in the 16th and 17th centuries and French grandeur in the 18th—as at Herrenhausen, Salzburg, Nymphenburg and Sans Souci—guided by actual pupils of Le Nôtre, until the novelty of landscape or "English" gardens swept all before it. In Prince von Pückler-Müskau, an admirer of Repton, the landscape style was rationalized, and it continued in general favour until challenged by the modern formal vogue which subjects private and public areas alike to the supreme dominance of man. In Austria, of older gardens in the French style, Schönbrunn is most important.



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TEMPLE OF LOVE IN THE BORGHESE GARDENS, ROME

In America gardens of the English colonists naturally followed the simple formal traditions of their earlier cottage and manor homes. About the time of the Revolution, notably through the influence of Thomas Jefferson at Monticello, the Romantic landscape style was consciously introduced, and later in uninspired form continued to prevail until it was revivified by Andrew Jackson Downing in the '40s. The real genesis of the modern American landscape style, however, was in Central park, New York, designed by Frederick Law Olmsted, Sr., and Calvert Vaux in 1858, the first great public work of landscape architecture in the United States, at once a bold municipal enterprise and a successful work of art. Its influence spread rapidly so that by 1870 most large cities of the country had undertaken public parks, and the development of public and private grounds received increasing attention. Largely through the extensive practice of the Olmsteds, Vaux and H. W. S. Cleveland, the profession was built up in the '80s, so that the Chicago World's Fair of 1893 offered to Olmsted an equal opportunity with Burnham and his collaborators for a monumental triumph. Simultaneously Charles Eliot through his work in Boston gave to the country the conception of metropolitan landscape reservations.

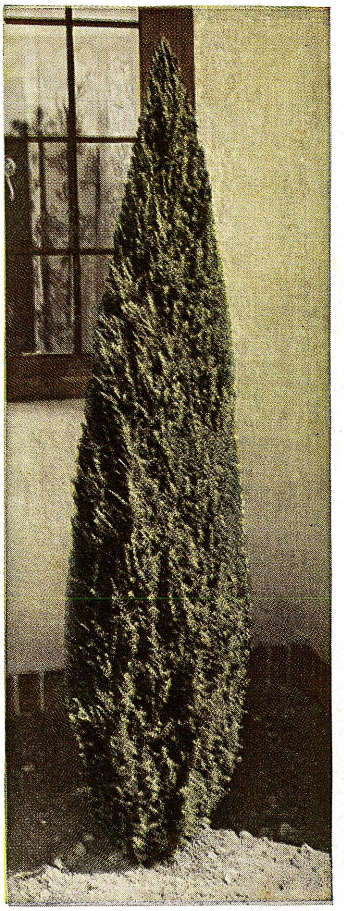
Gardens in Sweden and Russia followed styles imported largely from France, the influence of Le Nôtre manifesting itself in such magnificent palaces as Drottningsholm (near Stockholm) and Tsarskoye Selo (near Petrograd), where the landscape style imported from England was also employed.

Garden design, through the spread of Persian culture, reached high development in India under the Moguls, as in Spain under the Moors. The gardens of the Taj Mahal at Agra and Nishat Bagh in Kashmir remain as supreme examples of symbolic combination of water, shade, flowers and fruit. In the Far East landscape art found consummate expression in China centuries before the Western landscape school—on which Chinese gardens exerted profound influence—and similarly in Japan and Korea, where symbolism crystallized nature into conventions employed by successive generations of artists in landscape gardens of exquisite intrinsic form.

The influence of landscape architecture on culture through the centuries has manifested itself most strikingly in the impetus to outdoor recreation and in the greater appreciation of amenity as a necessary quality of human environment. Material wealth, private and public, has given the opportunity and furnished the means for great works of the past, be it in the era of princely splendour or of modern industrialism; but the art itself, having proved its desirability to potentate and citizen alike, is bound in the future to become more widely applied to all forms of land

White Fir *(Abies concolor)*

Black Hills White Spruce *(Picea glauca densata)*



Irish Juniper
(Juniperus communis hibernica)

Mugho Pine
(Pinus mugo mughus)

Japanese Yew *(Taxus cuspidata)*

Colorado Blue Spruce *(Picea pungens glauca)*

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CONIFEROUS EVERGREENS

LANDSCAPE ARCHITECTURE

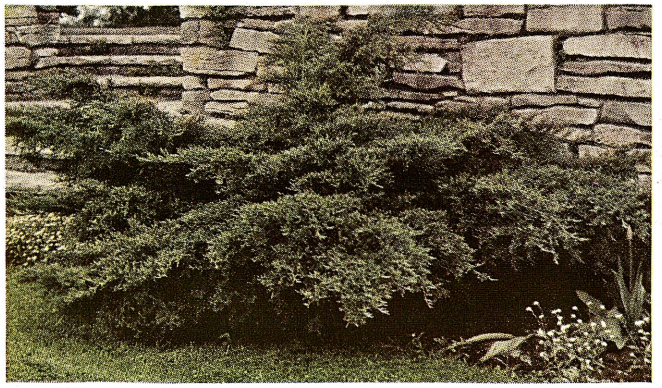
Red Cedar *(Juniperus virginiana)*

Austrian Pine *(Pinus nigra)*

Globe Arborvitae *(Thuja occidentalis globosa)*

Northern White-cedar *(Thuja occidentalis)*

Canada Hemlock *(Tsuga canadensis)*



Pfitzer Juniper *(Juniperus chinensis pfitzeriana)*

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CONIFEROUS EVERGREENS

development for human use and thus to penetrate more completely into the fabric of civilization.

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For biographies of the two most distinguished American landscape architects see: *Forty Years of Landscape Architecture, Professional Papers of Frederick Law Olmsted, Sr.* (1922–28) and *Charles Eliot, Landscape Architect* (1924). *The Life and Work of an English Landscape Architect* (1927) is T. H. Mawson's autobiography.

Of current journals, *Landscape Architecture*, official quarterly of the American Society of Landscape Architects, is the chief publication in English devoted entirely to this field. The *Transactions* of this society have also been published covering 1899–1926. *Parks and Recreation* (from 1917, journal of American Institute of Park Executives) and *Gartenkunst* (from 1899, journal of Deutsche Gesellschaft für Gartenkunst) represent current professional interest, supplemented by sumptuously illustrated popular periodicals such as *Country Life*, English and American, and *Gartenschönheit*. The files of *Garden and Forest* (1888–97) contain articles of historical value.

The chief historical bibliography in English is the catalogue of the Codman Collection of Books on Landscape Gardening of the Boston Public library. The New York Public library published a list on gardens in 1927. Working selected bibliographies will be found in Hubbard and Kimball, *Landscape Design* (1917) and in a reprint from *Landscape Architecture* (1927) compiled by the National Conference on Instruction in Landscape Architecture for the nucleus of a school library. For an indexed topical outline of the field, *see* Hubbard and Kimball, *Landscape Architecture: a Comprehensive Classification* (1920). (T. K. H.)

ENGLAND

It would be impossible to say when the art of landscape and garden design began in England, but it is not so difficult to trace its successive stages, because it follows the history of the English people. As soon as there was any reasonable assurance of security from invaders, people were free to give their attention to ornamental and fruitful planting, and further to adorn their own secluded portion of ground surrounding their residences. The ancient Britons have left no trace that they cultivated the ground, nor is there any direct evidence that their conquerors, the Romans, laid out gardens, although it may be inferred that they did so, since remains of their villas and numerous artistic adjuncts of luxurious houses have been unearthed. During the period of invasion and counter-invasion by the Danes and Norsemen, which followed the withdrawal of the Roman legions, and the factionary wars amongst the Saxon kings themselves, there could not be sufficient tranquillity for serious husbandry or even for farming, seeing that the country was given up largely to war and to the chase. There is no evidence of gardening to be gleaned up to the Norman Conquest at least, and then we have a suggestive account of the salient features of the country in general, but no gardens.

BY COURTESY OF "LANDSCAPE ARCHITECTURE"

A FORMALLY SET SUNDIAL IN AN ENGLISH GARDEN

Monastery Gardens.—When the possessions of others were plundered, the sacred property of the Church was respected, and to the monks, with their culinary and medical plants, is ascribed the first mention of gardens and orchards in England, in or about the 12th century. The evidences which have come down to us go to prove that for a century or two these monastic gardens existed in order to supply the monastery with food and fruit, and that it was purely a matter of profit or loss for the gardeners entrusted with them. With men of refined and scholarly ideas, as many of the monks were, there must have been design in these early gardens, but we have no direct evidence of it.

Although in the first mention of monastery gardens they appear to have existed solely for vegetable and fruit, as time progressed we find, after a lapse of two centuries from the 12th to the 14th, that the one circumscribed domain increased to include ornamental gardens all within the monastery walls, and flowers, such as roses, appear in their inventories, to crown the priests on certain high days. These ornamental spaces surrounding the ecclesiastical edifices gradually assumed the character of design, until we hear of royal gardens being made for the Plantagenet kings at their seats of Westminster, the Tower, Charing and Windsor. We read of Henry III. commanding his bailiff to make at Woodstock a garden enclosed by walls, wherein was an herbarium and a fish-pond, "whereat the queen may be able to amuse herself." Thus with the monastic fish-ponds and the runnels of water, the sequestered cloister gardens laid down to quiet expanses of grass for meditation, and the bowers and arbours, the flowers grown for priestly

purposes and for decorating the churches on high days, we have all the elements accumulating which go to the making of a garden. Out of the none too plentiful evidence to be gleaned from writers of this period of English history, notably from Chaucer and Langland, we can put together a fairly comprehensive list of features and flowers which of themselves opened up scope for the play of fancy, and formed a basis of design in their artistic arrangement.

Practically all the features of the mediaeval gardens have been demolished, but the one that has survived destruction is the fish-pond which supplied the needs of the monks on fast days. Stately houses have been built with gardens on the delectable sites of many of these old monasteries, and the fish-stews have been incorporated (in many cases with amplification) into the design, as for example at Woburn, Welbeck, Burghley, Sion, Beaulieu, Audley End, etc. Undoubtedly, in the latter part of this mediaeval period, gardens of royalty and the nobility were designed and pleasingly contrived for effect, and were always more or less protected by a high wall in a style which was distinctly English, and were not trammelled to any large extent by foreign influences. It is to be remembered that during the reign of King John, the barons and nobility secured their independence by the terms of Magna Carta and henceforward, since the kings had given them the lead, they began to frame for themselves secluded gardens at first within the protecting walls of their castles and moats. Then in the comparative peace which followed the English conquests on the Continent and the Wars of the Roses, the nobles and barons essayed to make gardens in the open country; then the rich merchants of the city of London followed suit. The material was there, and with the country's progress towards the attainment of freedom and opulence the arts kept pace, and gardens likewise.

FROM SIR FRANK CRISP, "MEDIAEVAL GARDENS" (JOHN LANE, THE BODLEY HEAD)

A CONVENT GARDEN OF 1490

Raised banks run round the walls, and flowers grow in the beds and in pots

The Renaissance.—The mediaeval period now blossoms forth into what is known as the Renaissance in England's advancing history. It is usually called the Tudor period, and the characteristic English style in architecture during this period is distinguished by the same term. For a time at least, during the early part of the Renaissance period, gardens had to suffer the domination of the Italian phase of design, but eventually the definite national convictions of garden design which had been previously followed came into their own. At first the sumptuousness of the Italian style gave it popularity and promised to make it all pervading but as time went on its grandiose stiffness, its extravagant array of fountains and masonry, its statues in white marble palled upon the English taste, and the result was a compromise. The quaintness of the mediaeval work and its homeliness of manner were allowed to modify the sumptuousness of Italian ideas in the 17th century. It was during this century that Henry VIII. employed Italians to lay out the grounds of his palace at Nonsuch in Surrey, commenced in 1539. He also in 1530 brought many Italian features into the gardens at Hampton Court, which had been treated by Cardinal Wolsey in the mediaeval English manner.

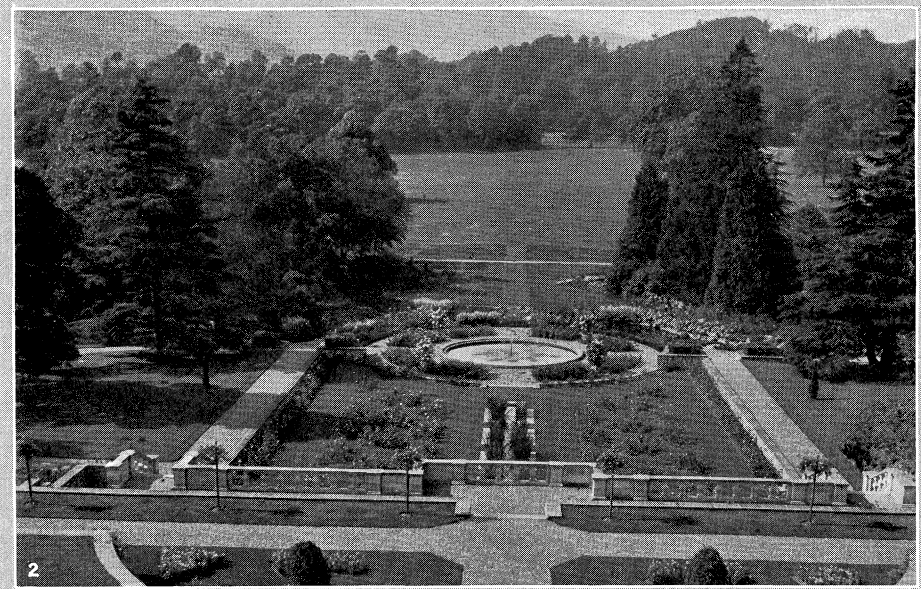
That landscape gardening was a subject of serious study can be gathered from the number of books written at this period. There were books by Dr. Andrew Borde, Thomas Hill, Didymus Mountaine and Bacon. In all these writers there is evidence that they were swayed by the Italian fashion, although at the same time they pronounce the true English delight in trees and flowers for their own sake. The open acceptance of their works proves that the subject was one that appealed to many readers. The Renaissance added little to the garden designer's materials save knots, mazes, labyrinths and dovecotes, also bowling greens and alleys. The latter were a decided acquisition, since they gave occasion for level green spaces which count for so much in the modern tennis and croquet lawns, and are always a restful note wherever found. The most valuable part of Hill's book is the light it throws upon the refined Englishman's garden in the 16th century and the woodcut illustrations. These depict the gardens as a circumscribed rectangular space with a broad walk down the middle and a similar broad walk all round within the enclosing wall, the two large equal spaces being subdivided by narrow paths into a number of smaller rectangular plots, with the maze, the labyrinth or any of the various knots occupying each or all of them as fancy dictated.

Owing, no doubt, to their being enamoured of the Italian manner, neither Borde, Hill nor Mountaine's books are inspiring in their style, but in Gervase Markham, and with him may be associated William Lawson, we begin to break away from Italian pedantry and find men who wrote from the sense of pleasure derived from gardens rather than from the standpoint of garden theorists. Furthermore, they wrote in quaint Elizabethan prose, with its old-world charm imbued with a sense of what is beautiful in nature. Markham's works were deservedly popular and undoubtedly did much to mould the English taste and preferences in garden design. One of his books went through 15 editions. He deals with the farm as well as the garden, directing where the stables, cow-houses, swine-cotes, barns and poultry-houses were to be placed, also the lodges. As yet there is no suggestion of the landscape treatment as we know it. Even though Borde and Markham go beyond the bounds of the gardener's realm, and branch out into the park and the farm-buildings and the lodges, everything they deal with is angular and formal. The garden, the kitchen garden as well as the orchard, was to be confined within high walls or a hedge and ditch. These pioneers adventured out into the domain claimed by the modern landscapist, who is often called in to advise upon a scheme of residence including mansion, dower-house, gardens and park shelters, plantations, lodges, farm-buildings, stables and garage, water-supply, electricity, sewage scheme, etc. When wisely directed a proprietor will settle the site and disposition of each and all of these policies before a sod is cut or a stone is laid.

Contemporary with the foregoing writers there appeared a group of ten or a dozen writers of herbals, the most notable being John Gerard and John Parkinson. Gerard's book is a great folio of over 600 pages, published in 1597. The value of these writers is that they fostered the innate love of the country and the open face of nature in general, stimulating the imagination by their method of expressing their pleasures in the teeming life around them. Moreover, they were the foster-parents of modern botanical gardens, such as Kew and Oxford and the Apothecaries garden at Chelsea, and indirectly to such ventures as the Royal Horticultural Society's gardens at Wisley, for several of these writers, including Gerard, ran physic or botanical gardens. Undoubtedly, there was during the 17th century a generally accepted principle of design in the garden, everything therein being square and geometrically set out, as may be gathered from all or most of the writers mentioned, so that the country gentleman could lay out his garden himself on traditional lines with very few variations.

Thus matters continued up to the Civil War, which marked a period of garden destruction by the Puritans, until the Restoration, when once more foreign fashion came to dominate the simple English taste. The lavish extravagance of Louis XIV. of France could not but have its effects upon Charles II. who was in intimate relations with that monarch and his splendid court, and it is recorded that he or his nobility invited Le Nôtre, the genius of the gardens of Versailles, to England. These imported ideas might induce the rank and file of stolid English country gentlemen to adopt a more comprehensive style of design and enlarge their ideas, but such pretentiousness, including sumptuous fountains and white marble sculpture, was not in the tradition of Markham and Lawson, with their established national taste, nor of John Worlidge, who succeeded them.

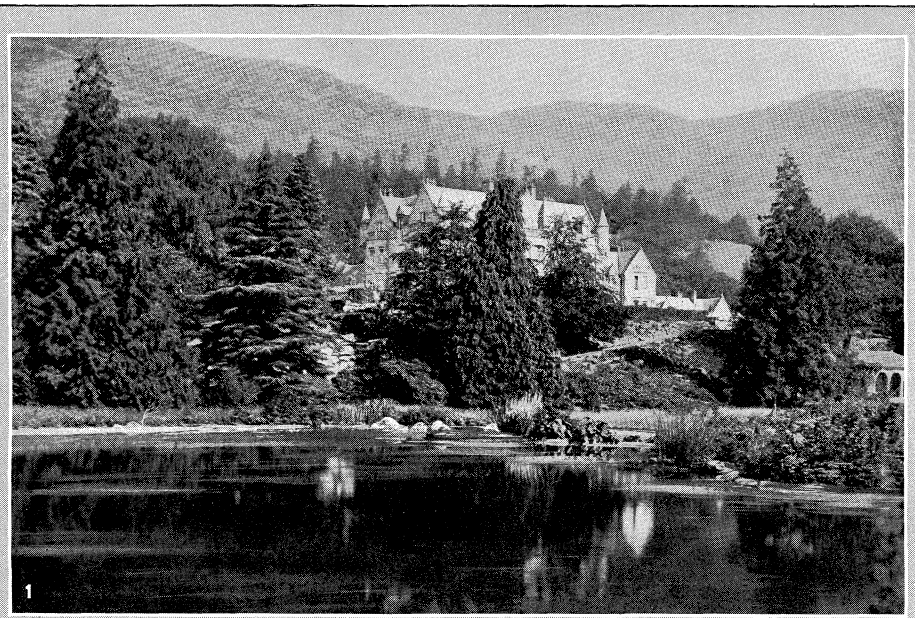
In the sequence of events the next phase was the Dutch style introduced from Holland by William and Mary. The Dutch love

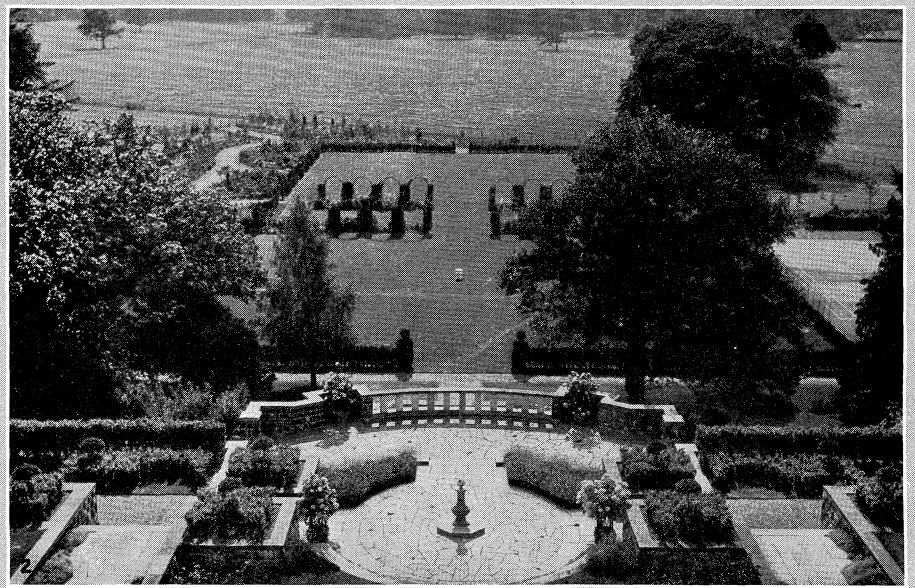


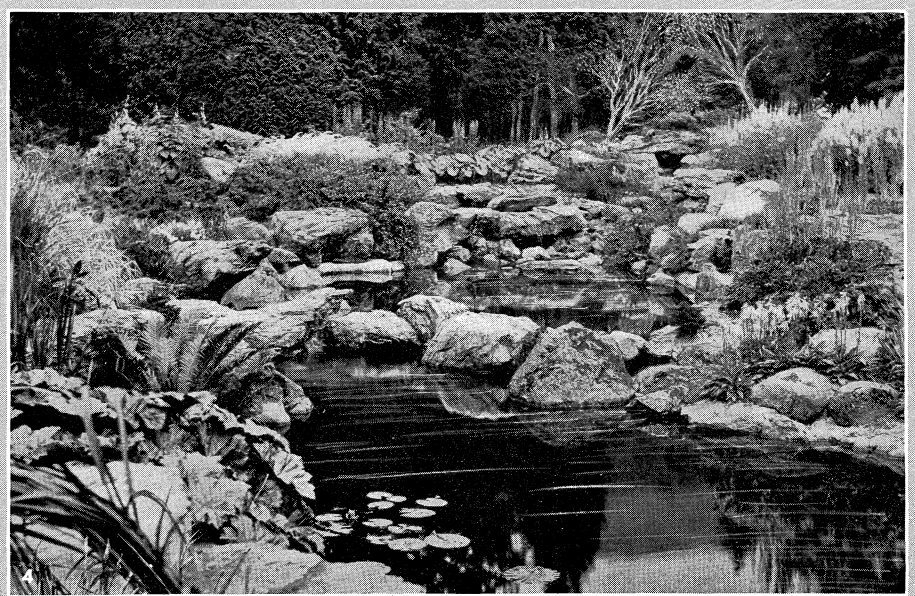
BY COURTESY OF (1, 4) THOMAS H. MAWSON, "THE ART AND CRAFT OF GARDEN MAKING" (B. T. BATSFORD, LTD.)

LANDSCAPE ARCHITECTURE IN ENGLAND AND SCOTLAND

1. Dunira, Perthshire, residence of W. G. Macbeth. View of the gardens at the south of the house
2. Dunira. View from upper terrace looking westwards
3. Pergola pond and terraces at The Hill, Hampstead, residence of Lord Inverforth
4. West lawn and lily pond at Woolley Hall, residence of Walter Cottingham



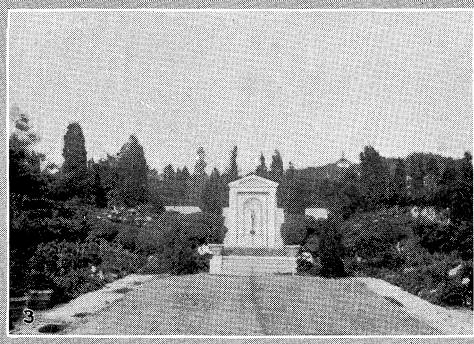


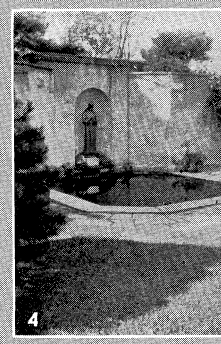


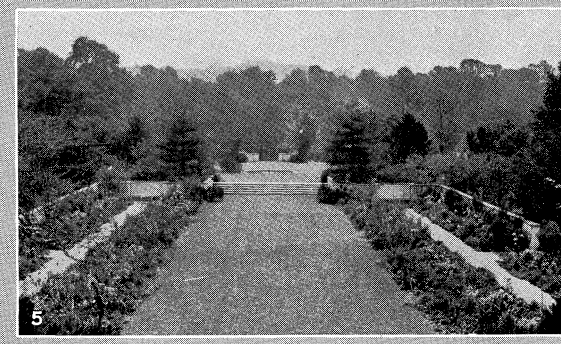
BY COURTESY OF (1, 4) THOMAS H. MAWSON, "THE ART AND CRAFT OF GARDEN MAKING" (B. T. BATSFORD, LTD.)

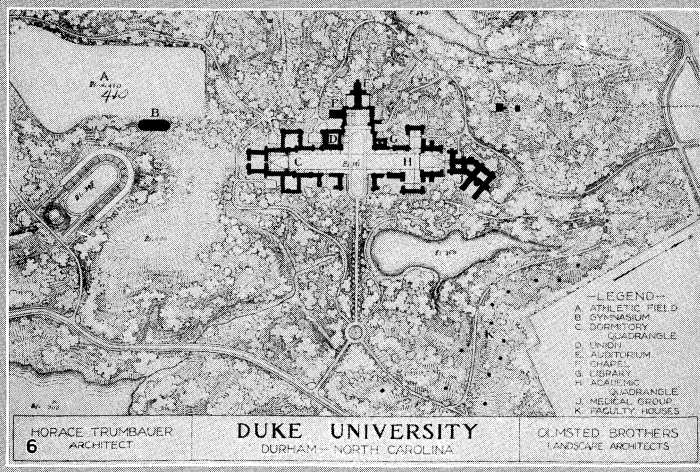
LANDSCAPE ARCHITECTURE IN ENGLAND AND SCOTLAND

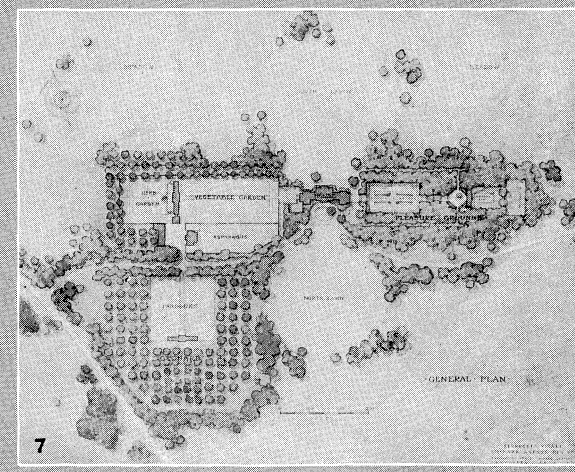
1. View of the lake at Dunira looking southeast towards the house
2. Dunira. View on south side, showing the park
3. Blickling Hall, Norfolk, formerly the residence of Anne Boleyn
4. Rocky stream at Dunira









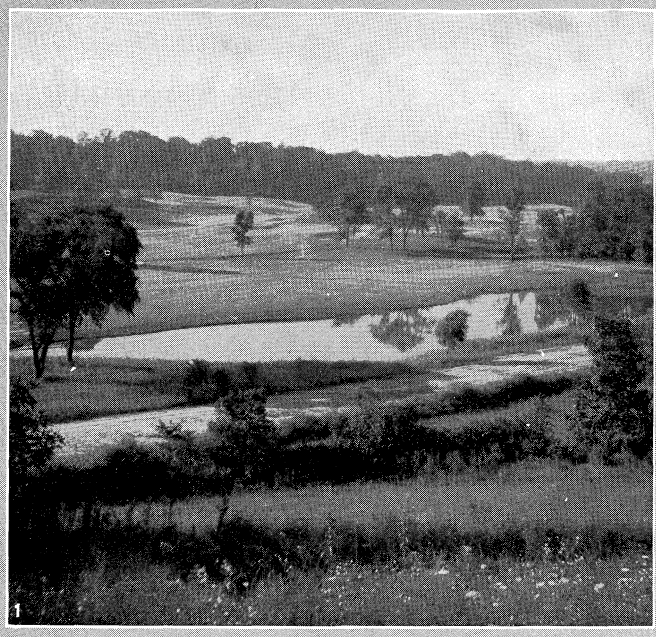


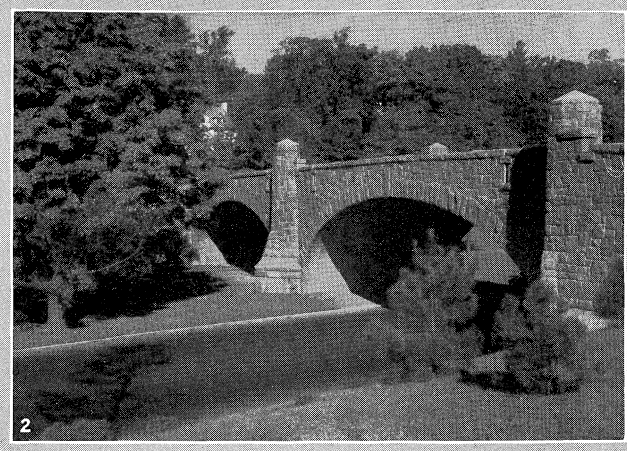
BY COURTESY OF (2, 3, 5, 7) FERRUCCIO VITALE, (4) A. F. BRINCKERHOFF; PHOTOGRAPH, (1) AMEMYA

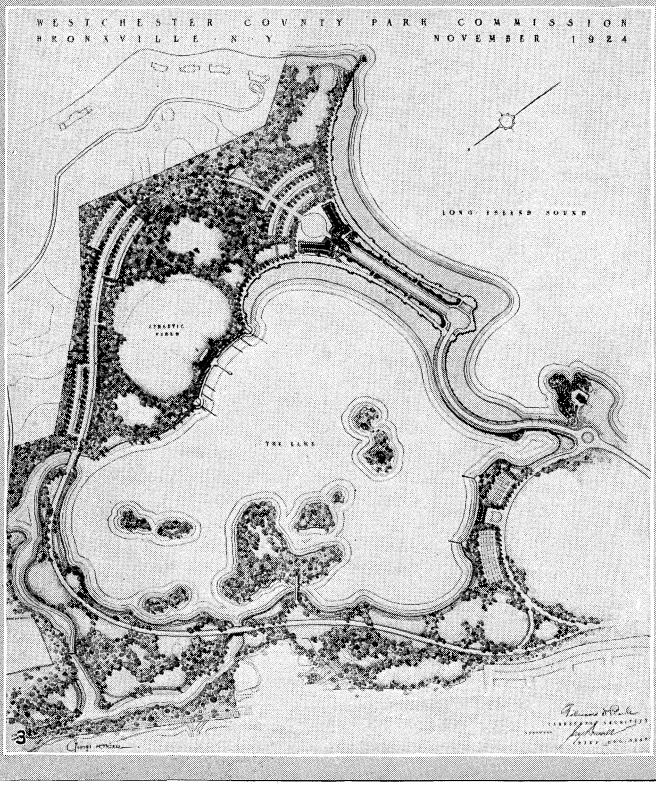
AMERICAN LANDSCAPE ARCHITECTURE

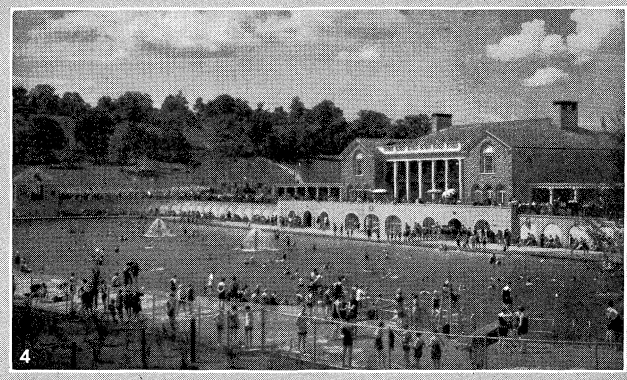
1. Garden of Mrs. Samuel D. Bell, Stamford, Conn. Ruth Dean, landscape architect. 2. Portion of the naturalistic garden of F. E. Drury. Ferruccio Vitale, landscape architect (*See* Plate VIII.). 3. Garden of Jay Carlisle, Islip, N.Y. Ferruccio Vitale, landscape architect. 4. Garden terminus on the estate of Arthur W. Lawrence, Bronxville, N.Y. A.F. Brinckerhoff, landscape architect. 5. In the garden of Myron C. Taylor, Locust Valley, N.Y. Ferruccio Vitale, landscape architect (*See* Plates VII. and IX.). 6. Plan of the grounds of Duke University, Durham, N.C. Olmsted Brothers, landscape architects. 7. Plan of the grounds of Thomas Frothingham, Morristown, N.J. Ferruccio Vitale, landscape architect

LANDSCAPE ARCHITECTURE





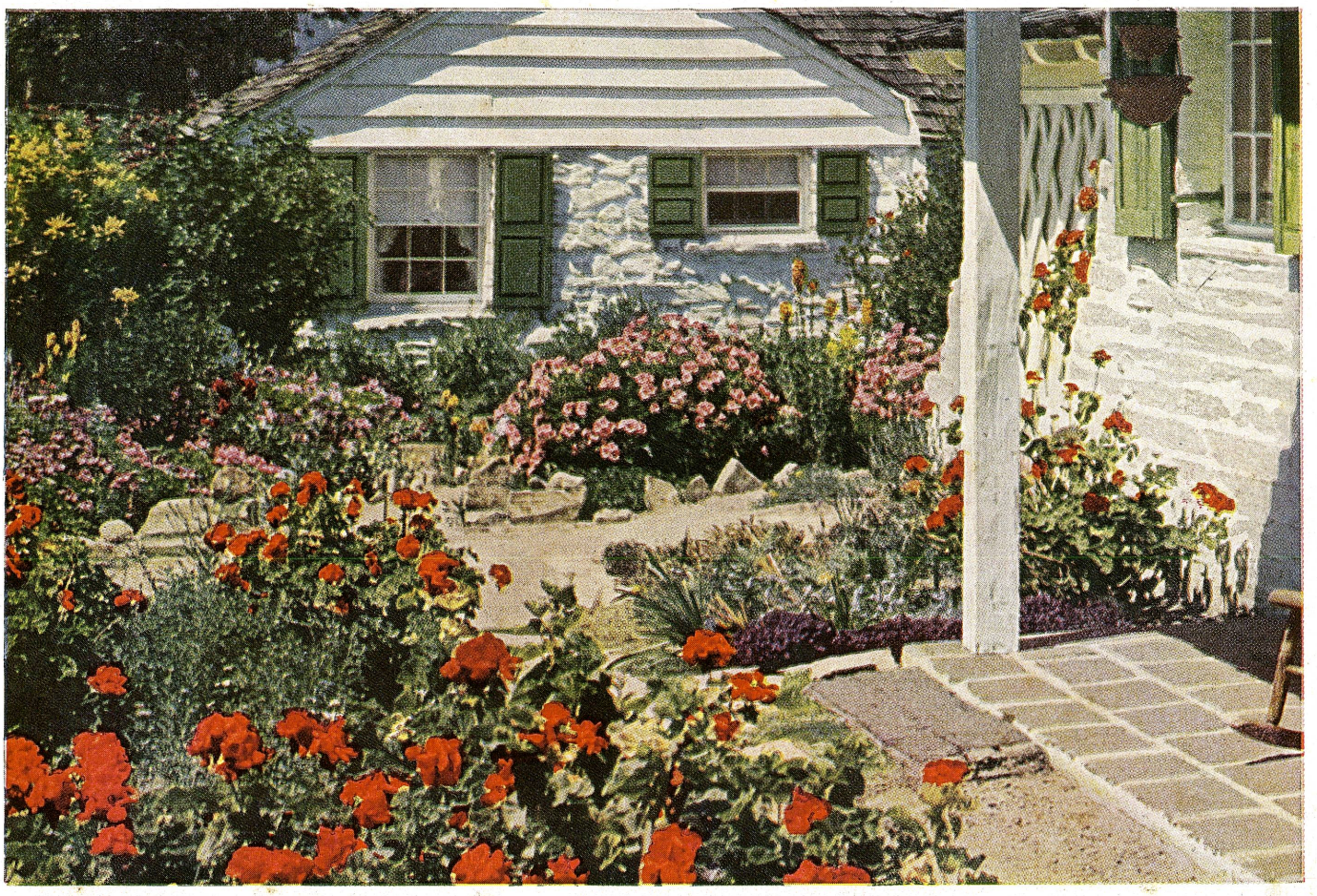




BY COURTESY OF (1, 2, 3, 4) THE WESTCHESTER COUNTY PARK COMMISSION; PHOTOGRAPH, (5) P. A. NYHOLM

LANDSCAPE DESIGN IN PUBLIC PARKS

1. Maplemoor Golf Course, Westchester County Park System. Gilmore D. Clarke, landscape architect
2. Bridge over the Bronx River, Crestwood, N. Y. Gilmore D. Clarke, landscape architect
3. Plan of development of Mansuring Island Park, Westchester County, N. Y. Gilmore D. Clarke, landscape architect
4. Swimming Pool, Tibbetts Brook Park, Westchester County, N. Y. Gilmore D. Clarke, landscape architect
5. Music Pavilion, Tibbetts Brook Park. Gilmore D. Clarke, landscape architect



REPRINTED FROM "BETTER HOMES & GARDENS" MAGAZINE. COLOUR PHOTOGRAPH BY GABRIEL MOULIN

Lavish and close planting of annuals in the rear of a seaside cottage

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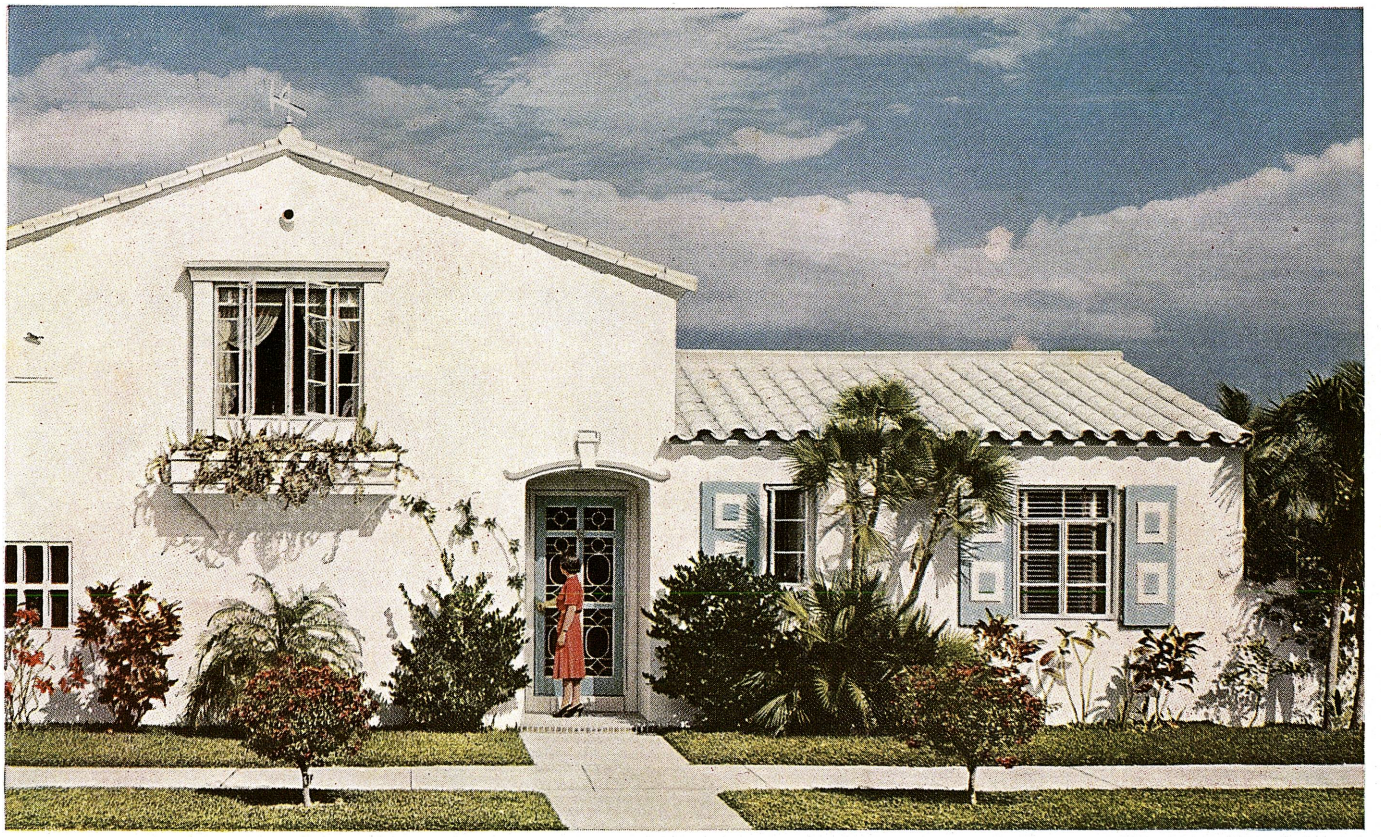
Stairway of brick on a flower-planted terrace separating two levels of grading



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Careful placing of a few selected shrubs and tropical plants set off the front of this Florida home

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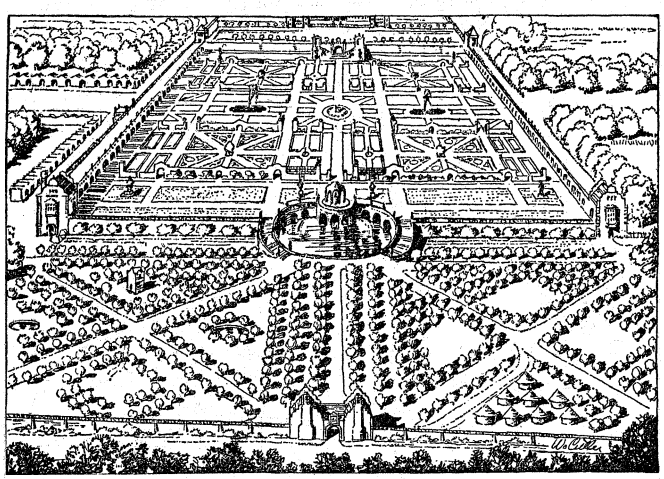
Scarlet azaleas in a garden on Long Island, New York

of quaintness was responsible for an exaggeration in topiary work, thus reducing to ridicule a practice which had served well for centuries when kept within legitimate bounds. The apostles of this departure were London and Wise, who ran a large nursery at Brompton. Wise, influenced by the Le Nôtre school, was in practice before the Restoration, and planned the chestnut avenue in Bushey Park, 1m. long and 60ft. wide, with four additional rows of limes on either side terminated by the great "Diana" basin at Hampton Court, 400ft. in diameter. Formalism was now reduced to a series of rules and a few variations upon stock recipes which foreshadowed its break-up. It was during this period that the gardens at Levens, Westmorland, were laid out, which are to-day the essence of quaintness, and have a certain richness of their own when the box-edged borders are full of bloom; nevertheless, it is easy to understand how soon such picture gardens would pall if there were many of them.

It must not be supposed that all who adhered to the then popular formal method of design were committed to its vagaries. Men such as Bridgman, who succeeded London and Wise in the favour of royal patronage (being gardeners to George I.), had the soul and sense of real design. He banished the clipped animals and monstrosities in yew, box and holly, and refused to be bound by the square precision or rules of the foregoing age. He refused to conform to the set symmetrical balance of one-half answering exactly to the other, and although he still adhered to straight walks and clipped hedges, they were only his determining axial lines and he diversified the free open parts with groves of oak and native trees, and incorporated in his schemes pieces of the natural, if such were worthy to be included. In this way Bridgman anticipated the present day, when gardens are modelled upon long determining axial lines, allowing the subsidiary walks to wander forth in easy routes as they fit in with the contours.

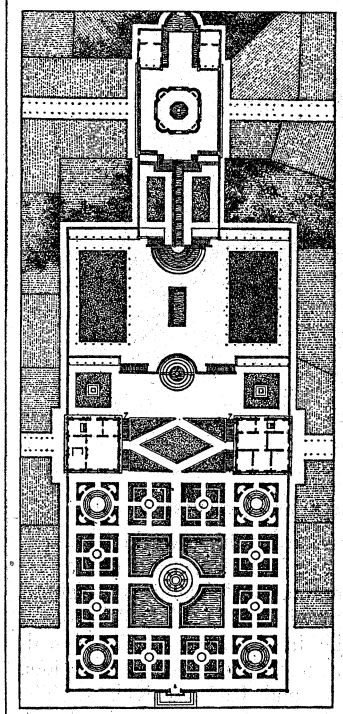
We may lay the blame for the change of the public taste upon the vagaries of topiary work, but change was inevitable. Whenever men fall to imitating one another in art and hold solely by academic rules, their system is bound to run to seed. In garden design we must ever be refreshing ourselves by communion with nature in her broadest aspects on the mountain side, in the woods and fields, and any rules which we formulate must thereby be proved and attested. It was by this line of argument that Addison began the attack upon the formalists in the *Spectator,* and whether right



MOOR PARK AS ORIGINALLY LAID OUT, FROM A DRAWING MADE BY L. ROME GUTHRIE TO SIR WILLIAM TEMPLE'S DESCRIPTION

or wrong this was his statement: "We may assume that works of nature rise in value according to their degree of resemblance to works of art. Therefore, works of art rise in value according to the degree of their resemblance to nature. Gardens, being works of art, therefore rise in value according to the degree of their resemblance to nature." Time has modified the crudeness of this argument, for we do not in general prize works of art or gardens according to the degree of their resemblance to nature; rather we deduce certain principles and conventions from nature, and produce a rhythmic pattern based upon them, modified to suit the scale of the district, the nature of the garden and the residence. Pattern and rhythm are the soul of design.

Pope and Horace Walpole, who wrote in the reign of Queen Anne, followed up the attack begun by Addison. Walpole's complaint against the lack of ideas and imagination in the prevalent formalism may be judged from the following quotation: "At Lady Orford's in Dorsetshire, there was when my brother married, a double enclosure of 13 gardens, each I suppose not more than 100yd. square, with an enfilade of corresponding gates, and before you arrived at these you passed a narrow gut between the two stone terraces that rose above your head and which were crowned by a line of pyramidal yews."



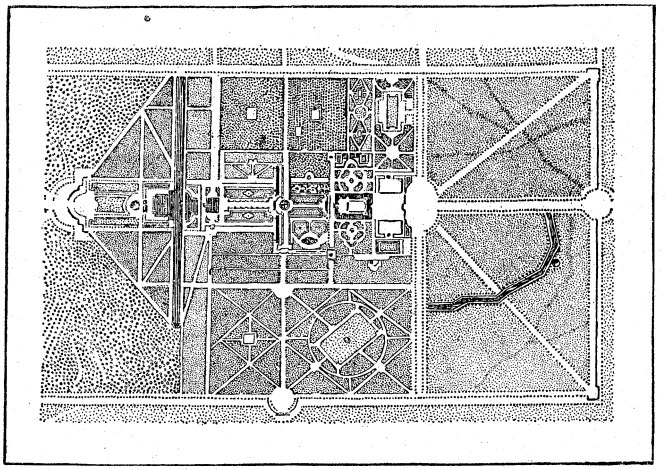
FROM GOTHEIN, "GESCHICHTE DER GARTENKUNST" (DIEDERICHS VERLAG)

PLAN OF THE VILLA LANTE, AFTER PERCIER AND FONTAINE

The Naturalists.—By this means the natural manner gained the day and became the rage, and for a time lost its head, perpetrating as many extravagances as the school it had replaced. Revolutionaries are always extremists and we may smile at Pope turning his five acres at Twickenham into a compendium of nature, condensing every kind of scenery into his villa garden. Into this ferment of rebellion against the old garden usages entered William Kent, architect and painter, fresh from a period of study in Rome, his mind steeped with the heroic landscape compositions of Claude and Poussin, which it was his intention to visualize materially, using the country as his canvas, and the trees, the water and the rocks as his paints. Such a propaganda was foredoomed to failure; nature will not be rushed out of her country and clime. Yet Kent, under the patronage of Lord Burlington and with the eulogies of Walpole and others behind him, was deemed a genius. In spite of his rich patrons and advocates, Kent was not the man to lead the movement; he had no feeling for pure landscape for its own sake. He was a creditable architect and furniture designer and in his gardens he always harked back to his bent by inserting Greek and classic temples.

After Kent came Launcelot, or as he was nicknamed, "Capability" Brown, a man who has been much derided; yet, judging from the work he did at Blenheim and from the survivals of his vast planting schemes, composed mostly of oak or one kind of tree he had a true eye for landscape composition. He ran the contours of the landscape right up to the mansion, with no apparent break. In order to keep the deer and cattle from approaching the mansion he made use of the ha-ha fence which made the grass appear to be of one uninterrupted sweep. His was the erroneous motto, "Nature abhors a straight line," therefore even when the ground was flat and the logical thing to do was to lay it down to a level lawn, he undulated it. Again, when a level plain invited a straight drive through an avenue, he made it wind about, and girded it with clumps of trees. Although he was somewhat hemmed in with his own maxims and mannerisms, his work marked a distinct advance, as did the work of his successor, Humphrey Repton, who is justly celebrated as a champion of the landscape style. In his way Repton was an idealist, a fact which is proved by his "Red Books." For each place of importance he prepared a report, bound in a red cover, and a series of sketches showing the result when the trees had attained a certain maturity, so that although his effects were not as demonstrable as geometrical gardens, which can be projected in planes by perspective drawing, there was a degree of probability in his proposals. Although Repton professed to be a follower of Brown, he was far ahead of his master in in-

telligent grasp of what constitutes design. In many instances he refused to destroy worthy old gardens and in others he readjusted the vagaries of his predecessors. He knew what was consistent with the various styles of architecture and recommended mostly a broad expansive formal scheme near the house, merging into the natural, attaching the house by imperceptible gradations to the landscape. He never lost sight of the house as the dominating



FROM H. L. GOTHEIN, "GESCHICHTE DER GARTENKUNST" (DIEDERICHS VERLAG)

PLAN FOR VAUX-LE-VICOMTE, AFTER SILVESTRE

factor, and in his domestic schemes everything worked from it and ministered to its elegance and comfort. He was a fairly prolific writer, and became the champion of the landscape school, maintaining a long argument in print with Sir Uvedale Price on its behalf. Other writers such as Burke, in his *Essay on Taste,* dealt with the philosophic aspect of beauty. Then there were long poetic effusions by William Mason and Richard Knight. The former published between 1772 and 1782 four consecutive books of poetry which were often reprinted.

All this discussion has been profitable to modern garden design. Repton and his sons, who continued his practice, verged upon the Victorian period; thenceforward garden design has been largely divided between architects and landscape gardeners. The outstanding works done by the architects are the gardens at Trentham, Staffordshire, by Sir Charles Barry, and at Penhurst, Kent, by George Devey. A noted man of the landscape school who practised successfully during the 19th century was J. C. Loudon. Then arose Sir Joseph Paxton, whose fame as a garden designer is a doubtful one, although after constructing the Crystal Palace for the Great Exhibition of 1851 his practice was extensive. Later followed Edward Milner, Robert Marnock, Nasmyth, the artist, Edward Thomas and Edward Kemp, men who could be relied upon to make an effective and beautiful garden, conveniently planned, free from the raw errors of the early landscape men and not devoid of imagination.

There are a few architects of the present day who design the whole garden to the houses they build and many more who limit their planning to the terrace and architectural portion immediately surrounding the house. Among the former, mention may be made of Sir Edwin Lutyens, who was usually assisted in the horticultural branches by Miss Jekyll. He had a versatile and original fancy in garden accessories. Inigo Triggs was an architect by training who specialized in gardens, having written and largely illustrated two indispensable text-books *Formal Gardens in England and Scotland* and *The Art of Garden Design in Italy.* The most informative and authoritative book on the formal branch of garden design is Reginald Blomfield's *Formal Garden in England.* The landscape school is not so well represented professionally in England as it might be if there were a national school for the proper training and equipment of would-be garden and park designers, like those at many of the universities in the United States. In a liberal profession which includes and impinges upon so many sciences, it is of the first importance that its students should grasp the principles of their art and its imaginative range before they are immersed in office detail.

BIBLIOGRAPHY.—Besides works on English landscape architecture mentioned in the bibliography for the main section, *see* also R. Blomfield and I. Thomas, *The Formal Garden of England* (1892); J. D. Sedding, *Garden Craft Old and New* (1892); G. Jekyll, *Wood and Garden* (1899); E. Kemp, *Landscape Gardening: How to Lay Out a Garden* (1911); and G. Jekyll and L. Weaver, *Gardens for Small Country Houses* (1914). (T. H. MA.)

MODERN TENDENCIES IN AMERICA

This article is confined almost entirely to domestic landscape architecture, institutional landscape architecture and park design. Although its scope is intended to cover only the United States, its reference to principles and tendencies will apply in a considerable degree to the American continent and to Europe.

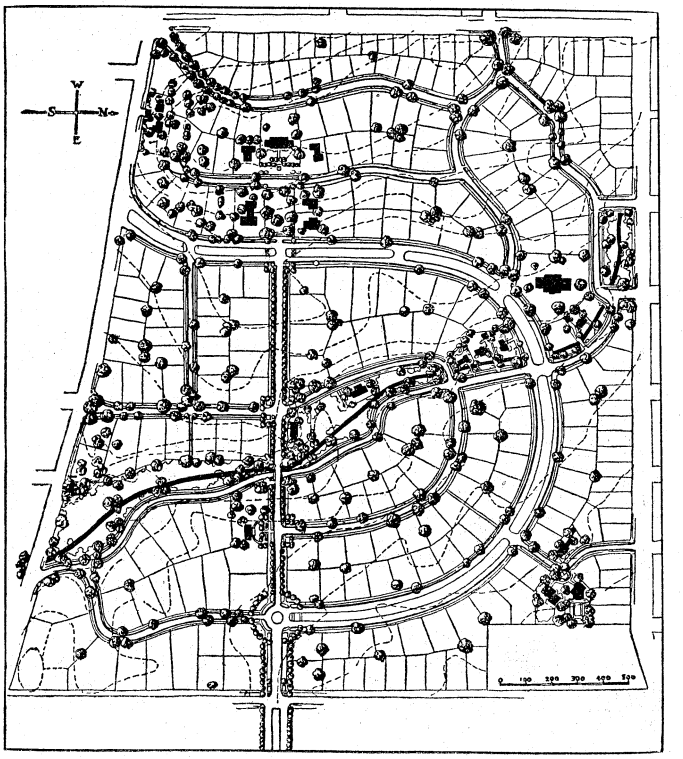
Throughout the United States of America the curtailment of private incomes and the burden of Government taxes have modified in scope the application of domestic landscape architecture.

On the other hand, through Government agencies and expenditure, there has been a marked increase in institutional landscape architecture as represented by schools, asylums, and Government housing, in addition to extended operations in the development of parks and parkways.

Landscape architecture made distinct and extraordinary progress after the beginning of the 20th century, particularly in North America.

It has met with much public favour and patronage, and through the work of instruction in several of the American schools and universities, qualified professional practitioners have increased in numbers.

Like architecture, it is a fine and applied art, dependent for its success upon so planning as not only to afford the utmost beauty of aspect, but to facilitate practical use in its many requirements. The elements of composition include not only stone,



BY COURTESY OF WERNER HEGEMANN

PLAN OF SUBDIVISION OF PABST FARM, WAUWATOSA, WIS.

brick, cement and other building materials, but also organic things—trees and plants—which are subject to constant change in growth and decay. It is necessary to compose these contrasting elements into an expression of beauty, and marked improvement may be noted in contemporary examples of landscape design by evidence of mass composition as the dominant feature and the use of colour, pattern and detail as contributory to the expression of form. More pleasure is afforded from the contemplation of a garden or other feature thus designed than from the inspection

of any single element of that garden. This has been made possible through improved technique and wider knowledge in the moving of trees and shrubs of larger size than had heretofore been practicable, thus enabling the use of organic elements which are in immediate scale with the buildings or environment of which they are made a part.

Domestic Landscape Architecture.—This phase of the subject is closely allied to domestic architecture. It responds to the same tendencies and requirements; it has to do with the design and development of all of the area outside of the building destined to be used as part of the home. It is, therefore, influenced in its development by the same factors which affect the house design.

A change in the economic and social conditions since the World War (1914–18) has had a very marked influence upon the physical aspects of the home. The difficulty and expense of employing labour to maintain the home grounds, scarcity of domestic servants, increased taxes and the more general use of the motor car have affected the design of the modern home surroundings. This applies to the homes of rich and poor, and to those living in the open country, in the suburbs and in the town. The result has been a concentration of area and of use. The person formerly requiring an estate of 100 or more acres carefully maintained for outdoor pleasure, is now content with half that area. The suburban dweller who formerly enjoyed ample ground space about his residence now has a confined area intensively used. The small householder is giving up his individual home unit and is moving to the multiple dwelling, or to an apartment or flat where, among other features used in common with his neighbour, may be a roof garden, a court garden or a play area. This tendency has been intensified, of course, particularly in America, by an increased concentration of people in and about the larger towns and cities.

Successful design is dependent upon rhythmic spacing terminating in focal or emphasis points. These may be defined by such features as garden benches, sculptural ornaments or figures, groups of figures or architectural structures, trees or plant forms. It matters not whether the design be formal or informal in spirit, the necessity for such points of emphasis prevails. This principle of spacing applies to all design as well as to music.

In landscape design, sculpture thus used is occupying an increasingly important place. The sculptural forms need not be executed with the same degree of refinement as might properly be employed in museum pieces. The silhouette in proper scale and contrast with its surroundings is of more importance than its other perfections of modelling. Bronze is a popular medium for such features on account of its permanence, but it is not otherwise successful as it does not show in strong enough contrast against a foliage background. Marble, on the other hand, is too marked a contrast. Lead, as popularly used in England for this purpose, does not withstand the severe weather conditions prevailing in more rigorous climates. There is, therefore, an opportunity for metallurgists to devise a metal which will lend itself to easy casting, withstand severe weather and afford a medium colour tone and texture between bronze and lead. The matter of contrast and of texture of the sculptural features in relation to the foliage mass is so important that they should be studied together and made to harmonize in one organic whole.

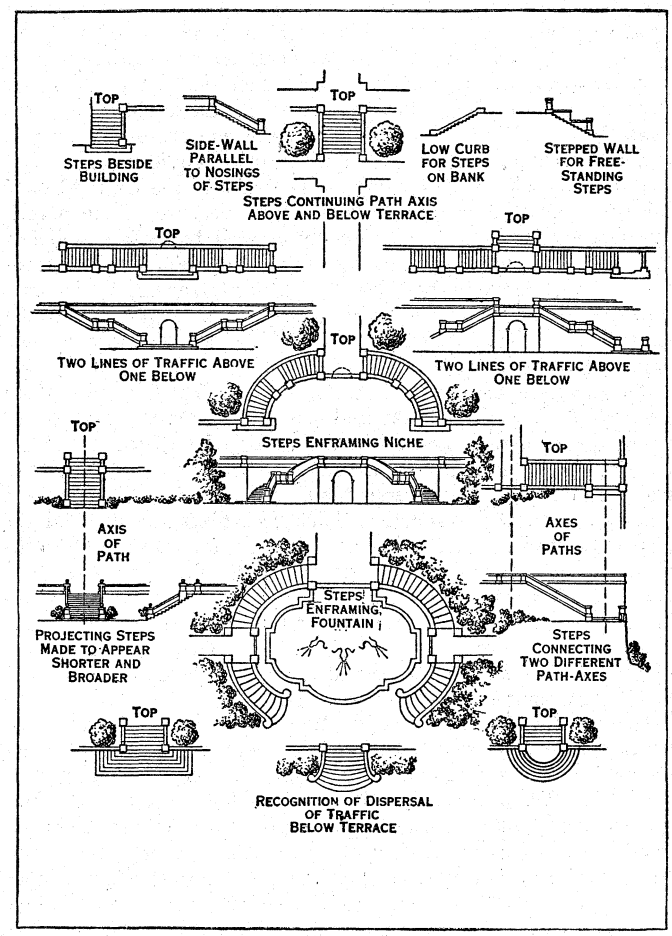
FROM HUBBARD AND KIMBALL, "LANDSCAPE DESIGN" (MACMILLAN)

WATERFALL IN THE "WILD GARDEN," ESTATE AT NEWPORT, R.I.

Multiple Homes.—This term is intended to include all structures designed to provide for more than one family unit. The present tendency is toward an increased use of dwellings that provide for many conveniences to be shared in common, so arranging these dwellings as to afford a garden area, frequently an enclosed or partially enclosed court, to be enjoyed co-operatively by all of the dwellers in that unit.

Marked progress has been made in the sphere of community or regional design. It varies, of course, in scope. A mere group of two or three homes planned in relation one to the other may come under this designation, and it may extend to include a considerable geographical area, providing for more than one nucleus or civic centre. Many benefits may be derived from thus planning home sites in groups.

Institutional Landscape Architecture.—So far as the application of landscape architecture is concerned with the design of



FROM HUBBARD AND KIMBALL, "LANDSCAPE DESIGN" (MACMILLAN)

PLAN SHOWING SOME TYPICAL FORMS OF STEPS

areas intended for institutional use, it follows the same motives and principles as domestic landscape architecture. Its purpose always is to provide for use of the area in the most appropriate manner and afford the utmost pleasure through the creation and conservation of beauty.

A marked increase has occurred in recent years in activity and interest in organized exercise and athletics. The schools, both public and private, as well as colleges and universities, have given more and more consideration and space to outdoor exercise. Some universities have required large stadiums with seating capacity for from 20,000 to 100,000 spectators. This requirement must necessarily be recognized and provided for in planning these institutions. Some of the sports, such as football, baseball, racing and the like, are exacting in their requirements as to specific areas; but all may be so organized with the introduction of trees and other foliage masses as to afford a park-like aspect and influence the students toward an appreciation of natural beauty as a result of their daily and intimate contact with that environment.

Another sign of changing social conditions has been the adoption of the golf or country club as the centre of interest in each community. For those who cannot afford membership in such clubs, municipalities and counties have provided golf courses on public park areas. The primary purpose, of course, has been to afford facilities for playing golf, but as the game requires large open areas on fertile soil and must of necessity be kept in an

orderly condition, the opportunity for creating and maintaining pictorial effects is very favourable. While the golfer may be primarily interested in the game of golf, the indirect and subtle pleasure resulting from a beautiful environment must necessarily make its appeal and afford a lasting benefit.

It is particularly necessary in developing the outdoor environment for hospitals and asylums that a quiet, restful atmosphere be created. The doctors and experts in the care and treatment of defectives fully appreciate the necessity for affording scope to the designer in his efforts to create such an atmosphere, and fortunately, public opinion favours a liberal policy in providing the necessary funds. Improved transit facilities have distinctly favoured the removal of institutions of the above character from congested districts to the open country, where the opportunity is so much greater for a pleasant and beautiful environment.

Park Design.—Public parks as they exist in the United States have been created for the recreation and pleasure of the public. In Europe the parks were originally created for a favoured few and were later turned over to the use of the public with comparatively slight change in their design so far as the aesthetic elements were concerned. The demand for play area, however, and the effort to meet that demand have been almost as evident in Europe as in the United States.

The pleasure parks in the United States, such as Central Park in New York city, are an integral part of the city, designed to afford quiet pastoral beauty in the midst of an urban environment. Drives for horse-drawn vehicles and walks for pedestrians made the various landscape pictures available. The present tendency is toward a practice which recognizes the demand for play by providing areas designed primarily for exercise and athletics, with the element of beauty incidental to that purpose. The "pleasure park" is being superseded by parkways or motorways no longer limited to the geographic limitation of the municipality, extending for many miles through territory selected for its possibilities of development aesthetically, but less desirable for home-building or commercial development.

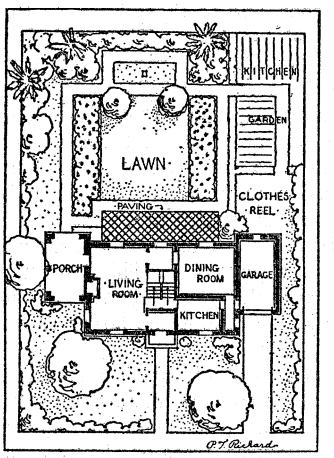
Despite the increasing application of landscape architecture which has prevailed during the past decade, it has not yet received the general recognition and use which are its due. It should be of general benefit to all the people, and its significance as a cultural influence recognized. No one of the applied arts can progress beyond a certain point without the corresponding progress of the others, so that it is very necessary that a collaborative and sympathetic interest should prevail among the designers. There is distinct evidence to-day of this mutual interest, and with the introduction of artistic training in the common schools and the increasing appreciation of the arts by the public, the United States is undoubtedly on the verge of a great artistic renaissance in which the art of landscape architecture will take a prominent part. (*See* BON-KEI; BON-SAI; HAKO-NIWA; BON-SEKI; BOTANIC GARDEN; HORTICULTURE; ARCHITECTURAL EDUCATION; SOCIAL ARCHITECTURE.) (A. F. BR.)

TOWN GARDENS AND ROOF GARDENS

The plainest yard can be made a lovely garden by planning its arrangement, instead of putting in flower beds, vegetable patches and chicken runs without thought for their relations to each other. The householder should so arrange his plot that the flowers are a coherent part of the general scheme, not a mere interruption in the lawn, the trees and shrubs form a pleasing composition and the vegetables contribute to the beauty of the whole. In planting a garden, three things need to be considered almost simultaneously: its orientation, its relation to the house, and its relation to the surroundings. It must be so arranged that its flowers and vegetables are not shaded, its paths, lawns and beds have some pleasing and logical relation to the house, and suitable objects outside its limits, such as a beautiful tree or a neighbouring wall, may be utilized to frame it or make it appear larger, while unsightly objects on adjoining property may be shut out by screen planting, or have attention distracted from them.

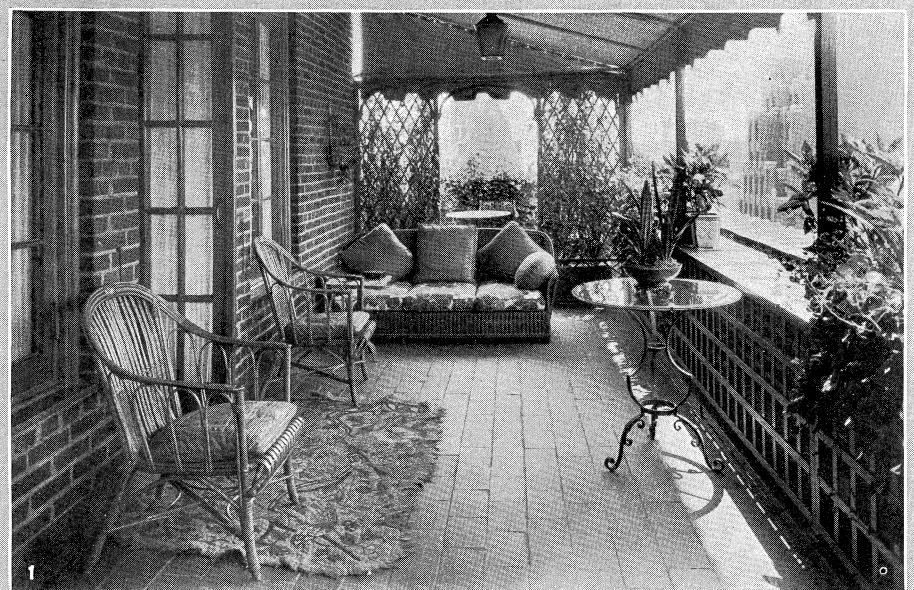
The simplest way to examine all elements of the design at once is to draw a plan of the garden on paper. For a small piece of property the most convenient scale is that of one quarter of an inch to the foot, but if drawing to scale seems too difficult a sketch plan that maintains the proper proportions between house, lot and adjoining objects is better than none.

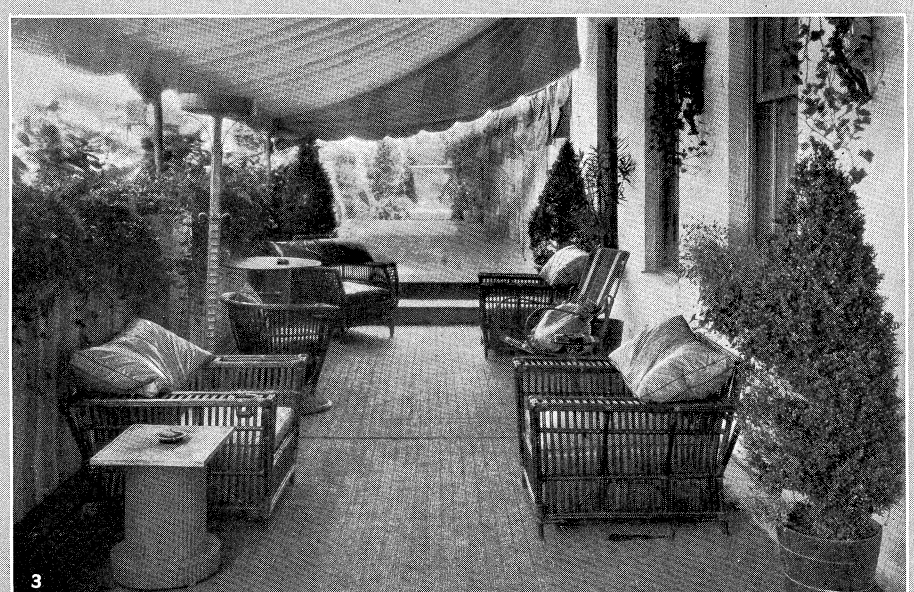
The plan of a garden is devised with the entrance as the feature of primary importance. The point of entrance having been established, the walks, the open grass and the beds, whether for flowers or vegetables, will fall into place naturally. A tree should no more be set in the middle of a garden entrance than a chair in the middle of a doorway. Just as one arranges furniture so as not to hinder movement in a room, so must paths in a garden be arranged to permit easy circulation. To carry the parallel a little further, in placing furniture inside a house its appearance from the adjoining rooms is always considered; so in a garden, the appearance of the garden through the windows of the room most used is important. Any garden, and especially a town garden, should be considered as an open air extension of the house and the principal axes and openings of the house must be continued or indicated in its arrangement. The plan can then be developed through consideration of its orientation; *i.e.*, how it lies with respect to the sun. Trees and high shrubs should not be so placed as to shade flowers or vegetables. Still sunlight is not the only factor that determines the placing of trees and light shrubs. Their inherent effectiveness as things of beauty must be taken into account also. In the town garden they will almost invariably have a dual function,—that of being part of the garden and that of screening unsightly surroundings. The final element entering into the plan is that of placing architectural features,—such as a sundial, a bench, a summer house, a pool, or especially important trees, shrubs or plants,—to attract attention to certain spots, to mark entrances to paths or to strengthen corners of flower beds. Such things have a function like that of ornaments or pictures in a house, and whether the garden be formal or naturalistic it will have some kind of vista or focal point. In winter when there is no foliage nothing enhances the appearance of a small garden so much as well-designed and well-executed architectural ornaments, but they must be carefully placed not to appear to have been dropped in the garden with the intention of putting them somewhere when there was time to consider where. We are all familiar with the old-fashioned Victorian method of placing cast iron dogs, china gnomes and fountains in almost any prominent place regardless of the relation of such objects to their surroundings, and of an exactly similar nature is the method of placing specimen trees and shrubs wherever they will grow best regardless of their function as part of the general design.



PLAN FOR A SMALL TOWN GARDEN

Usually the geometrically planned garden is most satisfactory in a town. It is difficult to make 40 by 50ft. into a miniature yet complete piece of wilderness, and it becomes impossible if a garage, a clothes-line or intensive cultivation of vegetables has a place in the scheme. The necessity of developing the plan logically cannot be stressed too strongly. A common and usually incorrect way to lay out a garden is to divide the available space by placing paths at right angles to each other; through the windows of the house such paths generally seem to begin and lead nowhere; the beds left by such arrangement are of sizes unsuited both to easy cultivation and to treatment in a pleasing manner. What matters least in the layout of a garden is its being symmetrical about a centre line, what is most important is to have the openings of the house opposite the axes of the garden regardless of whether they are on the physical centre of the garden space or not. While a plan on paper may appear lop-sided, in the garden itself, with varying heights and masses of planting to produce effects, it can appear





PHOTOGRAPHS, (1, 2, 3) MATTIE EDWARDS HEWITT, (4) EWING GALLOWAY

CITY ROOF GARDENS

1. Roof garden of Col. James A. Blair, Jr.
2. Roof garden of F. W. Slocum, showing planting in large cement beds and urns
3. Roof garden of William Cutler, showing methods of enclosure for protection from weather
4. Pent house roof garden in New York city, showing another method of enclosure. Potash-Marl, landscape architects

PHOTOGRAPHS, (1) EWING GALLOWAY, (2, 3) MATTIE EDWARDS HEWITT, (4) AMEMYA

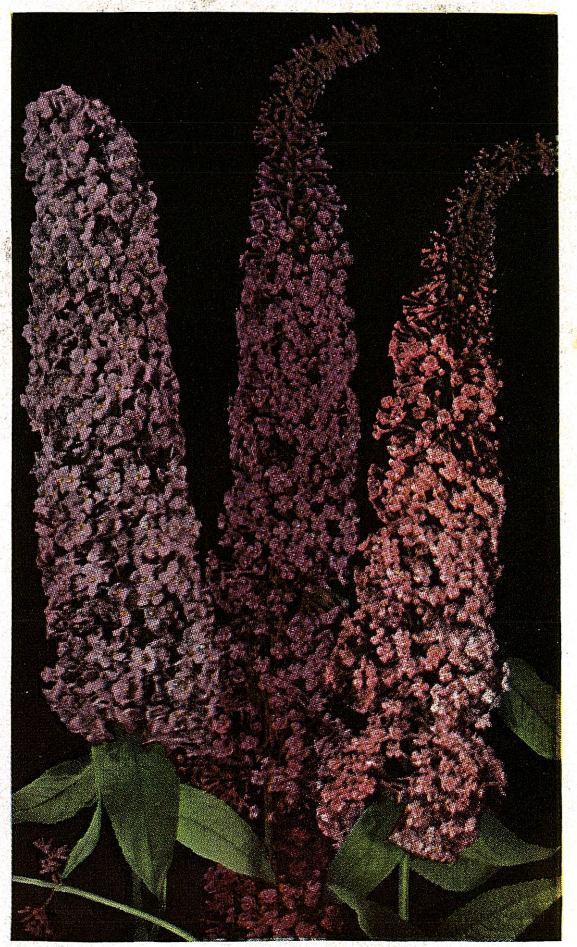
TOWN AND CITY GARDENS

1. City back yard garden, showing use of dense screen planting. Potash-Marl, landscape architects
2. Garden in Bronxville designed by Mrs. J. T. Duryea, with open planting, as used in suburban communities
3. Garden of John A. Hoagland, New York city. Addition of lattice to brick wall to cut off unpleasant view. The statue placed at the end of the garden gives an effect of increased length
4. Garden of Mrs. Howard Cullman, New York city. An example of circular planting in confined area. Ruth Dean, landscape architect

Snowhill Hydrangea *(Hydrangea arborescens grandiflora)*

Tatarian Honeysuckle *(Lonicera tatarica)*

Vanhoutte Spirea *(Spiraea vanhouttei)*



Butterfly Bush *(Buddleia davidi)*

BY COURTESY OF A. B. MORSE COMPANY

FLOWERING SHRUBS

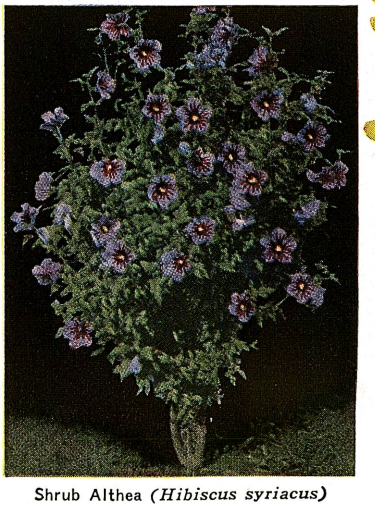
Japanese Barberry *(Berberis thunbergi)*

Korean Spice *(Viburnum carlesi)*

High Bush Cranberry *(Viburnum opulus)*

Golden Bell *(Forsythia intermedia)*

Common Lilac *(Syringa vulgaris)*



Shrub Althea *(Hibiscus syriacus)*

BY COURTESY OF A. B. MORSE COMPANY

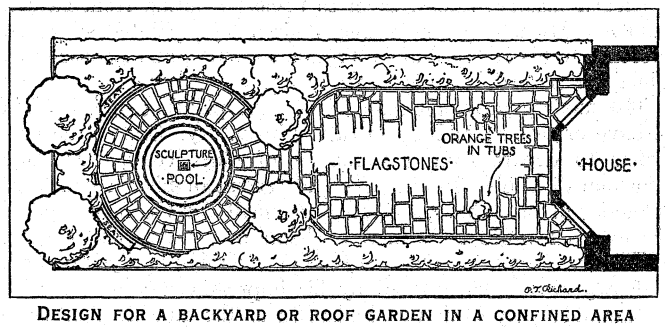
FLOWERING SHRUBS

well proportioned if not equally divided. Extending the axes of the house into the garden does not mean that the back door must open on a garden path. The garden may lie across a stretch of unbroken lawn with no path leading from porch or door to its entrance, but the entrance should be centred on a door or porch or window so that its connection with the house is at once apparent. Most amateur gardeners fail to recognize this point, and many otherwise charming gardens lose effectiveness because this principle has been neglected.

Having observed how the planting and surroundings will throw shadows, what unsightly objects must be screened, and the views of the garden from the house; having decided whether to have lawn, flowers, vegetables or all three—sketches may be made to evolve the plan best suited to all conditions involved. The designer has to decide how wide and how long to make the paths and flower borders so that they will be in proportion to the garden as a whole. Generally speaking the flower borders should be at least half again as wide as the paths—twice as wide being a better proportion—and the paths should be as wide as the whole space will permit up to five feet. Five feet is a pleasant and comfortable width in which two people may walk abreast, but if the space is so restricted that five-foot paths swallow up and dwarf the garden, it is better to reduce them to three or even to two and a half. The size of the architectural details, ornaments or accessories, such as a sundial, a fountain or bench, must be carefully considered in their relation to the size of the garden, so that they will not dwarf it by being too large or appear ridiculous because they are too small.

Since the average city plot is 20 by 100ft. and the house consumes the whole width and at least half the depth, very little land is left on which to make a garden. Further, the amount of sunlight is so limited and the constant rain of soot so damaging to the vegetation that few plants will grow. No conifers are able to survive the atmospheric conditions because they exude a resinous gum, which glues the soot fast, clogging their pores and killing them; but a few broad-leaved evergreens whose hard glossy leaves shed dirt easily, will live. In the temperate zone rhododendrons, Japanese holly (*Ilex crenata*), andromeda japonica, aspidistra and English ivy all do surprisingly well under these hard conditions, and of course privet and the ailanthus tree are known for their persistence in living under almost any conditions. Flowers, for the most part, are pathetic objects in the big city garden; a few of the hardier perennials, such as German iris and chrysanthemums, struggle through, but to have colour in a city garden it is necessary to have freshpotted plants every two or three weeks. As vegetation is so uncertain, the city garden is much more dependent on an architectural background and accessories than the suburban one where luxuriant foliage and flowers are possible. Under the best conditions the city garden cannot wholly mask or distract attention from the artificial elements by a wealth of blossoms. This means that walls, trellises, walks, fountains and seats must be so well designed as to create the atmosphere of a garden even though foliage is largely absent. A garden of this type in New York city is shown in the following plan, and although the size of the garden is only 20 by 40ft. it appears larger because the two Japanese flowering cherries in the foreground form an arch leading into the rear third of the 40ft. and by virtue of the picture frame so formed create an illusion of distance. These trees with a great deal of sunlight, well fertilized each year and frequently sprayed, thrive and blossom in a way that would be creditable in their native soil. To afford a place for children to play, the entire forepart of the garden is paved with flag, leaving on each side a border only 18in. wide for planting. Such a small space may seem a poor playground to country boys and girls, but most city children have only streets or distant parks. The figure ("Baigneuse," by Roy Sheldon) in this garden is its most prominent feature and illustrates the value of good ornament in scale. A commonplace piece of sculpture may nestle into a thicket of greenery and appear delightful in a country garden, but only the really distinguished appears worth while at close range and against an unflattering background.

The considerations that determine the design of a city garden are even more potent when the area in question is on a roof. The importance of architectural decoration increases as the possibility of successful vegetation decreases, and on the city roof the designer of the garden faces all the difficulties of the back yard with the added handicaps of wind and a scarcity of soil. Yet in the larger cities and especially in New York, penthouses on the roofs of the tall buildings are the pleasantest places to live in, and



DESIGN FOR A BACKYARD OR ROOF GARDEN IN A CONFINED AREA

since each of these penthouses has a sort of piazza or front yard of tile roof in front of or around it, the roof garden has been the subject of many enthusiastic designs. All earth needed on the roof has to be transported; therefore it is usually wisest to arrange the planting in tubs and boxes. Under the most favourable circumstances no great depth of earth is possible; consequently the planting is limited to those things that will grow in shallow soil. Privet and English ivy are the chief resources; annuals such as calendulas, petunias, marigolds and morning glories will thrive; most evergreens die and have to be replaced at least annually; everything needs to be fertilized frequently in order to replenish the easily exhausted soil. Perhaps the best way to consider the roof garden is as a bit of stage scenery with an architectural background against which a few plants may grow well. The importance of the architectural background is at once apparent. If the constant expenditure of money for upkeep is possible, however, a standing order for potted plants can make any roof garden enchanting, for there is something irresistible in being high above the world and in a garden filled with bloom. Such roof gardens are illustrated herewith and show very well the importance of the architectural background and the effect to be obtained from plants in tubs and boxes. In all small gardens, suburban, city or roof, the points to be emphasized are proper scale, a logical relation between house and garden, economy of plant material and good design in architectural accessories.

(R. DE.)

LANDSCAPE PAINTING. Landscape art began when artists sought to give a slight expression of background in their works of men and animals. As used by the earliest artists it is very simple: a mere line expresses a horizon; a few lines express foreground and distance. In Indian and Persian prints a few leaves represent the near location of a tree. The best of the early attempts to express landscape are by Chinese artists upon silk. These artists are unknown but experts form some idea of their antiquity, the earliest recorded being about A.D. 300. They expressed space and distance painted exquisitely in decorative composition. A few fine examples are "The Ten Horses" by Pei Kuan owned by the Metropolitan Museum; four paintings of the life of Wen-Chi, in the Boston Museum of Fine Arts; "The Earthly Paradise," in the British Museum and Ma Yuan's landscape roll in the Freer collection in Washington. Fine examples of wall decoration discovered at Boscoreal and Pompeii have an air of landscape art. (*See* ROMAN ART; CHINESE PAINTING.)

A further development of landscape painting is seen in the illuminated manuscripts (*q.v.*), with landscapes sometimes painted in the large beautifully decorated initials and in the line drawings for the masterly engravings and etchings that appeared in Europe with the development of the printing press, and in the backgrounds of the Italian primitives where the representation of rocks, hills, plains and skies appear. There are also the rich and beautiful landscapes in the Books of Hours, the miniatures from the "Hours of Turin" by Hubert Van Eyck (destroyed by

fire in 1903), the landscape backgrounds of Hubert and Jan Van Eyck, and the landscapes in the famous paintings of Albert Ouwater. In depicting scenes from the stories in the Testaments the artists of the early Renaissance enhanced and amplified these stories by endeavouring to place the characters in an imaginative landscape. Their archaisms lent them a peculiar decorative effect. The close adherence of students to the art conventions of their particular masters caused them to neglect painting from nature, although Michelangelo's master, Ghirlandajo, painted views of Florence in his frescoes of S. Trinita, Florence, and Leonardo da Vinci was an ardent student of nature.

The modern development of landscape painting may be said to have originated in Italy in the 15th century. One of the first artists to depart from the control of older conventions was Giovanni di Paolo. In the first and second of his six panels of the story of St. John, the figures are small and the landscape of the external world large in the scheme of composition, making a vivid representation that St. John encountered a physical earth and may have been affected by his impressions of it. Mathias Grunewald's polyptych (1510) known as the altarpiece of Isenheim, composed of several pictures with various backgrounds, is an impressive composition with a landscape effect which is an integral part of the expression of his idea. Jerome Bosch at the dawn of the 16th century conceived an inspired landscape of the Campinoise plains, in which there is a distinct atmosphere of the fantastic equally in its elements and in the figure subjects. Earlier than either of the foregoing is Conrad Witz's picture dated 1444 in the museum at Geneva, representing the Apostles fishing on the Lake of Geneva with Mt. Blanc in the background.

The landscape backgrounds of Titian's paintings are those which so much inspired later painters of landscape. They are reminiscent of the Cadore country where he spent his boyhood and of the views of the plains of Treviso with the far distant mountains to be seen from the window of his studio in Venice. In the work of the foregoing artists, however, landscape appears only as a background or accessory. The earliest detached landscapes are said to have been done by Ambrogio Lorenzetti, about 1338, on the wall of the Papazzo Pubblico at Siena. Even his fresco, however, is peopled with figures and can hardly be called "pure" landscape. Paul Bril (1554–1626), born at Antwerp, settled at Rome where he developed under the influence of A. Caracci and A. Elsheimer (who was a pioneer in landscape painting). He designed classic frescoes for Pope Clement VIII., in which he used landscape as his sole theme. His influence disturbed the ordered calm of the conventional art world and ushered in the Franco-Roman school. It was Bril's pupil Tassi, who taught Claude.

The Netherlands.—Before considering the Franco-Roman school as it developed after Titian's death, and which had so much influence upon French art, we must speak of the Flemish and Dutch schools. Holland and Belgium became very prosperous. Protestantism frowned upon church adornment and the demand for religious paintings became very slack. The wealthy citizens of the Netherlands built handsome chateaux and a demand for small pictures was created, what is known as the "easel picture." One kind of the easel picture was the landscape, which was not, however, popular. John Van Dyke in his volume on Rembrandt avers that there was no commercial demand for landscape painting until 200 years after Rembrandt's death. The extreme poverty of the Dutch landscapists was proverbial and Hobbema had to give up painting and take a post in a wine cellar. On this account, landscape painting did, in a manner, represent the high water mark of idealism, inasmuch as painters without prospect of profit, were seeking to express their love and knowledge of nature as they saw it.

Gilles van Coninxloo (b. 1544), left a reputation; of his surviving works there is but one landscape owned by Prince Liechenstein of Vienna, and his work is said to have had much influence upon his contemporaries and successors. They said "his touch was spirited and light." Joachim Patenir (1485–1524) who was characterized by Dürer as "that good painter of landscape" is thought to be the first landscapist although he too had to introduce figure subjects into his landscapes. He tried to rid himself of conventions such as painting a brown foreground, a green median and blue distances. He earned his living painting backgrounds for other artists' pictures.

Of the painters in the Netherlands attempting pure landscape, there was Bruegel the Elder (1525?–69) who had a broad style and composed his pictures splendidly; Sebastian Vraurex, admired by Rubens, and who introduced Italian ruins into his scenes, as also did Jacob Grimmer and others. Jan Sibrecht, David Teniers, Lucas van Valkenbrogh and Josse de Momper became very decorative and unconventionally gave the appearance of vastness to untrodden snow, or the peaceful vistas of the countryside in pale sunshine.

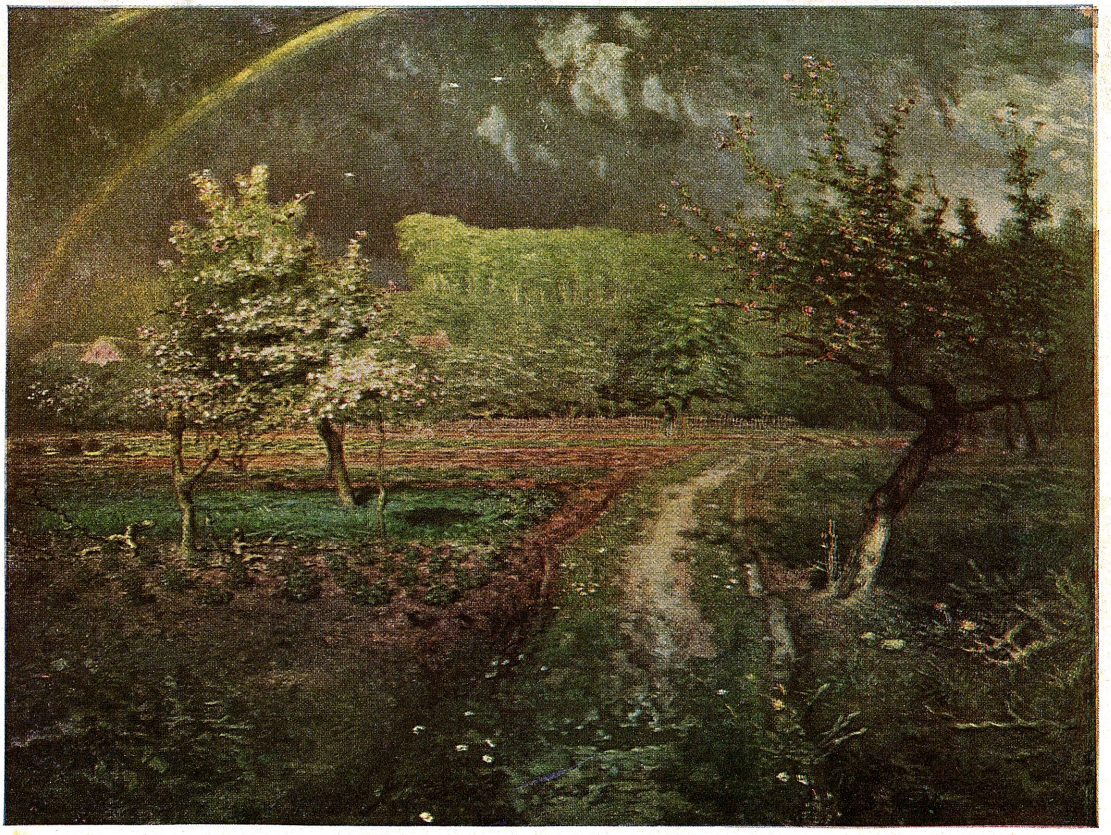
Peter Paul Rubens (*q.v.*) late in his life retired to the Chateau d'Elevyt and there, having no studio, did all his magnificent landscapes. At this time he spoke of his admiration for many of the Flemish landscape painters and may have had only a modest estimate of his own, but they were so living, graceful and charming that they are considered among the world's masterpieces. They were done in Titian's manner and introduced qualities he admired in that master, but his colour is that of his northern contemporaries. Constable said of Rubens: "In no branch of art is Rubens greater than in landscape painting." "Rubens delighted in phenomena, rainbows in a stormy sky, bursts of sunshine, moonlight, meteors and impetuous torrents mingling their sounds with wind."

The Dutch landscape painters long enjoyed the limelight of appreciation due to French and English admiration for their works throughout the 18th and 19th centuries but modern criticisms seem to have brought about a slight decrease in the high estimation in which they were held. They are not so much revalued as out of mind, set aside, as it were, from consideration as something the spirit of which our own age does not sympathize with. We are to-day more interested in the appeal of the less natural but more handsome landscapes of the Flemish painters. We discover in some of those until recently almost obscure artists, such as Bruegel the Elder, qualities which we think the connoisseurs of former times were curiously blind to. This out of mindness was but a phase of current criticism, perhaps in part a mood of uncertainty over the probability that Rembrandt's pictures were not all painted by himself, but as recent experts deduce, were the works of his pupils which he signed as was the custom of some of the Italian masters and of Rubens. It may seem that the expression of the Flemish landscape painters is more distinctly individual and individuality appeals to the modern mind.

If then, Rembrandt's landscapes were nearly all painted by his students (a view not generally accepted) the following are some of those of them who painted landscapes: Simon de Veeger, Anthon van Borssom, Lambert Dooner, Jacob Esselus, Phillip Komick, a prolific painter of landscapes, usually of flat river basins, Jan Griffers and Albert Cuyp whose work was radiant with light when attempting landscape; also Roeland Roghman who although not a student was particularly a friend of Rembrandt's.

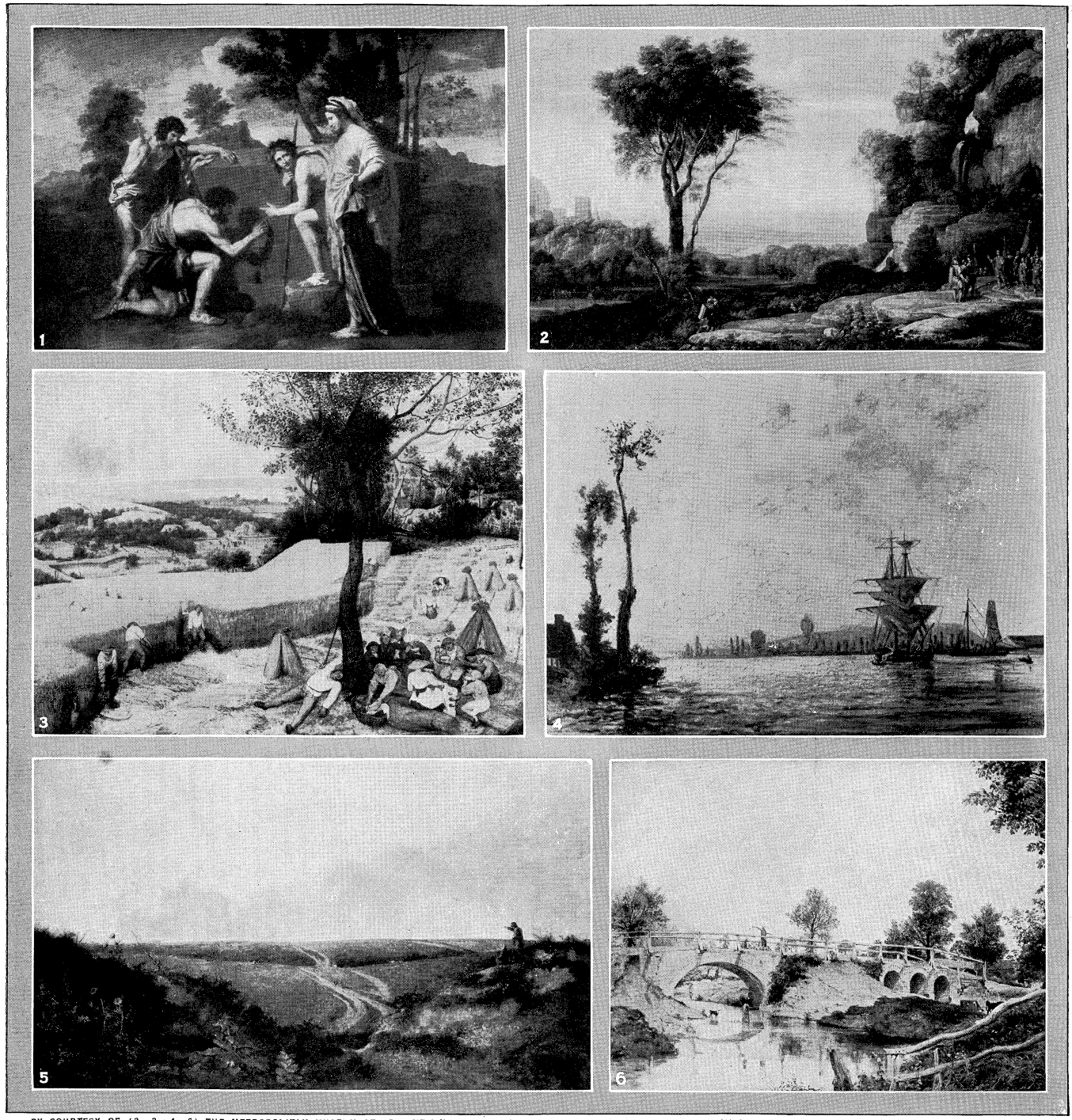
One of the earliest and best of Dutch landscape painters was Jan van Goyen (1596–1656) who taught Jan Sheen; his pictures show an especial liking for soft browns and greys. Jacob van Ruisdael (1628 or 1629–82), was a very distinct landscapist and his work is especially important in marking the transition from the old to the later landscape. He was the first to put a sad plaintive chord in the harmony of things seen and to give the feeling of restlessness, the never satisfied feeling which is so akin to the modern spirit. Meindert Hobbema (1638–1709) is now a much admired landscapist; Paul Potter (1625–54), painted with masterly skill Dutch out-of-door scenes; William van de Velde (1633–1707) a prolific worker, executed a large number of marine pictures as did his father Van de Velde the Elder (1611–93).

In the painting of landscape Rembrandt was much influenced by Adam Elsheimer and Hercules Seghers. He was not naturally a landscape painter and, like Rubens, did it in his advanced years. Being of all artists the greatest in intensity of feeling and the most profound, it follows that he would produce significant work



CONSTABLE AND MILLET

Top: "Glebe Farm with a view of Langham Church" (1827), by John Constable (1776–1837), English. In the Metropolitan Museum of Art
Bottom: "Spring" by Jean François Millet (1814–75), French, a member of the Barbizon school. In the Louvre



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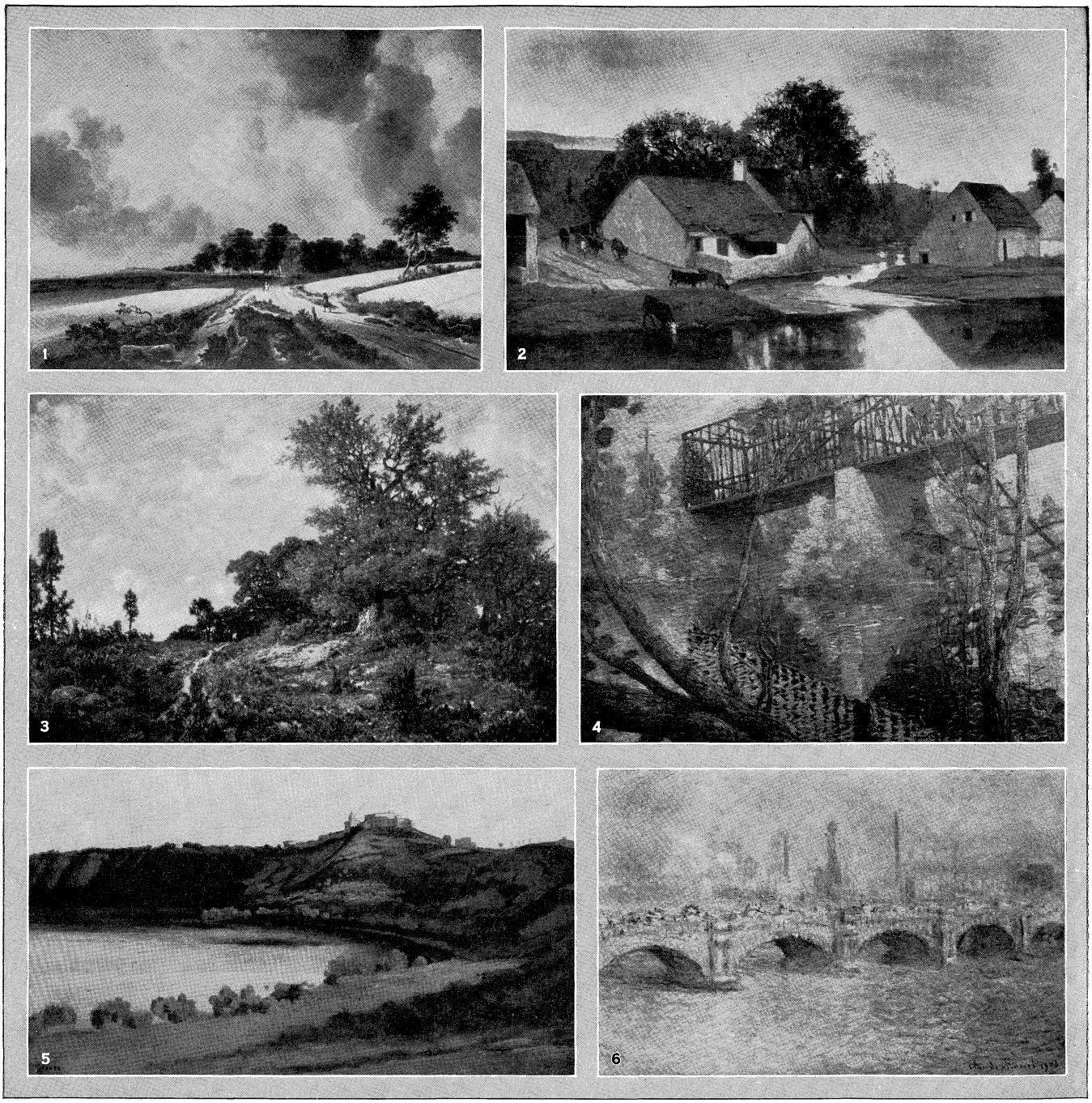
LANDSCAPE PAINTERS OF FRANCE, THE NETHERLANDS AND ENGLAND, 16TH–19TH CENTURY

1. "The Shepherds of Arcady," by Nicolas Poussin (1594–1665), French. Influenced strongly by the classical Italian school
2. "David at the Cave of Adullam," by Claude Gelée called Lorrain (1600–82), a French painter of landscape who studied and worked for the greater part of his life in Italy
3. "The Harvesters," by Pieter Bruegel the Elder (1525?–69), Flemish
4. "Sunset on the Scheldt," by Johan Barthold Jongkind (1819–91), Dutch
5. "Mousehold Heath, near Norwich," by John Crome (1769–1821) known as "Old Crome," English. Founder and representative of the Norwich school
6. "Bridge on the Stour" by John Constable (1776–1837), English

LANDSCAPE PAINTING



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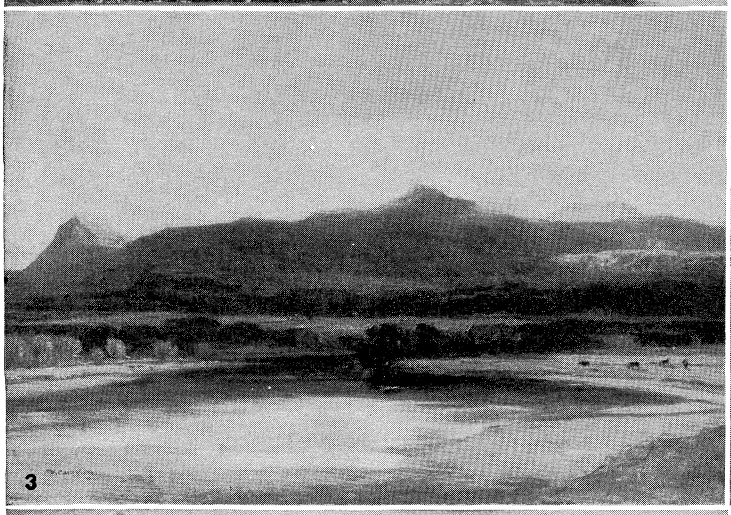
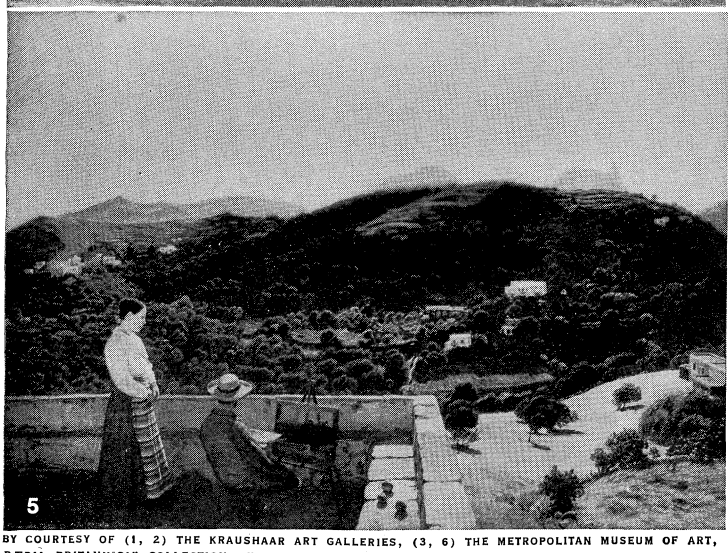
DUTCH, FRENCH AND AMERICAN LANDSCAPE PAINTERS, 17TH–20TH CENTURY

1. "Wheatfields," by Jacob I. van Ruisdael (1628–82), Dutch
2. "Evening," by Charles François Daubigny (1817–78), French, Barbizon school
3. "The Edge of the Woods," by Pierre Étienne Théodore Rousseau (1812–67). French, Barbizon school
4. "The Red Bridge," by J. Alden Weir (1852–1919), American
5. "Lake Albano from Castel Gandolfo," by Jean Baptiste Camille Corot (1796–1875), French, Barbizon school
6. "The Thames" (effect of snow, Waterloo Bridge) 1903, by Claude Monet (1840–1926), French, leader of the Impressionist group





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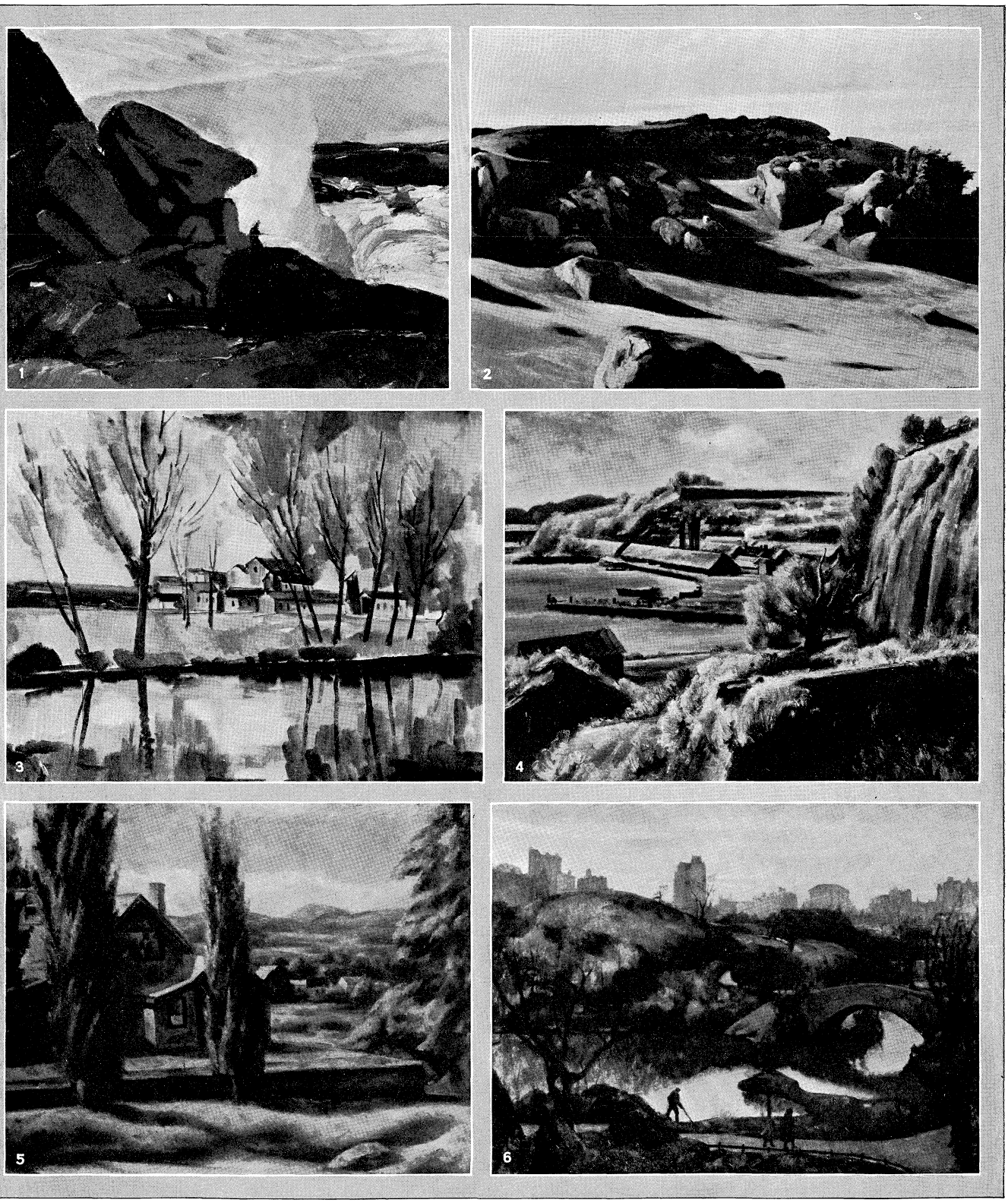
MODERN LANDSCAPE PAINTING

1. "Flight at Dawn, Montauk Point," by Gifford Beal (1879–), American
2. "Twilight and Sunglow," by Henri Le Sidaner (1862–1939), Belgian, Impressionist school
3. "Sunrise," by Sir David Young Cameron (1865–1945), English painter and etcher
4. "Trees and Mountains" by Luigi Lucioni (1900–), American
5. "View from the artist's home on the island of Naxos, Greece," by Niels Skovgaard (1858–1938), Danish
6. "Opalescent River," by Gardner Symons (1865–1930), American

LANDSCAPE PAINTING



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LANDSCAPE PAINTING BY MODERN FRENCH AND AMERICAN ARTISTS

1. "Incoming Tide," by George B. Luks (1867–1933), American
2. "Cape Ann Granite," by Edward Hopper (1882–), American painter
3. "The River," by Maurice Vlaminck (1876–), French
4. "Brigham's Yard, Kingston, N.Y.," by Eugene Speicher (1883–), American
5. "Landscape, with painter's house, Woodstock, New York," by Henry Lee McFee (1886–), American
6. "Central Park," by Leon Kroll (1884–), American

in this field. His known landscapes are fewer than 15 in number. "The Mill" is probably the most outstanding.

Italy.—In Italy Canaletto (1697–1768) and Guardi (1712–93) of Venice were famous for their Venetian scenes. Salvator Rosa (1615–73) did wild savage-looking landscapes peopled with bandits. Italy produced no pure landscape painters of the first rank. While the art of the Netherlands was developing in the north two artists of French birth were maturing in Italy: Poussin (1594–1665) and Claude Lorrain (1600–82). The latter was a pupil of the landscape painter Tassi whose master was Bril. The French painters inclined far more to Italian influences than did the northern painters, though in the 19th century the Romanist French school sought its inspiration from the Dutch painters. Both Claude and Poussin caused landscape painting to be raised to a place of dignity that it had never previously enjoyed, much as George Eliot raised the novel to a high place in English literature. At first sight Poussin seems cold and austere, as masculine as Claude is feminine, warm and radiant, but with intimate acquaintance one comes to understand that Poussin's was a passionate temperament held in restraint. His touch was heavy, bold and firm; he often worked upon a dark red ground. His landscapes depicted ragged ground and sharp contrasts of light and shadow and introduced rolling storm clouds. In his rigid style he recorded nature faithfully and grandly. He considered that the idea to be expressed should first be clearly conceived, then expressed in noble symbols of trees, flowers, sky and mountains. His "Shepherds of Arcady" is one of the treasures of the Louvre. Of Claude, one writer has said, "He was a worshipper of sunlight, transmitting ideal expression in an adoration of nature." He worked with indefatigable enthusiasm, staying in the country from earliest dawn until night to learn how to express the blazing fires of daybreak, the setting sun or the falling night. Much of his painting he did in the presence of nature. Modern painters highly value Claude as an innovator in going to nature for a revelation of her wondrous loveliness. He is spoken of as "the greatest lyricist of nature." Posterity gives him the pride of place as the innovator of the modern landscape, for the fire of originality found in his approach to landscape painting.

France.—After the superlatively good work of Claude and Poussin, no notable landscape painting appears in France for a long time. The vogue for architectural ruins dwindles and Poussin's fine painting of "Cherubs" descends to the frivolous painting of Boucher's cupids. Art is led away from nature and follows the dictates of fashion, which was to paint idyllic pictures and of these Watteau's (1683–1721) are most noteworthy. His landscapes have the charm of sparkling colour, a prophesy of modernism to come.

Shepherds and cupids went out of fashion as the influence of Winckelmann and Lessing aroused Europe to an awakening of the merit of antique art. French art in particular became classic under the patronage of Napoleon (if not classic, at least enamoured of the sterner virtues) and landscape art almost suffered extinction in consequence of it.

Far East.—Early in the 16th century commerce and the consequent exchange of thought developed between Europe and Asia. We can guess that the artists of Europe, China and Japan studied the prints of the age and in some degree appreciated the subtleties of each other's art. French art took from the Japanese only what it liked—a delight in lovely contrast of movement.

Until her ports were forced open, Japanese art had been feudal, but with this event the popular and vulgar school of painting arose. It produced Japan's greatest landscape artist, Hokusai, who did the 100 views of Fujiyama and other sets of masterpieces in landscape drawing. Hiroshige is the second famous and very fine painter of Japanese landscapes. Some of his work has been compared to Claude's because his colour print landscapes give a revelation of light in a masterly intellectual statement in line drawing.

England.—The English people admired Dutch art, especially in the eastern part of England where the intercourse of commerce with Holland was very active and where many Dutch families migrated. Many Dutch pictures were owned in Norfolk and the influence of them was strong upon the development of the Norwich school. Jan Griffers, a pupil of Rembrandt, who lived in London, had great influence on English landscape. English landscape developed a little earlier in London than in the Norwich school in east England. Richard Wilson (*q.v.*), the "Father of English landscape painting," was a prosperous figure painter until he visited Italy. Upon seeing the work of Claude, he abandoned his former work to face starvation and experiment in a new manner of painting which was 100 years ahead of his time. Until this time the brown tree was a strict convention and Wilson strove to uproot it by painting in fat juicy colours and in other respects anticipating modern art. His influence on Constable was very great. Constable writing a friend said, "I recollect nothing so much as a large, bright, fresh landscape by Wilson."

Rembrandt's "Mill" was first seen in England in a loan collection in 1815 and had great influence upon Constable, Turner and Crome. Ruben's "Château de Steen" was shown in the same collection. It produced a sensation. Its golden blazes of sunlight were immediately copied by Turner in his "Walton Bridges." Constable changed his style on the spot and in Crome's "Windmill" it seems as if he tried to carry out the "Mill" of Rembrandt in the key of Ruben's "Château de Steen." Thomas Girtin, a boyhood friend of Turner was an artist of remarkable promise who died in his early youth. Two water-colour landscapists, Alexander Couzens, an experimenter, and his son John exerted great influence upon landscape art in their time. Of the latter's "Hannibal Crossing the Alps" Turner said he had learned more from it than from any other painting.

Joseph Mallard Turner (*q.v.*), one of the best known of all landscape painters was fortunate to find an impassioned critic whose fierce controversy of his claims to genius aroused great interest in Turner's work in his lifetime. His work is either vehemently liked or disliked; Ruskin at 17 began his career by defending and praising Turner. Ruskin divides Turner's work into three periods, the work of the first being distinguished by boldness of handling; generally gloomy tendency of mind, subdued colour and perpetual reference to precedent in composition. In his second period colour appears everywhere, instead of grey. His shadows are no longer one hue. He discovers that it is much more difficult to draw tenderly than ponderously and that all the most beautiful things in nature depend on infinitely delicate lines. Thirdly, quantity takes the place of mass. He sees that nature is infinitely full; that painters had not only missed her pitch of hue but her power of accumulation. "He saw that there were more clouds in every sky than had ever been painted, more trees in every forest, more crags on every hillside, and set himself with all his strength to proclaim the great quantity of the universe. He saw that there were no limits to creation, but forgot that there was to reception. He thus spoiled his most careful work by the very richness of invention they contained, and concentrated the materials of twenty noble pictures into a single failure." These words from Ruskin's *Modern Painters* describe Turner's art. He was called the Claude Lorrain of England.

The desire of Wilson to paint in a less conventional manner was felt by Constable (*q.v.*), who was greatly enamoured of Claude and broke away from tradition completely. He was long in finding himself, but tireless in his effort to discover means of interpreting nature as he saw it. He succeeded late in life by a singular persistence that carried him through moods of depression in the years of his unrecognized efforts to paint with sincerity and conviction and to overcome the discouraging neglect of his early and middle years. His art steadily improved until the time of his death. He gained a fame that was never diminished and his influence in later life and after his death was enormous. His influence upon French painting and the subsequent art of all nations is acknowledged by all writers in art of every nationality. In 1828 he sent an exhibition of landscapes to Paris which created a sensation, so general was the enthusiasm for his work. The furore of Constable's success abroad established his success in England as her greatest landscape painter.

One of his contemporaries was Gainsborough (*q.v.*), whom

he admired greatly. Gainsborough's landscapes are not so greatly admired by posterity as are his superlatively fine portraits. He regarded them as a luxury and left 40 of them in his studio when he died. Ruskin said of him, "His touch was as light as the sweep of a cloud, as swift as the flash of a sunbeam." His landscapes are of no particular place and are done in a manner peculiarly Gainsborough's own. He tried to be classic and to conform to an ideal of beauty.

In the east of England, in Norfolk, there developed a landscape school of a different character. While the London painters were so much influenced by Italian art the Norwich painters were mainly influenced by Dutch art. Many Dutch paintings were owned in the locality so that Hobbema was an early love of Crome, who died mentioning that painter by name. Crome was the leader of the Norwich school. He was peasant born and self-taught. He did not seek to crowd splendour upon splendour, so his landscapes are remarkable for their simplicity and wonderful dignity. They were carefully planned, spacious and luminous with exquisitely coloured atmosphere. He taught and advised the painters of the Norwich school. He said to his son, "If you paint a pigsty, dignify it." His letter to his pupil Stark is a famous one of advice to a landscapist.

The Classicists.—The English taste for art showed itself aristocratic and luxurious and did not welcome the innovations of Constable's tendency toward realism, the joy of seeing commonplace things made interesting. A cold austere revival of classicism in France, fostered by Napoleon, had caused French art to lose its animation so that Constable's exhibition of breezy landscapes moist with dew and suggestive of real out-of-doors threw the French painters into a fever pitch of excitement. Painters old and young felt a new enthusiasm for their art, and its development was such that France won and held the position of leadership in art throughout the 19th century.

Delacroix, Deschamps and Counture drew and painted excellently from nature, but are not fine landscapists. Courbet turned to landscape after he had failed as an historical painter and after he was exiled to Switzerland. He was defiantly realistic, the very antithesis of David, "The Father of French Classicism." Courbet was famous for his hunting scenes. Occasionally he would paint a single tree with unrivalled mastery, or delight one with simple bits of painting in his native mountains of Jura. His "Wave" is his most famous painting.

Corot (1796–1875), who had a natural bent for the presentation of sunlight and air, acquired a sense of ancient poetry and mythology which he showed in his pictures. His early work, fresh in tone. full of movement and intimate in feeling is being rediscovered, after some neglect. It was Corot's later period of work that became so popular. The simplest paths, the quiet streams and misty distance composed in delicate tones and values afforded him ample material for subject matter.

Rousseau (1812–67) loved the forest of Fontainebleau and was more alone with nature than Constable was. Often there was no sign of man in his landscapes, only untamed nature teeming with living energy. He had an extraordinary knowledge of earth and everything that grew upon it.

Millet (1814–75), an intimate friend of Rousseau, was equally serious-minded. One must appreciate the man to appreciate his work. Through his deep and powerful sympathy for the hard and melancholy life of the French peasants that silhouette his landscapes, he fails to rank as a landscape painter in the pure sense, except in his famous "Spring," now in the Louvre, which is one of the world's greatest landscapes.

Diaz (1809–76), of Spanish origin, loved the brightness of nature. Dupré loved the movement of nature between light and gloom, wind and rain. Daubigny (1817–78) worked on a house-boat that was his studio and home. From it he observed with intimacy the last glow of evening and the rising sun mists. For him the green earth was earthly and very lovely. His best works are in Mesdag museum in The Hague. Troyon (1810–65) used the earth as the home of cattle, as Millet used it as the home of the peasant.

The Impressionists and Post-Impressionists.—Monet (1840–1926), was the great master of Impressionism (*q.v.*). He employed a palette of nine colours: red, orange, yellow, blue, green, indigo, violet, black and white. He liked to experiment in flat planes of earth and painted sunlight keen and hot. His subjects were most varied: fields and trees in effects of light. His paintings of water are marvels of beautiful analysis of colour, whether attempting the bubble and iridescence of quick flowing streams or the surging seacoast. As his love of colour analysis developed, he delighted in painting series of effects of light upon a single subject such as his 22 paintings of a neighbour's haystack at all times of day and seasons of the year. His 25 paintings of every effect of light upon the façade of the cathedral of Rouen, covering a period of three years' work, were done from a second storey window opposite the cathedral. Of himself Monet said, "I wish to paint as the bird sings." Without Monet there would have been no Impressionists. He borrowed from Japanese prints their perspective of seeing things from a high altitude and did his famous street scenes in this manner.

Sisley (1830–1899) was prominent among the Impressionists doing rural scenes and commonplace subjects with a personal and lovely vision. There was tranquillity and happiness in all he saw around him. The followers of Impressionism are numerous, and the movement affected the art of other countries, notably as in the work of George Clausen, Spencer Gore, Sickert and Gilman of England and Emile Claus and Le Sidaner of Belgium. Degas (1834–1917) and Manet did few but very important landscapes. Degas painted with a keen intelligence and his race courses are admired for their restraint.

Impressionism was followed by Neo-Impressionism, a more formal and scientific technique of dots of pure pigment now called Pointillism. (*See* POST-IMPRESSIONISM.) Signac, its originator, said, "By means of suppression of all impure mingling, by the exclusive use of the optical mingling of pure colours, it guarantees a maximum of luminosity, colouration and harmony." Seurat, Henri Martin, Auguste Pointilin and Fjaestad of Sweden employed this manner in painting.

In Italy Segantini was one of the greatest artists of the 19th century. In one respect, he is unique; he demonstrates more than any other artist the unwillingness to be influenced by any "isms" or methods, and the value of independent, individual thinking and feeling. He did not strive in the least to live in his age with the hope of being classified with the artists who expressed the ideas and feelings current in their age. Segantini's life was solitary and his thought independent. His chaste passion for his art has made his work very virile and gives it great depth of feeling.

After Neo-Impressionism came Post-Impressionism. The momentary emotion of the Impressionist was dissatisfying to some artists of earnest effort and a new leadership was established by the work of Cézanne, Van Gogh and Gauguin. Its cult was that the artist should endeavour to master his subject rather than that his subject should master him. Cézanne's aim seems to have been to find a greater measure of volume, depth and height than Impressionism achieved. He ruthlessly eliminated detail, thus seeming to return to primitive art.

Other Artists.—Gauguin did not begin to paint until he was 35 years old. He worked at times in Brittany but is famous for his landscape decorations of Tahiti which have a jewel-like splendour of colour and an expression of mass. Van Gogh had a great power of perception but his impetuosity and lack of restraint made him seem a very brutal if very powerful painter. His ploughed fields are so interpreted as to make one feel and smell the pungent turf, as one almost smells his blossoming trees. His colour is very glowing and powerful.

America.—Rodin wrote of American landscape as he knew it: "There is in America a renaissance of landscape painting equalled only by the Italian Renaissance." The aspect of American landscape is influenced less by European art than is figure painting. All its best landscape painters are distinctly American: George Inness, Homer Martin, Winslow Homer, J. Alden Weir and Willard Metcalf were all distinguished American landscapists. (*See* PAINTING; WATER-COLOUR PAINTING; OIL PAINTING, TECHNIQUE OF.)

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MODERN

Landscape painting of the present century has been the subject of a great number of conflicting influences. Of these the first and greatest was undoubtedly Impressionism (*q.v.*). Few are the outdoor painters of to-day who have not been profoundly influenced by the discoveries of the group of Frenchmen who devoted themselves to the study and interpretation of the phenomena of light. But, while Monet, Manet, Sisley and their compatriots sacrificed form in their search for vibration, the outdoor painter of to-day has increasingly concerned himself with it. Indeed, form, or the allied problem of mass—three-dimensional form—is the particular concern of the followers of Cézanne and form in the sense of design is the greatest interest of many of the other so-called "Modernists," many of whom, be it said in passing, seem to believe that it originated with them.

A painter who is devoting himself to the exploiting of a certain quality in art, be it form or colour or design or some esoteric and not easily defined subtlety, almost inevitably disregards in his work the other qualities in which, for the moment, he is not interested. This was markedly true in the case of the Impressionists. It is evidenced to-day by a multitude of painters who are attempting to introduce new qualities into their art or to employ it for the expression of hitherto unexpressed emotions and who, in the attempt, are quite regardless of the ordinary technical qualities. It is for this reason that much of this experimental work is crude. Unfortunately for its creator the crudities are frequently more obvious than are the subtle qualities for which he is striving and which, in some measure, he may have realized.

The experimental in art was never more in evidence than in the era of reconstruction through which we are passing to-day. The landscape painter is no longer interested in producing a transcript of nature; he is not moved by the once important technical problems but only by the desire to produce balanced design of form and colour. Even the jargon has changed. Instead of "values" he talks of "rhythms" and his critical compatriots question not the factual truth of his colour but his reasons for employing it in certain arbitrary forms and relations.

Modern painting, then, is little concerned with craftsmanship, in the sense of beauty of surface. Moreover, the modern landscapist is, unlike the Impressionist, not particularly interested in the registration of the ephemeral, passing phases of nature, concerning himself rather with what he believes to be the organized statement of her fundamental, structural qualities. This rather general statement would seem to be applicable, with few exceptions, to the landscape painting of the world in this 20th century. From the severe naturalism of the Scandinavian product to the frankly experimental and daring work of the Germans, from the austere landscape of the Spaniards to the brittle virtuosity of the modern Italians, the prevailing note is the search for the essential, the fundamental.

But landscape is not the preferred field of endeavour of the painters of Germany, of Spain or of Italy, notwithstanding the brilliant work of certain artists in each country. It is more in evidence in the profoundly racial work of the Russians as exemplified by Rörich, Anisfeld, Gorbatoff and Grigoriv. In Czechoslovakia and in Poland groups of young painters are producing original and sometimes daring landscape, and, in possibly a less degree, this is true of Holland and Belgium.

In France, notwithstanding the landscape tradition of the Barbizon men and the Impressionists, one sees to-day less important work in this field than in that of figure painting or even of still life. But landscape is by no means neglected and the artistic catholicity of the French is demonstrated by the interest that is shown in work that differs so radically in its intention as does the daring product of Vlaminck, Utrillo and Othon Friez, to cite names almost at random, from the poetic realism of Bonnard and Besnard or from the pure impressionism of Le Sidaner.

But it is in the Anglo-Saxon countries that the art of landscape is most followed. In England, while there is little, in this field, of acute modernism, excellent work is being done by a number of artists. Definitely English are the landscapes of Alfred East, James Pryde, D. Y. Cameron and of many others. There is little of the experimental in this handsome work. Its dominant quality is an intense, poetic appreciation of the beauties of nature. Distinguished landscape, much in the English tradition, is also being produced in Canada.

If the United States may be said to have produced a definitely national art, it is in the field of the out-of-doors. Far less modern in its character than is most of the continental painting now in evidence, its dominant note would seem to be an organized realism, a realism which makes use of the facts of nature but so employs them as to increase their artistic potency. This was the message of Winslow Homer and it is that of a multitude of distinguished painters of to-day. While between the slightly controlled naturalism of Redfield or Davis or Metcalf, for example, and the formalized patterns of Kroll, Dasburg, McFee or Rockwell Kent there is an enormous difference in emphasis, there is not so much divergence in intention as appears at first sight. All are more or less successfully shaping landscape to their ends as are also Gardner Symonds, Garber, Gifford Beal, Lawson, Hibbard and Emil Carlsen, none of whom find it necessary to distort but merely to organize truth. There are many others, notably the important group of painters of the West: Blumenschein, Reiffel, Groll, Hennings, to name only a few, the art of all of whom goes far beyond mere imitation of facts.

Landscape is, perhaps, in transition, as are probably all the arts. It is futile for one to attempt to enter the field of prophecy, but it would seem to be reasonably probable that the landscape of the future will make full use of the technical knowledge of the past and, while not in the least concerning itself with photographic statement, will also avoid grotesque distortion and will continue to make the fullest use of the facts of nature as material to be organized toward the production of truth. (*See* PAINTING, IMPRESSIONISM, POST-IMPRESSIONISM.) (Y. A.)

LANDSEER, SIR EDWIN HENRY (1802–1873), English painter, third son of John Landseer, A.R.A.[1], a well-known engraver and writer on art, was born in London, on March 7, 1802. Edwin Henry Landseer began his artistic education under his father. At five he could draw fairly well, and at eight excellently, as is seen from the drawings at South Kensington, dated by his father. At ten he was an admirable draughtsman and his work shows considerable sense of humour. At thirteen he drew a majestic St. Bernard dog so finely that his brother Thomas engraved and published the work. In this year (1815) he sent two pictures to the Royal Academy, and was described in the catalogue as "Master E. Landseer, 33 Foley Street." Owing to his youth he was named as the "Honorary Exhibitor" of "No. 443, Portrait of a Mule," and "No. 584, Portraits of a Pointer Bitch and Puppy." Adopting the advice of B. R. Haydon, he studied the Elgin Marbles, the animals in the Tower of London and Exeter 'Change, and dissected every animal whose carcass he could obtain. In 1816 Landseer was admitted a student of the Royal Academy schools. In 1817 he sent to the Academy a portrait of "Old Brutus," a much-favoured dog, which, as well as its son, another Brutus, often appeared in his later pictures.

In 1818 Landseer sent to the Society of Painters in Oil and Water Colours, then in Spring Gardens, his "Fighting Dogs getting Wind." This picture, bought by Sir George Beaumont, illustrates the prime strength of Landseer's earlier style. Another product of this period was "The Cat's Paw," which was sent to the British Institution in 1824, and made an enormous sensation. With the £100 obtained for this picture Landseer moved into the house at No. 1 St. John's Wood Road, where he lived nearly 50

[1]John Landseer died on Feb. 29, 1852, aged 91 (or 83, according to Cosmo Monkhouse). Sir Edwin's eldest brother Thomas, an A.R.A. and a famous engraver, whose interpretations of his junior's pictures have made them known throughout the world, was born in 1795, and died on Jan. 20, 1880. Charles Landseer, R.A., and Keeper of the Royal Academy, the second brother, was born in 1799, and died on July 22, 1879. John Landseer's brother Henry was a painter of some reputation, who emigrated to Australia.

years and in which he died. During this period Landseer's principal pictures were "The Cat Disturbed"; "Alpine Mastiffs reanimating a Distressed Traveller," a famous work engraved by his father; "The Ratcatchers"; "Pointers to be"; "The Larder Invaded"; and "Neptune," the head of a Newfoundland dog.

In 1826 Landseer was elected an A.R.A. In 1827 appeared "The Monkey who has seen the World," a successor to the humorous "Cat's Paw." "Taking a Buck" (1825) was the painter's first Scottish picture, inspired by his journey to the Highlands in 1824. Its execution marked a change in his style which, in increase of largeness, was a great improvement. In other respects, however, there was a decrease of solid qualities; indeed, finish, searching modelling, and elaborate draughtsmanship rarely appeared in Landseer's work after 1823. The subject, as such, soon after this time became a very distinct element in his pictures; ultimately it dominated, and in effect the artist enjoyed a greater degree of popularity than technical judgment justified, so that later criticism has put Landseer's position in art much lower than the place he once occupied. Sentiment gave new charm to his works, which had previously depended on the expression of animal passion and character, and the exhibition of noble qualities of draughtsmanship. Sentimentality ruled in not a few pictures of later dates, and *quasi*-human humour, or pathos, superseded that masculine animalism which rioted in its energy, and enabled the artist to rival Snyders, if not Velazquez, as a painter of beasts. His later pictures were not less true to nature than their forerunners, but the models were chosen from different grades of animal society. As Landseer prospered he kept finer company, and his new patrons did not care about rat-catching and dog-fighting, however vigorously and learnedly those subjects might be depicted. After "High Life" and "Low Life," now in the Tate Gallery, London, Landseer's dogs, and even his lions and birds, were sometimes more than half civilized. It cannot be said that the world lost much when, in exchange for the "Cat Disturbed" and "Fighting Dogs getting Wind," came "Jack in Office," "The Old Shepherd's Chief Mourner" and "The Swannery invaded by Eagles," three noble and distinctive types of Landseer's art.

Landseer was elected a Royal Academician in 1831. "Chevy Chase" (1826), which is at Woburn, "The Highland Whisky Still" (1829), "High Life" (1829) and "Low Life" (1829), besides other important works, had appeared in the interval. Landseer had by this time attained such amazing mastery that he painted "Spaniel and Rabbit" in two hours and a half, "Rabbits" in three-quarters of an hour and the fine dog-picture "Odin" (1836) at one sitting, *i.e.*, within 12 hours. But perhaps the most wonderful instance of his rapid but sure and dexterous brush-handling was "The Cavalier's Pets" (1845), the picture of two King Charles's spaniels in the National Gallery, which was executed in two days. "Harvest in the Highlands," and that masterpiece of humour, "Jack in Office," were exhibited in 1833.

In 1834 he painted "Suspense," now at South Kensington, which shows a dog watching at the closed door of his wounded master; other well-known pictures are "A Distinguished Member of the Humane Society," a dog reclining on a quay wall (1839); "Dignity and Impudence" (1839); and "Eos," a portrait of Prince Albert's greyhound; and the "Monarch of the Glen," one of three subjects connected with the chase which in 1850 Landseer was commissioned to paint in the Houses of Parliament, but the matter was dropped because the House of Commons refused to grant more than £1,500 for the pictures. Landseer was knighted in 1850, and in the next few years produced several pictures, including "Titania and Bottom" (1851). Signs of failing health were remarked in "Man proposes, God disposes" (1864), a picture of bears clambering over the relics of Sir John Franklin's party. In 1864 "A Piper and a Pair of Nutcrackers" revealed his old power. Landseer sold "Peace" and "War" for £1,500 and for the copyrights alone obtained £6,000. In 1881 "Man Proposes, God Disposes" (1864) was resold for 6,300 guineas and a cartoon of "The Chase" (1866) fetched 5,000 guineas. He declined the presidency of the Royal Academy in 1865. In 1867 his four lions for the base of the Nelson Monument in London were unveiled. He died on Oct. 1, 1873, and was buried in St. Paul's Cathedral. A collection of his sketches is in the Victoria and Albert Museum. Those who would see the full strength of Landseer's brush should examine this collection, for in these he shows himself endowed with the strength of Paul Potter.

See Algernon Graves's *Catalogue of the Works of the late Sir Edwin Landseer, R.A.* (London, n.d.); Frederic G. Stephens's *Sir Edwin Landseer* (1880); W. Cosmo Monkhouse's *The Studies of Sir Edwin Landseer, R.A., with a History of his Art-Life* (n.d.); W. P. Frith's *My Autobiography and Reminiscences* (1887); Vernon Heath's *Recollections* (1892); and James A. Manson's "Sir Edwin Landseer R.A.," *The Makers of British Art* (1902).

LAND'S END, a promontory of Cornwall, forming the westernmost point of England. It is a fine headland of granite, pierced by a natural arch. Dangerous reefs lie off the point, and one group a mile from the mainland is marked by the Longships lighthouse, in 50° 4′ N. 5° 43′ W. The Land's End is the westernmost of the granite masses which rise at intervals through Cornwall from Dartmoor. Changes in sea level are indicated by a raised beach as well as by a submerged forest.

LANDSHUT, a town in the *Land* of Bavaria, Germany, on the Isar, 40 mi. N.E. of Munich. Pop. (1939) 30,979. Founded about 1204, it was from 1255 to 1503 the principal residence of the dukes of Lower Bavaria. During the Thirty Years' War it was captured several times by the Swedes. From 1800 to 1826 the university, formerly at Ingolstadt and now at Munich, was located at Landshut. Owing to the three helmets which form its arms the town is sometimes called "Dreihelm Stadt." Landshut consists of an old and a new town and of suburbs. Among its churches the most noteworthy are those of St. Martin, of St. Jodocus, and of the Holy Ghost, or the Hospital church, all three begun before 1410. The former royal palace contains some fine Renaissance work; and the town-hall, built in 1446 and restored in 1860, are also noteworthy. Overlooking Landshut is the castle of Trausnitz, erected early in the 13th century, but the chapel, the oldest part existing, dates from the 14th century. The industries of Landshut include brewing, tanning and iron founding, and the manufacture of tobacco, chemicals, soap and cloth. Market gardening and an extensive trade in grain are also carried on.

LANDSKNECHT, a German mercenary foot-soldier of the 16th century. The name (German for "man of the plains") was given to mark the contrast between the force composed of these soldiers, formed by the emperor Maximilian I. about the end of the 15th century, and the Swiss, the "men of the mountains," at that time the typical mercenary infantry of Europe. After the battles of Marignano and Pavia, where the military reputation of the Swiss had been broken, the Swabian *landsknechte* came to be considered the best fighting troops in Europe. Though primarily a German force and always the mainstay of imperial armies, they served in organized bodies as mercenaries elsewhere in Europe; in France they fought for the League and for the Protestants indiscriminately. In fact *landsknecht,* and more particularly its French corruption *lansquenet,* became in western Europe a general term for mercenary foot-soldiers. It is owing to the *lange Spiesse* (long pike or lance), the typical weapon with which they were armed, that the corrupted French form, as well as a German form, *lanzknecht,* and an English "lance-knight" came into use.

The landsknechts were raised by colonels (*Oberst*), to whom the emperor issued recruiting commissions corresponding to the English "indents"; they were organized in regiments made up of a colonel, lieutenant-colonel and regimental staff, with a varying number of companies, "colours" (*Fähnlein*), comanded by captains (*Hauptmann*); subaltern officers were lieutenants and ensigns (*Fähnrich*). In thus defining the titles and duties of each rank, and in almost every detail of regimental customs and organization, discipline and interior economy, the landsknechts may be considered as the founders of the modern military system on a regimental basis. (*See* further ARMY and INFANTRY.)

LANDSKRONA, a seaport of Sweden, on the Sound, 15 m. N.E. of Copenhagen. Pop. (1943) 21,553. Landskrona, originally called Landora or Landör, owed its first importance to King Erik XIII., who introduced a body of Carmelite monks from Germany in 1410, and bestowed on the place the privileges of a town. It

suffered heavily during the wars of the 16th and 17th centuries. In 1677 a great naval battle was fought in which the Swedes defeated the Danes. The harbour is excellent, giving a depth of 35 ft., with 26 ft. beside the quays. The principal industries are tanning, floor milling and the manufacture of sugar and artificial manures. On the little island of Hven, immediately opposite, Tycho Brahe built his famous subterranean observatory of Uranienborg.

LANDSLIP, the fall of a mass of earth or rocks to a lower level. On seacoasts landslips or large falls of rocks occur due to the undermining action of the sea, and in mountainous regions where strata dipping towards the valley rest on soft layers; hard rocks slip into the valley after heavy rains or melting snow, damming back the drainage which thus forms a barrier basin. Many small lakes in the Alps and Pyrenees are formed in this way. Landslides are also the result of earthquakes and erosions.

LANDSTEINER, KARL (1868–1943), Austrian scientist and Nobel prize winner in medicine, was born in Vienna on June 14, 1868. He attended the University of Vienna and received the degree of doctor of medicine from that institution in 1891, later returning there to teach pathology (1909–19). In 1919 he moved from Vienna to Holland, and three years later accepted an invitation to go to New York as a member of the Rockefeller Institute for Medical Research. Dr. Landsteiner's discovery, ten years after his graduation, that human bloods are of different types, led to the practice of using only similar blood types for transfusions, thereby eliminating much of the danger of that operation. In pursuance of his studies in this field, Dr. Landsteiner worked out the mechanism causing paroxysmal haemoglobinuria. His principal work and interests were in immunology, bacteriology and pathology, but he also carried on researches in virus diseases and, in connection with his work on infantile paralysis, succeeded in transmitting the disease to monkeys. He was awarded the Nobel prize for medicine in 1930 and also won the Paul Ehrlich medal and the Dutch Red Cross medal. Dr. Landsteiner, a naturalized citizen of the U.S., died in New York on June 26, 1943.

LANDSTURM, originally a general levy in time of war. The name was later given to certain militia forces of Germany, Austria-Hungary and Switzerland, consisting of all those men of military age not serving in the navy, the first-line army or the Landwehr. The German Landsturm before World War I comprised men of two categories. The 1st ban was formed of men from 17 to 20 years of age, and of all those men not called up for service in the active army or the Landwehr; most of these men were unfit for active service and received no training. The 2nd ban consisted of men more than 30 years of age who remained fit for service after completion of their period in the Landwehr or the 1st ban of the Landsturm; they continued liable for service up to 45 years of age, but received no further training. During World War I a large number of units of all arms were formed from the Landsturm and some saw service on quiet sectors of the western and eastern fronts; the bulk of them were employed on fortress, garrison or line of communication duties or on labour work.

The Landsturm of Austria-Hungary before World War I was organized on similar lines to the German, men being liable for service between 19 and 20 years of age, and after 10 years' service. Men up to 38 years old formed the 1st ban, and those from 38 to 42 the 2nd ban; except for the Tirolese units, no peacetime training took place. During World War I some 72 Landsturm units were raised, several of which took part in operations on the eastern front against the Russians; in 1918 there were nine so-called Landsturm divisions in existence.

The Swiss Landsturm at present comprises all men liable for military service between the ages of 41 and 48, and numbers about 70,000 of all arms and ranks. No training is carried out in peace time. It is intended to use the force in war as frontier guards and for line of communication duties.

LAND TAXES (PROPERTY TAXES). The taxation of land is one of the oldest forms of direct taxation. As the main source of production in the past and as a definite and visible sign of wealth, land offered a natural subject for taxation and the history of taxation teems with taxes levied by reference to its area, value, or produce.

While land continues to be a fruitful source of tax revenue, it is usually as part of a general scheme for taxation of all property or all income and not as the subject of peculiar taxation levied specially in respect of the land. Thus the value of land comes under charge to British death duties in common with the value of all other property, and the income from land comes under charge to British income tax in common with all other income; but this taxation is general and is not properly to be considered as falling within the scope of specific land taxes.

Land Tax, Great Britain.—The land tax is the only form of land taxation in Great Britain. It is an old tax, dating from 1692, having developed from the so-called monthly assessments under which parliament specified for each county the total sum required and each county raised its contribution by a rate upon the yearly value of all property, real and personal, and on the income from certain offices. In intention, the land tax was a kind of general property and income tax, but personalty gradually escaped from assessment, and in 1798 William Pitt made the quota then due from each area a perpetual charge on the landed property of that area, with provision enabling the owner of the property to redeem the liability by a capital payment. The land tax thus became converted into a redeemable rent charge on landed property, and in its essentials, it remains to the present day as Pitt left it. Each parish has its quota to be raised annually and this is levied by a rate not exceeding 1/– in the £ on the annual value of the land and buildings thereon in the parish. An owner of the land can redeem the charge by payment of a capital sum equal to 25 times the annual tax assessed for the year ended March 24, 1940, and where redemption is effected the land is exonerated from the tax and the quota of the parish is correspondingly reduced. As the annual value of any buildings erected on the land comes into the annual value for charge to land tax, redemption generally takes place as a preliminary to building operations. The average annual receipt is about £550,000.

New Land Taxes.—In modern taxation theory the land tax finds its place in systems of taxation not as part of a general tax applying to all property but as a tax that singles out land as the subject of special taxation, and it is in this sense that the term is now generally used. This development is founded on the theory that land has an additional and special taxable capacity peculiar to itself by reason of the fact that the increase in its value in many places is due not so much to the activities of the owner as to the growth in prosperity of the community. It involves the task of ascertaining the values of the land at different points of time and making allowance for the then value of any improvements (*e.g.,* buildings, timber, crops, etc.) due to the action of the owners, in order to find the unimproved or site value. The determination of values of this kind presents serious difficulties, particularly where the tax is levied on the unearned increment only. These difficulties do not favour clear and unambiguous legislation and afford ground for disputes of all kinds. They are at the root of the failure of the British land value duties, which became practically unworkable after a few years' operation.

The following notes refer briefly to modern taxes introduced in the United Kingdom, Australia, New Zealand and Germany.

United Kingdom.—The new land taxes were introduced by David Lloyd-George in his 1909 budget, and were the main cause of the hostility encountered by that budget in its passage into law by the Finance Act, 1910. There were four duties, viz.:—(1) *increment value duty,* which was levied on every "occasion" of sale or transfer of land at the rate of 20% on the increase in the site value of the land accruing after April 30, 1909. Provision was made for periodical assessments every 15th year in the case of land held by corporate bodies; (2) *reversion duty,* which was levied at the rate of 10% on the value of the benefit accruing to the lessor on the termination of long leases, the benefit being in general the difference between the value at the beginning and at the end of the lease; (3) *undeveloped land duty,* an annual duty of ½d. in the £ on the site value of undeveloped land, *i.e.,* land not being used for agriculture, business or building purposes, etc., and was intended to fall on land ripe for building. Gardens, public parks, recreation grounds and woodlands were exempt; (4) *min-*

eral rights duty, an annual duty of 1/– in the £ on mineral royalties, wayleaves, etc. As a preliminary measure it was necessary to ascertain the capital value of all lands, buildings, etc., in the kingdom as at April 30, 1909—a colossal task involving the valuation of 11,000,000 units of land—and in particular to determine the "site value" which represented, broadly speaking, the market value of the land when divested of buildings, trees, or other improvements upon it. The work of valuation proceeded for five years and was practically completed by the outbreak of World War I. The total of the valuations for Great Britain was about £5,250,000,000.

The first three duties yielded a small though increasing revenue in the early years. Serious difficulties however soon arose in connection with the assessment of the values required by the statute, which ultimately led to the practical suspension of the undeveloped land duty and reversion duty and the crippling of the increment value duty. Proposals for remedial legislation were put forward in the Revenue Bill of 1914 but owing to the outbreak of war were not proceeded with. The position was reviewed at the end of the war and it was decided to repeal the three duties. This was done by the Finance act, 1920, and provision was made to repay all the duty collected after their imposition. The mineral rights duty alone remained in force.

Australia.—In Australia the new land taxes took the form of taxes on the unimproved value of land, the value of buildings and other improvements being excluded from assessment. The taxes were partly designed to break up large holdings and to this end the rates of tax were usually graduated so as to bear heavily on large landowners. Victoria introduced a tax on land values in 1877 and was followed in course of time by the other states. The most important development, however, occurred in 1910, when the commonwealth instituted a federal land tax (graduated from 1d. to 6d. in the £) throughout Australia, in addition to the existing state taxes. For 1938–39 the commonwealth scale ranged from ½d. to 5d. in the £, and there were graduated taxes in Queensland (1d. to 8d.), South Australia (¾d. to 1½d.) and Tasmania (1d. to 3¾d.). The tax was levied at a flat rate in Victoria (½d.), Western Australia (2d.) and New South Wales (1d.).

The land tax revenue raised by the commonwealth and the separate states for 1938–39 contrasted with their total taxation revenue was:

	Land tax revenue	Total taxation revenue
	£	£
Commonwealth	1,489,000	74,037,000
New South Wales	2,000	20,263,000
Victoria	482,000	12,023,000
Queensland	402,000	8,646,000
South Australia	321,000	4,199,000
Western Australia	115,000	3,619,000
Tasmania	85,000	1,779,000

New Zealand.—As early as 1878 New Zealand instituted a tax of ½d. in the £ on the unimproved value of real estate. Although abolished in 1879 and replaced by a general property tax, the land tax was re-instituted in 1891, and after 1893 was again restricted to the unimproved value. For 1939 the tax was graduated from 1d. to 6d. in the £. The tax produced £1,058,000 toward the total taxation revenue of £37,798,000.

Germany.—Various towns adopted an increment (*Wertzuwachs*) tax on land beginning with Frankfurt in 1904, followed by Berlin, Cologne, Hanover and many others. In 1911 nearly all the local taxes were superseded by a general imperial tax levied on the increase in the value of land on sale, allowance being made for expenditure on permanent improvements. The rate was graduated from 10% to 30% of the increase in value, according to the proportion which the latter bore to the cost price plus expenditure on permanent improvements. In 1913, however, in view of the introduction of the defense contribution and property tax, the imperial government ceased to levy the increment tax, leaving it to any of the states and communes to continue it locally if they desired. The fact that in Germany the tax was imposed (except for two years) as a local tax and not as a national tax is of some interest in the theory of land values taxation.

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United States.—Land taxes were common in the primarily agrarian economy of the colonial era. Typically they were flat charges according to acreage, occasionally with adjustment for other physical characteristics of the individual tracts. As wealth became more diversified, land taxes were almost everywhere superseded by the general property tax based on the value of real and personal property. Difficulties in applying this general tax led to modifications making it selective either in law or in practice. New York state, for example, limited its tax in 1933 to real estate; other states, though retaining the general tax as a matter of law, actually reach only a fraction of the personal property which is legally taxable. During 1900–40, land and its improvements constantly made up about three-fourths of the aggregate property tax base. Urban sites and structures dominated the real estate total; within the cities, housing constituted about 60% of the total real estate valuation.

Local governments are the chief users of the property tax. The constitution from the start made it impractical for the federal government to levy direct taxes, including property taxes. After about 1910 the states, too, turned to other sources. In 1942 property taxes yielded 62% of all local government revenues, 4% of all state revenues.

Unlike the individual income tax, the property tax is not adjusted to the taxpayer's economic status; it is legally imposed on the property itself. Real estate is taxed at its situs, regardless of the owner's residence or the nature of his ownership. The tax is collectible by sale of the property if necessary; rarely is any personal liability enforced against the owner.

Administration is largely local, with state supervision and assistance and with the courts participating extensively. There are about 26,000 primary assessment districts—mostly counties and townships or towns. The assessor in each district determines periodically the assessed value of each parcel of real estate—presumably at current market value, although commonly by custom and often by law the assessment is only a fraction of market value. Usually a state agency assesses types of property, such as public utilities, which pose special difficulties.

The tax rate for any taxing district is the ratio of its estimated revenue needs from the property tax to the total assessment within its jurisdiction. The total rate applicable to any parcel of property depends on the number and needs of taxing districts in which it lies. State constitutions or statutes often fix maximum tax-rate limits in percentages of assessed value.

Assessments are commonly the basis, also, for municipal debt limits and for apportioning grants-in-aid. Equity in applying a state or county tax, in imposing debt and tax-rate limits, and in apportioning grants-in-aid requires relative uniformity among assessment districts and types of property in the ratio of assessed to true value. Provision for state and county equalization is therefore customary, though the worst inequalities of the initial assessments, inequalities among individual properties, cannot be overcome by adjustments in tax rates or assessment totals. (*See* also TAXATION, LOCAL.)

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LAND TENURE: ECONOMIC AND AGRARIAN ASPECTS. The word "tenure" (Latin, *tenere,* to hold) derives, probably, from the feudal system, the basis of which was that all land was "held" by one individual from another and none was absolutely owned. The system was established in its strictest form by William the Conqueror and in its gradual modification throughout nearly 1,000 years may be traced the development of modern land tenure in England.

Feudalism.—At the Norman conquest all land was vested in the king who made grants to his barons, knights and others, to be "held" by them subject to the payment of dues or the rendering of services. So long as the conditions were fulfilled the grantees enjoyed all the rights of ownership but in default the land reverted to the crown. The unit of a grant was the manor of which the grantee was termed the lord (who might, and frequently did, hold several manors) and he in his turn granted the use of the land to tenants, all of whom held it from him.

The terms of tenure were various and the classes of tenants of the manor numerous. There has been much controversy among economic historians as to the precise status of the individuals forming the manorial community and there appear to have been differences between one district and another and, indeed, between one manor and another. For the present purpose it is sufficient to note the existence from the outset of three classes—"free" tenants, villeins, serfs and cottars. Toward the end of the 14th century another class termed "copyholders" appeared.

"Free tenants" held their land on condition of liability to military service, and, in many cases, as time went on, commuted their liability for a quit-rent. They formed the class of "yeomen" which played so large a part in English history. Sometimes their land was in a separate holding but much more frequently it was a part of the open common fields. "Copyholders" although less independent, frequently had, like them, a status akin to ownership as they held their land subject to the payment of certain fines and heriots on specified occasions.

Serfs and cottars were occupiers of a cottage and garden and perhaps five acres of arable land and grazing rights in the common fields but they had to depend for their livelihood mainly on labour for the lord—in addition to their obligatory service—or for the tenants. The status of the villeins was at the outset one of modified servitude. They were "unfree" in that they were tied to the manor and were subject to the will of the lord. But each held an allotment in the common field with rights over the common pasture and on the waste or woodland surrounding the manor. He paid rent to the lord, mainly in the form of labour, being under obligation to give so many days' service on the lord's demesne during the year. The arable land of the manor was divided into strips of an acre, or in some cases, half an acre, separated by balks of turf, but otherwise unfenced and in large open fields. Every villein held a number of these "strips" distributed in various parts of the two or three open fields, and not adjoining. The extent of the holding differed but the "hide" of 120 ac. appears to have been the conventional holding of the "free" tenants. Each villein usually had a "yard-land," conventionally of 30 ac. but varying according to the soil. Each cultivator had a number of working oxen proportionate to his holding, eight being regarded as forming a plow team for a "hide" of land.

The manorial organization had no sooner been constructed on these apparently rigid lines than it began to be modified. The villeins struggled continually to secure greater freedom. The "custom of the manor" became established and eventually became binding on the lord as well as the tenants. Individuals more enterprising than their fellows not only acquired larger holdings but in many cases secured a commutation of their services for payment in cash or kind.

Leases.—The long story of the slow dissolution of the manorial system and the eventual development of the villein and the serf into the tenant cannot be told here. But by the end of the 15th century a large part of the agricultural land was let to tenants on lease either for a term of years, or for lives, at fixed rents. What was termed a "stock and land" lease was common, the tenant renting not only the land and buildings but also a certain head of livestock. In a well-known instance the land, buildings and a flock of 360 wether sheep were let, in 1528, to a man for the lives of himself, his wife and his son whichever was the last survivor. The rent was fixed partly in produce and partly in cash. It is estimated that by the middle of the 16th century more than half the land in many parts of the country was let on lease.

The letting of farms was generally established on the basis that the owner provided the land, house and necessary buildings, the tenant supplying the livestock and working capital. The terms on which the farm was let were minutely set out in the lease, the landlord, with the object of preventing deterioration of his property, binding the tenant by strict and detailed conditions. These conditions or covenants varied on different estates and they were gradually elaborated by the ingenuity of agents and lawyers jealous to protect in every possible way the interests of the owner.

The main object of these conditions was to maintain the fertility of the land and to bind the tenant to farm in accordance with what were then considered the principles of good husbandry. The average farmer would not regard them as unreasonable. It was not until the latter part of the 18th century that the "new farming" brought improved practice, more enlightened landowners and more intelligent and responsible farmers.

Leases for 7, 14 or 21 years were offered by the new race of "improving" landlords and eagerly taken by the new race of capitalist farmers. The lease for 21 years was popular in the eastern counties and it was also adopted in Scotland. Leases fell into some disfavour during the disturbed period of the Napoleonic wars but when conditions became more stable they again prevailed generally until the depression of the '80s. Many who then held their farms on lease were only saved from ruin by the consideration of landlords, and tenants have ever after been very chary of binding themselves for long periods. Leases are still common in Scotland but throughout England and Wales tenancies from year to year (continuing until notice of termination is given) are almost universal.

English Tenant Right.—The equitable claim of a tenant to be recouped for his improvements arose as soon as the letting of farms became general. In many districts custom in some degree mitigated the legal position of tenants. By law everything that was put into the soil, or attached to the land became the property of the landlord. Bills to deal with this injustice were introduced by Lord Portman in 1843 and Philip Pusey in 1847. Both were unsuccessful but the latter was referred to a select committee before which evidence was given showing the small amount of protection afforded to tenants by custom. In most districts no allowance could be claimed even for durable improvements such as draining or liming and still less for the use of artificial manures or purchased feeding stuffs.

Still parliament refused redress, and it was not until the political influence of farmers was increased by the Reform Act of 1867 and they began to organize in chambers of agriculture that in 1875 the First Agricultural Holdings act was passed in England, Irish legislation of 1870 having preceded it.

Unexhausted Improvements.—The act of 1875 did little more than give statutory recognition to the principle that a tenant was entitled to compensation, on quitting the holding, for the unexhausted value of improvements which he had made at his own expense. As it was not compulsory landlords generally stipulated in leases and agreements that it should not apply and consequently it had little practical effect. In 1883 another act framed on broader lines was passed which provided that no lease or agreement should be valid unless it either embodied the conditions of the act or gave terms not less favourable to the tenant.

By successive enactments the list of improvements for which compensation may be claimed was much extended and under the act of 1923 the rights of tenants are thus set out:—

"Where the tenant of a holding has made thereon any improvement comprised in the first schedule to this act he shall, subject as in this act mentioned, and, in a case where the contract of

tenancy was made on or after the first day of January 1921, then whether the improvement was or was not an improvement which he was required to make by the terms of his tenancy, be entitled at the termination of the tenancy, on quitting his holding to obtain from the landlord as compensation for the improvement such sum as fairly represents the value of the improvement to an incoming tenant.

"In the ascertainment of the amount of the compensation payable to a tenant under this section there shall be taken into account:

"(a) any benefit which the landlord has given or allowed to the tenant in consideration of the tenant executing the improvement, whether expressly stated in the contract to be so given or allowed or not; and

"(b) as respects manuring as defined by this act, the value of the manure required by the contract of tenancy or by custom to be returned to the holding in respect of any crops grown on and sold off or removed from the holding within the last two years of the tenancy or other less time for which the tenancy has endured, not exceeding the value of the manure which would have been produced by the consumption on the holding of the crops so sold off or removed.

"Nothing in this section shall prejudice the right of a tenant to claim any compensation to which he may be entitled under custom, agreement or otherwise, in lieu of any compensation provided by this section."

The first schedule of the act, referred to in this section, contains the list of the improvements for which compensation is payable, as follows:

Part I.

Improvements to which consent of landlord is required.

(1) Erection, alteration or enlargement of buildings.
(2) Formation of silos.
(3) Laying down of permanent pasture.
(4) Making and planting of osier beds.
(5) Making of water meadows or works of irrigation.
(6) Making of gardens.
(7) Making or improvement of roads or bridges.
(8) Making or improvement of watercourses, ponds, wells, reservoirs or works for the application of water power or for supply of water for agricultural or domestic purposes.
(9) Making and renewal of permanent fences.
(10) Planting of hops.
(11) Planting of orchards or fruit bushes.
(12) Protecting young fruit trees.
(13) Reclaiming of waste land.
(14) Warping or weiring of land.
(15) Embankments and sluices against floods.
(16) Erection of wirework in hop gardens.
(17) Provision of permanent sheep-dipping accommodation.
(18) In the case of arable land the removal of bracken, gorse, tree roots, boulders or other like obstruction to cultivation.

Part II.

Improvement in respect of which notice to landlord is required.

(19) Drainage.

Part III.

Improvements in respect of which consent of or notice to landlord is not required.

(20) Chalking of land.
(21) Clay burning.
(22) Claying of land or spreading blaes upon land.
(23) Liming of land.
(24) Marling of land.
(25) Application to land of purchased artificial or other purchased manure.
(26) Consumption on the holding by cattle, sheep or pigs, or by horses, other than those regularly employed on the holding, of corn, cake or other feeding stuff not produced on the holding.
(27) Consumption on the holding by cattle, sheep or pigs or by horses, other than those regularly employed on the holding, of corn proved by satisfactory evidence to have been produced and consumed on the holding.
(28) Laying down temporary pasture with clover, grass, lucerne, sain-foin or other seeds, sown more than two years prior to the termination of the tenancy in so far as the value of the temporary pasture on the holding at the time of quitting exceeds the value of the temporary pasture on the holding at the commencement of the tenancy for which the tenant did not pay compensation.
(29) Repairs to buildings, being buildings necessary for the proper cultivation or working of the holding, other than repairs which the tenant is himself under an obligation to execute:

Provided that the tenant before beginning to execute any such repairs shall give to the landlord notice in writing of his intention, together with particulars of such repairs, and shall not execute the repairs unless the landlord fails to execute them within a reasonable time after receiving such notice.

The consent of the landlord to improvements in Part I must be given in writing and may be unconditional or on such terms as regards compensation as he may agree with the tenant.

Compensation for drainage (Part II) is not payable unless the tenant gives notice, in writing, to the landlord not more than three nor less than two months before beginning to execute the improvement of his intention to do so, and of the manner in which he proposes to do it. The landlord may then agree with the tenant as to the terms of compensation or failing such agreement may execute the improvement "in any reasonable and proper manner which he thinks fit" and increase the annual rent of the farm by a sum sufficient to repay the cost in a period of 25 years with interest at the rate of 3%. The minister of agriculture may by regulation substitute such percentage or period as he thinks fit having regard to the current rates of interest. If the landlord fails to execute this improvement within a reasonable time the tenant may do it himself and he is entitled to compensation.

All claims by the tenant for compensation whether under custom or agreement are settled, unless the landlord and tenant agree, by arbitration. The arbitrator is appointed by mutual agreement, or in default of agreement by the minister of agriculture.

A tenant is not entitled to claim compensation, except in respect of manuring, for any improvement begun by him within one year of his quitting the holding.

The long list of improvements for which compensation may be claimed would appear to afford reasonable security that a tenant will recover on quitting his holding any capital expenditure of which he has not reaped the full benefit during his tenancy. In the Agriculture Act 1920, however, a new principle was introduced which established the right of the tenant to claim compensation not only for specific improvements but also for adoption of a special standard or system of farming. The terms in which this right is given are as follows:—

(1) "Where a tenant who quits a holding after the commencement of this act" (*i.e.*, after Jan. 1, 1921) "on so quitting proves to the satisfaction of an arbitrator appointed under the act of 1908 that the value of the holding to an incoming tenant has been increased during the tenancy by the continuous adoption of a standard of farming or a system of farming which has been more beneficial to the holding than the standard or system (if any) required by the contract of tenancy, the arbitrator shall award to the tenant such compensation as in his opinion represents the value to an incoming tenant of the adoption of that standard or system:

"Provided that:

"(a) This section shall not apply in any case unless a record of the condition of the holding has been made under the act of 1908 or in respect of any matter arising before the date of the record so made; and

"(b) Compensation shall not be payable under this section unless the tenant has, before the termination of the tenancy, given notice in writing to the landlord of his intention to claim such compensation; and

"(c) The arbitrator in assessing the value to an incoming tenant shall make due allowance for any compensation agreed or awarded to be paid to the tenant for any improvement specified in the first schedule to the act of 1908 which has caused or contributed to the benefit.

"(2) Nothing in this section shall entitle a tenant to recover in respect of an improvement specified in the first schedule or the third schedule to the act of 1908 any compensation which he would not have been entitled to recover if this section had not been passed.

"(3) The continuous adoption of such a beneficial standard or system of farming as aforesaid shall be treated as an improvement for the purposes of the provisions of this act relating to the determination of the rent properly payable in respect of a holding."

Rules of Good Husbandry.—The phrase "cultivating in accordance with the rules of good husbandry" is of ancient origin. Stipulations as to conforming with the rules of good husbandry were common in old leases and agreements. Indeed, apart from explicit conditions, conformity with the rules of good hus-

bandry was obligatory, under the common law, on any tenant. There was no definition of the term, and in cases of dispute the rules of good husbandry applicable in a particular case were proved by the evidence of experienced persons familiar with the farming practice of the district in which the farm was situated.

In the Agriculture Act 1920, a legal definition was given to the term as follows—

"The expression 'rules of good husbandry' means (due regard being had to the character of the holding) so far as is practicable having regard to its character and position—

"(a) the maintenance of the land (whether arable, meadow or pasture), clean and in a good state of cultivation and fertility, and in good condition; and

"(b) the maintenance and clearing of drains, embankments and ditches; and

"(c) the maintenance and proper repair of fences, stone walls, gates and hedges; and

"(d) the execution of repairs to buildings, being repairs which are necessary for the proper cultivation and working of the land on which they are to be executed; and

"(e) such rules of good husbandry as are generally recognized as applying to holdings of the same character and in the same neighbourhood as the holding in respect of which the expression is to be applied;

"Provided that the foregoing definition shall not imply an obligation on the part of any person to maintain or clear drains, embankments or ditches, if and so far as the execution of the works required is rendered impossible (except at prohibitive or unreasonable expense) by reason of subsidence of any land or the blocking of outfalls which are not under the control of that person, or in its application to land in the occupation of a tenant imply an obligation on the part of the tenant—

"(i.) to maintain or clear drains, embankments, or ditches, or to maintain or properly repair fences, stone walls, gates or hedges where such work is not required to be done by him under his contract of tenancy; or

"(ii.) to execute repairs to buildings which are not required to be executed by him under his contract of tenancy."

Security of Tenure.—Although, as has been said, the practice of letting farms on long-term lease died out in England at the end of the last century, the system of yearly tenancies which became almost universal did not, in fact, make any great change in the length of time for which farms were generally occupied. On many estates instances were common of farming families who had occupied the same farm for generations although subject legally to a year's notice. On the other hand instances sometimes occurred of the eviction of old tenants for reasons unconnected with their competence or solvency as farmers. It was felt as a grievance that a man should be turned out of a farm because, for some reason or other, he had become personally objectionable to his landlord, and a demand arose either for "fixity of tenure" or "compensation for disturbance." This demand was strongly opposed as an unreasonable interference with the rights of landowners but the interests of the tenants prevailed and the Agriculture Act of 1920 contained provisions for compensating the tenant if his tenancy is terminated except for certain specific causes. These provisions do not, in terms, give fixity of tenure, but they are designed to penalize the landlord if he unreasonably evicts a competent and solvent tenant.

The reasons for which a tenant may be evicted without payment of compensation are:

(1) That he is not cultivating the holding in accordance with the rules of good husbandry.
(2) That he has failed to pay the rent due, or to remedy any breach of a condition of the tenancy consistent with good husbandry.
(3) That he has materially prejudiced the interests of the landlord by committing a breach which was not capable of being remedied of any condition of the tenancy consistent with good husbandry.
(4) That he has become bankrupt.
(5) That he has refused or failed to agree to a demand by the landlord as to the rent to be paid for the holding.
(6) That he has refused or failed to comply with a demand by the landlord to execute an agreement setting out the terms of the tenancy.

If the tenant is given notice to quit the holding compensation is payable to him by the landlord unless he states that the notice is given for one or more of these reasons.

The landlord may at any time apply to the agricultural committee for the area in which the holding is situated for a certificate that the tenant is not cultivating the holding according to the rules of good husbandry. The committee has to give both landlord and tenant the opportunity of being heard and must grant or refuse the application within one month. Either the landlord or tenant, if he does not accept the decision of the agricultural committee, may require that the question as to whether the holding is being cultivated in accordance with the rules of good husbandry be referred to an arbitrator whose decision is final.

The tenant has a right to demand that the question of the amount of rent to be paid in future shall be referred to arbitration, and if the landlord refuses, the tenant, if he quits the holding for that reason, is entitled to compensation.

The English landlord and tenant system, as developed from feudalism into its present form, is unique. Under no other system has the occupier of land so much control and the owner so little. The liabilities of the landlord for the equipment and upkeep of the farm remain unaffected but the effect of recent legislation is to make him otherwise little more than a rent receiver.

World Aspects.—Over the greater part of the world the occupiers of agricultural land are the owners of it. Peasant proprietorship is the predominant system and where there is a dual interest in the occupation of land the most common system is that of metayage in one form or another (*see* METAYAGE SYSTEM). But in some countries the tenancy system as developed in England—that is the letting of farms by free contract on money rents—prevails somewhat extensively.

In Belgium, for example, about three-fourths of the farms are let on lease or annual tenancy. Leases for nine years, with option for either party to break the lease at three or six years, are usual and leases for 15 or 18 years are sometimes granted. In the 18th century emphyteutic tenures—*i.e.*, leases of a length varying from 27 to 99 years, giving the tenant the right to erect buildings at his own cost—existed widely but these have greatly diminished. It is said that examples of leases existed in Flanders as early as the 13th century, but the very earliest form of tenure generally adopted was metayage which was gradually replaced by a system known as "cheptal" which was in fact practically the stock and land lease system then common in England. By the end of the 18th century cheptal had disappeared and although metayage still survives the landlord and tenant system is now predominant.

Flanders led the way in modern methods of husbandry and in the 16th and 17th centuries was held up, not unjustly, as a model for English farming.

In Denmark more than 90% of the agricultural holdings are owned by the occupiers and tenancies are rare. But a new form of tenancy was created, under an act passed in 1919, which placed in the possession of the state 120,000 acres of land suitable for small holdings. The applicants for these holdings are offered the choice of purchase or tenancy. If they choose tenancy they pay rent to the state equal to 4½% of the value of the land. They have absolute security of tenure subject to the condition that they cultivate the holding satisfactorily. Indeed provided they comply with this condition and pay the fixed rent they have the right of passing on the tenancy of the holding to their heirs.

The Economic Effect of Tenure.—The conditions under which agricultural land is held—in other words the precise form of tenure—are diverse. A complete description of them as they are found in different countries would be very voluminous and would reveal a wide variety in the terms on which men occupy land.

Possibly a majority of those who occupy and cultivate agricultural land hold rights of ownership. France is typically a country of peasant proprietors who have complete control of their property and are in no way restricted by law or otherwise in its agricultural use. Similar conditions exist also in other countries but in some cases the proprietorship of the peasant is modified by communal rules and traditions.

It would appear at first sight that the line of demarcation between ownership and tenancy is well-defined, but in fact ownership may give no more than limited control of the land, and on the other hand the terms of tenancy may be such—as where tenant rights are protected by law and custom—that they provide for long-term occupation and abiding interests in land.

From the economic, as distinct from the legal, point of view, cultivators' interests in the tenure of agricultural land stretch all

the way from some of the short-term interests of "share-croppers" to those of freehold owners.

It is commonly assumed that the ownership of agricultural land by the occupier will ensure its most effective economic use. The dictum of Arthur Young that "the magic of property turns sand into gold" is quoted as expressing an unchallengeable truth of universal application. No such generalization can be fairly made if facts and not theories are considered. No doubt the assurance that all the fruits of a man's toil and enterprise will accrue to himself and will not be shared with another is a strong incentive to energy, but other factors, psychological, political, racial, or other, may tend to counteract this influence. In any case, although it is easy to cite instances where the most intensive cultivation of the soil is practised under conditions of ownership, it is equally easy to refer to cases where under the same conditions the land is ill-cultivated and neglected. On the other hand a system of tenancy may, as was the case in England in the 1800s, before farmers possessed any statutory rights in their holdings, result, as it did, in the highest development of the art of husbandry. Flanders also presents an example of the same fact.

The conclusion is that while conditions of tenure may have a considerable influence on the economic use of land they cannot be regarded as decisive. The economic and legal conditions of occupation of land for agricultural uses are influenced by changes in the technical processes of production and by economic and social trends in the body politic. No entirely permanent system of land tenure has ever been devised. Most of the existing systems have been and will be subject to economic and legal changes.

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THE UNITED STATES

Tenure means the holding of land and the rights that go with such holding. It includes everything from fee simple title, embracing all possible rights within the general limitations imposed by government, down to the most restricted forms of tenancy. Tenancy means holding land under the ownership of another.

Indian Land Tenure.—In the United States the earliest tenure is that of the North American Indian. Indian tenure very considerably depended upon whether the Indians were nomadic or whether they had a fixed place of abode. In general we say that their tenure was that of possession rather than of property. The Indians did not develop the right of alienating land by sale until they came into contact with the white race. In treaties with the whites the Indians thought they were giving to the whites the same privileges that they had, rather than giving exclusive rights to the land. In 1783 the government prohibited individuals from bargaining with the Indians for land, reserving this power to congress alone. In the case of the public domain the government insisted that the Indian rights to the land must be extinguished by treaties before the land could be surveyed or opened for sale.

Until 1887 the Indian land was generally held by the tribe, rather than by the individual. By the General Allotment act of that year a new policy was inaugurated: individuals were to be allotted land and after a certain length of time given a title in simple fee. At that time the American Indian held 130,000,000 ac. of land. By 1933 he had lost all but 49,000,000 ac., much of it waste and desert. The individual Indian, with no capital to develop his holdings, was no match for the white man. The Indian concept of property was no small factor.

The life of Indians has been so intimately tied up with land and its utilization that to think of the Indian is to think of land. The two are inseparable. An effort was made, after 1933, to help the Indian regain sufficient land holdings to a point where he would have a self-sustaining economy and a self-satisfying social organization. At the close of the 1938 fiscal year the government held in trust 51,540,307 ac.; approximately 67% tribally owned, and 33% individually owned.

Land Tenure in Colonial Times.—Except for these Indian beginnings, land tenure is for the most part traced back to England. In the colonial period the highest property was that of the crown and that obtained in America. The form of settlement was somewhat different in New England from that in the rest of the country. Large grants of land in New England were given to the trading companies by the crown and these companies in turn granted land to groups of settlers, occasionally to individuals. In this way the land was settled compactly in village communities. Land was set aside for the church, the school and other community purposes before home lots were transferred to each settler.

In the remainder of the country the proprietary system of settlement was more general. In the selling of land to settlers, the grantees transferred larger holdings than was the case in New England. Especially was this true in the south where it was profitable to farm larger areas.

When British sovereignty was terminated by the treaty of 1783, lands hitherto belonging to the crown went to the separate states in which, rather than in the federal government, the highest right of eminent domain was vested.

THE PUBLIC DOMAIN

Building Up the Public Domain.—Because of the conflicting claims of the new states some states suggested that all claims be ceded to the confederacy. This marked the beginning of the public domain and was an important factor in holding the states together in the early life of the nation. By purchase, cession and annexation this original public domain was enlarged until, after subtracting prior private claims, it reached an aggregate total of about 2,186,862 sq.mi. or 1,309,591,680 ac. which at one time or another was part of the public domain.

Alienation of the Public Domain.—The alienation of the public domain may conveniently be discussed by periods: (1) 1785–1800, sales in large tracts; (2) 1800–20, credit sales; (3) 1820–41, cash sales; (4) 1841–91, pre-emption law; (5) 1841–71, large land grants; (6) 1862-1936, homestead law and the closing of the public domain; (7) 1880-1940, reform, conservation and reconstruction. These periods overlap and some of the characteristics of one period are found in most of the others but certain outstanding features in each period make it possible to mark them off in this way:

(1) *1785–1800.*—The public land policy in the earliest period was dominated by the federal government's urgent need for money after the Revolution. Since the chief asset was land, the government decided to obtain the needed revenue by selling the public domain, a motive that persisted well into the 19th century. The ordinance of 1785 was the first act passed dealing with the disposal of the public domain. Under this act land was first to be bought from the Indians, then to be surveyed and sold by townships or by sections of 640 ac. for a minimum of $1 an acre. The land did not sell rapidly and insufficient revenue was obtained. Most of the settlers during this period went on land owned by private companies or reserved by the original state. These tracts could be obtained in smaller units and in more settled parts of the country.

(2) *1800–1820.*—The credit system was introduced when it became clear that actual settlers could not buy land in such large

tracts as 640 acres, especially if they had to pay for the land within a year. Either the size of tracts offered or the price of the land had to be reduced or the amount of time allowed for payment had to be lengthened. The minimum price had been raised to $2 an acre in 1796 and was not changed, but in 1800 the amount of time allowed for payment was extended to five years and the minimum area that might be bought was reduced to a half-section. With this extended credit and the more prosperous condition of the country the land was taken up very rapidly. However, speculation was encouraged, for only a small down payment was required; no further payment was required for the first two years and the land was not forfeited until five years after settlement.

The government, always inclined to be lenient toward the settlers, passed a number of acts extending the time allowed for payment, but in spite of these relief acts an enormous amount of money was due to the U.S. In 1820 the credit system was finally abolished, after 19,399,158 ac. had been sold.

(3) *1820–1841.*—The act of 1820 permitted land to be bought in tracts as small as 80 acres and the minimum price was reduced to $1.25 an acre, but no credit was allowed. During this period of cash sales the feeling grew that the land should be disposed of to the best advantage of the settler and not mainly for the purpose of deriving revenue. This feeling culminated in the pre-emption law of 1841.

(4) *1841–1891.*—The pre-emption law legalized the vested interests of the squatters on the public domain. Hitherto special pre-emption laws had been passed to meet certain situations. General pre-emption gave the squatter the first opportunity to buy his claim up to a quarter-section, which meant private sales instead of public auctions, and sales at minimum prices or the double minimum if the land lay beside a railroad. The pre-emption law was not repealed until 1891.

In 1854, after 20 years' discussion, another act, known as the graduation law, was passed. To hasten the disposal of public land which remained unsold after being put on the market because settlers preferred squatting on land farther west, the act authorized gradual reduction of the price of such land to 12½ cents an acre after it was in the market for 30 years. This was in line with the policy of transferring the public domain to individual owners as rapidly as possible. Moreover, it was hoped that the new settlers attracted by these more liberal provisions would make more valuable the land already taken up. During the eight years this law was in effect 25,696,000 ac. of land were sold at $1 per acre or less. However, much of this land passed into the hands of speculators instead of settlers as had been hoped.

(5) *1841–1871.*—From 1841 to 1871 is often called the land-grants period in connection with the disposal of the public domain. During the land-grants period large grants were made to the states both for internal improvements and for education. In all approximately 99,000,000 ac. were given to the states for education. Especially large grants were given by the government for agricultural and mechanic arts colleges. Sixty-four million acres of swamp land also were given to the states for drainage, some of it being a subsidy to education.

The railroads were other important recipients of land (about 129,000,000 ac.) from the federal government during this period. Not only did these gifts include the right of way but also every other section along the right of way, the government retaining intervening sections. Mineral rights except for coal and iron were retained by the government, the railroad being given the right to select land elsewhere if minerals were found. The railroads were interested in selling their land as rapidly as possible; in fact, in some instances selling to settlers was stipulated in the grant.

(6) *1862–1936.*—After years of agitation the Homestead law giving free land to settlers was passed in 1862. Previously the free land movement had encountered insuperable obstacles in the widely supported policy of deriving revenue from the public domain and in the opposition of the southern states. However, by 1862 the movement for free land had gathered such momentum that, after the opposing southern states had seceded, the law was passed even though the country was in special need of revenue for war purposes. The law provided that settlers were entitled to 160 ac. of land free if they lived on their land and cultivated it for five years. The residence requirement was afterward reduced to three years. No land acquired under the Homestead law could be taken in satisfaction of a debt made before the patent was issued. For those who did not wish to fulfil the residence requirements the commutation privilege provided that after fulfilling certain other requirements a person might buy the land at $1.25 or $2.50 an acre and immediately obtain patents thereto. At first this privilege was rarely used but later when the west was settling more rapidly and the value of land was rising rapidly commutation became very common. It was possible for the speculator to obtain land in this way and sell to farmers.

In 1877, a new law, the Desert Land act, had provided that a settler could buy 640 ac. of desert land for $1.25 an acre if he would irrigate it within three years. But the terms of this act were vague and the legislators overlooked the fact that on irrigated land intensive farming was required for which 640 ac. was entirely too much. Some of the land was never irrigated but was taken up for grazing. The problem of irrigated land in the arid region was more effectively dealt with in the Carey Act of 1894, under which the states in that region acquired about 4,000,000 ac. for irrigation and settlement. In 1902 the federal government itself undertook the construction of reclamation projects, the cost of which, without interest, was to be repaid by the settlers. In 1911 this act was supplemented by the Warren act, which authorized the sale of surplus water from federal projects to provide for supplemental water supplies for lands already irrigated.

In 1891 a law which embodied some of the recommendations contained in the 1880 report of the public land commission, reduced the residence requirements under the Homestead law from five to three years.

The problem of adjusting the land system to the arid region of the west was difficult. When the Homestead law was passed, congress had the humid section of the country east of the 100th meridian in mind, but it was soon seen that 160-ac. tracts were not the proper units for farming on the plains. Accordingly in 1904 the Kinkaid act applying to Nebraska allowed 640 ac. to be taken up under the Homestead law; in 1909 under the Enlarged Homestead act, 320 ac. was the amount allowed in some other states.

The Taylor Grazing Act of 1934 as amended in 1936, for all practical purposes closed the public domain. It authorized the withdrawal of 142,000,000 ac. of public domain from entry, and its organization as grazing districts to be administered by the department of interior.

(7) *1880 to 1940.*—Until the decade of the '70s little distinction among classes of land was made by the government. Because land was so abundant, little attention was given to the importance of natural resources and classification was not considered necessary. Even in the Civil War decade timber land was so plentiful that forests were regarded more as a liability than an asset. However, when settlement on the plains of the west began in earnest an interest in the forests and their preservation began to grow. In 1873 under the Timber Culture act a farmer was allowed 160 ac. additional in return for devoting one-fourth of his farm to the growth of trees. This law remained in force until 1891, though it did not bring the expected results. Tree growing of this kind was not suited to the section of the country then being developed and in addition one-fourth of the farm was a good deal to devote to timber culture. However, the law made it possible for men who had already taken up land under the homestead and pre-emption laws to acquire another 160 acres. As a result, about 10,000,000 ac. were alienated.

In 1878 the Timber and Stone act was passed to take care of forested land, not suitable for agriculture. Such land was to be sold at not less than $2.50 an acre and in lots of not more than 160 ac. per person. Large areas of this land came into the hands of lumber companies who announced that they would in turn buy forest land from any one who would buy it from the government. By 1923 more than 12,000,000 ac. of timber land had become private property under the Timber and Stone act, mainly in large holdings of lumber companies.

Up to 1891 it was possible for one person to obtain 1,120 ac. from the public domain under the various laws, but after this time the total amount one person might acquire was reduced to 320 acres. By 1923, under the Homestead, Timber Culture, Desert Land and Reclamation acts, 265,500,000 ac. passed into the hands of private owners.

Little was done to work out a satisfactory solution regarding mineral lands until the 20th century. In the early disposition of the public domain there are indications that congress felt mineral lands should be treated differently from agricultural lands. The gold, silver, lead and copper mines were specifically mentioned in the ordinance of 1785 and the saline lands were reserved in the act of 1796, but no general law applying to minerals was passed until 1866, and this law was nothing more than a confirmation of local customs in regard to mining.

Some attempts were made to lease mineral lands in the first half of the 19th century. This policy was not notably successful as the administration of the leases in some cases cost more than the leases brought in. After 1841 mineral lands were not supposed to be sold to settlers on the same basis as agricultural land; individuals acquired this land anyway because so little information was available regarding the location of minerals.

Coal lands were not included in the general mineral laws. The first law in regard to coal lands was passed in 1864, and amended in 1873. As people began more fully to realize the value of these lands new laws were passed and in 1905 large amounts of land thought to contain coal were withdrawn from entry until they could be properly classified. Five years later, however, a settler wishing agricultural land might take up coal land, the government reserving the right to the coal. In 1917 a law was passed providing for the leasing of coal lands in Alaska and in 1920 this leasing policy was extended to the U.S. and to other minerals.

Depression and Later Developments.—By 1933 the land policies of the United States were in serious need of reconstruction. While a great many scholars and economists were long aware of this fact, dramatic evidence was needed to awaken the general public to this problem. Nature and the depression highlighted the situation by dust storms, soil erosion and floods, widespread mortgage foreclosures, stranded communities, back-to-the land movements, tenancy, migrant families, urban slums, run-down farm houses, etc. Economic dislocations of the depression only intensified situations which were already chronic. Over-optimism, speculation and the lack of well thought out plans had taken their toll.

Among numerous agencies established beginning in or shortly after 1933 with direct or indirect effects on land tenure were the following: Farm Security administration (and its predecessor the Resettlement administration) which has authority over the retirement of submarginal land, debt adjustment, rehabilitation loans, and implementation of the Bankhead-Jones Farm Tenant Act of 1937; division of grazing in the department of the interior; Farm Credit administration. In addition, there were three new agencies concerned almost exclusively with urban areas: U.S. Housing authority; Federal Housing administration and the Federal Home Loan Bank board. Moreover, many of the old agencies were given new duties.

Analysis of recent land tenure problems disclosed that there are at least three main aspects:

(1) the relationship between land use maladjustment and land tenure;
(2) The economic instability of the farmer and the urban land owner as it affects our present system of freehold tenure;
(3) Insecurity of large numbers of farmers on the economic margin.

I. Land Tenure and Land Use Maladjustment.—The first of these aspects, the relationship between land use maladjustment and land tenure is aptly illustrated by the large problem areas of the U.S. There are at least four large areas in which there are severe maladjustments in land use: the Great Plains, the Old Cotton Belt, the Cutover region of the Great Lakes, and the Southern Appalachian Coal plateau. Land use and land tenure must either be reconstructed in these areas, or remain a burden on the nation's economy.

(*a*). *The Great Plains.*—The Great Plains form a region distinctive in both physical features and history. The development of the Great Plains has been marked by exploitation of the land in the hope of sudden wealth. The government land policy attempted to superimpose upon the Great Plains an agricultural system adapted to the more humid eastern sections of the country. The result has been repeated failures and widespread speculation.

It is an area where climatic conditions, unfavourable to a permanent agricultural economy, recur with irregular persistency. The unpredictable, yet recurrent, periods of drought have become the chief factor limiting the development of the land and the population of the Great Plains. The area is different from the prairies to the east in climate, soil and natural vegetation. Its climate is characteristically semiarid—deficient in rain, with frequent hot drying winds in the summer and blizzards in the winter. Wind, of high velocity, sweeping over the soil laid bare by wheat production has caused widespread wind erosion. At least 65% of the total area has been damaged in this manner, 15% severely.

The significant difference between the Great Plains and more humid areas lies in the fact that the rainfall of the plains varies widely around a critical point for crop production, and even a slight reduction of moisture affects crop yields seriously.

The present pattern of ownership and use is a result of the original homestead system and its concomitant, land speculation. Absentee ownership, the development of land in uneconomic units, and excessive tenancy are all characteristics of the region. The early homestead system, which provided for parcelling out the land in 160-ac. tracts, was well adapted to the humid sections of the country, but it was unsuitable in the subhumid and semiarid plains. Even when the homestead was increased it was still much too small, in most cases, for proper utilization of the land resources.

Much of the Great Plains land fell into the hands of lending agencies, and a large proportion of farms changed ownership through tax sales, mortgage foreclosures and bankruptcies. The years of World War II were generally more favourable in prices and in rainfall. A consequence was widespread easing of the tenure crisis.

(*b*). *The Old Cotton Belt.*—The Old Cotton Belt is that region of 11 states in the southeastern section of the U.S. which, as the name implies, is economically founded upon the growth of cotton. In brief, it is a problem area because cotton production has become unprofitable. The peculiar nature of the cotton economy and the land tenure system caused this area, in the predepression year 1929, to have the lowest per capita income in the U.S.

Unlike the Great Plains, the Old Cotton Belt is adapted to the use to which it has been put. The area has a long growing season, plentiful rainfall with adequate seasonal distribution, low land values, and suitable soils. It is this very favourable situation which has led both directly and indirectly to its problems. Primarily it has led the region to rely on cotton as its one cash crop. In exchange for this one crop it has largely depended on other regions for the necessities of life. At best, this type of economic organization is a risk. Secondly, the system of share-cropping which was expanded in the South after the Civil War has been closely associated with poverty and poor farming.

The economy has been hard on the land. Twenty-two million acres have been destroyed beyond repair and an even larger area has been seriously damaged. And the economy has been even harder on the men. Forty-eight per cent of the farmers are tenants. More than one-third move every year, and only a small percentage stay on the same farm long enough to carry out a five-year crop rotation. Less than 2% have written leases which give them security of tenure for more than one year. Under these conditions the tenant has no incentive to protect the soil or keep the buildings in repair. The result has been widespread insecurity, poverty, ill health and ignorance.

(*c*). *The Cutover Region of the Great Lakes States.*—A third area of the U.S. in which we find chronic economic and land tenure maladjustments is the Cutover region in northern Minnesota, Wis-

consin and Michigan.

Most parts of the Cutover region have been generally characterized by rural poverty, isolated settlements on poor land, excessive costs of local government, and a steady decline in employment in mines and forests. The causes are twofold: the forest resources were exploited with little consideration for the future, and settlers entered the region in large numbers to convert the cutover land to agricultural use. Public policy was based on the belief that the land was suitable for this purpose. Unfortunately, however, it was discovered that the soil was thin and sandy, excessively stony and had poor drainage, and was of rough topography; in addition, these characteristics were of extreme variability. Secondly, the mining areas of the region were affected by technological changes in the mining industry and competition from lower cost mining areas in other regions.

(*d*). *The Southern Appalachian Coal Plateau.*—A fourth area that is beset by chronic problems is the western section of the southern Appalachians. This area, like the Cutover region, is dependent upon agriculture, forestry and mineral resources. And like that region, it underwent a similar cycle of exploitation, though at an earlier date. When forestry resources were depleted. land was taken over for agricultural use. But good farm land was scanty.

A high proportion of the land is of too steep a slope for commercial farming. It is bituminous coal from which the area draws the major part of its cash income.

The fundamental cause of the low standard of living in this region is the pressure of an excessive population on the sources of subsistence. From the point of view of land tenure, the area must be depopulated, primarily through emigration, and the land-use pattern be readjusted to sustain its optimum population.

II. Land Tenure and Economic Instability of the Freehold System.—In the United States there were productive farming areas where distress was so widespread in 1932 that farmers banded together and prevented legal foreclosure sales. While these conditions were followed by much better ones even before World War II, they deserve special attention.

The causes were twofold: (1) Maladjustments within the economy as a whole—business depressions, loss of foreign markets, mechanization; and (2) maladjustments due to speculation, lack of balance between individual interest and social control.

It is obviously impossible to discuss at this point the overall problems of the capitalist economy as they affect land ownership. The maladjustments of the second type, however, are comparatively simpler.

World War I (1914–18) led to an expansion of agriculture in the U.S. Prices of agricultural products produced high selling prices, values went up. People anticipated high prices for food, continued to buy, and land values mounted still higher. They bought land and heavily mortgaged it. While the indebtedness was abnormally high, the land owners were constantly on the brink of foreclosure.

The conditions of land use and land values in urban areas are to a large extent the result of the absence of sound long-term land policies. The enormous and rapid growth of cities opened unparalleled opportunities for private gain. During the formative stages of their history U.S. cities were not particularly concerned over uses to which private owners put their land holdings. Communities allowed a substantial part of their holdings to flow into private lands in order to avoid taxation or when their credit was poor.

Uncontrolled subdivisions, improper zoning or the lack of zoning, speculation and other problems led to high social costs and consequent high real estate assessments, and lowered land values.

III. Land Tenure and Insecurity.—A third sector of the problems of agricultural land tenure is that which is concerned with those on the economic margin of poverty and insecurity: Tenants, labourers, families on submarginal land, families on holdings of inadequate size, owner families hopelessly in debt, young people unable to obtain farms.

In 1880 only 25% of all farmers were tenants; in 1940 the proportion stood at 39%. In 1937 congress passed the Bankhead-Jones act and allotted $10,000,000 to be loaned for the purchase of farms. From 2,000 tenants aided in 1938 the cumulative number of borrowers through Dec. 31, 1944, was 37,673, and the amount of loans approved was $219,590,917. States having in excess of 2,000 were Georgia, Alabama, Mississippi, Texas, North Carolina, Arkansas and South Carolina.

A second large group is composed of farm labourers. A large part of this group is migratory, following a circuit of crop areas to be on hand as the crops mature. The members of this group rarely reside long enough in one place to become resident members of a community and hence do not have access to community resources.

It has been estimated that there are about 500,000 farm families living on land too poor to provide an adequate livelihood. They occupy holdings estimated at 95,000,000 to 100,000,000 acres. The National Resources board recommended the purchase of these lands by the government. About 10,000,000 ac. had been acquired or optioned prior to the outbreak of World War II.

Information and Social Control.—Among others the following adjustments in land use are desirable: (1) shifting between intensive and extensive farming as needed; (2) instituting constructive use and management of forest and cutover lands; (3) modifying the size of farms in order to provide adequate family living and permit soil maintenance; (4) changing the cropping system to reduce erosion and improve productivity; (5) using range land more judiciously; (6) improving drainage, flood control and water supply to permit the continuance of economic agriculture on existing farms.

Tenure adjustments may be expected to develop as social planning toward agreed land-use goals is pushed forward in the national interest.

A research basis for economic and social planning in land tenure has been in the making for the U.S. The U.S. department of agriculture had its land tenure investigations first definitely organized on the economic and social side in 1919. Agricultural experiment stations in U.S. colleges and universities were a prolific source of formal reports on local land tenure situations. Beginning in 1939 regional committees on land tenure research were instituted under the leadership of Farm foundation. Regional committees, one for thirteen midwestern states, one for five south central states, and one for the Great Plain states were maintaining facilities for exchanging information and co-ordinating and stimulating research. Need for research at federal, state and local levels became widely recognized.

Publicly-supported extension services directed energies toward land-tenure problems in the U.S., placing emphasis on better lease contracts, improved landlord-tenant relations, conservation in the interest of lease parties and the public and numerous other problems. In addition, church groups, such as the National Catholic Rural Life conference, the Committee on Town and Country (Home Missions Council of North America and the Federal Council of the Church of Christ in America) and others gave increased attention to land tenure problems after the depression of the 1930s.

Training programs for equipping representatives of churches for specific economic service in rural communities where tenure problems were acute received impetus after 1940. Federal legislation in 1944 provided for use of public credit in limited guaranties of land purchases made by World War II veterans who, under debt, proposed to conduct farming operations upon it. Widespread attention was given to proposals for appropriations for land purchase by farm tenants, both in direct loans and by establishing an insurance system to promote farm purchase loans made by various agencies.

As defined by the National Resources board, "Planning consists in the systematic, continuous, forward looking application of the best intelligence available to programs of common affairs, in the public field, as it does to private affairs in the domain of individual activity." Land tenure arrangements in any society have deep influence on its total life. In a society that emphasizes widespread opportunities for citizens, there is need for widespread re-examination of the extent to which the arrangements for land tenure at

a given time satisfy social ends.

Attention to land tenure problems in the U.S. has been continuous in some respects beginning with seaboard colonization but at recurring intervals leads to extensive use of legislative and administrative energy.

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LAND TENURE, PRIMITIVE. For primitive as for modern societies the use of a certain area of the earth's surface "is a primary condition of anything that man can do; it gives him room for his own actions, for the enjoyment of the heat and the light, the air and the rain which nature assigns to that area, and it determines his distance from and, in a great measure, his relations to other things and other persons."

Land tenure is affected by the relative density of population. Thus, among the Andamanese, Professor Radcliffe Brown found that "an average local group consisted of from 40 to 50 persons of all ages, the average number of local groups to a tribe being about ten. This would give the average extent of country occupied by each local group as about 16 sq.m., but some groups certainly had a larger territory than this, and some had smaller." (*Andaman Islanders,* 1922.) The areas required by other groups of the food-gatherer type are large. Thus, in Arctic America from 70 to 200 sq.m. are required for the support of the hunters. Pastoral nomads require from 2 to 5 sq.m., and agriculture, in its most intensive form, with rice as the staple of cultivation, will support a population of over 1,000 per square mile.

A factor which affects the density of an agricultural population and the tenure of land is the method of cultivation employed. Communities in Assam, such as the Lusheis, practice extensive cultivation by the *jhum,* or fire and axe method, which speedily exhausts the resources of an area, and compels migration. There are in that area villages with permanent fields with temporary or *jhum* cultivation subsidiary thereto. There are also permanent villages with permanent fields, and *jhum* cultivation in set rotation. (Hodson, *Naga Tribes of Namipur,* 1911). Tenure conditions deal with temporary dwellers with permanent cultivation.

In communities in Africa and India both pastoralism and agriculture are followed. The relations between the groups practising these methods engender problems of land tenure, as do the relations between sections of the community subsisting by hunting, and those practising fixed agriculture. A feature of pastoral life is the periodical movement of communities with their flocks and herds, generally over well defined routes to definite areas which by custom they are entitled to exploit.

Simple Forms.—The study, therefore, of land tenure exhibits simple forms only in communities where a single method of economic exploitation secures the food supply, such as the Andamanese and Australian tribes. Among the former, the hunting grounds of a local group belong to the whole group and all the members have an equal right to hunt over it, and the boundaries are generally recognized. In Australia, "from time immemorial—that is, as far back as their native traditions go—the boundaries of the tribes have been where they are now fixed. Within them their ancestors roamed about hunting and performing their ceremonies, just as their living descendants do at the present day. There has never apparently been the least attempt made by one tribe to encroach upon the territory of another. Now and again they may have intertribal quarrels and fights, but there is no such thing as the acquisition of fresh territory." (Spencer and Gillen, *Northern Tribes of Australia,* 1904.)

Similarly, among the American Indians such as the Creeks, "every individual inhabitant has an equal right to the soil and to hunt and range over its region, except within the jurisdiction of each town or village, which, I believe, seldom extends beyond its habitations and sporting ground. Perhaps the Uches are to be excepted. They claim an exclusive territory by right of contract, and though they have sometimes put the Creeks in mind of this privilege, when their hunters make too free with their hunting grounds, yet the dispute seldom goes further, as the Confederacy are cautious of offending the Uches and yield, to their common interest and safety." (*Report,* Bureau of American Ethnology for 1924–25, 1928.)

Agriculture, Hunting and Pastoralism.—In East Africa the dominance of the Hamitic pastoralists over the earlier agricultural negroid population brought two sets of interests into relationship. Thus, among the Bunyoro, cultivation is avoided by the pastoral people; "it is said to be harmful for the wife of a man belonging to the pastoral clan to till the land, as by doing so, she may injure the cattle." (J. Roscoe, *Northern Bantu,* 1915.) The king was the sole possessor and disposer of land, which was valued for its pastoral rather than for its agricultural qualities. Nevertheless, care was taken to provide some measure of security of tenure for the agriculturalists.

Common Holding and Redistribution.—Within a community land is often held in common; even, as among the Creeks, cultivated in common. Thus, "in the town plantation every family or citizen had his parcel or share according to desire or convenience, or the largeness of his family These fields were planted and cultivated by the town, working together and attending to the several plots in turn. They harvested at the same time, but each family harvested from its own plot." (Bureau of American Ethnology *Report 1924–25,* p. 336.)

Communities are known which practise the periodical redistribution of land. Thus, among the Marris in Baluchistan, land was divided every ten years. "The tribe welcomed, indeed depended upon, the admission of strangers for the maintenance of its strength, and it was not until after a man or group had been given a share of tribal land that women were given to him or them in marriage. At the time of the decennial division of land, the number of males of whatever age, in every sub-section of each section, is counted. In some cases the division takes place among the married men of the section. . . . Lots are drawn." (*Census of India,* vol. v., 1901.)

Among the Brahuis "Following the distribution of armed men among the clans and sections, came the division of the land which had been acquired under Kacchi. The share of land of each clan was proportionate to the number of armed men it had to produce, and the same system was followed in the case of each Dhagana or section until the individual was reached. Previous to this, however, a portion of land was specially set aside

for the chief, in addition to that to which he was entitled on account of his responsibility for 20 armed men. No individual is allowed to part with his land, and if a section happens to be reduced to such small numbers as to be unable to undertake the burden of supplying the armed men assessed on it, a redistribution of the armed men is made among the remaining sections of the clan. A similar process is followed if a clan becomes extinct." Mention is made of redistribution of clan land among the Lhota Nagas.

In Central Africa, the land held by a community is invested in the chief as its head and representative. He is the *murni-inshi* ("master of the land"). He may not alienate it except by the permission of his people. He receives it with all the taboos attached to it—the sacred groves, the trees, ant-hills, pools, streams, the *matongo,* all of them with taboos attached—and it is his to see that none is violated, and to hand them all to his successor intact. Should a stranger wish to live on the land, a *lubeta* is called and the matter discussed. Many things have to be taken into consideration, including the character of the applicant. There is need for some circumspection in this respect for sometimes an undesirable person gets his head in and ends by turning the rightful owner out, or at least, making himself the master. But unless patently undesirable the chief and his people are not likely to refuse him, because he adds to their number and dignity. The chief points out a place where he may live and cultivate, and informs him of taboos which he needs to know. If he oversteps the borders allotted to him he will get into trouble. (Smith and Dale, *Ila Speaking Peoples,* 1920.)

Where a community or society comprises minor sub-divisions or has certain typical institutions; these often occupy land as distinct units. Thus, among the Lhota Nagas "land can be held either by the village, a *morung,* a clan or an individual. The land close to a village is generally waste land, and common property, as are the rights of "poisoning" in certain pools. Every morung owns land, which is the property of the morung as a whole, and not of individuals. It is worked by the boys of the morung and the produce used to buy meat for ceremonies such as the rebuilding of the morung. . . . A very large proportion of the land in the Lhota country is clan land, which is held in common by all members of that particular clan or village. A man who leaves a village loses all right to clan land in the village. . . . Every year the members of the clan in a Lhota village meet and portion out land which each is to get that year, the senior men getting the bigger share. Strangely enough, this delicate operation never seems to result in a quarrel. . . . When direct heirs fail the land becomes clan land. If this were to go on indefinitely the whole of the land in a village would in time become clan land and no one would then be able to buy or sell land. To prevent this, from time to time when the amount of common land becomes unwieldy, the clan meets and divides it up among the members who thus each become private owners of a portion of it. The process then begins again." Recognition of the *morung* or Man's House as a land holding unit indicates the rudiments of corporate tenure.

Among the Ila the boundaries are well recognised. "No passer-by would know these boundaries. They are purely natural—a tree, an ant heap, a certain direction; all very vague, apparently, but known to all concerned as well as if fenced in with a stone wall. All boundaries are taboo. The chief apportions the land to his people for their fields, but does it in the presence of a company so that there may be no doubt of it. When a person has his field apportioned, he puts in a few stakes, and afterwards clears a line round it. Woe to anyone who moves his neighbour's marks!" (*Ila Speaking People,* vol. i., 1920), the sentiment of the Commination service, where "Cursed is he who moves his neighbour's land mark." The sacred boundary stone, the natural landmark, the hill, the ravine, the river, acquire sanctity.

Religious Sanctity.—In Australia totem groups are associated with definite spots which are therefore sacred, and men belong to a spot because they originated there. The spot is sacred to the men because it is the place of their origin, because it is the place to which at death their spirits return, thence to be reincarnated. So, too, the Birhors of Chota Nagpur regard with reverence the hills from which the ancestor of their clans emerged. Thus the sentiment of sacredness attaches to selected spots which are distinguished from other adjoining or similar spots by the traditional sentiment whose maintenance adds to the solidarity of the society.

Religion colours the attitude of primitive man towards the land area he occupies. The Ila chief manages the land of the community as its head representative. "He receives it with all taboos attached to it—the sacred groves, the trees, the ant-hills, pools, streams, the *matongo*—all of them with taboos attached—and it is his to see that none is violated and to hand them on to his successor intact." Thus the easements attached to land even in primitive communities are of very diverse origin, others related to military service, while corporate tenure is maintained side by side with individual property.

LAND TITLES. The ownership of land, being the ownership of the source and scene of all property and all life, must necessarily be of a complex and in some aspects purely notional character. Its value, its immobility, its permanence, its variety of uses and relationships, give it a totally distinctive character and render it peculiarly liable to complication, doubt and dispute. In the case of goods, for instance, possession may ordinarily be relied on as proof of full ownership; in the case of land, the person in possession is seldom the owner, he is usually only a tenant, paying rent to someone else. Even the person to whom the rent is paid is in many cases—probably, in England, in most cases—not the full owner, but only a life owner, or a trustee, whose powers of disposing of the property are of a strictly limited nature. Again, goods are very seldom the subject of a mortgage, whereas land has from time immemorial been the frequent subject of this class of transaction, which, if left undiscovered, might afterwards deprive the purchaser of a large part or even the whole of the value of his purchase.

Apart from very early and primitive social conditions, there appear to be only two ways in which the required certainty as to title to land can be obtained. Either (1) the purchaser must satisfy himself, by an exhaustive scrutiny and review of all the deeds, wills, marriages, heirships and other documents and events by which the property has been conveyed, mortgaged, leased, devised or transmitted during a considerable period of time, that no loophole exists whereby an adverse claim can enter or be made good—this is called the system of Private Investigation of Title—or (2) the Government must keep an authoritative list or register of the properties within its jurisdiction, together with the names of the owners and particulars of the encumbrances in each case, and must protect purchasers and others dealing with land, on the faith of this register, from all adverse claims. This second system is called Registration of Title. It would seem fairly obvious that the latter system, if efficiently and economically administered, would be safer, cheaper and more expeditious than the former, and so in fact it has proved in all cases where it has been established on an adequate scale to afford a proper comparison. The Private Investigation system may or may not be assisted by the Government setting up a Register of Deeds. This is done in nearly all civilized countries except England, where it is confined to two counties—Yorkshire and Middlesex. It consists in the establishment of public offices in which all documents affecting land are to be recorded—partly to preserve them in a readily accessible place, partly to prevent the possibility of any material deed or document being dishonestly concealed by a vendor. Where registration is effected by depositing a full copy of the deed, it also renders the subsequent falsification of the original document dangerous. In some countries registration is essential to the legal validity of a deed; in others registration only confers priority over an unregistered one.

Another expedient for getting over some of the worst drawbacks of the Private Investigation system has been adopted on a large scale in the United States, namely Insurance of Title (*q.v.*). An insurance company investigates in the ordinary way, charging a premium for the trouble and risk of error.

One other matter of principle—recognized in some form or other by all systems—is that title can be acquired (or lost) by the mere fact of possession (or the want of it) continued for a considerable time. This is called Prescription (*q.v.*). In English law it takes mostly a negative rather than a positive form, and is called Limitations of Actions. This consists in the deprivation one after another of the rights of possible adverse individual claimants rather than the acquisition by the possessor of an independent right, good against all the world, to which alone the term prescription exactly applies. Where there are dormant rights (*e.g.*, the remainder on an estate tail or on a long term of years) it may be a very long time before all such claims are effectively barred. Scotland, South Africa and most European countries recognize prescription in the more exact sense.

Practical Developments.—In very early times, and in small and simple communities, the difficulty afterwards found in establishing title to land does not arise, owing to the primitive habit of attaching ceremony and publicity to all dealings. The parties meet on the land, with witnesses; symbolical acts (such as handing over a piece of earth, or the bough of a tree) are performed; and a set form of words is spoken, expressive of the intention to convey. By this means the ownership of each estate in the community becomes to a certain extent a matter of common knowledge, rendering fraud and mistake difficult. But witnesses die, and memory is short; and one of the earliest improvements consists in the establishment of a sort of public record kept by the magistrate, lord or other local authority, containing a series of contemporary notes of the effect of the various transactions that take place. This book becomes the general title-deed of the whole community, and as long as transactions remain simple, and not too numerous, the results are quite satisfactory. Of this character are the Manorial Court Rolls, which were in the middle ages the great authorities on title, both in England and on the Continent. In the land registry at Vienna there is (or till lately was) a continuous series of registers of this kind going back to 1368, in Prague to 1377, in Munich to 1440. No doubt there are extant manorial records in England of equal or greater antiquity; since the abolition of the manorial courts in 1925–26, these are passing gradually into the keeping of local authorities under the superintendence of the master of the rolls. Where dealings become more numerous and complicated, written instruments are required to express the intentions of the parties, and afterwards to supply evidence of the landowner's title. It appears, too, that as a general rule the public books already described continue to be used, notwithstanding this change; only (as would be expected) the entries in them, once plain and simple, either grow into full copies of the long and intricate deeds, or consist of mere notes stating that such and such deeds have been executed, leaving the persons interested to enquire for the originals, in whose custody soever they may be found. Here we have, in effect, the system of Private Investigation of Title, assisted by Registration of Deeds. It prevails in France, Belgium, parts of Switzerland, in Italy, Spain, India, in almost all the British dominions and colonies (except where superseded by a formal Registration of Title), in most of the States of the American Union, in the South American republics, in Scotland and Ireland, and in the English counties of Yorkshire and Middlesex. Where it exists, there is generally a law to the effect that in case of dispute a registered deed shall prevail over an unregistered one. The practical effect is that a purchaser can, by searching the register, find out exactly what deeds he ought to enquire for, and receives an assurance that if, after completion, he registers his own conveyance, no other deeds—even if they exist—will prevail against him.

The more perfect system of Registration of Title consists in collecting the transactions affecting each separate estate under a separate head, keeping an accurate account, generally by means of a map, of the parcels of which each such estate is composed, and summarizing authoritatively, as each fresh transaction occurs, the subsisting rights of all parties in relation to the land itself. This system prevails in Germany, Austria, and in most other parts of the former Austro-Hungarian empire, in parts of Switzerland, Australia, New Zealand, nearly the whole of Canada, some of the states of the American Union, to a certain extent in Ireland, and is in course of establishment in England and Wales. On a sale the purchaser can see in a few minutes from the register (or from an authorized copy of it called a land certificate) who is the owner, what are the burdens (if any) and who owns them, and can at once prepare a transfer, usually in a short clear-printed form. The vendor executes this in exchange for the purchase money, the purchaser presents it at the registry, the necessary alterations are made in the books, a new certificate is issued to him and all is over.

England and Wales.—Private investigation, assisted in Middlesex and Yorkshire by Registration of Deeds, is still the prevalent system. The purchaser has a right to demand a perfect title, beginning with a good root, at least 30 years old, but this right is frequently much modified by special contract. On an average, an investigation of title takes about a month. The cost is *ad valorem*, on a sliding rate, the rate diminishing as the value increases. At typical values—say £500, £2,000 and £20,000, it is £10, £33 6s. 8d. and £126 13s. 4d. respectively. Both parties pay these costs, so the total cost is double these amounts. In Middlesex and Yorkshire a few shillings more for registration and searches are paid by the purchaser. Owing to the absence of a register, fraud by suppression of deeds, though rare, is not unknown—especially in regard to mortgages.

About 1855 the superior merits of Registration of Title began to be ventilated: in 1857 a Royal Commission reported in favour of it; in 1859 a government was introduced and in 1862 the lord chancellor (Westburn) carried an act establishing it, but on a voluntary basis only. The act of 1862 was replaced by another in 1875 (passed by Lord Cairns with the support of Lord Selborne) still on voluntary lines. The House of Lords passed strong compulsory bills in three successive years. The opposition came in the Commons, where the professional interest was sufficient to secure a "block," which was only finally removed in 1897, at the price of very heavy concessions. Under the Land Transfer Act of that year, coupled with orders in council made under it, registration of the title has been compulsory on every sale and long lease in the county of London ever since 1899. By the end of 1927 upwards of 352,000 titles had been registered under it, representing a value of over 350 millions sterling. Compulsory orders have also been made as to Eastbourne (1925) and Hastings (1928). Particulars can be obtained from the circulars issued *gratis* by the Land Registry (Lincolns' Inn Fields, London, W.C. 2) or (for a few pence) from the chief Registrars' Annual Reports.

In 1922, Lord Birkenhead carried a Land Registration Act founded on the report of a royal commission under Lord St. Aldwyn (1909–11) and a committee of enquiry (1919) under Sir Leslie Scott. There is thus every probability that the system will, in due course be gradually applied by orders in council under the new scheme of 1922 (which took permanent shape, in Lord Cave's Land Registration Act of 1925) to the whole of England and Wales. To give a few typical figures—the cost of a sale (both parties' solicitors' and registry fees) under registration of title at £500, £2,000 and £20,000 value is £11 10s. 0d., £29 6s. 8d. and £39 6s. 8d. respectively, with state guarantee of title thrown in. The registry produces an annual surplus, out of which £160,000 of capital expenditure on site and building has been defrayed and an insurance fund valued at £133,000 has been built up and is increasing.

Pari passu with these developments of registration of title, considerable improvements of detail have, during the last half century, been made in the private investigation system itself—notably the shortening (in 1874) of the period of investigation on sales from 60 to 40 years and (in 1922) to 30—and the establishment (in 1882) of an *ad valorem* fee scale for solicitors' remuneration instead of the old system of item costs. Also, in 1926, a new scheme of a far-reaching, but highly technical, character called the "curtain" scheme came into operation, by which the titles to settled estates will ultimately be much simplified.

Scotland and Ireland.—The Scottish system is private investigation, assisted by a very complete and efficient registry of deeds, called the Register of Sasines. After 20 years on the

register a good title is conferred, by prescription, on the grantee and accordingly the investigation made on sales is for that period only. But it is not the practice, as in England, to curtail this by contract: the full legal title for 20 years is invariably shown. The register for the whole of Scotland (except certain royal burghs which are gradually being brought into line) is at Edinburgh and was established in 1617. The Register of Sasines is among the most complete and efficient deed registries in existence. Its distinctive features are the "minute" and the "search sheet." The former is a précis or abstract of each deed, officially made and filed: the latter is a mode of arranging these minutes, according to the property affected, so that the register contains a ready-made abstract of title for each estate, enabling a full investigation to be made without difficulty or delay, in the office itself. In 1906 the question of Registration of Title was mooted and a royal commission under Lord Dunedin produced a report showing much difference of opinion on the main issue, but containing sundry suggestions which have been carried out under an act of 1924. The minimum purchaser's costs are £5: at £100,000 they are £532 10s. 0d. The vendor's scale is two-thirds of the purchaser's—the latter also pays the registry fee (ranging from 5s. to £6). Fraud by suppression of deeds is unknown.

Till 1891 the system in Ireland was private investigation, assisted (since 1708) by a deed registry in Dublin. There are now about 300,000 titles on the register and 10,000 first registrations and 30,000 dealings registered annually. The registry is a department of the High Court. The fees are *ad valorem*, and average 18s. or 19s. in the Free State and 10s. in Northern Ireland. Unlike the deed registry, Registration of Title is administered to some extent locally: in Northern Ireland there are five local offices.

British Dominions and Colonies.—Registration, either of deeds or of title, is universal. Registration of Title, generally known outside the British Isles as the "Torrens system" after Sir Robert Torrens, who first successfully introduced it into South Australia in 1857, is almost universal in the Australian states and in New Zealand and has been partially adopted in Canada and elsewhere. In South Africa a mixed system prevails, conferring most of the benefits of registration of title.

The Australian states, with New Zealand, now furnish the most conspicuous examples in the British empire of the success of registration of title. But prior to the year 1857 they had only registration of deeds, and the expense, delay and confusion resulting from the frequent dealings appear to have been a crying evil. Sir Robert Torrens, then registrar of deeds in South Australia, drew up and carried an act establishing a register of title similar to the shipping register. The act rapidly became popular, and was adopted (with variations) in all the other Australian states in the years 1861, 1862 1870 and 1874. Consolidating and amending acts have since been passed in most of these states. Only absolute title is registered.

As regards Canada, registration of title was introduced in Vancouver island in 1861, was extended to the rest of British Columbia in 1870, and was in 1885 adopted by Ontario, Manitoba and the North-West Territories, and in 1903 (partially) by Nova Scotia. Only Quebec, New Brunswick and Prince Edward island retain the old English system, plus registration of deeds. The provinces which have adopted registration of title have adopted it in somewhat different forms. In British Columbia it is similar to Lord Westbury's act of 1862. The North-West Territories follow closely the Torrens acts. The Ontario act is almost a transcript of Lord Cairns's act of 1875.

France.—In France registration of deeds is universal. Sales, mortgages, gifts and successions; easements, leases of over 18 years and transactions affecting the land to the extent of three years' rent may lose priority if not registered. Wills need not be registered. Mortgages must be re-registered every ten years. Purchase deeds are registered by filing full copies. Registries are established in all the considerable towns. The title can usually be fully investigated from the documents in the registry. Official searches for mortgages are commonly resorted to. Under the monarchy the land system was practically copyhold tenure, but greater validity was attached to the Court Rolls than was the case in England. The present system was established by a law of 1790 after the abolition of seignorial institutions in 1789. This was modified by the Code Napoleon, and further perfected by a law of 1855 which is still in force. With regard to cost, the outstanding feature is the government duty, which is now permanently fixed at rates ranging from 15% in low values to 18½% in high values. Besides this there is a temporary tax of 7% on the first sale after 1926. Before the War it was about 6½%. There are also small charges for registration. The combined cost of duty and professional help works out on a general average at about 25 to 30% on the value and is paid by the purchaser. The vendor as a rule has no costs.

Germany and Austria.—By far the most important examples of registration of title at present existing—because they show how the system works when applied to large European communities, with all the intricacies and complications of modern civilized life—are to be found in Germany, Austria, Hungary and the other states formerly parts of the Austrian empire. In some parts of these countries registration of title has been established for several centuries—notably in Bohemia; in most parts it has existed for the greater part of the 19th century; in some districts, again, notably Tirol and the Rhine Provinces, it is of comparatively recent introduction. In all cases it appears to have been preceded by a system of deed registration, which materially facilitated its establishment. In some cases, Prussia, for instance, the former registers were kept in such a way as to amount in themselves to little short of a registry of title. Very low scales of fees suffice to pay all official expenses. In case of error, the officials are personally liable; failing these, the state. Other states are very similar. Owing to the ease and simplicity of the registers, it is not always necessary to employ professional help. When such help is required, the fees are low. In Vienna (prior to the War) £1 was a very usual fee for the purchaser's lawyer, £10 being seldom reached. In Germany the register is private. In Austria it is open to public inspection. The systems are usually administered in districts, about 20 to 30m. across, attached to the local law courts. In Baden and Württemberg every parish (commune) has its own registry. All ordinary dealings are transacted with the greatest expedition. Security is absolute. Very full information as to the German and Austrian systems is given in the parliamentary report (C. 8,139) of 1896. There has been no change of importance since that date. (C. F.-Br.)

United States.—"The characteristics of the American recording system which distinguish it from other systems are these: The document recorded is a deed, not a memorandum of a transfer or an agreement for a transfer; the deed is operative without record, the title passing before the deed is recorded; the record is not a mere device for preserving evidence, but gives a legal priority to the grantee of the recorded deed. In the first particular it differs from the mediaeval registry system; in the second from the continental registry systems and the American Torrens system of registration; in the third from the recording system in England under local customs, like those of Middlesex and Yorkshire," Joseph H. Beale, "The Origin of the System of Recording Deeds in America," 19 *Green Bag*, 335 (1907). Land registration in America antedates the English system established by the statute of 7 Anne c. 20. It began in Plymouth Colony in 1626 and in Virginia and Connecticut in 1639. The first legislation, however, that established the principle of preferring a recorded deed to a prior unrecorded one was the Massachusetts statute of 1841. Since that time recording has been inaugurated in every State as its aid in facilitating commerce in land became apparent. The basic principles of the American recording system are two: registration gives absolute notice of the contents of every deed properly recorded to every person subsequently dealing with the property, whose duty it is to examine the record, and, secondly, gives all persons the right to rely upon the records as containing a complete catalogue of every outstanding estate that could affect their rights as purchasers of the land. Consequently, though registration is not mandatory, a failure to register gives subsequent parties dealing with the property in good faith superior rights.

The basic principle is easily illustrated by the following case: A, the owner of Blackacre, conveys in fee simple to B who fails to record. A thereafter conveys to C, who has no actual notice of the prior conveyance to B. C's title is superior to the earlier title of B, though in some States this is true only if C records his deed before B records his prior deed. It should be noticed that recording is not necessary for the acquisition of title. Upon the conveyance to B, he immediately acquires title, but this is subject to be divested by a subsequent conveyance to another purchaser having no notice of the earlier deed. An unregistered deed may also be ineffective as against creditors of the grantor who had no notice of the conveyance.

The registration of deeds, stretching back in the Eastern States to the early colonial period, makes necessary a voluminous system of records. Each county of a State has its central registry system, but the extensive indexes make an examination of title a lengthy and expensive process. Complaints are continually made as to the accuracy of the indexes. The dangers inherent in the recording system have led to the use of title guarantee companies, the activities of which have increased enormously in the past two decades. Also wide efforts for reform in land registration have been directed toward the establishment of the Torrens system to function side by side with the older recording system. Ohio passed legislation establishing the Torrens system in 1896, and Illinois and California followed in 1897. (The Ohio act was later declared to be unconstitutional in *State* v. *Guilbert,* 55 Ohio St. 575, and was superseded in 1913 by an act free from the invalidating defects.) By 1915 similar legislation had been enacted by 12 States and by Hawaii and the Philippine Islands. The constitutionality of such legislation had been established by the leading case of *Tyler* v. *Judges,* 175 Mass. 68, 179 U.S. 405. In 1912 the matter was taken up by the National Conference of Commissioners on Uniform State Laws and, as a result of their efforts, a uniform statute to establish the Torrens system of registration was recommended to the various States in 1915. The adoption of this statute by three States and the adoption of similar statutes by other States indicates the extent to which the Torrens system has fastened itself upon the legal systems of the various American States. (J. M. La.)

Bibliography.—A very complete list of some 114 English publications from 1653–1895 will be found in R. Burnett Morris, *Land Registration* (1895). For parliamentary publications see *Second Report of the Real Property Commissioners* (1831); *Report of the Registration and Conveyancing Commission* (1850); *Report of the Registration of Title Commission* (1857); *Report of the Land Transfer Commission* (1870); *Reports on Registration of Title in Germany and Austria-Hungary* (1896); *Report of the Registration of Title (Scotland) Commission* (1908); *Report of Commission on Land Transfer Acts* (1911); *Fourth Report of the Acquisition and Valuation of Land Committee, on the Transfer of Land in England and Wales* (1919). For general reviews of land registration in the British Isles, the colonies, and in foreign countries; R. Burnett Morris, as above, and C. F. Brickdale, *Methods of Land Transfer* (1913). For books on practice: C. F. Brickdale, *Registration in Middlesex* (1892); R. Smith, *The Yorkshire Registration Acts* (1895); C. F. Brickdale and J. Stewart-Wallace, *The Land Registration Act, 1925* (1927); J. J. Wontner, *Guide to Land Registry Practice* (1928). *See* also for British empire: W. Burge, *Burge's Colonial and Foreign Law,* vol. iv., pt. 2 (1837, new ed. by A. W. Renton and W. A. Bewes, 1928); J. E. Hogg, *Australian Torrens System* (1905), and *Registration of Title to Land throughout the Empire* (1920); *The Victorian Year Book* (1925–26); *The Australian Encyclopaedia,* art. "Torrens System" (1926). United States: *Land Title by Registration Certificate,* Bulletin No. 1 publ. by the Federal Farm Loan Bureau, Treasury dept. (1918). France: L. H. Guilhot, *Manuel de droit fiscal* (1928), pp. 27 etc. Germany: H. Bartsch, *Das oesterreichische allgemeine Grundbuchsgesetz in seiner praktischen Anwendung* (1882, new ed. 1914), and *Die Grundbücherlichen Einträge Dargestellt für den praktischer Gebrauch* (2 vol., 1911); H. Oberneck, *Das Reichsgrundbuchrecht und die preussischen Ausführungs- und Ergänzungsbestimmunger* (1900); G. Güthe, *Die Grundbuchordnung für das Deutsche Reich und die preussischen Ausführungsbestimmungen* (2 vols., 1905; 2nd ed. 1913). (C. F.-Br.)

LANDUMAN, a small tribe of light-skinned folk, about 1m.65cm. in height, who file their teeth into points and tattoo their arms. They live between the upper Nunez and Pongo rivers in French Guinea, and are organized as a monarchy. Marriage is polygamous, the first wife being the senior. The eldest daughter of the first wife marries the brother of the second wife. Inheritance is matrilineal, and both family and personal ownership of goods exist. The dead are exposed, then buried in sacred groves, and sacrifices take place on the grave. They are animists and have secret societies (*Sebe* and *Basondji*).

See Arcin, *La Guinée Française* (1907).

LANDWEHR, that part of the organized forces of which continuous service is required only in time of war. The Prussian Landwehr was first formed during the War of Liberation against Napoleon and after the unification of Germany became the recognized second-line army. On termination of their service in the active army, all reservists passed into the Landwehr, with which they served for eleven years, up to the age of 39, then passing to the Landsturm. At the opening of the World War the bulk of the Landwehr were absorbed into the active army, and from the residue there were formed a number of independent Landwehr brigades, which later in the war were combined to form divisions. These were at first utilized for line of communication duties, but later took part in operations on the eastern front and held quiet sectors of the line in the west. A total of 34 Landwehr divisions were organized at various periods during the war.

In Austria-Hungary the pre-war Landwehr was a totally different organization, being in reality a cadre force existing alongside the regular army. Into it were passed not only those men who had completed their term of service in the active army, but also those who for want of vacancies could not be placed in the latter. Peace-time training was limited to a few weeks every two years. At the opening of the World War Austria mobilized eight Landwehr (Schutzen) divisions and Hungary eight Honved divisions, and three additional Schutzen and nine Honved divisions had been raised before its termination in 1918.

The Swiss Landwehr consists of men who serve for eight years between the ages of 33 and 40; the force includes units of all arms and numbers some 70,000 men. Training at present consists only of a few repetition courses and arms inspections.

LANE, EDWARD WILLIAM (1801–1876), English Arabic scholar, son of Dr. Theophilus Lane, prebendary of Hereford, was born on Sept. 17, 1801. He was educated at Bath and Hereford grammar schools. In 1825 he started for Egypt in search of health. There he spent three years, twice ascended the Nile, proceeding as far as the second cataract, and composed a complete description of Egypt, with a portfolio of 101 drawings. He again visited Egypt in 1833–35, residing mainly in Cairo, but retiring to Luxor during the plague of 1835. Lane took up his residence in the Mohammedan quarter, and under the name of Mansur Effendi lived the life of an Egyptian scholar. His *Account of the Manners and Customs of the Modern Egyptians* appeared in 1836, and became a classic. The translation of the *Arabian Nights,* with notes and illustrations, designed to make the book a sort of encyclopaedia of Eastern manners, appeared between 1838 and 1840. In 1840 Lane married a Greek lady. A useful volume of *Selections from the Kur-ān* was published in 1843, but before it passed through the press Lane was again in Egypt, where he spent seven years (1842–49) collecting materials for a great Arabic lexicon, which the munificence of Lord Prudhoe (afterwards duke of Northumberland) enabled him to undertake. The most important of the materials amassed during this sojourn was a copy in 24 thick quarto volumes of Sheikh Murtadā's great lexicon, the *Tāj el 'Arūs,* which, though itself a compilation, is so extensive and exact that it formed the main basis of Lane's subsequent work.

Returning to England in 1849, Lane devoted the remaining 27 years of his life to digesting and translating his Arabic material in the form of a great thesaurus of the lexicographical knowledge of the Arabs. He worked at this *Arabic-English Lexicon* with unflagging diligence till a few days before his death at Worthing on Aug. 10, 1876. Five parts appeared during his lifetime (1863–74), and three posthumous parts were afterwards edited from his papers by S. Lane-Poole. Lane's scholarship was recognized by many learned European societies. He was a member of the German Oriental Society, a correspondent of the French Institute, etc. In 1863 he was awarded a small civil list pension, which was after his death continued to his widow.

A Memoir, by his grand-nephew, S. Lane-Poole, was prefixed to part vi. of the *Lexicon*. It was published separately in 1877.

LANE, FRANKLIN KNIGHT (1864–1921), American public official, was born near Charlottetown, P.E.I., Canada, July 15, 1864. He graduated at the University of California in 1886. Beginning his career as a newspaper reporter, he later studied law, was admitted to the bar in 1889, and practised in San Francisco. In 1897 he was elected city attorney, to which office he was twice re-elected. In 1905 he was appointed by President Roosevelt a member of the Interstate Commerce Commission and was retained by President Taft, serving for eight years. In 1913 he entered the cabinet of President Wilson as secretary of the interior. During his term of office the wealth of Alaska was made more accessible by the construction of a government railway. To the Indians he gave special attention, maintaining that perpetual tutelage was wrong. He advocated development of national resources without waste as being reasonable conservation, and earnestly urged the reclamation of land. In 1920 he resigned his post. He died at Rochester, Minn., May 18, 1921.

Lane was the author of *The American Spirit* addresses delivered in war time (1918).

See also A. W. Lane and L. H. Wall, *The Letters of Franklin K. Lane, Personal and Political* (1923).

LANE, SIR HUGH PERCY (1875–1915), Irish art collector, was born in Co. Cork on Nov. 9, 1875, the son of the Rev. J. W. Lane. He entered the firm of Colnaghi and Company in 1893 and rapidly made a name as a connoisseur of extraordinary perception. In 1898 he began dealing on his own account. He took a prominent part in the revival of an interest in art in Ireland, especially in establishing a gallery of modern art in Dublin. A fine collection was ultimately made, and housed in Harcourt street, Dublin, where it was opened in 1906. He was knighted in 1909. He acted as adviser on the formation of the Johannesburg Municipal Gallery of Modern Art (1909), and brought together the Cape Town National Gallery collection of 17th century Dutch pictures (1912). He was in 1914 appointed director of the National Gallery of Ireland. He was drowned in the sinking of the "Lusitania," May 7, 1915. After his death a controversy arose about a collection of pictures, mostly of the French Impressionist school, which he had lent to Dublin in 1906 and had offered to give if a permanent gallery were provided. As this condition was not complied with he withdrew the loan and lent these pictures to the National Gallery in London, to which he bequeathed them in 1913. However, before sailing to America in 1915, he made a codicil to his will restoring the pictures to Dublin; but this codicil was unwitnessed, and on Lane's death the National Gallery became possessed of the pictures. On Dublin protesting, a committee was set up in 1924 to consider the question, and its report (1926) affirmed that Lane thought he was making a legal disposition in his codicil, but that an act of parliament was necessary to put it into force, and that it would not be proper to modify his will by act of parliament. The pictures are now in the Tate Gallery.

See Lady Gregory, *Hugh Lane's Life and Achievements: with some account of the Dublin Galleries* (1920).

LANE, JAMES HENRY (1814–1866), American soldier and politician, was born at Lawrenceburg, Ind., on June 22, 1814. The son of an Indiana politician, he was admitted to the bar, served in the Mexican War, was lieutenant-governor of Indiana, a Democratic representative in Congress, and in 1855 emigrated to Kansas. There he soon became prominent in the Free State forces, both in a political and military way, being second-in-command in Lawrence during the "Wakarusa War," senator-elect under the Topeka constitution, one of the Free State leaders indicted for treason, and a participant in the domestic feuds of 1856–57. After Kansas became a State, Lane was elected in 1861 to the U.S. Senate as a Republican. As a result of the president's favour he exercised vague military powers in Kansas during the Civil War, in spite of the protests of the governor and the regular departmental commanders. In the autumn of 1861 he conducted a devastating campaign on the Missouri border, and in July 1862, he was appointed commissioner of recruiting. Accused of being implicated in Indian contracts of a fraudulent character, in a fit of depression he took his own life, dying near Ft. Leavenworth, Kan., on July 11, 1866. Ambitious, unscrupulous, rash and impulsive, and generally regarded by his contemporaries as an unsafe leader, Lane was a man of great energy and personal magnetism, and possessed oratorical powers of a high order.

See L. W. Spring, "The Career of a Kansas Politician," in the *Amer. Hist. Rev.* (vol. iv., Oct. 1898) and the too laudatory biography by John Speer (Garden City, Kan., 1898).

LANE-POOLE, STANLEY (1854–1931), British historian and archaeologist, was born in London on Dec. 18, 1854, and was educated at Corpus Christi college, Oxford, and Dublin university. His first post was in the coin department of the British Museum (1874–92), where he compiled a catalogue in 14 volumes of the oriental and Indian coins. During this period he went on archaeological missions organized by the Government to Egypt (1883) and Russia (1886). He also visited Australia. From 1895 to 1897 he was engaged on archaeological research at Cairo, under the direction of the Egyptian Government, and on his return to England was appointed professor of Arabic at Trinity college, Dublin, a post which he held until 1904. His numerous publications include: *Histories of the Moors in Spain* (1887, 9th ed., 1915); *Turkey* (1888, 6th ed., enlarged, 1908); *The Barbary Corsairs* (1890, 3rd ed., 1915); *Egypt in the Middle Ages* (1901); *Mediaeval India* (1902, 9th ed., 1915); *Essays in Oriental Numismatics* (3 vols., 1874, 1877 and 1892); *The Thousand and One Nights* (3 vols., 1906); *Mediaeval India from Contemporary Sources* (1916); *A Short History of India in the Middle Ages* (1917); and biographies of Lord Stratford de Redcliffe (1888), Sir G. F. Bowen (1889), Sir Harry Parkes (1894), Sir R. Church (1890), E. W. Lane (1877), Aurangzib (1892), Saladin (1898), Babur (1899), and Watson Pasha (1919).

LANESSAN, JEAN MARIE ANTOINE DE (1843–1919), French statesman and naturalist, was born at Sainte-André de Cubzac (Gironde) on July 13, 1843. Elected to the Municipal Council of Paris in 1879, he declared in favour of communal autonomy, and joined with Henri Rochefort in demanding the erection of a monument to the Communards; but after his election to the Chamber of Deputies for the 5th arrondissement of Paris in 1881 he gradually veered from the extreme Radical party to the Republican Union, and identified himself with the cause of colonial expansion. A government mission to the French colonies in 1886–1887, in connection with the approaching Paris exhibition, gave him the opportunity of studying colonial questions, on which, after his return, he published three works: *La Tunisie* (Paris, 1887); *L'Expansion coloniale de la France* (*ib.*, 1888); *L'Indo-Chine française* (*ib.*, 1889). In 1891 he was made civil and military governor of French Indo-China; he consolidated French influence in Annam and Cambodia, and secured a large accession of territory on the Mekong river from the kingdom of Siam. He was recalled in 1894, and published a defence of his much-criticised administration (*La Colonisation française en Indo-Chine*) in the following year. In the Waldeck-Rousseau cabinet of 1899 to 1902 he was minister of marine, and in 1901 he secured the passage of a large naval programme. At the general election of 1906 he was not re-elected; he retired from politics in 1914 and died at Ecouen (*Seine-et-Oise*) on Nov. 8, 1919.

LANETT, a city of Chambers county, Ala., U.S.A., on the Chattahoochee river (eastern boundary of the state), 30 mi. above Columbus, Georgia. It is on federal highway 29 and is served by the Chattahoochee Valley and the Western of Alabama railways. The population was 5,204 in 1930 and 6,141 in 1940. It has cotton mills, dyeworks, and a bleachery.

LANFRANC (d. 1089), archbishop of Canterbury, was born early in the 11th century at Pavia, where his father, Hanbald, was a magistrate. Lanfranc studied law, and tradition links him with Irnerius of Bologna as a pioneer in the renaissance of Roman law. After his father's death he crossed the Alps to found a school in France. About 1039 he became the master of the cathedral school at Avranches, where he taught for three years. But in 1042 he entered the newly founded house of Bec. Until 1045 he lived at Bec in absolute seclusion. He was then persuaded by Abbot

Herluin to open a school in the monastery. His pupils were drawn not only from France and Normandy, but also from Gascony, Flanders, Germany and Italy. Many of them afterwards attained high positions in the Church. Among them, Gilbert Crispin became famous as Abbot of Westminster, Ives as Bishop of Chartres, Anselm of Aosta as Archbishop of Canterbury and Primate of all England, and Anselm of Baggio as Pope. Lanfranc lectured on logic and dogmatic theology. He was therefore naturally invited to defend the doctrine of transubstantiation against the attacks of Berengar of Tours. He took up the task with the greatest zeal, although Berengar had been his personal friend; he was the protagonist of orthodoxy at the councils of Vercelli (1050), Tours (1054) and Rome (1059). To his influence we may attribute the desertion of Berengar's cause by Hildebrand and the more broad-minded of the cardinals. Knowledge of Lanfranc's polemics is chiefly taken from his tract *De corpore et sanguine Domini* (written after 1079) when Berengar had been finally condemned.

In the midst of his scholastic and controversial activities Lanfranc became a political force. While merely a prior of Bec he led the opposition to the uncanonical marriage of Duke William with Matilda of Flanders (1053), and incurred a sentence of exile. But the quarrel was settled, and he undertook to obtain the pope's approval of the marriage. This he accomplished at the same council which witnessed his third victory over Berengar (1059), and he thus acquired a lasting claim on William's gratitude. In 1066 he became the first abbot of St. Stephen's at Caen, founded by the duke as a penance for his disobedience to the Holy See. William adopted the Cluniac programme of ecclesiastical reform, and obtained the support of Rome for his English expedition in the character of a crusader against schism and corruption. Alexander II., the former pupil of Lanfranc, gave the Norman Conquest the papal benediction.

When the see of Rouen next fell vacant (1067), Lanfranc declined the honour, and he was nominated to the English primacy as soon as Stigand had been canonically deposed (1070). The new archbishop at once began a policy of reorganization and reform. Thomas of Bayeux, archbishop-elect of York, asserted that his see was independent of Canterbury and claimed jurisdiction over the greater part of midland England. Lanfranc, during a visit to Rome to receive the pallium, obtained an order from Alexander that the disputed points should be settled by a council of the English Church. This was held at Winchester in 1072. Thanks to a skilful use of forged documents, the primate carried the council's verdict upon every point. Although the school of Bec was firmly attached to the doctrine of papal sovereignty, he still assisted William in maintaining the independence of the English Church; and appears at one time to have favoured a neutral attitude in the quarrels between papacy and empire. In the domestic affairs of England Lanfranc sought to extricate the Church from the fetters of the state and of secular interests. He was a generous patron of monasticism. He endeavoured to enforce celibacy upon the secular clergy. He obtained the king's permission to deal with the affairs of the Church in synods which met apart from the Great Council, and were exclusively composed of ecclesiastics. His influence shaped the famous ordinance which separated the ecclesiastical from the secular courts (*c.* 1076). But he acknowledged the royal right to veto the legislation of national synods. In the cases of Odo of Bayeux (1082) and of William of St. Calais, bishop of Durham (1088), he used his legal ingenuity to justify the trial of bishops before a lay tribunal. He accelerated the process of substituting Normans for Englishmen in all preferments of importance.

Lanfranc's greatest political service was rendered in 1075, when he detected and foiled the conspiracy which had been formed by the earls of Norfolk and Hereford. He interceded for Waltheof's life and to the last spoke of the earl as an innocent sufferer for the crimes of others; he lived on terms of friendship with Bishop Wulfstan. On the death of the Conqueror (1087) he secured the succession for William Rufus, in spite of the discontent of the Anglo-Norman baronage; and in 1088 his exhortations induced the English militia to fight on the side of the new sovereign against Odo of Bayeux and the other partisans of Duke Robert. He exacted promises of just government from Rufus, and was not afraid to remonstrate when the promises were disregarded. In 1089 he was stricken with fever and he died on May 24 amidst universal lamentations. As a statesman Lanfranc did something to uphold the traditional ideal of his office; as a primate he elevated the standards of clerical discipline and education. Of all the Hildebrandine statesmen who applied their teacher's ideas within the sphere of a national church he was the most successful.

The chief authority is the *Vita Lanfranci* by Milo Crispin, who was precentor at Bec and died in 1149. Milo drew largely upon the *Vita Herluini,* composed by Gilbert Crispin, abbot of Westminster. The *Chronicon Beccensis abbatiae,* a 14th-century compilation, should also be consulted. The first edition of these two sources, and of Lanfranc's P. Jaffé, Berlin, 1865). Of modern works A. Charma's *Lanfranc* (Paris, 1648). Another edition, slightly enlarged, is that of J. A. Giles, *Lanfranci opera* (2 vols., Oxford, 1844). The correspondence between Lanfranc and Gregory VII. is given in the *Monumenta Gregoriana* (ed. P. Jaffé, Berlin, 1865). Of modern works A. Charma's *Lanfranc* (Paris, 1849), H. Boehmer's *Die Fälschungen Erzbsichof Lanfranks von Canterbury* (Leipzig, 1902), and the same author's *Kirche und Staat in England und in der Normandie* (Leipzig, 1899) are useful. *See* also A. S. Macdonald, *Lanfranc* (1926), and the authorities cited in the articles on WILLIAM I. and WILLIAM II. (H. W. C. D.; X.)

LANFREY, PIERRE (1828–1877), French historian and politician, was born at Chambéry (Savoie). His father had been one of Napoleon's officers. The son studied philosophy and history in Paris and wrote historical works of an anti-clerical and rationalizing tendency. These included *L'Eglise et les philosophes du XVIIIe siècle* (1855; new edition, with a notice of the author by E. de Pressensé, 1879); *Essai sur la révolution française* (1858); *Histoire politique des papes* (1860); *Lettres d'Evérard* (1860), a novel in the form of letters; *Le Rétablissement de la Pologne* (1863). His *magnum opus* was his *Histoire de Napoléon Ier* (5 vols., 1867–75 and 1886), in which he unduly minimized Napoleon's military and administrative genius. A staunch republican, he was elected to the National Assembly in 1871, became ambassador at Berne (1871–73), and life senator in 1875. He died at Pau on Nov. 15, 1877.

His *Oeuvres complètes* were published in 12 vols. (1879 *seq.*), and his *Correspondance* in 2 vols. (1885).

LANG, ANDREW (1844–1912), Scottish scholar and man of letters, was born at Selkirk on March 31, 1844. He was educated at Selkirk Grammar school, Edinburgh academy, the University of St. Andrews and Balliol college, Oxford. He held a fellowship of Merton until he married in 1875, when he removed to London. Lang was one of the greatest journalists of his time, always fresh and original, and writing from a mind overflowing with all kinds of out-of-the-way knowledge. He wrote leaders for the *Daily News,* literary and critical articles for the *Morning Post* and other papers; he also wrote articles on ballads, crystal gazing, poltergeist, totemism and many other questions for the 9th edition of the *Encyclopædia Britannica.*

He was keenly interested in Scottish history, especially in the history of the Stuarts; it would be almost fair to call him the last of the Jacobites. He had a passion for unravelling mysterious intrigues and Scottish history gave him plenty of opportunities. Among his works in this field were *The Mystery of Mary Stuart* (1901; rev. ed. 1904); *The Portraits and Jewels of Mary Stuart* (1906); *John Knox and the Reformation* (1905); *Pickle the Spy* (1897); a *History of Scotland from the Roman Occupation to the Suppression of the last Jacobite Rising* (4 vols., 1900–07), a work containing many entertaining digressions; and other monographs on Scottish questions. He also took a keen interest in French history; he wrote a book on the "Man in the Iron Mask," which he called *The Valet's Tragedy* (1903), and a counterblast to Anatole France's work on Joan of Arc in *The Maid of France* (1908).

Lang was an incurable romantic, and this is one of the reasons for his great success in writing for children. Generations of them were delighted with the long series of fairy books, beginning with the *Blue Fairy Tale Book* (1889), and going on with the *Red, the Green* and the *Yellow,* and then with true stories equally enchanting. Lang's first ambition had been towards poetry. He published many pleasant volumes of verse, beginning with the *Ballads and Lyrics of Old France* (1872), in which he experi-

mented in various metres. He was disappointed by the reception of his narrative poem on *Helen of Troy* (1882). His serious Homeric studies bore fruit in his collaboration with S. H. Butcher in a prose translation (1879) of the Odyssey, and with E. Myers and Walter Leaf in a prose version of the *Iliad* (1883). Of his separate books on classical subjects the best is *The World of Homer* (1910).

Lang's other main preoccupation was with myth and folklore. He made solid contributions to the subject in his *Custom and Myth* (1884); *Myth, Literature and Religion* (2 vols., 1887; rev. ed., 1899); *The Making of Religion* (1898). Many academic honours were conferred on him. His biographer (G. S. Gordon) in the *Dictionary of National Biography* calls him the "greatest bookman of his age." He died at Banchory, Aberdeenshire, on July 20, 1912.

LANG, COSMO GORDON LANG, 1ST BARON OF LAMBETH (1864–1945), Anglican divine, was born in Aberdeen on Oct. 31, 1864. Educated at Glasgow university and Balliol college, Oxford, he graduated in 1886 and two years later was elected a fellow of All Souls. In 1890 he was ordained and was appointed curate of the parish church of Leeds. From 1893 to 1896 he was fellow and dean of divinity of Magdalen college, Oxford, and from 1894–96 vicar of the university church of St. Mary's. In 1896 he became vicar of Portsea, and in 1901 suffragan bishop of Stepney, London, and canon of St. Paul's cathedral. In 1908 he was appointed archbishop of York. His eloquence and clear common sense made him an influential member of the house of lords, and in 1909 he was appointed a member of the royal commission on divorce. He took a leading part in the support of the Prayer Book measure in parliament in 1928. On Nov. 12, 1928, he succeeded Dr. Davidson as archbishop of Canterbury, at a critical point in the Church's history, the revised Prayer Book having been twice rejected by parliament. The great feature of his career was his social work in industrial centres. He retired as archbishop of Canterbury in 1942 and died at Richmond, Surrey, England, on Dec. 5, 1945.

His published works include *The Miracles of Jesus as Marks of the Way of Life* (1901); *Thoughts on some of the Parables of Jesus* (1906); *The Opportunity of the Church of England* (1905); *Prayer Book Revision* (Speeches by the archbishops of Canterbury and of York, 1927).

LANG, KARL HEINRICH, RITTER VON (1764–1835), German historian, was born on June 7, 1764, at Balgheim, near Nördlingen. At intervals from 1793 to 1801 Lang was closely connected with the Prussian statesman Hardenberg, who employed him as his private secretary and archivist, and in 1797 he was present with Hardenberg at the congress of Rastadt as secretary to the legation. He was occupied chiefly with affairs of the principalities of Anspach and Bayreuth, newly acquired by Prussia, and especially in the settlement of disputes with Bavaria as to their boundaries. He was archivist at Munich from 1810 to 1817, and devoted himself to the study of Bavarian history. He died on March 26, 1835.

Lang is best known through his *Memoiren* (Brunswick, 2 vols. 1842) which must, however, be read with caution on account of their satirical tone.

LANGDELL, CHRISTOPHER COLUMBUS (1826–1906), American jurist, was born in New Boston, N.H., May 22, 1826. He studied at Phillips Exeter academy in 1845–48, at Harvard college in 1848–50 and in the Harvard law school in 1851–54. He practised law in 1854–70 in New York city, but he was almost unknown when, in Jan. 1870, he was appointed Dane professor of law, and soon afterwards dean of the law faculty of Harvard university. He resigned the deanship in 1895, in 1900 became Dane professor emeritus, and on July 6, 1906, died in Cambridge. He received the degree of LL.D. in 1875; in 1903 a chair in the law school was named in his honour; and after his death one of the school buildings was named Langdell Hall. He remodelled the administration of the Harvard law school and introduced the "case" system of instruction.

Langdell wrote *Selection of Cases on the Law of Contracts* (1870, the first book used in the "case" system; enlarged, 1877); *Cases on Sales* (1872); *Summary of Equity Pleading* (1877, 2nd ed., 1883); *Cases in Equity Pleading* (1883); and *Brief Survey of Equity Jurisdiction* (1905).

LANGDON, JOHN (1741–1819), American statesman, was born in Portsmouth, N.H., on June 25, 1741. After an apprenticeship in a counting-house, he led a sea-faring life for several years, and became a shipowner and merchant. In Dec. 1774 as a militia captain he assisted in the capture of Ft. William and Mary at New Castle, N.H., one of the first overt acts of the American colonists against the property of the Crown. He was elected to the last royal assembly of New Hampshire and then to the second Continental Congress in 1775, but he resigned and in June, 1776, became Congress's agent of prizes in New Hampshire, and in 1778 continental (naval) agent of Congress in this State, where he supervised the building of John Paul Jones's "Ranger," and other vessels. He was a judge of the New Hampshire court of common pleas in 1776–77, a member (and speaker) of the New Hampshire house of representatives from 1776 until 1782, a member of the State Constitutional Convention of 1778 and of the State senate in 1784–85, and in 1783–84 was again a member of Congress. He contributed largely to raise troops in 1777 to meet Burgoyne; and he served as a captain at Bennington and at Saratoga. He was president of New Hampshire in 1785–86 and in 1788–89; a member of the Federal Constitutional Convention in 1787; a member of the State convention which ratified the Federal Constitution for New Hampshire; a member of the U.S. Senate in 1789–1801, and its president *pro-tem.* during the first Congress and the second session of the second Congress; a member of the New Hampshire house of representatives in 1801–05 and its speaker in 1803–05; and governor of the State in 1805–09 and in 1810–12. He refused the naval portfolio in Jefferson's cabinet, and received nine electoral votes for the vice-presidency in 1808. He died in Portsmouth on Sept. 18, 1819.

Alfred Langdon Elwyn has edited *Letters by Washington, Adams, Jefferson and Others, Written During and After the Revolution, to John Langdon of New Hampshire* (Philadelphia, 1880).

LANGE, FRIEDRICH ALBERT (1828–1875), German philosopher and sociologist, was born on Sept. 28, 1828, at Wald, near Solingen, the son of the theologian, J. P. Lange. He was educated at Duisburg, Zürich and Bonn, where he distinguished himself by gymnastics as much as by study. He taught in various places for some time, but gave up teaching when schoolmasters were forbidden political activity. He wrote: *Die Leibesübungen* (1863), *Die Arbeiterfrage* (1865, 5th ed. 1894), *Geschichte des Materialismus und Kritik seiner Bedeutung in der Gegenwart* (1866; 7th ed. with biographical sketch by H. Cohen, 1902; Eng. trans., E. C. Thomas, 1877), and *J. S. Mill's Ansichten über die sociale Frage* (1866). In 1866, discouraged by affairs in Germany, he moved to Winterthur, near Zürich, to write for the democratic newspaper, *Winterthurer Landbote.* In 1869 he was *Privatdozent* at Zürich, and next year professor. The strong French sympathies of the Swiss in the Franco-German War led to his resignation. In 1872 he became professor at Marburg, where he died on Nov. 23, 1875. His *Logische Studien* was published by H. Cohen in 1877 (2nd ed., 1894).

See O. A. Ellissen, *F. A. Lange* (Leipzig, 1891); and in *Monatsch. d. Comeniusgesell.* iii., 1894, 210 ff.; H. Cohen in *Preuss. Jahrb.* xxvii., 1876, 353 ff.; Vaihinger, *Hartmann, Dühring und Lange* (Iserlohn, 1876); J. M. Bösch, *F. A. Lange und sein Standpunkt d. Ideals* (Frauenfeld, 1890); H. Braun, *F. A. Lange, als Socialökonom* (Halle, 1881).

LANGEAIS, a town of west-central France in the department of Indre-et-Loire, on the right bank of the Loire, 16 mi. W.S.W. of Tours by rail. Pop. (1936) 1,932. Langeais has a church of the 11th, 12th and 15th centuries but is chiefly interesting for the possession of a large château built soon after the middle of the 15th century by Jean Bourré, minister of Louis XI. In the park are the ruins of a keep of late 10th century architecture, built by Fulk Nerra, count of Anjou. It has a small trade in bricks and tiles and potted meat.

LANGENSALZA, a town in the Prussian province of Saxony, Germany, on the Salza, about 20 mi. N.W. from Erfurt. Pop. (1939) 14,605. It became a town in 1211 and was afterwards

part of the electorate of Saxony. In 1815 it came into the possession of Prussia. Near it are the remains of the old Benedictine monastery of Homburg or Hohenburg, where the emperor Henry IV. defeated the Saxons in 1075. The manufacture of cloth is the chief industry; lace, machines, cigars and leather are also produced, while spinning, dyeing, brewing and printing are carried on. There is a sulphur bath in the neighbourhood.

LANGENTHAL (1,558 ft.), a town in the canton of Berne, Switzerland. The town has a population of 7,257, mainly German-speaking Protestants, who engage in agriculture and a few industries such as weaving, dyeing and machine making. It is on the railway Berne-Zürich, with branches to Huttwil, Oensingen and Melchnau.

LANGHAM, SIMON (d. 1376), archbishop of Canterbury and cardinal, was born at Langham in Rutland, becoming a monk in the abbey of St. Peter at Westminster, and later prior and then abbot of this house. He was treasurer of England (1360), bishop of Ely (1361), chancellor of England (1363) and archbishop of Canterbury (1366). He drove the secular clergy from their college of Canterbury Hall, Oxford, and filled their places with monks. The expelled head of the seculars was a certain John de Wiclif, who has been identified with the reformer Wycliffe. Langham was made a cardinal by Pope Urban V. in 1368. Two months later he was compelled to resign his archbishopric and went to Avignon. He was made cardinal-bishop of Praeneste in 1373. In 1374 he was elected archbishop of Canterbury for the second time; but he withdrew his claim and died at Avignon on July 22, 1376. Langham's tomb is the oldest monument to an ecclesiastic in Westminster Abbey; he left the residue of his estate—a large sum of money—to the abbey, and has been called its second founder.

LANGHOLM, a small burgh, Dumfriesshire, Scotland, on the Esk, 16 mi. N.E. of Annan, the terminus of a branch line connecting with the L.N.E.R. system at Riddings Junction. Pop. (1938) 2,385. Area, 204 ac. Its prosperity depends on the numerous woollen mills. Distilling, dyeing and tanning are also carried on, and sales of cattle and sheep held. The Esk and Liddell are favourite fishing streams.

LANGHORNE, JOHN (1735–1779), English poet and translator of Plutarch, was born at Kirkby Stephen, Westmorland. He was appointed (1766) to the rectory of Blagdon, Somerset, where he died on April 1, 1779. His poems (original and translations), and sentimental tales are now forgotten, but his translation of Plutarch's *Lives* (1770), in which he had the co-operation of his elder brother William (1721–1772), is not yet superseded.

His poems were published in 1804 by his son, J. T. Langhorne, with a memoir of the author.

LANGIEWICZ, MARYAN (1827–1887), Polish patriot, was born at Krotoszyn, in the province of Posen, on Aug. 5, 1827, his father being the local doctor. Langiewicz was educated at Posen, Breslau and Prague, and was compelled to earn his daily bread by giving lectures. He subsequently entered the Prussian *Landwehr* and served for a year in the royal guard. In 1860 he migrated to Paris and was for a time professor in the high school founded there by Mieroslawski. The same year he took part in Garibaldi's Neapolitan campaign, and was then a professor in the military school at Cuneo till the establishment was closed. In 1862 he entered into communication with the central Polish committee at Warsaw, and on the outbreak of the insurrection of Jan. 22, 1863, took the command of the armed bands and inflicted several defeats on the Russians, which encouraged him to proclaim himself dictator (March 10). On March 18, however, his army was almost annihilated at Zagosc, whereupon he took refuge in Austrian territory and was interned at Tarnow, and afterwards at the fortress of Josephstadt, from which he was released in 1865. He then lived at Solothurn as a citizen of the Swiss Republic, and subsequently entered the Turkish service as Langie Bey. He died at Constantinople on May 11, 1887.

See Boleslaw Limanowski, *The National Insurrection of 1863–64* (Pol.) (Lemberg, 1900); Paolo Mazzoleni, *I Bergamaschi in Polonia nel 1863* (Bergamo, 1893).

LANGLAND, WILLIAM (*c.* 1332–*c.* 1400), the supposed English poet, generally regarded as the single author of the 14th-century poem *Piers the Plowman.* Its full title is—*The Vision of William concerning Piers the Plowman, together with Vita de Do-wel, Do-bet, et Do-best, secundum Wit et Resoun;* usually given in Latin as *Visio Willelmi de Petro Plowman, etc.;* the whole work being sometimes briefly described as *Liber de Petro Plowman.* We know nothing of William Langland except from the supposed evidence of the mss. of the poem and the text itself.

The Vision of Piers Plowman.—The poem exists in three forms. If we denote these by the names of A-text (or Vernon), B-text (or Crowley), and C-text (or Whitaker), we find, of the first, ten mss., of the second, fourteen, and of the third, seventeen, besides seven others of a mixed type. A complete edition of all three texts was printed for the Early English Text Society as edited by W. W. Skeat, with the addition of *Richard the Redeless,* and containing full notes to all three texts, with a glossary and indexes, in 1867–85. The Clarendon Press edition, by the same editor, appeared in 1886.

The A-text dating from about 1362 contains a prologue and 12 passus or cantos (i.–iv., the vision of the Lady Meed; v.–viii., the vision of Piers the Plowman; ix.–xii., the vision of Do-wel, Do-bet and Do-best), with 2,567 lines. The B-text (*c.* 1377) is much longer, containing 7,242 lines, with additional passus following after xi. of A, the earlier passus being altered in various respects. The C-text (*c.* 1395–98) with 7,357 lines, is a revision of B.

The general contents of the poem may be gathered from a brief description of the C-text. This is divided into twenty-three passus, nominally comprising four parts, called respectively Visio de Petro Plowman, Visio de Do-wel, Visio de Do-bet and Visio de Do-best. Here *Do-bet* signifies "do better" in modern English; the explanation of the names being that he who does a kind action *does well,* he who teaches others to act kindly *does better,* whilst he who combines both practice and theory, both doing good himself and teaching others to do the same, *does best.* But the visions by no means closely correspond to these descriptions; and Skeat divides the whole into a set of eleven visions, which may be thus enumerated: (1) Vision of the Field Full of Folk, of Holy Church, and of the Lady Meed (passus i.–v.); (2) Vision of the Seven Deadly Sins, and of Piers the Plowman (pass. vi.–x.); (3) Wit, Study, Clergy and Scripture (pass. xi., xii.); (4) Fortune, Nature, Recklessness and Reason (pass. xiii., xiv.); (5) Vision of Imaginative (pass. xv.); (6) Conscience, Patience and Activa-Vita (pass. xvi., xvii.); (7) Free-will and the Tree of Charity (pass. xviii., xix.); (8) Faith, Hope and Charity (pass. xx.); (9) The Triumph of Piers the Plowman, *i.e.,* the Crucifixion, Burial and Resurrection of Jesus Christ (pass. xxi.); (10) The Vision of Grace (pass. xxii.); (11) The Vision of Antichrist (pass. xxiii.).

The *vision* is formless and full of digressions. It shows no French influence in its verse which is based on alliterative stresses and is unrhymed, on the other hand the use of allegory as a vehicle of satire reminds one of the *Roman de la Rose.* The book is a document of primary importance for the social history of the time. The author describes the hard condition of the poor, inveighs against clerical abuses and the rapacity of the friars; tells of the miseries caused by the great pestilences then prevalent and by the hasty and ill-advised marriages consequent thereupon; and denounces lazy workmen and sham beggars, the corruption and bribery in the law courts, and the numerous forms of falsehood which are at all times the fit subjects for satire and indignant exposure. In describing the seven deadly sins, Glutton and Sloth are portraits rather than abstractions and great power of descriptions is shown throughout the work. The numerous allegorical personages introduced, such as Scripture, Clergy, Conscience, Patience and the like, are generally mouthpieces of the author himself though they sometimes speak purely "in character."

Skeat's View of Langland.—The traditional view, accepted by Skeat and Jusserand, that a single author—and that author Langland—was responsible for the whole poem, in all its versions, has been disputed. Skeat's statement may be summarized as follows. The author's name was William (and probably Langland), and he was born about 1332, perhaps at Cleobury Mortimer in Shropshire. His father, who was doubtless a franklin or farmer, and his other friends put him to school, made a "clerk" or scholar

of him, and taught him what Holy Writ meant. In 1362, at the age of about thirty, he found himself wandering upon the Malvern hills, and fell asleep beside a stream, and saw in a vision a field full of folk, *i.e.*, this present world, and many other remarkable sights which he duly records. From this supposed circumstance he named his poem *The Vision of William,* though it is really a succession of visions, since he mentions several occasions on which he awoke, and afterwards again fell asleep; and he even tells us of some adventures which befell him in his waking moments. In some of these visions there is no mention of Piers the Plowman, but in others he describes him as being the coming reformer who was to remedy all abuses, and restore the world to a right condition. His conception of this reformer changes from time to time, and becomes more exalted as the poem advances. At first he is a ploughman, one of the true and honest labourers who are the salt of the earth; but at last he is identified with the great reformer who has come already, the regenerator of the world in the person of Jesus Christ; in the author's own phrase—"Petrus est Christus." If this be borne in mind, it will not be possible to make the mistake into which so many have fallen, of speaking of Piers the Plowman as being the author, not the subject, of the poem.

The author once alludes to the nickname of Long Will bestowed upon him from his tallness of stature—just as the poet Gascoigne was familiarly called Long George. Though there is mention of the Malvern hills more than once near the beginning of the poem, the poet lived for "many years in Cornhill (London), with his wife Kitte and his daughter Calote." He seems to have come to London soon after the date of the first commencement of his work, and to have long continued there. He describes himself as being a tall man, one who was loath to reverence lords or ladies or persons in gay apparel, and not deigning to say "God save you" to the sergeants whom he met in the street, insomuch that many people took him to be a fool. He was very poor, wore long robes, and had a shaven crown, having received the clerical tonsure. But he seems only to have taken minor orders, and earned a precarious living by singing the *placebo, dirige* and seven psalms for the good of men's souls. The fact that he was married may explain why he never rose in the church. But he had another source of livelihood in his ability to write out legal documents, and he was extremely familiar with the law courts at Westminster. His leisure time must have been entirely occupied with his poem, which was the work of a lifetime. He was not satisfied with re-writing it once, but he actually re-wrote it twice, and from the abundance of the MSS. which still exist we can see its development from the earliest draught (A-text), written about 1362, to its latest form (C-text), written about 1393[1].

In 1399, just before the deposition of Richard II., appeared a poem addressed to the king, who is designated as "Richard the Redeless," *i.e.*, devoid of counsel. This poem, occurring in only one MS. [of the B-text] in which it is incomplete, breaking off abruptly in the middle of a page, may safely be attributed to Langland, who was then in Bristol. As he was at that time about sixty-seven years of age, we may be sure that he did not long survive the accession of Henry IV. It may here be observed that the well-known poem entitled *Pierce Ploughman's Crede,* though excellently written, is certainly an imitation by another hand; for the Pierce Ploughman of the *Crede* is very different in conception from the subject of "William's Vision."

Professor Manly's View.—On the other hand, the view taken by Professor J. M. Manly, which has obtained increasing acceptance among scholars, is that the early popularity of the *Piers Plowman* poems has resulted in "the confusion of what is really the work of five different men," and that Langland himself is "a mythical author." The argument for the distinction in authorship rests on internal evidence, and on analysis of the style, diction and "visualizing" quality within the different texts. Whereas Skeat, regarding the three texts as due to the same author, gives most attention to the later versions, and considers B the intermediate form, as on the whole the best, Manly recognizes in A the real poet, and lays special stress on the importance of attention to the A-text, and particularly pass. i.–viii. In this A-text the two first visions are regarded as by a single author of genius, but the third is assigned to a continuator who tried to imitate him, the whole conclusion of the 12th passus being, moreover, by a third author, whose name, John But, is in fact given towards the end, but in a way leading Skeat only to credit him with a few lines. The same process of analysis leads to crediting the B-text and the C-text to separate and different authors, B working over the three visions of the A-text and making additions of his own, while C again worked over the B-text. The supposed references to the original author A, introduced by B and C, are then to be taken as part of the fiction. Who were the five authors? That question is left unsolved. John But, according to Professor Manly, was "doubtless a scribe" or "a minstrel." B, C and the continuator of A "seem to have been clerics, and, from their criticisms of monks and friars, to have been of the secular clergy," C being "a better scholar than either the continuator of A or B." A, who "exempts from his satire no order of society except monks," may have been himself a monk, but "as he exhibits no special technical knowledge or interests" he "may have been a layman." As regards Richard the Redeless, Professor Manly attributes this to another imitator; he regards identity of authorship as out of the question, in consequence of differences in style and thought, apart from the conclusion as to the authorship of *Piers the Plowman.*

See the editions already referred to: *The Deposition of Richard II.*, ed. T. Wright (Camden Society), which is the same poem as *Richard the Redeless;* Warton, *Hist. of Eng. Poetry;* Rev. H. H. Milman, *Hist. of Latin Christianity;* G. P. Marsh, *Lectures on English;* H. Morley, *English Writers;* B. ten Brink, *Early English Literature;* J. J. Jusserand, *Observations sur la vision de P. P.* (Paris, 1879); *Les Anglais au moyen âge: L'Épopée mystique de William Langland* (1893, Eng. trans. *Piers Plowman,* revised and enlarged by another 1894); J. M. Manly in *Cambridge Hist. of English Lit.*, vol. ii. and bibliography. A long and careful summary of the whole poem is given in Morley's *English Writers,* and is repeated in his *Illustrations of English Religion,* ch. iii.

LANGLEY, SAMUEL PIERPONT (1834–1906), U.S. astronomer and physicist, was born at Roxbury, Mass., now a part of Boston, on Aug. 22, 1834. His ancestors, bearing such old English family names as Mather, Sprague, Sumner, Williams and Pierpont came to America in the first half of the 17th century. Langley's formal education was obtained at the Boston Latin school and at the Boston high school, from which he was graduated in 1851. Without ever entering college, he went to the west in 1857 and there, for seven years, practised the profession of civil engineering and architecture, mainly in Chicago, Ill., and St. Louis, Mo. His liberal education was, in a sense, completed when he went to Europe in 1864 with his brother, J. W. Langley, for a year of travel and study.

It was on his return to Boston, in 1865, that his serious professional life began with an assistantship in the Harvard observatory. The year following took him to the U.S. Naval academy where he taught mathematics, while his principal pursuit was the reorganization of the academy's observatory. At the age of 33, Langley accepted the directorship of the Allegheny observatory in Pennsylvania where he spent a period of 20 fruitful years and accomplished the three principal researches of his life, together with several minor but truly important contributions.

In 1887 he left Allegheny to assume the highly responsible office of secretary of the Smithsonian institution at Washington. Here he spent the last 19 years of his life mainly in developing and completing work already initiated at Allegheny. In the autumn of 1905, Langley suffered a stroke of paralysis, but he was nevertheless able to travel to Aiken, S.C., in search of health. Here, however, a second stroke was fatal, on Feb. 27, 1906.

It remains to consider his outstanding scientific achievements. Langley was first of all an ardent student of solar phenomena. Every student of astronomy is familiar with his exquisite drawing of the great sun-spot of Dec. 1873. He was a superb draftsman, and nothing can compete with the fidelity of his work save the best of modern photographs. His main interest, however, was in the fundamental problem of meteorology, which is the amount of heat the earth receives from the sun and the selective absorption of it by the earth's atmosphere. In 1881 he made an expedi-

[1]According to Jusserand, 1398.

tion to Mt. Whitney, Calif., accompanied by that remarkable observer, James E. Keeler, for the purpose of getting a clear sky and two points of widely differing elevation from which to measure the heat received from the sun. One station he chose near the top of the mountain; the other 11,000 ft. (2 mi.) down near the foot of the mountain. A comparison of the radiant energy received at these two stations enabled him to estimate the solar radiation received at the upper limit of our atmosphere and thus to compute the energy received per minute over each square centimetre of the earth's surface—a quantity known as the "solar constant." The extrapolation here involved is a complex and difficult matter. It is not surprising, therefore, that the value of the solar constant first derived by Langley—3 gram-calories per cm^2 per minute—proved to be affected with an insidious error of considerable size. The generally accepted value is now 1.938 which Charles Greeley Abbot and F. E. Fowle obtained in 1938.

Langley's study of the solar spectrum led him to the invention of an instrument known as the "bolometer"—a device which enabled him to extend the solar spectrum far into the infra-red. The bolometer (*q.v.*) is essentially a Wheatstone's bridge having two of its arms equal and each consisting of a thin, narrow, blackened platinum strip. If the bridge is balanced when these two arms are shielded from radiation, it will be thrown out of balance when one of these strips is exposed to sunlight, the other being housed. So sensitive, indeed, is this thermometer that a change of temperature of one-millionth of a degree centigrade can be detected, and is shown by a deflection of the galvanometer mirror. Langley used this apparatus with great skill not only to detect those dark spaces in the solar spectrum known as Fraunhofer lines and telluric lines, but also to measure the intensity of solar radiation at various wave lengths.

While he was still at Allegheny, Langley made some highly important qualitative experiments upon the "lift" and "drag" of a plane moving through the air at a measured speed. These experiments, in which a recording dynamometer was carried on the arm of a whirling table measured both *lift* and *drag*; and they also established the new fact that a plane could be driven through the air, by engines then existing, at a speed which would more than support their own weight. As early as 1896, Langley made a steam-driven model which flew a distance of 4,200 ft. over the Potomac river, but it carried no pilot, nor was it provided with any means of safely leaving the ground or safely alighting.

Along the same line with these pioneering results, Langley was the first to offer a clear explanation, backed by experiment, of the manner in which birds are able to soar without appreciable motion of their wings. The key facts are that ordinary winds fluctuate rapidly in speed; and that soaring birds use these fluctuations to sustain themselves.

BIBLIOGRAPHY.—A complete catalogue of all of Langley's researches will be found in the *Biographical Memoirs of the National Academy of Sciences,* vol. 7, pp. 258–268 (1912). (H. Cw.)

LANGLOIS, HIPPOLYTE (1839–1912), French general, was born at Besançon in 1839, and, after passing through the École Polytechnique, was appointed to the artillery as sub-lieutenant in 1858, attaining the rank of captain in 1866. He served in the army of Metz in the war of 1870. In 1888 he became professor of artillery at the École de Guerre, and he there worked out the tactical principles of the employment of field artillery under the new conditions of armament. His great treatise *L'Artillerie de campagne* (1891–1892) is an artillery classic.

In 1907 Langlois began the publication of a monthly journal of military art and history, the *Revue militaire générale.* The most important of his other works are *Enseignements de deux guerres récentes* and *Conséquences tactiques du progrès de l'armement.* He died in Feb. 1912, in Paris.

LANGMUIR, IRVING (1881–), American chemist, was born in Brooklyn, N.Y., on Jan. 31, 1881. He studied at the Columbia school of mines, (M.E., 1903) and at the University of Goettingen (Ph.D., 1906). He taught chemistry at Stevens Institute, Hoboken, N.J. (1906–09). From that date he was engaged in physico-chemical research for the General Electric Company, Schenectady, New York. He invented the gas-filled tungsten lamp and the condensation pump for producing high vacua; his researches in the field of electric discharges are largely responsible for the modern vacuum tube used in radio. In 1911 he discovered the atomic form of elementary hydrogen, and subsequently developed a process for welding metals by flames of atomic hydrogen. In recognition of his achievements in chemistry and physics he has been awarded many scientific distinctions, among them the Nobel prize in chemistry (1932) for his work in surface chemistry.

See B. Harrow, *The Romance of the Atom* (1927).

LANGNAU (2,244 ft.), a town in the canton of Berne, Switzerland, in the middle of the Emmenthal and at the junction of the railways Berne-Luzern (Lucerne) and Burgdorf-Langnau. The place has 8,388 inhabitants, mostly German-speaking Protestants, and engaged chiefly in cattle breeding and cheese making.

LANGO. The Lango (sometimes incorrectly called Miro and Bakedi) are a Nilotic tribe of Uganda, combining agriculture with animal husbandry. A well-built, tall, upstanding race, they live in the marshy and lowland country north and east of Lakes Kwanya and Kioga, arriving there after a series of migrations from the north-east dating from the 17th century. They remove the lower middle incisors and in their primitive conditions are unclothed, the women only wearing small aprons of metalwork or fibre suspended from a belt. Both sexes, however, are inordinately fond of bead and wire ornaments, and cicatrise their bodies with fantastic and often charming designs.

They live in compact villages varying from ten to 150 huts, the village representing an aggregate of families which have united for mutual support. Their dome-like huts exhibit the flounced thatching typical of the Nilotics, and the diminutive bachelors' huts raised from the ground on piles are a distinctive feature of the culture. In each village there is a communal girls' hut supervised by an aged duenna.

They cultivate a large variety of millets both for food and for making the beer, which is their staple drink, and numerous vegetables are also grown in the vicinity of the village. Men and women share the agricultural duties, but men have the sole custody and management of the cattle, while women concern themselves with the domestic duties of the village. Men manufacture pots, but women make baskets and mats. Their weapons are spears and light hide shields of a rectangular pattern.

The tribe is divided into a number of exogamous clans with totemic or pseudo-totemic characteristics, inheritance and descent being through the male. Polygyny is practised. Society is also classified by a system of age-grades, which has been borrowed from their Nilo-Hamitic neighbours, probably before their final migrations. These grades have their special functions which are chiefly religious and are concerned with the magical processes of rainmaking. They are governed by hereditary clan leaders, who have gradually acquired a territorial status and might be called petty chiefs, with powers and duties in regard to all who dwell in their vicinity irrespective of clan allegiance. Above these are the chiefs, who control from three to six clan chiefs, winning their position by personal merit, generosity and ability. Their title (*rwot*), however, is not hereditary, and their tenure of office is precarious and depends largely on their success in war and on the conduct of their civil responsibilities.

The Lango are skilful hunters, and though all land is held communally by the tribe, or in a few cases by the clan, the whole country is divided into a number of hunting areas, in which the rights of hunting are vested in an individual and pass to his heir on his death.

They believe that every human being (and a few animals) has a guardian spirit called *winyo* or "bird" which attends him during life and has to be liberated from the corpse by certain rites. There is also the shadow-self or immaterial soul called *tipo,* which after death may be renamed *chyen* and is eventually merged into a vague entity named *jok,* found in one form or another in all the Nilotics. *Jok* and the ancestors, of whom *jok* is thus the universal sublimation, are worshipped at shrines and sacred trees by prayer and sacrifice, and *jok* manifests himself in a diversity of forms, to each of which a specific name is given as to a divinity, some of them being anthropomorphic in conception, and all having special

functions and individual spheres of activity appropriate to the different needs of humanity.

See J. H. Driberg, *The Lango* (1923). (J. H. D.)

LANGPORT, a market town in Somersetshire, England, 13½ m. E. of Taunton by the G.W. railway. Pop. (1931) 686. Langport owed its origin to its defensible position on a hill, and its growth to its facilities for trade on the chief river of Somerset. It occupies the site of the British town of Llongborth, and was important during the Roman occupation. It was a royal borough in Saxon times, and in 1086 had 34 resident burgesses. The first charter (1562) recognized that Langport was a borough of great antiquity, which had enjoyed considerable privileges, being governed by a portreve. It was incorporated by James I. in 1617, but the corporation was abolished in 1883. Langport was represented in parliament in 1304 and 1306. The charter of 1562 granted three annual fairs to Langport, on June 28, Nov. 11 and the second Monday in Lent. One fair only is now held, on Sept. 3, which is a horse and cattle fair. A Saturday market was held under the grant of 1562, but in the 19th century the market day was changed to Tuesday. It lies on the bank of the river Parret, where it enters the plain through which it flows to the Bristol channel. The church of All Saints is Perpendicular. Close to this an archway crosses the road, bearing a Perpendicular building known as the hanging chapel. After serving this purpose it housed first the grammar-school (founded 1675), then the Quekett museum, named after John Thomas Quekett (1815–1861) the histologist, a native of the town, whose father was master of the school. The hanging chapel afterwards became a masonic hall. Not far distant is the church of Huish Episcopi, with one of the finest of the Somersetshire Perpendicular towers. Langport has a considerable general and agricultural trade.

LANGREO, a town of northern Spain, in the province of Oviedo, in very hilly country, on the left bank of the river Nalon, and on a branch railway from Oviedo to Laviana. Pop. (1940) 43,797. In the neighbourhood large quantities of wheat, hemp, fruit and cider are produced; and there are important coal and iron mines, foundries and factories for the manufacture of cloth.

LANGRES, a town of eastern France, capital of an arrondissement in the department of Haute-Marne, 22 mi. S.S.E. of Chaumont on the eastern railway to Belfort. Pop. (1936) 6,981. Langres stands at a height of some 1,550 ft. on a promontory of the plateau de Langres, overlooking the valleys of the Marne and its tributary the Bonnelle, with fine views from its cathedral tower and ramparts. The cathedral of St. Mammès, for the most part 12th century Transitional, has a Graeco-Roman west front (18th cent.) and a fine Renaissance chapel. The church of St. Martin (13th, 16th and 18th centuries) possesses a figure of Christ of the 16th century, one of the finest wood carvings known. The ramparts are protected by several towers, mostly 16th century. The Gallo-Roman gate, one of four entrances in the Roman period, is preserved, but is walled up. The town possesses a museum of Gallo-Roman antiquities, and an important library. Langres is the seat of a bishop under the archbishop of Lyons and a sub-prefect, and has tribunals of first instance and of commerce. It manufactures well-known cutlery and grind-stones.

Langres, the ancient *Andematunum,* was capital of the *Lingones.* Under Roman rule it was at first to some extent autonomous, but was reduced to the rank of colony after the revolt of the chief Sabinus in A.D. 71.

LANGTOFT, PETER (d. *c.* 1307), English chronicler, took his name from the village of Langtoft in Yorkshire, and was a canon of the Augustinian priory in Bridlington. His name is also given as Langetoft and Langetost. He wrote in French verse a *Chronicle* dealing with the history of England from the earliest times to the death of Edward I. in 1307. The earlier part of the *Chronicle* is taken from Geoffrey of Monmouth and other writers; for the period dealing with the reign of Edward I. Langtoft is a valuable authority. The latter part of the *Chronicle* was translated into English by Robert Mannyng, sometimes called Robert of Brunne, about 1330. It has been edited for the Rolls Series by T. Wright (1866–68).

See Wright's preface, and also O. Preussner, *Robert Mannyng of Brunne's Übersetzung von Pierre de Langtofts Chronicle und ihr Verhältniss zum Originale* (Breslau, 1891).

LANGTON, JOHN (d. 1337), chancellor of England and bishop of Chichester, was a clerk in the royal chancery, and became chancellor in 1292. Owing to the resistance of Pope Boniface VIII. he failed to secure the bishopric of Ely in 1298, although he was supported by Edward I. and visited Rome to attain his end. Resigning his office as chancellor in 1302, he was chosen bishop of Chichester in 1305, and again became chancellor shortly after the accession of Edward II. in 1307. Langton was one of the "ordainers" elected in 1310, and lost the office of chancellor about this time. He mediated between the king and Earl Thomas of Lancaster in 1318, and attempted to do so between Edward and his rebellious barons in 1321. He died in June or July 1337. Langton built the chapterhouse at Chichester, and was a benefactor of the University of Oxford.

LANGTON, STEPHEN (d. 1228), English cardinal and archbishop of Canterbury, the first great Englishman in the primacy since Dunstan, was the son of Henry, lord of the manor of Langton-by-Wragby, Lincolnshire, but the date of his birth is unknown. He became early in his career a prebendary of York, and his brother Simon (d. 1248) was elected to that see in 1215. Stephen, however, migrated to Paris, and having graduated in that university became one of its most celebrated theologians. He spent some 25 years in Paris. This was probably the time when he composed his voluminous commentaries (many of which still exist in manuscript). He divided the Old Testament books of the Vulgate into chapters, and was probably responsible for the grouping of the historical apocryphal books. To this period belong his *Questiones,* dealing with subjects of current debate, such as the limits of obedience to episcopal authority and the papal power of dispensation. At Paris also he contracted the friendship with Lothar of Segni, the future Innocent III., which played so important a part in shaping his career. Upon becoming pope, Innocent summoned Langton to Rome, and in 1206 designated him as cardinal-priest of S. Chrysogonus. Immediately afterwards Langton was drawn into the vortex of English politics.

Pope Innocent III. and King John.—Archbishop Hubert Walter had died in 1205. The suffragans of Canterbury claimed a share in choosing the new primate, although that right had been exclusively reserved to the monks of Canterbury by a papal privilege; and John supported the bishops since they were prepared to give their votes for his candidate, John de Gray, bishop of Norwich. A party of the younger monks, to evade the double pressure of the king and bishops, secretly elected their sub-prior Reginald and sent him to Rome for confirmation. The rest of the monks were induced to elect John de Gray, and he too was despatched to Rome. After hearing the case Innocent declared both elections void; and with John's consent ordered that a new election should be made in his presence by the representatives of the monks. The latter, having confessed that they had given John a secret pledge to elect none but the bishop of Norwich, were released from the promise by Innocent; and at his suggestion elected Stephen Langton, who was consecrated by the pope June 17, 1207.

On hearing the news the king banished the monks of Canterbury and lodged a protest with the pope, in which he threatened to prevent any English appeals from being brought to Rome. Innocent replied by laying England under an interdict (March 1208), and excommunicating the king (November 1209). As John still remained obstinate, the pope at length invited the French king Philip Augustus to enter England and depose him. It was this threat which forced John to sue for a reconciliation; and the first condition exacted was that he should acknowledge Langton as archbishop. During these years Langton had been residing at Pontigny, formerly the refuge of Becket. He had addressed to the English people a dignified protest against the king's conduct, but he had consistently adopted towards John as conciliatory an attitude as his duty to the church would allow, and had more than once entered upon negotiations for a peaceful compromise. Immediately after entering England (July 1213) he showed his desire for peace by absolving the king.

The Archbishop.—Langton was associated with the baronial opposition. He encouraged the barons to formulate their demands, and is said to have suggested that they should take their stand upon the charter of Henry I. It is uncertain what further share he took in drafting Magna Carta. At Runnymede he appeared as a commissioner on the king's side, and his influence must therefore be sought in those clauses of the Charter which differ from the original petitions of the barons. Of these the most striking is that which confirms the "liberties" of the church; and this is chiefly remarkable for its moderation.

Soon after the issue of the charter the archbishop left England to attend the Fourth Lateran Council. At the moment of his departure he was suspended by the representatives of Innocent for not enforcing the papal censures against the barons. Innocent confirmed the sentence, which remained in force for two years. During this time the archbishop resided at Rome. He was allowed to return in 1218, after the deaths of Innocent and John. From that date till his death he was a tower of strength to the royal party. Through his influence Pandulf was recalled to Rome (1221) and Honorius III. promised that no legate should be sent to reside in England during the archbishop's lifetime. In 1222, in a synod held at Oseney, he promulgated a set of Constitutions still recognized as forming a part of the law of the English Church. He may be said to have accomplished the transition from the feudal church of Lanfranc to the national church of later days. He died on July 9, 1228, and was buried in Canterbury Cathedral, where his tomb, unless tradition errs, may still be seen.

Dr. Gore, speaking at Canterbury at the seventh centenary celebrations in 1928 justly defined Langton's position as "mediate between excessive nationalism and excessive papalism, leaving both parties unsatisfied, but always the just moderator and harmonizer."

The authorities are mainly those for the reign of John. No contemporary biography has come down to us. Some letters, by Langton and others, relating to the quarrel over his election are preserved in a Canterbury Chronicle (ed. W. Stubbs in the "Rolls" edition of *Gervase of Canterbury,* vol. ii.). There are many references to him in the correspondence of Innocent III. (Migne's *Patrologia Latina,* vols. ccxiv.–ccxvii.). Of modern works *see* F. Hurter, *Geschichte Papst Innocenz III.* (Hamburg, 1841–44); W. F. Hook, *Lives of the Archbishops of Canterbury* (London, 1860–76); W. Stubbs's preface to the second volume of *Walter of Coventry* ("Rolls" ed.), which devotes special attention to Langton; and F. M. Powicke, *Stephen Langton* (1928). The mss. of Langton's writings are noticed in J. Bale's *Index Britanniae scriptorum* (ed. R. L. Poole, 1902); his Constitutions are printed in D. Wilkin's *Concilia,* vol. ii. (London, 1737). (H. W. C. D.)

Another English prelate who bore the name of Langton was THOMAS LANGTON, bishop of Winchester, chaplain to Edward IV. In 1483 he was chosen bishop of St. Davids; in 1485 he was made bishop of Salisbury and provost of Queen's College, Oxford, and he became bishop of Winchester in 1493. In 1501 he was elected archbishop of Canterbury, but he died on Jan. 27, 1501, before his election had been confirmed.

LANGTON, WALTER (d. 1321), bishop of Lichfield and treasurer of England, was probably a native of Langton West in Leicestershire. He became treasurer in 1295, and in 1297 bishop of Lichfield. Later he became chief adviser of Edward I., and principal executor of his will. His position, however, was changed by the king's death in July 1307. The accession of Edward II. and the return of Langton's enemy, Piers Gaveston, were followed by the arrest of the bishop and his removal from office. His lands and movable wealth were seized. Langton, accused again by the barons in 1308, remained in prison till Jan. 1312, when he again became treasurer. Excommunicated by Winchelsea, he appealed to the pope, visited him at Avignon, and returned to England after the archbishop's death in May 1313. He died in November 1321, and was buried in Lichfield cathedral.

LANGTRY, LILY (1852–1929), English actress, was the daughter of the Rev. W. C. le Breton, dean of Jersey, and married in 1874 Edward Langtry (d. 1897). For many years she was famous as one of the most beautiful women in England, being known as "the Jersey Lily." In 1881 she definitely went on the stage, appearing from that time under her own management both in London and in America. In 1899 she married Sir Hugo de Bathe, Bart. She died at Monte Carlo, Feb. 12, 1929.

LANGUAGE. By language in the widest sense of the word is meant any means of communication between living beings. The question whether "lower animals" have something that can be rightly compared with human language must still be left open, though there can be no doubt that many animals have various means of communicating thoughts and feelings, which at any rate approach human speech. But in its developed form language is decidedly a human characteristic, and may even be considered the chief distinctive mark of humanity. No human race, not even the most primitive and backward tribe, lacks language, and the language of each nation or tribe must have behind it a history of a great many thousand years. An attempt has been made to prove from the anatomical structure of the skulls of the earliest prehistoric men that they could not yet have possessed the faculty of speech; but this conclusion is certainly drawn from insufficient premises and has no foundation in fact.

Ear Language and Eye Language.—We may distinguish two kinds of language according to the sense affected, ear-language and eye-language, of which the former is by far the more important. Among the various species of eye-language we must first mention gestures, made by means of the hands and the muscles of the face. Some of these are perfectly natural and spontaneous, being generally performed by the individual unconsciously, while others are much more conventional and have to be learned consciously. A specially developed variety of the latter kind is the gesture-language of some American Indians; others are found among criminals of different countries. More or less conventional eye-languages are the "language" of flowers, pictures, flag-signalling, optical telegraphy and finally—the most important of all—written and printed language. But as soon as writing has disengaged itself from ideographic picture-writing, it becomes dependent on the spoken language and develops into a more or less faithful representation of the sounds of speech; the written languages with which we are most familiar, are thus secondary languages in relation to the ear-languages underlying them. The same is true of the artificial alphabetic finger-language sometimes taught to deaf-mutes, whose natural sign-language is a species of picture-writing in the air, totally independent of spoken language. When, however, deaf-mutes are taught lip-reading, the spoken language is perceived visually and ear-language thus becomes eye-language.

The paramount importance of an ear-language as compared with any kind of eye-language is, of course, due to the facts that the speech-organs (lungs, vocal chords, soft palate, tongue and lips) are capable of producing an immense variety of easily distinguished sounds, which can be pronounced without preventing arms and hands and the rest of the body from being simultaneously active in various ways, and that speech-sounds can be perceived at a reasonable distance without any regard to light or darkness or to the position of the hearer or hearers in relation to the speaker. The development of speech has not, however, been completely independent of the eye-language, and even now among civilized, and still more among uncivilized people, gestures and mimic play are a great assistance to the right understanding of spoken words; it is often asserted that there are some races who cannot dispense with this aid to comprehension and who therefore cannot carry on a conversation in the dark. This, however, may be an exaggeration. In the rest of this article, language is always understood to mean ear-language.

Social Importance.—Language is purposive activity on the part of one human being in order to come in mental contact with a fellow-man or fellow-men. But we should not one-sidedly think of the purpose of language as being predominantly, or even exclusively, the intellectual one of communicating thoughts; not even if we include volition (commands, wishes, prayers, imprecations, etc.) is that definition sufficiently comprehensive. Language often serves as an outlet for intense feeling, but very often also people speak for the mere pleasure of speaking without having anything really to communicate, and there is no doubt that this enjoyable exercise of the vocal organs has played a very great rôle in the development of speech. Language is likewise important in social intercourse; when two friends meeting in the

street ejaculate their "Good-morning!" their intention is not to communicate ideas to one another, but merely by means of language to give vent to their feeling of good will. This point of view is emphasized by B. Malinowski as important, if we would understand the attitude towards language of primitive people.

Language is one of the most potent forces in social life; it welds together smaller or greater communities and makes them something more than a number of isolated individuals. Language always presupposes two, or generally a much greater number of individuals, who agree in connecting approximately the same ideas with approximately the same sounds. It is necessary to add "approximately," for complete agreement between even two individuals does not exist, and language can fulfil its function in practical life without it. The number of individuals thus connected by means of the same language varies considerably, from small tribes of savages often counting only a few hundred people so that villages a few miles apart can hardly understand one another, to the great civilized speech communities. English is spoken by at least 150 millions distributed over five continents. As the possession of a common language is an extremely potent factor in all spiritual life and fosters feelings of fellowship and solidarity, and as linguistic boundaries do not always coincide with political frontiers, it is quite natural that linguistic questions should play a great part in national rivalries. But the terms "nation" and "language" are not co-extensive, for the feeling of national coherence has as its main source community of outlook occasioned by historical events, which may be independent of language; thus the Swiss, though speaking four distinct languages, consider themselves one nation, and on the other hand the inhabitants of Great Britain and the United States of America are two nations, though speaking essentially the same language.

THE LANGUAGE OF THE INDIVIDUAL

The Child.—The screaming and babbling of the first period of a child's life may be considered preliminary exercises of the organs of speech; gradually the baby learns how to control the movements of his lips, tongue, etc., and produce what sounds he likes, and little by little he acquires the power to imitate the sounds he hears from his parents and others. The tongue is for a long time his dearest plaything, but at first nothing but a plaything; he does not as yet associate any ideas with the sounds he utters. The order in which speech sounds are acquired is not the same with all children, though among consonants lip sounds are probably always the first to appear, no doubt because the labial muscles used to produce them are the same that the baby has exercised in sucking the breast or the bottle. Some of the sounds produced by means of the tongue do not appear till the muscles of the tongue have been exercised by eating more solid things than milk, but *t* and *d* are almost universally substituted for *k* and *g* in one period. Otherwise no rules can be given for the first very inexact imitations of speech sounds, which vary from individual to individual, even among children of the same family. Even after most sounds have been learnt, some combinations of sounds will present difficulties; transpositions (like *efelant* for elephant) and assimilations and partial reduplications are frequent, *e.g.*, *capm* for *captain, goggi* for *doggie, bikykle,* etc. But gradually the agreement between the child's and the community's pronunciation becomes practically perfect.

As with the sounds, so with the meanings of words, the child is often very wide of the mark. It hears a word and ascribes to it a meaning that seems to fit the situation and combination in which it is heard. One girl said *soldier* of any man, and everybody who was not a man was a *baby*. Bobbie said *abuz* for apples, but called cherries *tiny abuz* and oranges *big abuz*. Some children use the words, *dinner, breakfast* and *tea* interchangeably—each word to them means "meal." The ideas connected with numerals and such expressions as *yesterday, last week,* or *on Tuesday* are necessarily very vague in the beginning. Such words as *old* present difficulty; a boy knew he was three years, but could not be induced to say "three years old"; no, he was three years *new*. Even more difficult are pronouns like "I," whose application shifts from person to person.

The child has to pick up in an unsystematic way not only sounds and isolated words, but also the way in which words are inflected and put together to form sentences, and here too it takes some time before he acquires full familiarity with all the intricacies of language. After he has discovered that the plural is generally indicated by the addition of *s,* he will feel tempted to use the same mode everywhere and say *gooses* and *tooths* instead of *geese* and *teeth*. In the same way he will use analogy-formations in adjectives (*gooder, baddest* for better, worst), and verbs (*buyed, frowed* for bought, threw and thrown), or mix up regular and irregular formations (*drunked, boughted* for drank, bought), etc. Some of these formations may be used invariably for quite a long time, while others are only momentary slips made even after the correct forms have been long known and used. It is not only forms that have to be learnt in this way, but also all those intricate syntactical rules for the use of cases, tenses, moods, etc., which, when set forth by learned grammarians, may fill whole volumes, and which the foreigner seldom learns to perfection; after comparatively few years the native child handles all these things with nearly unfailing accuracy.

The whole process of the child's acquisition of its mother-tongue may be described as a progressive socialization; it starts with sounds and meanings that are so individualistic that they are often comprehensible only to the narrowest family circle, and gradually, chiefly under the influence of other children, especially playmates a little older than the child itself, everything comes into greater and greater harmony with common usage—and only through this general agreement is the individual's language capable of fulfilling its purpose.

Individual and Society.—It is a simple consequence of the intrinsic nature of all language and the way in which each individual gradually learns his own language that no one's linguistic education is ever finished. The form of correct speech is not given in the form of a set of fixed rules, but has to be worked out in the subconscious mind of the individual from what he hears every day from other individuals who have acquired it in the same way. One never hears the "average," but always individual utterances adapted to the needs of each moment. A sharp distinction is made by some linguists (de Saussure, Palmer) between "speech" (*parole*), *i.e.,* the individual's linguistic activity, of which he is sole master, and "language" (*langue*), which belongs to the community and is independent of the individual, to whom it gives the norm from without, but this sharp distinction cannot be maintained in the face of a realistic linguistic psychology, which sees the social side of speech-activity in the constant action and reaction of individuals on one another. Every adult person retains some traces of the imperfection of his early acquisition of his native language, however imperceptible they may be to a superficial observer, and everyone is apt to be influenced by the speech of those who surround him, though the strength of influence varies very considerably, some people being easily affected and quickly adopting new turns of expression, nay even catching the inflection of another dialect after a short stay in a new district, while others are in such respects very conservative.

Size of Vocabulary.—How many words does the vocabulary of an individual comprise? On this question erroneous beliefs are curiously current, even among psychologists. Careful enumerations have been made of the words used by children at various ages; but it is evident that the difficulties of counting increase as the child grows older, and an exact calculation of a grown-up person's vocabulary is practically impossible. Still we have some data to go on. One six-year-old boy used more than 2,600 words. A Swedish peasant, according to the minute investigation of Smedberg, possesses at least 26,000 words.

Much, however, depends on what is counted as a word. Are *I, me, we, us* one word or four? Is *teacup* a new word for those who already know *tea* and *cup?* And so for all compounds. Is *box* (a place at a theatre) the same word as *box* (workbox) or as a *box* on the ear? Investigators do not always distinguish between words that are understood and words that are actually used by the individual examined—two entirely different things. So all such statistics should be used with some diffidence.

Prof. E. H. Babbitt found that most of his (American) college students reported a little below 60,000, and thinks that people with an ordinary school education would possess from 25,000 to 35,000 words. The vocabulary of savage tribes is also surprisingly rich; a missionary in Tierra del Fuego was able to compile a dictionary of 30,000 words in the Yaagan language. Such indications are easily reconciled with the fact that the concordances to Shakespeare's and Milton's dramas and poetical works give only 20,000 and 8,000 words respectively; a vast number of words of daily life are seldom or never required by a poet, especially by a poet with such a comparatively narrow range of subjects as Milton; as a matter of fact, every page of his prose works show words not found in his poetry (Jespersen, *Growth and Str. of the Eng. Language,* c. ix.).

VARIETIES OF LANGUAGE

Dialects.—Whenever a language is spoken by a great number of people, it is inevitable that there should be within its boundaries greater or lesser differences, partly of a local and partly of a non-local character. The former constitute what is generally understood by the word dialects. The existence of sharp dialect boundaries has been denied by some philologists (Schuchardt, Gaston, Paris and others), who maintain that there are boundaries for each separate linguistic phenomenon (each sound law or morphological peculiarity, etc.), but that each of these boundaries ("isoglosses," as they are called) is independent of the boundaries for other phenomena; a village will thus always in some respects go with its neighbour to the North, in others with that to the East, etc. There is some truth in this, but only where one and the same population has been living for a long time in the same district in a flat country, where there have been no natural hindrances to continued intercourse, and where no great migrations have ever taken place. But as a matter of fact conditions have very seldom been so simple, and consequently we do find sharp dialect boundaries here and there. This is one of the indisputable facts that have been brought to light especially by so-called linguistic geography, which has of late years flourished more particularly in France, where a great *Atlas linguistique de la France* consisting of 2,000 maps has provided scholars with incomparable material for these studies.

Dialect boundaries are very often due to natural obstacles to free intercourse; not infrequently these consist in great forests which in olden times were impenetrable, though they may have disappeared later; or again marshy districts, etc., whereas rivers form boundaries only where the stream is so rapid that it is not navigable; in mountainous countries the boundaries do not always follow the highest ranges of mountains, as there is often much traffic through defiles which connect places on either side of the watershed. On the whole we see that it is not physical, but human geography that is decisive. An instructive case has been studied by Gauchat in Switzerland. The two villages La Ferrière and Les Bois are situated on about the same level and only an hour's walk distant; yet their dialects are mutually unintelligible, one agreeing with Franco-Provençal, the other with North French. The inhabitants of one village are Protestants and live by industry; those of the other are Catholics and chiefly pastoral. They therefore look askance at one another, and no marriages take place between them. Now the difference of dialect dates further back than the religious difference, and it is possible to show that Les Bois was founded in the 14th century through immigration from Franche Comté, while La Ferrière was founded a couple of centuries later, when some villagers from Chaux-de-Fonds cleared the forest here to obtain pasturage for their cattle. Only recently the two neighbouring villages have been joined administratively, and they are now beginning to have a little intercourse.

The chief law of linguistic biology is this, that intercourse breeds similarity, and want of intercourse dissimilarity. In former times a great many splittings took place, because means of communication were inferior to those of our own day; it was not long after the colonization of Iceland, that Icelandic began to show traces of differentiation from Norwegian. Nowadays linguistic agreement can be much better preserved, accordingly the English spoken in Australia and New Zealand is not widely different from that of the mother country, and the difference in speech between Boston and San Francisco is much less than what may be observed between two villages in Great Britain that are only a few miles apart. There is no definite point at which we may say that "a dialect" has developed such great differences as to have become a "language"; some will use the former, others the latter term of "Afrikaans," the Dutch "Taal" of South Africa.

When we say that one language is "related" to another, or that two languages belong to the same "family" of languages, what we mean is that they are uninterrupted continuations of what was once one and the same language, but which in course of time has been differentiated, *i.e.*, has developed in one way here and in another way there. On the basis of the greater or less similarity of languages, especially in their oldest shapes, philologists are able to group them together in a way that resembles, but is no exact parallel to the "pedigrees" of living beings. English is more closely related to Frisian than to German and Dutch—all these, together with the Scandinavian languages and the extinct Gothic, form the Germanic (or Gothonic) branch or sub-family of the great Indo-European family of languages (*see* PHILOLOGY).

Non-local Varieties.—Besides these local provincialisms other varieties of speech are independent of locality, and are therefore as it were perpendicular varieties as distinct from the horizontal local dialects. People moving in the same set will always tend to develop forms of speech not known to others, not only technical terms such as those peculiar to each kind of artisans or to each branch of science, but also words and expressions of a more general character. Some of these varieties are designated by the names *argot* and *jargon,* but while the latter term may be loosely used as a contemptuous word for any variety of language that is hard to understand or unnecessarily technical, *argot* should be restricted to the language used by criminals with the express purpose of not being understood by outsiders. The elements of such a thieves' language may be taken from the most heterogeneous sources (gypsy and others) or made up quite artificially by distorting ordinary words (back-slang, etc.). The English name for argot in this sense was *cant,* which some philologists still use with that meaning.

Slang also to some extent belongs here, though that word should be reserved for the playful production of new expressions, where, properly speaking, nothing new is required, but where the normal expression has grown trite, so that speakers, especially young people, eagerly seize anything fresh that is offered to them, until that again has become trite. It is evident that the varieties with which we are dealing here, are of slighter character than dialects proper, because they chiefly affect parts of the vocabulary and not the whole phonetic and morphological structure of the language.

Where the social stratification is strongly marked, it will leave its stamp on language, so that we may speak of an upper-class language and a lower-class language, even if the distinction is not always so pronounced as in the old Indian drama, where gods, kings, brahmans, etc., spoke Sanskrit, while the lower orders, to which most female characters belonged, spoke a simpler and less refined form called Prakrit.

In his daily life every single individual to some extent modifies his language according to the position of the person he is addressing. In many languages there are two or three forms of the pronoun of the second person to indicate different degrees of familiarity (*thou, you* in earlier English, *tu, vous* in French, *tu, voi, lei* in Italian), but this is nothing to the complicated linguistic ceremonial of some oriental languages, where several degrees of politeness and humility or condescension have found expression in the whole style of address.

In contradistinction to the easy-going speech of everyday life it is natural to use a more solemn style on grave occasions, in poetry, etc., and for such purposes expressions are often chosen which were formerly in current use, but have now grown more or less unfamiliar. This is still more marked in the language of religious ritual, and very often we find a sacred language used exclusively in this connection and partially or wholly unintelli-

gible to the laity. Latin, as used in the Roman Catholic Church, and Church Slavonic in the Russian Church, are two examples; several similar ones are found among savages. The angakoks (heathen priests) of Greenland in their incantations of the mighty spirits use a great many strange words not found in ordinary Eskimo. Similar things are reported from many places with regard to the ceremonies by which the young men are solemnly admitted among the adults. The Isneg-negritos of northern Luzon, who ordinarily speak a corrupt Ibanag (Filippino-Indonesian), have in their secret nightly ceremonies a totally different language, which they do not understand, but say that they have learnt from their ancestors (Vanovergh and W. Schmidt).

It is common for savages and primitive people to ascribe magical or mystical powers to words, or to some words. Survivals of this superstition are found in our own days even in civilized countries. J. Jakobsen discovered that the Shetlanders on their fishing expeditions used a number of words for fish and implements which were different from their everyday Scottish words, and which he was able to identify with old Norse words; if they did not use these they believed that their fishing would be unsuccessful. Jutland peasants at Christmas time are not allowed to use the ordinary words for mice, lice, etc., for then these animals will multiply. It is more and more recognized that similar reasons for the tabu of certain words have operated in making old words disappear, as when the old word for "bear" corresponding to Greek *ἄρκτος* has given way to words originally meaning "brown" (as English *bear*) or "honey-eater" (as Russian *medvet*). Names of gods and goddesses are often interdicted in a similar way, *e.g.*, Jahveh among the Jews; it is a kindred half-religious fear that makes people shy of the proper word for "die," "death," "be killed" and leads to such euphemisms as "pass away," "go West," etc.

Tabu customs also underlie a phenomenon which is found in numerous countries, namely that women have a great many separate words and expressions not used by men; in some places this is carried to such an extent that we may speak of a distinct women's language.

Standard Languages.—One of the most important events in the linguistic evolution of historical times is the springing up of the great national common-languages, standard languages, which are driving out the local dialects; those who speak them do not betray by their speech where they come from. Several factors have operated to bring about that sociable intercourse between people hailing from different districts which makes them drop specific local peculiarities, not only such traits as are easily noticed and therefore often ridiculed by people from other parts, but also those indescribable and hardly perceptive variations which go together to constitute a local idiom.

Religious festivals and likewise athletic gatherings—some of these, like the Olympic games in Greece, had also a religious significance—have been very important agencies for rubbing off local peculiarities; and so have the wandering minstrels who, long before written literature began, visited successively the courts of petty kings and naturally wanted their songs or recitals to be understood everywhere. The language of Homer does not represent the speech of one district, but is highly composite, and the same is true with regard to common poetical languages among savage tribes. In recent times theatrical companies touring from one place to another have had a unifying influence on language in some countries, notably in Germany, where "Bühnendeutsch" (German of the stage) is largely considered the best German. Political unity is, of course, a factor of the utmost importance; among its unifying consequences must be mentioned common military service and the moving of officials from one part of the realm to another. The common language is often in a marked degree an upper-class language, because the upper classes travel a good deal and mix with their equals from other districts; at school and in the universities their children have much intercourse with young people from all over the country. As a final factor of very great importance must be mentioned the creation of big cities; in these, and especially in the capital of the country, immigrants from different parts get their dialect rubbed down in intercourse with one another. This, however, does not mean the same thing as adopting the local dialect of that particular town. The common French language, though largely developed in Paris, is not in the strict sense Parisian. Similar phenomena are to be observed in other countries; standard English has to a great extent come into existence in London, but has not been created by born Londoners.

The upshot of all this is that the rise of great standard languages is due to a great many forces at play at the same time. And it is important to notice that several of these have never been so strong as they are nowadays—and we are now witnessing the rise of one new factor which may prove one of the most potent of them all, wireless broadcasting. We may therefore look forward to a great process of unification in the future.

The common language has two forms, one spoken and one written. At first people everywhere wrote their own local dialect, but the tendency towards unity quickly acts upon the way in which people write, and through the influence of schools the common language often makes greater progress in writing than in speaking. In languages with alphabetic systems of writing no one at first could think of anything else but trying to represent spoken words as phonetically as possible; but soon tradition tended to fix accustomed spellings and to keep them in use even where the sound had changed; thus the gap between the spoken and the written form of words grew wider and wider from generation to generation. In some languages the discord is further increased through the fact that numerous foreign words are taken over with their native spelling unchanged, as has been the case in English with French words. Time after time spelling reformers endeavour to bridge over the gulf, but some nations are extremely conservative in this respect, while in some other countries (Spain, Germany, Scandinavia) more or less thorough-going reforms have been successfully carried through.

THE HISTORY OF LANGUAGES

While in the case of the vast majority of languages we know only their present stage or quite recent stages, as these languages have only been noted down in recent periods by missionaries and philologists, there are fortunately other languages whose history we can trace back for centuries, some even for a few thousand years. But we must remember that even with regard to those languages in which writing goes furthest back, the period thus known to us is extremely short in comparison with those thousands of years which have left no record. Besides, writing is at best a very imperfect medium for language-study, and its deficiencies are especially glaring in the oldest systems of writing. The Egyptian hieroglyphs and the early Semitic alphabets leave us almost entirely in the dark as to the vowels of these languages. Chinese writing is even worse, and the nature of the sounds of early Chinese is only now slowly revealing itself to the patient researches of B. Karlgren and other scholars. We are of course much better informed with regard to such old languages as Sanskrit, Greek, Latin, Old Turkish, etc., where not only consonants, but also vowels are indicated. But even the best of these alphabets are incapable of denoting a great many nuances—in the qualities of the sounds, in quantity, stress, tone, etc.—which are of importance in the spoken language and which may exercise a far-reaching influence on the development of speech. Speaking and writing are really incompatibles because they address themselves to two distinct senses, and even the neatest phonetic script is nothing but a makeshift contrivance for the study of the real, *i.e.*, the spoken language. Our descendants will be better off in that respect as they will have gramophone records for the study of *our* speech.

A great difficulty is created for the historian by the conservatism of people who persist in writing words in a customary spelling, even where the sounds have changed greatly from what they were (*see* above "Standard Languages"). Sometimes this disadvantage is remedied by the express statements of early phonetic observers who describe the pronunciation of their own times and call attention to the discrepancies between spelling and pro-

nunciation; in other cases we must draw our conclusions as to earlier pronunciation in a more indirect way, through loan-words to and from the language concerned, through rhymes and rhythms in poetical works, and through mistakes in spelling. When we find, for instance in the Shakespeare folio, spellings like *solembe,* we are justified in inferring, both that *n* in *solemn* and that *b* in words like *comb,* had at that time disappeared from actual pronunciation. Mistakes made by illiterate spellers have proved a very fruitful source in the hands of recent investigators (H. C. Wyld and others).

In writing people will tend to be more conservative than in speaking, not only in their spelling, but also in their grammar and in their choice of words. The verbal forms in *-th* (*goeth, hath*) were kept in writing long after the forms in *s* (*goes, has*) had become universal in speech; thus also forms like *mine own,* etc. The subjunctive in "If he come" is much more frequent in writing than in actual speech. Some literary words have practically disappeared from the spoken language, e.g., *abode, wax* (=grow), *anent, belike.* Such things are found in all languages that have a long literary tradition, though their extent and character may vary considerably between one language and another. In Swedish and Dutch the old word-genders survive only in the written language. In Modern Greek the tendency to preserve as much as possible of the old glorious language has led to an extreme artificiality in the written language, which creates infinite difficulties for all its users, and the same is the case in some of the Southern Indian languages, such as Telugu. The first requirement of a linguistic historian must therefore be that he is constantly on his guard against false impressions due to the way in which languages are written.

In the course of time we see languages changing, though the rate of change varies a good deal. But why do languages change? The ultimate cause must be the same as that of the mutability of all human customs and institutions, namely human nature. In the case of languages we are able to specify some causes of change, chief among which are the nature of the speech-material itself (sounds and the ideas to be expressed) and the way in which language is transmitted from generation to generation or rather from older contemporaries to each new individual; a further cause of change is the influence of persons speaking or writing other languages.

Some deviations from the norm are of such a momentary and fleeting character that they have no influence whatever; but others show by the frequency of their occurrence in the mouths of different speakers that they are deeply motived by human nature or by the structure of the particular language in which they occur; these will therefore tend to persist and finally become so universal that they can no longer be considered lapses, but form part and parcel of the language in its new stage. These changes then are the chief objects of study for the linguistic historian.

Changes of Sounds.—Speech sounds are not invariable quantities. Each "phoneme," *i.e.,* distinctive sound in the language, has a certain latitude of correctness, within which it may be pronounced, now with the mouth a little more open, now a little more closed, now with the tip of the tongue a little more advanced, etc., without being unrecognisable or causing any confusion with neighbouring sounds. The speaker in some moods will be tempted to pronounce in a more careless way, and may thereby here and there overshoot the mark or omit a sound which in other moods he will produce correctly.

Human laziness plays its part in the phonetic changes of languages, which very often follow the line of least resistance; but there will always be a curbing influence in the mere fact that one speaks to be understood by others who will ask one to repeat one's words if they are not clearly recognized. Here the whole structure of a language comes into consideration, for some indistinct pronunciations are more apt to cause confusion and misunderstanding than others; in English a great many words are kept apart by distinction of the final voiced and unvoiced stop (*b, p; d, t; g, k*); consequently these sounds are pronounced carefully, while in German, where the same sounds serve only in a few cases to distinguish words, there has not been the same check on the natural tendency to unvoice final consonants, the result being that *-b, -d,* and *-g* are pronounced as *p, t, k* (or *ch*) in *Grab, Geld, Tag,* etc. Whenever a sound is significative in a language it resists change much more effectively than corresponding sounds which are not used to distinguish words. A correlated principle is seen in "stump-words," those clippings of words which abound especially in school and college slang, *e.g., gym* for *gymnastics, lab*(*oratory*), *undergrad*(*uate*), but which in some cases have penetrated into normal language, *e.g., brig* for *brigantine, cab* for *cabriolet, photo* (*cf.* also numerous Christian names like *Fred*). In all such cases the beginning of the word has sufficed to convey the sense, and speakers have therefore accustomed themselves to drop the rest.

In these last mentioned cases the phonetic change affects only one word at a time; but linguistic history abounds in cases in which a sound is changed, not in one word only, but in all the words, or a majority of the words, in which it occurs, or at any rate in which it occurs in the same position or under similar conditions. Here we speak of "sound-laws" or "phonetic laws," and some of these are of the utmost importance in linguistic science in determining the relationship between various languages and the etymology of particular words.

In dealing with these sound-laws we should never lose sight of the fact that a speech-sound always exists as a part of the whole sound-system or sound-pattern of that language; all the important sound-changes therefore affect more than one sound; and not infrequently we see that a sound-change is conditioned by the whole structure of a language; similar changes will therefore take place independently in languages of similar structure. This is the case with mutation ("umlaut"), of which there is no trace in Gothic, but which took place in subsequent periods in all the other Germanic languages, though not exactly in the same way everywhere.

When initial *k* was dropped in the beginning of *knight,* all words with the same group of sounds were affected in the same way; *know, knowledge, knock, knit,* etc., but *k* was retained after a vowel, *acknowledge.* Very often two or more sounds possessing some articulatory elements in common are affected at the same time in the same way; thus *g* in *gn* was dropped simultaneously with *k* in *kn; gnaw, gnat.* The English vowel-shift which probably began about 1400, modified all long vowels (which had formerly had their "continental" values), *e.g.,* in *bite, beet, beat, abate, foul, fool, foal;* the vowels were diphthongised or raised, but generally speaking they kept the same distance, so that no confusion was produced and no clashings occurred, until finally the vowel in the *beat*-group was raised and so fused with that of the *beet*-group. In the great prehistoric Germanic consonant-shift, which affected all the stopped consonants of primitive Aryan, the various sub-classes were similarly kept distinct, though the distinctions were made in a different way from that of the old Aryan system.

Sometimes one and the same phonetic change is gradually extended to a greater and greater number of combinations. Such is the case with the dropping of the first element of the English "long u," phonetically written (ju), after consonants. This happened first after *r,* as in *true;* then after *l* when preceded by another consonant (*blue*)—in these cases the sound-law is carried through consistently. Next came *l* with no consonant before it, as in *Lucy,* and *s* as in *Susan, suit,* where there is a good deal of vacillation; after *t, d, n,* as in *tune, due, new,* the tendency has prevailed only among vulgar British speakers and some Americans. As regards these speakers the "law" must be said to affect all consonants produced by the point of the tongue, while it will have to be formulated in various less comprehensive terms for other speakers. It is probable that many of the comprehensive prehistoric sound changes, of which we see only the final results, may have similarly spread from more modest beginnings.

While some phonetic changes bring about a convergence of two or more forms of the same word, which were previously distinct, as when the different Old English (Anglo-Saxon) case-forms *sunu* and *suna* became Middle English *sune* and modern *son,* other sound changes lead to divergences between forms of the same

word, as when *keep* and *kept,* which had formerly the same vowel, now have distinct vowels; a still greater divergence is seen in *seek, sought,* which in prehistoric times had the same vowel (*o*).

When philologists speak, as they usually do, of sound-laws or phonetic laws, it must never be forgotten that the word "law" is not used exactly as in the physical sciences, but always refers to historical occurrences restricted to one particular language or dialect and to one definite period of its existence. But from all these particular "laws" we may hope some day to be able to find out some more general laws determining linguistic development everywhere and at all times, though the result may be only comparatively vague statements of universal "tendencies."

Among these we must mention the tendency toward assimilation of neighbouring sounds so as to save some particular articulation. Thus, the *s* is voiced, *i.e.,* has acquired the sound of *z,* before a voiced stop in *husband* (a compound of *hus,* house), *gooseberry,* etc. The place of articulation is shifted, when *n* becomes *m* before a labial, as in *Stamford* from *Stanford, vamp* (upper leather) from French *avant-pied,* and when *n* is pronounced with the back of the tongue before a back consonant, *e.g.,* in *handkerchief;* inversely *m* has become *n* before a *t,* because that is pronounced with the tip of the tongue, in *ant* from *æmette, count* from Latin, *comit-;* similar examples abound in many languages, though the extent to which such assimilatory forms are tolerated varies a good deal between one language and another.

Analogy.—Irregularities in forms, whether due to such phonetic changes as have just been mentioned, or to other causes, will always tend to disappear. This is brought about by the springing up of *analogy-formations,* which have played and still play an enormous rôle in the development of all languages. They have led to the English genitive being now always formed by means of *s,* while Old English had a variety of formations; *fæder* father's, *manna* men's, *cwene* queen's, *haran* hare's, etc. The *s*-ending of the plural has been also extended by analogy to nearly all words; many verbs which in earlier times had a preterite of the "strong" or irregular form now form their preterite with the regular "weak" ending *-ed.* The same thing happens in all departments of grammar. Irregular forms may indeed hold their own against all levelling influences, but this can only be if they are in very frequent use, so that a child hears them and has occasion to utter them constantly from a very early age, *e.g.,* the plural *men,* the case forms *I, me, she, her,* the comparative *better,* verb forms like *see, saw, stand, stood,* etc.

In these various ways form-systems constantly tend towards simplification; we see how the languages belonging to the Indo-European family have reduced the number of cases, etc., independently of one another, though with varying rapidity, and in some languages, *e.g.,* Celtic, the process has been countered by the development of new complications.

Meanings.—The meanings of words are just as subject to change as are their sounds. Changes of meaning are often termed semantic changes, and the science of such changes is called *semantics* or *semasiology* (from Greek *sēma* "sign"), but though a very great many semantic changes have been collected and classified from various points of view, it must be confessed that this "science" has not acquired the same fixity or high standing as that which deals with sound-changes. This is a natural consequence of the essential vagueness of meanings and the extremely complicated nature of the phenomena and ideas that have to be denoted by words. In some cases we must ascribe the change in meaning to the ordinary man's want of precise thinking or punctuality, as when *soon,* which at first meant "at once" has come to mean "in a short time," in others to the desire to express a new notion or to vary the expression of an old one by means of existing speech material; *i.e.,* by means of metaphors or metonymy, as when we speak of the *eye* of a needle, a *fountain* pen, or say the *Crown* or the *crowned head* for the king.

Nearly all everyday words have more than one meaning, and it is only the context or whole situation that shows the hearer how a particular word is to be taken. *Man* in one sentence may mean human being without regard to sex or age, in another it may be used in contrast to "woman," in a third in contrast to "boy," and in a fourth with the meaning "husband" (man and wife). *Tea* may according to circumstances mean the plant, the dried leaves of the plant, the drink made from them, or the meal taken with that drink ("She had a substantial tea of bread and butter"). We see then that changes of meaning are often caused by the syntactical combinations into which words enter. "Go to chapel" at first had reference to the place, but *chapel* in that connection came to mean the service ("There is no chapel on the day on which they hang a man"). *Board* from meaning a thin slab of wood came to mean table, and then what is put on the table (hence "board and lodging"), and then again a committee sitting round the table ("Board of Trade"), etc. These necessarily cursory remarks may serve to show the infinite variety of possibilities attending the development of meanings in a language.

In this field philologists must crave the assistance of psychologists and philosophers. How difficult it is to realize and define what exactly is in our minds when we say that such and such a word "means" this or that, is shown in "The Meaning of Meaning" by C. K. Ogden and I. A. Richards (1923), and K. O. Erdmann, "Die Bedeutung des Wortes" (1910, much more easily understandable than the English book). It is very important to notice how different words have their own emotional colouring, so that though intellectually they may mean the same thing, they nevertheless produce quite different impressions on the hearer or reader—a fact which naturally affects their applicability in poetry and higher prose. Such differences may depend on various things which cannot be comprised in one formula; but among the most potent factors one must mention the impression produced by the sound as such. Some vowels and consonants, and some combinations of sounds, are more apt to produce agreeable associations than others; while the sound of short *i* (or *ē*) is often suggestive of small or graceful things, as in *little, pretty, twig, kid, slip, chick* (*cf.* French *petit,* Italian *piccino,* German *winzig,* Danish *bitte* and a great many other words meaning "little" in various languages), the opposite idea is expressed in such sounds as *clumsy, blunder, bungle, muddle, slubber, sloven,* etc. Sound symbolism must not be overlooked if we would understand the development of languages; in many cases, however, it is not the ultimate source of a word, but rather something that determines the fate of an already existing word in its competition with others.

Etymology.—By etymology is understood both the process of tracing words back to their origin and the ultimate source of a word found by that process. In contradistinction to the etymologising of earlier times, which was mere guesswork, philologists nowadays claim—and with good reason—that in making their etymologies they are much more scientific, since they take into account all the sounds of the words, and moreover give proper attention to the way in which the meanings may have developed in all those cases in which these things are not obvious.

One example may illustrate the method pursued in etymological investigations. English *tooth* means the same thing as Latin *dens,* accusative *dentem,* and Greek ὀδούς, accusative ὀδόντα: all three words go back to one and the same form in the parent language (apart from the difference between Lat. *e* and Gr. *o,* and the initial *o* in Gr.). The discrepancies in the consonants are accounted for, when we notice that Eng. *t* here corresponds to original *d* in the same way as in *tear* (Gothic *tagr*); Gr. δάκρυ, *ten* (Gothic *taihun,* ai=e); δέκα; *teach,* δείκ(νυμι); *tame,* Lat. *domo,* Gr. δαμάω, etc. Before *th* an *n* has disappeared in English: this is a regular phenomenon, comparing *other* with German *ander, sooth* with Norse *sann;* before *s* and *f* the same thing happened, *cf. goose,* German *gans; soft,* German *sanft.* Finally *th* corresponds to original *t* as in *three,* Lat. *tres; thin,* Lat. *tenuis.* In this way philologists have been able to build up a complete set of correspondences, by means of which even seemingly distant forms may be connected etymologically with perfect certainty.

Where etymologies are not obvious, the chief thing is to find out all the available historical facts as to the use and occurrence of the words. These may sometimes reveal curious circuitous

ways in which words have come to be used. Thus the word *chapel,* of which we have just seen one change of meaning, owes its origin to Latin *cappella,* "a little cloak or cape." The cloak of St. Martin was preserved by the Frankish kings as a sacred relic under the care of its *cappellani* or "chaplains"; hence *cappella* was used for the sanctuary in which the cloak was kept, and afterwards transferred to similar places of worship. Another interesting case in point is *check,* in some of its uses spelt *cheque,* which is now used in a variety of meanings having seemingly no connection with the name of the Persian king, *shah,* from which it is nevertheless derived (through the game of *chess,* which is ultimately nothing but the plural of the same word). Though a great many words have thus been explained in a most satisfactory way, many others even in the best known languages have resisted all the attempts of linguistic historians, among them such comparatively recent words as *put, pull, pun, job, rococo, zinc.*

Speech-mixture.—No nation lives entirely isolated from others, and contact between nations has always some linguistic consequences. No language is therefore free from foreign elements, though the degree of speech-mixture varies very considerably.

The simplest case is the adoption of a foreign name of an animal or product hitherto unknown; thus *kangaroo* is from some Australian tongue, *zebra* from an African, *tea* from Chinese, *coffee* from Arabic, *chocolate* from Mexican, and *punch* from Hindustani. A certain type of carriage was introduced from Hungary and is known in most European languages by its Magyar name, English *coach,* German *kutsche,* etc. While such loan-words are isolated, there are others which come in larger quantities and bear witness to the cultural superiority of some nation in some one specified sphere of activity or branch of knowledge; such are the Arabic words relating to mathematics and astronomy, *algebra, zero, cipher, zenith;* the Italian words relating to music, *piano, allegro, soprano,* etc., and to commerce, *bank, balance, ducat, florin.* It is possible to read whole chapters of the cultural history of the English nation out of the successive strata of important loan-words. Before the migration from the continent came commercial and domestic words from Latin, *mint, monger* (fishmonger, etc.), *pound, inch, wine, dish, cook, kitchen, pear, plum.* Next came words connected with the Christian religion, *pope, bishop, nun, shrive.* Then we have Scandinavian words connected with law and with peaceful settlement, *law, by-law, thrall, crave, wapentake, egg, skirt,* numerous place names in *-by, -thorp,* etc. The Norman French words show the conquerors as the ruling and refined upper class, *crown, reign, sovereign, duke, court, judge, jury, summon, grace, beauty, flower, dinner, supper,* etc. And finally we have the learned words from the classical tongues after the revival of learning, *intellect, abstract, educate, preternatural, biology, heterodox, metamorphosis, encyclopaedia* and innumerable others. In the same way we are able to draw inferences from loan-words with regard to the nature of prehistoric contacts between various races, *e.g.,* Scandinavian and Baltic words in Finnic.

The study of loan-words is important in other respects as well. As phonetic development does not follow the same lines in all languages, loans often retain traces of a pronunciation which is lost in the country from which they came. English *w* in *wine* shows the old Latin pronunciation, which has been given up in all the Romanic languages; *vine* from French *vigne* shows the later French development into *v.* English words often preserve consonants which have been dropped in French, *beast, feast* from old French, *beste, feste,* now *bête, fête; ch* in *chief, chair, charm,* etc., shows the Old French sound, which in Modern French has been simplified through dropping of the first element; *chef, champagne* are later loans after the change in French pronunciation. In this way Finnic loans from their western neighbours show us forms that are older than the oldest runic inscriptions and than the Gothic translation of the Bible, *e.g., kuningas* for "king."

Indirect loans are found when a compound term is translated from one language to another; this is the case with some words of ethical or religious import; Greek *συνείδησις* and *συμπάθεια* were translated into Latin *conscientia* and *compassio* and those again into German *Gewissen* (ge=*con*), and *Mitleid,* Danish *samvittighed* and *medlidenhed.* Again phraseological and syntactical combinations are in this way transferred from one language to another. Very intricate borrowings of this kind in the Balkans have been studied by Sandfeld; thanks to them, Greek, Bulgarian, Rumanian and Albanian, despite their different origins, present a certain homogeneity in syntactical structure. It is highly probable that certain peculiarities in the flection of Armenian and Tokharian must be similarly ascribed to the neighbourhood of Turkish.

Contact between races with mutually unintelligible languages has given rise to makeshift languages of a curiously similar type in various parts of the globe, however different the underlying language may be. Such are Pidgin English and Bêche-de-Mer in the East, various Creole languages such as Creole French of Mauritius, Negro-Portuguese, Negro-Dutch, "El Papiamento" in Curacao and the Chinook trade language in North America. In all these is an extreme simplicity of grammatical structure, which together with a minimum of vocabulary gives them a pronouncedly childish character. Such languages are not mixed languages, properly speaking, but arise from the first bungling attempts at learning a difficult language, the Europeans having very often met the natives half-way by using broken English, etc., themselves. Generally these minimum languages are in a very fluctuating state, but under favourable circumstances they may become more fixed and even be used for expressing all the ideas of a cultured mind.

SUBSTRATUM

In recent discussions about the origin of dialects and linguistic differences the so-called *substratum theory* has played a great rôle. The starting point is the undoubtedly correct observation that when an adult learns a new language he will nearly always transfer sounds and such general phonetic qualities as tones, stress, etc., from his first to his second language. The differences between the development of Latin in Gaul, in Spain, etc., are then explained as chiefly due to the influence of the original language of each country; the old Germanic sound shift is said to be due to phonetic habits of an aboriginal population, etc. In most cases, however, we know nothing at all about the pronunciation of the languages thus conjectured to be substrata of European languages (Iberian, Rhaetian, pre-Germanic), and though there may be some truth in the theory in a general way, it cannot explain everything that it has been supposed to explain by writers like Meillet, Hirt and Feist. Before resorting to the hypothesis of a prehistoric substratum one should always try to explain linguistic changes in the same way as those which happen before our eyes in historic times in countries where the same population has been living for centuries.

THE ORIGIN OF LANGUAGE

On the ultimate origin of language speculation has been rife, more, however, among philosophers than among philologists, who have very often been too matter-of-fact to take an interest in this problem. Some scholars (among them quite recently W. Schmidt) see the insufficiency of the usual theories, and giving up all attempts at explaining it in a natural way fall back on the religious belief that the first language was directly given to the first men by God through a miracle.

Greek philosophers were divided into two groups on this question, some thinking that there is from the beginning a natural connection between sound and meaning and that therefore language originated from nature (*φύσει*), while others denied that connection and held that everything in language was conventional (*θέσει*). The same two opposite views are represented among the linguistic thinkers of the 19th century, the former in the nativism of W. v. Humboldt, Max Müller, Steinthal and others, the latter in the empiricism of Madvig, Whitney, Marty, etc.

Some of the chief theories are best known under the nicknames invented by Max Müller, the *bow-wow, pooh-pooh,* and the *yo-he-*

ho theories. According to the first, language began with the imitation of the characteristic sounds of animals; according to the second, with interjections, instinctive utterances called forth by pain or other intense sensations or feelings, and according to the third, with the natural phonetic accompaniments of acts performed in common; these sounds would thus come to stand as verbs denoting the acts themselves; *e.g., heave, haul.*

Each of the theories thus succinctly sketched explains part of our human language, and there is nothing to hinder us from combining them, but even when combined they do not explain everything, and especially fail to explain the central parts of language and its whole complex structure. Moreover, they all tacitly assume that up to the creation of language man had remained mute and silent, but it is much more probable that he had already exercised his organs through something that was not yet speech, but might lead to speech.

The latest attempt at solving the mystery is that of Jespersen, who thinks that the problem may be approached in a quite new way by starting from languages as we find them nowadays and tracing their history back as far as our material allows, in order from a comparison of present English with Old English (and similarly in the case of as many languages as possible) to find out the great laws governing linguistic development; by lengthening this system of lines on a larger scale backwards beyond the reach of history we may be able to arrive at uttered sounds of such a description that they can no longer be called a real language.

As regards the phonetic structure of the most primitive language, we shall in that way arrive at long conglomerates of sounds forming a striking contrast to those monosyllables with which philologists of the 19th century imagined that language must necessarily have begun. These long strings of syllables were probably characterised by marked tone movements with great intervals, and thus more like singing than is our comparatively monotonous civilised speech. The further back we go in the history of languages the greater is the number of irregularities that we find, not only in morphology, and syntax, but also in vocabulary; the same thing is not always denoted in the same way, and instead of general terms as in our languages we find words with highly specialised and concrete meanings. The bigger and longer the words, the thinner the thoughts. The first framers of speech were not taciturn beings, but lively men and women babbling or singing merrily on for the mere pleasure of producing sounds with or without meaning; as an instrument for expressing thoughts their utterances were clumsy, unwieldly and ineffectual, but they served to give vent to their emotions, and that was all they cared for. One string of syllables sung to some kind of melody may have been so characteristic of a certain individual, that it came to be repeated by others to signalise his approach, thus denoting him and becoming a proper name for him—the most concrete of all words. Another song might serve to remind the tribe of some occasion when it was first intoned and might thus become an undifferentiated expression for what happened then. When a multitude of utterances of this kind had developed, each with some sort of special meaning, they might be combined in various clumsy ways and thus give rise to something that was more like the long intricate sentence-conglomerates which we find, for instance, in Eskimo. But even the most primitive language heard to-day has an evolution of many thousand years behind it, and a modern mind cannot hope to be able to enter into the workings of a mind that was only beginning to be human.

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(O. J.)

LANGUEDOC, one of the old provinces of France, the name of which dates from the end of the 13th century. In 1290 it was used to refer to the country in whose tongue (*langue*) the word for "yes" was *oc,* as opposed to the centre and north of France, the *langue d'oil* (the *oui* of to-day). Territorially Languedoc varied considerably in extent, but in general from 1360 until the French Revolution it included the territory of the following departments of modern France; part of Tarn et Garonne, Tarn, most of Haute-Garonne, Ariège, Aude, Pyrénées-Orientales, Hérault, Gard, Lozère, part of Ardèche and Haute-Loire. The country had no natural geographical unity. Stretching over the Cevennes into the valleys of the upper Loire on the north and into that of the upper Garonne on the west, it reached the Pyrénées on the south and the rolling hills along the Rhône on the east. Its unity was entirely a political creation, but none the less real, as it was the great state of the Midi, the representative of its culture and, to some degree, the defence of its peculiar civilization.

While it corresponded exactly to no administrative division of the Roman empire, Languedoc was approximately the territory included in *Gallia Narbonensis,* one of the 17 provinces into which the empire was divided at the death of Augustus. It was rich and flourishing, with great and densely populated towns, Nîmes, Narbonne, Béziers, Toulouse; with schools of rhetoric and poetry still vigorous in the 5th century. In the 5th century this high culture was an open prize for the barbarians; and after the passing of the Vandals, Suebi and Visigoths into Spain, the Visigoths returned under Wallia, who made his capital at Toulouse in 419. This was the foundation of the Visigothic kingdom which Clovis dismembered in 507, leaving the Visigoths only Septimania —the country of seven cities, Narbonne, Carcassonne, Elne, Béziers, Maguelonne, Lodève and Agde—that is, very nearly the area occupied later by the province of Languedoc. At the council of Narbonne in 589 five races are mentioned as living in the province, Visigoths, Romans, Jews—of whom there were a great many—Syrians and Greeks. The repulse of the Arabs by Charles Martel in 732 opened up the country for the Frankish conquest, which was completed by 768. Under the Carolingians, Septimania became part of the kingdom of Aquitaine, but it became a separate duchy in 817.

Until the opening of the 13th century there is no unity in the history of Languedoc. The feudal régime did not become at all universal in the district, as in the north of France. By the end of the 11th century the house of the counts of Toulouse began to play the predominant rôle; but their court had been famous almost a century before for its love of art and literature and its extravagance in dress and fashions, all of which denoted its wealth. Under Raymond of Saint Gilles, at the end of the 11th century, the county of Toulouse began its great career, but Raymond's ambition to become an Oriental prince, which led him away on the first crusade left a troubled heritage to his sons Bertrand and Alphonse Jourdain (1109–48). The latter successfully beat off William IX., duke of Aquitaine, and won from the count of Barcelona the part of Provence between the Drôme and the Durance. By the opening of the 13th century the sovereignty of the counts of Toulouse was recognized through about half of Provence, and they held the rich cities of the most cultured and wealthiest portion of France.

The prosperity of this region was ruined by the great crusade directed against the popular heresy which had developed there by the early 13th century. The whole county of Toulouse, with its fiefs of Narbonne, Béziers, Foix, Montpellier and Quercy, was in open and scornful secession from the Catholic Church, and the suppression of this Manichaean or Cathar religion was the end of the brilliant culture of Languedoc. (*See* ALBIGENSES, CATHARS, INQUISITION.) The crusade against the Albigenses, as the Cathars were locally termed, in 1209, resulted in the union to the crown of France in 1229 of all the country from Carcassonne to the Rhône, thus dividing Languedoc into two. The western part, left to Raymond VII., by the treaty of 1229, included the Agenais, Quercy, Rouergue, the Toulousain and southern Albigeois. He had as well the Venaissin across the Rhône. From 1229 to his death in 1249 Raymond VII. worked tirelessly to

bring back prosperity to his ruined country, encouraging the foundation of new cities, and attempting to gain reconciliation with the Church. He left only a daughter, Jeanne, who was married to Alphonse of Poitiers. Alphonse, a sincere Catholic, upheld the Inquisition, but, although ruling the country from Paris, maintained peace. Jeanne died without heirs four days after her husband, in 1271, and her lands were promptly seized by King Philip III. Thus the county of Toulouse passed to the crown, though Philip III. turned over the Agenais to Edward I. of England in 1279. In 1274 he ceded the county of Venaissin to Pope Gregory X., the papacy having claimed it, without legal grounds, since the Albigensian crusade (*see* AVIGNON).

Such was the fate of the reduced county of Toulouse. At the division of Languedoc in 1229 Louis IX. was given all the country from Carcassonne to the Rhône. This royal Languedoc was at first subject to much trickery on the part of northern speculators and government officials. In 1248 Louis IX. sent royal *enquêteurs*, much like Charlemagne's *missi dominici*, to correct all abuses, especially to enquire concerning peculation by royal agents. On the basis of their investigations the king issued royal edicts in 1254 and 1259 which organized the administration of the province. Two *sénéchaussées* were created—one at Nîmes, the other at Carcassonne—each with its lesser divisions of *vigueries* and *baillages*. During the reign of Philip III. the *enquêteurs* were busily employed securing justice for the conquered, preventing the seizure of lands, and in 1279 a supreme court of justice was established at Toulouse. In 1302 Philip IV. convoked the estates of Languedoc, but in the century which followed they were less an instrument for self-government than one for securing money, thus aiding the *enquêteurs*, who during the Hundred Years' War became mere revenue hunters for the king. Under Charles V., Louis of Anjou, the king's brother, was governor of Languedoc, and while an active opponent of the English, he drained the country of money. But his extortions were surpassed by those of another brother, the duc de Berry, after the death of Charles V. In 1382 and 1383 the infuriated peasantry, abetted by some nobles, rose in a rebellion—known as the Tuchins—which was put down with frightful butchery, while still greater sums were demanded from the impoverished country. In the anarchy which followed brigandage increased. Redress did not come till 1420, when the dauphin, afterwards Charles VII., came to Languedoc and re-formed the administration. Then the country he saved furnished him with the means for driving out the English in the north. For the first time, in the climax of its miseries, Languedoc was genuinely united to France. But Charles VII. was not able to drive out the brigands, and it was not until after the English were expelled in 1453 that Languedoc had even comparative peace. Charles VII. united Comminges to the crown; Louis XI. Roussillon and Cerdagne, both of which were ceded to Aragon by Charles VIII. as the price of its neutrality during his expedition into Italy. From the reign of Louis XI. until 1523 the governorship of Languedoc was held by the house of Bourbon. After the treason of the constable Bourbon it was held by the Montmorency family with but slight interruption until 1632.

The Reformation found Languedoc orthodox: persecution had succeeded. The Inquisition had had no victims since 1340, and the cities which had been centres of heresy were now strongly orthodox. But Calvinism gained ground rapidly in the other parts of Languedoc, and by 1560 the majority of the population was Protestant. This was, however, partly a political protest against the misrule of the Guises. The open conflict came in 1561, and there was intermittent civil war thenceforward until the Edict of Nantes (1598). By this, the Protestants were given ten places of safety in Languedoc; but civil strife did not come to an end, even under Henry IV. In 1620 the Protestants in Languedoc rose under Henri, duc de Rohan (1579–1638), who for two years defied the power of Louis XIII. When Louis took Montpellier in 1622, he attempted to reconcile the Calvinists by bribes of money and office, and left Montauban as a city of refuge. By 1629 Protestantism was crushed in the Midi as a political force. After the rebellion of Henri II., duc de Montmorency, Languedoc lost its old provincial privilege of self-assessment until 1649. During Louis XIV.'s reign Languedoc prospered until the revocation of the Edict of Nantes. Industries and agriculture were encouraged, roads and bridges were built, and the great canal giving a water route from the Atlantic to the Mediterranean increased the trade of its cities. The religious persecutions which accompanied the revocation of the Edict of Nantes resulted in a guerrilla warfare known as the rebellion of the Camisards (*q.v.*).

BIBLIOGRAPHY.—The one monumental history of Languedoc is that of the Benedictines, Dom Claude Devic and Dom J. J. Vaissete, *Histoire générale de la province de Languedoc* (1730–45). This has been re-edited, and continued and increased by the addition of important monographs (Toulouse, 1872–92). The fine article "Languedoc" in *La Grande Encyclopédie* is by A. Molinier, perhaps the greatest modern authority on Languedoc.

LANGUET, HUBERT (1518–1581), French Huguenot writer and diplomat, was born at Vitteaux in Burgundy, of which town his father was governor. He received his early education from a distinguished Hellenist, Jean Perelle, and studied law, theology and science at the University of Poitiers (1536–39); then, after some travel, attended the universities of Bologna and Padua, receiving the doctorate from the latter in 1548. At Bologna he read Melanchthon's *Loci communes theologiae* and was so impressed by it that in 1549 he went to Wittenberg to see the author, and shortly afterwards became a Protestant. He made his headquarters at Wittenberg until the death of Melanchthon in 1560. In 1557 he declined the invitation of Gustavus I. to enter the service of Sweden, but two years later accepted a similar invitation of Augustus I., elector of Saxony. He showed great ability in organizing the Protestants. He represented the elector at the French court from 1561 to 1572 except when troubles in France occasionally compelled him to withdraw. In 1567 he accompanied the elector to the siege of Gotha. He delivered a harangue before Charles IX. of France in 1570 on behalf of the Protestant princes, and escaped death on St. Bartholomew's Day (1572) only through the intervention of Jean de Morvilliers, bishop of Orleans. He represented the elector of Saxony at the imperial court from 1573 to 1577. Financial embarassment and disgust at the Protestant controversies in which he was forced to participate caused him to seek recall from the imperial court. His request being granted, Languet spent the last years of his life mainly in the Low Countries, and though nominally still in the service of the elector, he undertook a mission to England for John Casimir of Bavaria, and was a valuable adviser to William the Silent, prince of Orange. Languet died at Antwerp on Sept. 30, 1581. For his relations with Sidney, *see* SIDNEY, SIR PHILIP.

Collections of Languet's letters, which are important for the history of his time, are: *Arcana seculi decimi sexti*, ed. Ludovicus (Halle, 1669); *Langueti epistolae ad Joach. Camerarium, patrem et filium* (Groningen, 1646); and the correspondence with Sir Philip Sidney (Eng. trans. by S. A. Pears, 1845). His acknowledged work includes *Historica descriptio* (Gotha, 1568), dealing with the siege of Gotha. His fame rests on the attribution to him of the *Vindiciae contra tyrannos* (Basle, 1579; Eng. trans., 1689), which purported to be published at Edinburgh and written by Stephanus Junius Brutus, a Celt. The work upholds the doctrine of resistance, but maintains that resistance itself must originate in properly constituted authority; that is to say, it was directed against tyranny on the one hand and the excesses of anabaptism on the other.

See Ph. de la Mare, *Vie d'Hubert Languet* (Halle, 1700); H. Chevreul, *Hubert Languet* (1852); J. Blasel, *Hubert Languet* (Breslau, 1872); O. Scholz, *Hubert Languet als kursächsischer Berichterstatter u. Gesandter in Frankreich während 1560–1572* (Halle, 1875); G. Touchard, *De politica Huberti Langueti* (1898). There is a good article on Languet by P. Tschackert in Hauck's *Realencyklopädie*, 3rd ed., xi. 274–280.

LANGUR or HANUMAN, the sacred Indian monkey scientifically known as *Semnopithecus entellus*. An extremely long tail, beetling black eyebrows, black ears, face, feet and hands, and a general grayish-white colour of the fur are its distinctive characteristics. These monkeys roam at will in the bazaars of Hindu cities, where they help themselves freely from the stores of the grain-dealers. They are also kept at various temples. The

term is often extended to embrace all the Asiatic leaf monkeys, which includes a large number of species, ranging from Ceylon, India and Kashmir to southern China and the Malay countries as far east as Borneo and Sumatra. These monkeys are characterized by their lank bodies, long slender limbs and tail, well-developed thumbs, absence of cheek-pouches, and complex stomachs.

LANG VON WELLENBURG, MATTHÄUS (1469–1540), German statesman and ecclesiastic, was the son of a burgher of Augsburg. After studying at Ingolstadt, Vienna and Tübingen he entered the service of the emperor Frederick III. He was a trusted adviser of Maximilian I., and was made provost of the cathedral at Augsburg and bishop of Gurk. In 1511 he was made a cardinal by Pope Julius II., and in 1514 he became coadjutor to the archbishop of Salzburg, whom he succeeded in 1519. He also received the bishopric of Cartagena in Murcia in 1521, and that of Albano in 1535. Lang's arrogance made him very unpopular in his diocese of Salzburg; in 1523 he was involved in a serious struggle with his subjects, and in 1525, during the Peasants' War, he had again to fight hard to hold his own. He was one of the chief ministers of Charles V.; he played an important part in the tangled international negotiations of his time; and he was always loyal to his imperial masters. He has been compared with Cardinal Wolsey. He died on March 30, 1540.

LANIER, SIDNEY (1842–1881), American poet, was born at Macon, Ga., on Feb. 3, 1842. He was of Huguenot descent on his father's side, and of Scottish and American on his mother's. From childhood he was passionately fond of music. When 14 years old he entered Oglethorpe college, where, after graduating with distinction, he held a tutorship. He served from 1861–65 in the Civil War, returning home in broken health. In 1867 he visited New York in connection with his novel *Tiger Lilies*—an immature work, dealing in part with his war experiences. The next year he began to study and practise law with his father. In 1872 he went to Texas for his health, but was forced to return, and he secured an engagement as first flute in the Peabody concerts at Baltimore (Dec. 1873). He wrote a guide-book to Florida (1876), and tales for boys from Froissart, Malory, the Mabinogion and Percy's *Reliques* (1878–82). His reputation gradually increased, and he was enabled to study music and literature, especially Anglo-Saxon poetry. In 1876 he wrote his ambitious cantata for the Centennial Exhibition, and returned north. A small volume of verse appeared in the next year. In 1879 he was made lecturer on English literature at Johns Hopkins university. His lectures became the basis of his *Science of English Verse* (1880)—his most important prose work, and an admirable discussion of the relations of music and poetry—and also of his *English Novel* (1883). Work had to be abandoned on account of growing feebleness, and in the spring of 1881 he was carried to Lynn, N.C., to try camp life, and died there on Sept. 7. An enlarged and final edition (1884) of his poems was prepared by his wife, his *Letters, 1866–1881* (1899) and several volumes of miscellaneous prose assisted in keeping his name before the public. A posthumous work on *Shakspere and his Forerunners* (London, 2 vols., 1902) was edited by H. W. Lanier. Among his more noteworthy poems are "Corn," "The Revenge of Hamish," "Song of the Chattahoochee" and "The Marshes of Glynn." By some his genius is regarded as musical rather than poetic, and his style is considered hectic; by others he is held to be one of the most original and most talented of modern American poets.

See a "Memorial," by W. H. Ward, prefixed to the *Poems* (1884); *Letters of Sidney Lanier 1866–1881* (1899), edited by H. W. Lanier and Mrs. Sidney Lanier; E. Mims, *Sidney Lanier* (1905). There is a bibliography of Lanier's scattered writings in *Select Poems* (New York, 1896; Toronto, 1900) edited by M. Callaway. (W. P. T.)

LANIIDAE: *see* SHRIKE.

LANJUINAIS, JEAN DENIS, COMTE (1753–1827), French politician, was born at Rennes (Ille-et-Vilaine) on March 12, 1753. He studied law and became in 1775 professor of ecclesiastical law at Rennes. His two important works of this period, *Institutiones iuris ecclesiastici* and *Praelectiones iuris ecclesiastici*, remained unpublished owing to the chaotic state of public affairs. Elected to the States General in 1789 he demanded the abolition of nobility and helped to establish the civil constitution of the clergy. In the Convention (1792) his views became more moderate, and while adhering to his republican principles, he made repeated attacks on the Mountain, which resulted (April 15, 1793) in a demand for his exclusion from the Assembly. Arrested with the Girondins, he escaped to Rennes where he drew up a pamphlet, *Le Dernier Crime de Lanjuinais*, denouncing the constitution of 1793. He was re-admitted to the Convention on March 8, 1795. He maintained his liberal and independent attitude in the Conseil des Anciens, the senate and the chamber of peers, being president of the upper house during the Hundred Days. Following the Restoration most of his time was given to religious and political subjects. He died in Paris on Jan. 13, 1827. His writings include: *Constitutions de la nation française* (1819); *Appréciation* and *Études biographiques et littéraires sur Antoine Arnauld, P. Nicole et Jacques Necker* (1823).

For the life of the comte de Lanjuinais *see* also A. Robert and G. Cougny, *Dictionnaire des parlementaires*, vol. ii. (1890); and F. A. Aulard, *Les Orateurs de la Législative et de la Convention* (1885–86). For a bibliography of his work *see* J. M. Quérard, *La France littéraire*, vol. iii. (1829).

LANKESTER, SIR EDWIN RAY (1847–1929), British biologist, was born in London on May 15, 1847, and was educated at St. Paul's School, Downing College, Cambridge, and Christ Church, Oxford. In 1872 he was elected to a fellowship at Exeter College, Oxford. During 1874–90 he was professor of zoology and comparative anatomy at University College, London, and from 1890–8 Linacre professor of comparative anatomy at Oxford. From 1898 to 1907 he was director of the natural history department of the British Museum, and from 1898–1900 he held the Fullerian professorship of physiology and comparative anatomy at the Royal Institution, London. He did valuable research work on the comparative structure of animals, both living and extinct. To the general public he became known owing to his successful presentation of scientific subjects in a popular form. He was elected F.R.S. in 1875, and was awarded the Royal Medal in 1885 and the Copley Medal in 1913. In 1884 he founded the Marine Biological Association, becoming its president in 1892.

His numerous publications include *Comparative Longevity* (1871); *Degeneration* (1880); and the several editions of *Science from an Easy Chair* (1908, 15th ed., 1922); *Diversions of a Naturalist* (1915, 3rd ed. 1919); *Science and Education* (1919); *Secrets of Earth and Sea* (1920, 2nd ed., 1923); and *Great and Small Things* (1923). He died in London on Aug. 15, 1929.

LANMAN, CHARLES ROCKWELL (1850–1941), American Sanskrit scholar, was born in Norwich, Conn., on July 8, 1850. He graduated at Yale in 1871, was a graduate student there (1871–73) and in Germany (1873–76), was teacher of Sanskrit at Johns Hopkins university in 1876–80 and subsequently professor of Sanskrit at Harvard. In 1889 he travelled in India and bought for Harvard university Sanskrit and Prākrit books and manuscripts, which, with those subsequently bequeathed to the university by Fitzedward Hall, make the most valuable collection of its kind in America. In 1879–84 he was secretary and editor of the *Transactions*, and in 1889–90 president of the American Philological Association; he was successively corresponding secretary, vice president and president of the American Oriental Society, in addition to being joint editor of its journal and proceedings for many years. In the Harvard oriental series, which he edited, he translated (vol. iv.) into English Rājaçekhara's Karpūra-Mañjarī (1900), a Prākrit drama, and (vols. vii. and viii.) revised and edited Whitney's translation of, and notes on, the *Atharva-Veda* (1905); he published *A Sanskrit Reader: with Vocabulary and Notes* (1884–88); and he wrote on noun-inflection in the Veda and on early Hindu pantheism and contributed the section on Brahmanism to *Messages of the World's Religions*.

LANNES, JEAN (1769–1809), duke of Montebello, marshal of France, was born at Lectoure (Gers) on April 11, 1769. He was apprenticed to a dyer and had little education. He joined the army and rose to the rank of *chef de brigade* during the war with Spain (1793–4). In 1795, on the reform of the army by the Thermidorians, he was dismissed from his rank. He re-enlisted as a volunteer in the army of Italy, and in the campaign of 1796 he again fought his way up to the rank of general of brigade. He

accompanied Napoleon to Egypt as commander of one of Kléber's brigades. Returning to France he assisted at the 18th Brumaire and was appointed general of division, and commandant of the consular guard. He commanded the advanced guard in the crossing of the Alps in 1800, winning the battle of Montebello, from which he afterwards took his title. In 1801 Napoleon sent him as ambassador to Portugal. On the establishment of the empire he was created a marshal of France, and commanded the left of the grand army in the campaign of Austerlitz. He fought with distinction through the campaign of 1806–7 and in 1808 Napoleon made him commander-in-chief of a detached wing of the army in Spain. On Feb. 21, 1809, he captured Saragossa, after one of the most stubborn defences in history. Napoleon then created him duc de Montebello, and in 1809, for the last time, gave him command of the advanced guard. He took part in the engagements around Eckmühl and the advance on Vienna. With his corps he led the French army across the Danube, and bore the brunt, with Masséna, of the terrible battle of Aspern-Essling (*q.v.*). During the retreat on May 22 Lannes was wounded and died at Vienna on May 31.

Lannes ranks with Davout and Masséna as the ablest of all Napoleon's marshals, and consciously or unconsciously was the best exponent of the emperor's method of making war. Hence his constant employment in tasks requiring the utmost resolution and daring, and more especially when the emperor's combinations depended upon the vigour and self-sacrifice of a detachment or fraction of the army.

See R. Périn, *Vie militaire de Jean Lannes* (1809).

LANNION, a town of north-western France, capital of an arrondissement in the department of Côtes-du-Nord, on the right bank of the Léguer, 45 mi. N.W. of St. Brieuc by rail. Pop. (1936) 6,475. Lannion is 5 mi. in direct line from the mouth of the Léguer; its port does a small trade (exports of agricultural produce, flax and hemp, imports of wine, salt, coal, timber, etc.), and there is an active fishing industry. It has much commerce in horses, grain, cattle, butter, flax and wool. The town contains many houses of the 15th and 16th centuries and the church of St. Jean-du-Baly (16th and 17th centuries). On an eminence close to Lannion is the church of Brélevenez of the 12th century, restored in the 15th century; it has an interesting 16th-century Holy Sepulchre. Some 6 m. S.E. of the town are the imposing ruins of the Château of Tonquédec (*c.* 1400) styled the "Pierrefonds of Brittany."

LANOLIN, the commercial name of the preparation styled *adeps lanae hydrosus* in the British Pharmacopoeia, which consists of 7oz. of neutral wool-fat (*adeps lanae*) mixed with 3 fluid oz. of water. The wool-fat is obtained by purification of the "brown grease," "recovered grease," or dégras extracted from raw sheep's wool in the process of preparing it for the spinner. It is a translucent unctuous substance which has the property of taking up large quantities of water, and forming emulsions which are very slow to separate into their constituents. Owing to the ease with which it penetrates the skin, wool-fat both in the anhydrous form and as lanolin, sometimes mixed with such substances as vaseline or fatty oils, is largely employed as a basis for ointments. It is slightly antiseptic and does not become rancid. (*See* OILS, FATS AND WAXES.)

LA NOUE, FRANÇOIS DE (1531–1591), called Bras-de-Fer, Huguenot captain, was born near Nantes in 1531, of an ancient Breton family. His first great exploit was the capture of Orleans at the head of only 15 cavaliers in 1567, during the second Huguenot war. At the battle of Jarnac in March 1569 he commanded the rearguard, and at Moncontour in the following October he was taken prisoner; but he was exchanged in time to resume the governorship of Poitou, and to defeat the royalist troops before Rochefort. At the siege of Fontenay (1570) his left arm was shattered by a bullet; but a mechanic of Rochelle made him an iron arm (hence his sobriquet) with a hook for holding his reins. When peace was made in France in the same year, La Noue carried his sword against the Spaniards in the Netherlands, but was taken at the recapture of Mons by the Spanish in 1572. He was commissioned by Charles IX., after the massacre of St. Bartholomew, to reconcile the inhabitants of La Rochelle, the great stronghold of the Huguenots, to the king. But La Noue gave up his royal commission, and from 1574 till 1578 acted as general of La Rochelle.

When peace was again concluded La Noue once more went to aid the Protestants of the Low Countries. He took several towns and captured Count Egmont in 1580; but a few weeks afterwards he fell into the hands of the Spaniards, who kept him in close imprisonment at Limburg for five years. In prison he wrote his *Discours politiques et militaires* (Basel, 1587, and many other editions). La Noue wrote of war as a human drama, before it had been elaborated and codified. In June 1585, La Noue was exchanged. In 1589, he joined Henry of Navarre against the Leaguers. He was present at both sieges of Paris, at Ivry and other battles. He died at Moncontour on Aug. 4, 1591.

He wrote, besides the Discourses, *Déclaration pour prise d'armes et la défense de Sedan et Jamets* (1588); *Observations sur l'histoire de Guicciardini* (2 vols., 1592); and notes on *Plutarch's Lives*. His *Correspondance* was published in 1854. See *La Vie de François, seigneur de la Noue,* by Moyse Amirault (Leiden, 1661); Brantôme's *Vies des Capitaines français;* C. Vincen's *Les Héros de la Réforme, Fr. de la Noue* (1875); and Hauser, *François de La Noue* (Paris, 1892).

LANREZAC, CHARLES LOUIS (1852–1925), French soldier, was born at Pointe-à-Pitre, Guadeloupe on July 31, 1852. While at the École de Guerre, the new French doctrine of strategy and tactics was being established under the influence of Maillard, Langlois and Bonnal. To this doctrine Lanrezac himself contributed in his study *La manoeuvre de Lützen.* He became colonel in 1902, general of brigade in 1906, and general of division in 1911. In 1912 he commanded the XI. Corps, and on April 10, 1914 succeeded Galliéni as a member of the Conseil Supérieur de la Guerre and commander-designate of the V. Army. His theories as summarized in the article *Stratégie* of the *Dictionnaire militaire* were not in accordance with the modern theory of an incessant and universal offensive, of which plan 17 was an example. This plan assumed that the V. Army would attack east of the Meuse towards Neufchâteau. Lanrezac pointed out in his report of July 31, 1914, that if the extreme German right crossed the Meuse north of Givet the V. Army at Neufchâteau would be turned. Neither he nor Joffre anticipated the magnitude of the German attack, though he feared an enemy attack between Namur and Givet aimed at Chimay and the sources of the Oise and the direct road to Paris. He therefore sought and obtained permission on Aug. 12 to place the I. Corps (left) in the Dinant region, and to make preliminary arrangements for moving the rest of his army towards the northwest. On Aug. 15 the Germans having endeavoured to cross the Meuse at Dinant, General Joffre ordered the transfer of the army on the left bank.

On Aug. 21 Lanrezac asked Joffre whether he should attack the following day, but was then violently attacked by Von Bülow's army, and the battle of Charleroi began. The arrival of the III. German Army forced the I. French Corps to fall back on the Meuse, while the III. Corps had to yield. On the evening of the 23rd Lanrezac was obliged to order a retreat, which lasted from Aug. 24 to Sept. 5. On Aug. 27 orders were given to renew the offensive at Saint-Quentin in order to assist the British. This order provoked a violent disagreement between Joffre and Lanrezac. Nevertheless Lanrezac renewed his offensive on the 29th and at the battle of Guise, won a brilliant tactical success. But the retreat continued, and on Sept. 3, Gen. Lanrezac was relieved of his command. In 1917 he was offered the post of Major General of the armies by M. Painlevé, but he refused and suggested Gen. Pétain. "He is one of my own children," he said, "and I can answer for him." On July 3, 1917 he was made grand officer of the Legion of Honour and on Aug. 29, 1924 was given the grand cross of the same order. He died on Jan. 18, 1925.

See Lanrezac, *Le plan de campagne français et le premier mois de la guerre* (1920); Jules Isaac, *Joffre et Lanrezac* (1922); F. Engerand, *Lanrezac* (1926). (H. Bi.)

LANSBURY, GEORGE (1859–1940), British labour leader, was born on Feb. 21, 1859, in Suffolk. He worked as a checker on the Great Eastern railway, emigrated to Queensland in 1884, returned in 1885, and eventually went into the timber business in

London. Until 1892 he was an ardent Liberal, assisting greatly in the return of J. Murray MacDonald as M.P. for Bow in that year, but he then joined the Social Democratic Party of which he was one of the earliest propagandists. As a member of the royal commission on the poor law he signed the minority report in 1909. He was elected M.P. for Bow in 1910, and was a strong supporter of women's suffrage. He resigned his seat in 1912 to test opinions on this subject and failed to carry it again. He became editor of the *Daily Herald* in 1912 which he carried on as a weekly during the war and again as a daily until 1922, when it was taken over by the whole labour movement. In 1920 he visited Soviet Russia, being the first newspaper editor to get direct wireless messages through from that country (*see* his book *What I saw in Russia*, 1920). In 1922 he was elected M.P. for Bow, a seat which he retained till his death. He refused a seat in the Labour Government of 1924, criticizing its "right wing" policy and in 1925–27 edited an independent journal, *Lansbury's Labour Weekly*. He was, however, best known for his direction of the municipal affairs of the Poplar borough council of which he was mayor 1919–20 and 1936–37. In 1921 he and most of the council served a short term in prison rather than modify his policy of generous relief to the unemployed. He was First Commissioner of Works from 1929 to 1931 and leader of the opposition, 1931–35, resigning this position because of the Labour party's support of the government's rearmament policy.

See his books *My Life* (1928); *My Quest for Peace* (1938).

LANSDALE, a borough of Montgomery county, Pa., U.S.A., 25 mi. N. of Philadelphia, on the Reading railroad. The population was 9,316 in 1940 by federal census. It is in a fertile agricultural district, and has a large number of varied manufactures, of which the most important are pottery, stoves, glue, hosiery, radiators, textiles, clothing, steel fabricating and foods. The borough was incorporated in 1872.

LANSDOWNE, WILLIAM PETTY FITZMAURICE, 1ST MARQUESS OF (1737–1805), British statesman, better known under his earlier title of earl of Shelburne, was born at Dublin, on May 20, 1737. He was a descendant of the lords of Kerry (dating from 1181), and his grandfather Thomas Fitzmaurice, who was created earl of Kerry (1723), married the daughter of Sir William Petty (*q.v.*). On the death without issue of Sir William Petty's sons, the first earls of Shelburne, the estates passed to his nephew John Fitzmaurice (advanced in 1753 to the earldom of Shelburne), who in 1751 took the additional name of Petty. His son William spent his childhood "in the remotest parts of the south of Ireland," and, according to his own account, when he entered Christ Church, Oxford, in 1755, he had both "everything to learn and everything to unlearn." He served in Wolfe's regiment during the Seven Years' War, and was raised to the rank of colonel and appointed aide-de-camp to the king (1760). In 1761 he succeeded his father as earl of Shelburne. Though he declined to take office under Bute he tried to induce C. J. Fox to gain the consent of the Commons to the peace of 1763. Fox affirmed that he had been duped. Shelburne joined the Grenville ministry in 1763 as president of the Board of Trade, but resigned office in a few months, and retired for a time to his estate. After Pitt's return to power in 1766 he became secretary of State, but during Pitt's illness his conciliatory policy towards America was completely thwarted by his colleagues and the king, and in 1768 he was dismissed from office. In 1782 he took office under the marquess of Rockingham on condition that the king would recognize the United States. On Lord Rockingham's death he became premier; but the secession of Fox and his supporters led to the famous coalition of Fox with North, which caused his resignation, Feb. 1783, his fall being perhaps hastened by his plans for the reform of the public service. He had also in contemplation a bill to promote free commercial intercourse between England and the United States. When Pitt acceded to office in 1784, Shelburne was created marquess of Lansdowne. Though giving a general support to the policy of Pitt, he from this time ceased to take an active part in public affairs. He died on May 7, 1805. John Henry Petty Fitzmaurice (1765–1809), his son by his first marriage with Lady Sophia Carteret, succeeded as 2nd marquess.

HENRY PETTY FITZMAURICE, 3rd marquess of Lansdowne (1780–1863), son of the 1st marquess by his second marriage, was home secretary under Canning (1827–28); he was lord president of the council under Earl Grey and then under Lord Melbourne (1830–41) and under Lord John Russell (1846–52); and, having declined to become prime minister, sat in the cabinets of Lord Aberdeen and of Lord Palmerston, but without office. In 1857 he refused the offer of a dukedom, and he died on Jan. 31, 1863. Lansdowne married Louisa (1785–1851), daughter of the 2nd earl of Ilchester, and was succeeded by his son Henry, the 4th marquess (1816–66). The latter, who was member of parliament for Calne for 20 years and chairman of the Great Western railway, married for his second wife Emily (1819–95), daughter of the comte de Flahaut de la Billarderie, a lady who became Baroness Nairne in her own right in 1867. By her he had two sons, the 5th marquess and Lord Edmond Fitzmaurice (Baron Fitzmaurice of Leigh).

HENRY CHARLES KEITH PETTY FITZMAURICE, 5th marquess of Lansdowne (1845–1927), was educated at Balliol, Oxford, where he became one of Jowett's favourite pupils. In 1869 he married the daughter of the 1st duke of Abercorn. He joined the Liberal Party, and was a lord of the Treasury (1869–72), under-secretary of war (1872–74), and under-secretary of India (1880). He resigned from the India Office within a few months, because he disapproved of the Irish Compensation for Disturbance bill. From 1883 to 1888 he was governor-general of Canada, where he suppressed the Indian rising under Riel. From 1888 to 1893 he was viceroy of India. He had joined the Liberal Unionist Party when Gladstone proposed Home Rule for Ireland, and on returning to England from India became one of its most influential leaders. He was secretary of State for war from 1895 to 1900, and foreign secretary from 1900 to 1906. Lord Lansdowne's tenure of the Foreign Office covered an extremely important period in the history of British foreign relations, for it covered the conclusion of the Anglo-Japanese alliance (1902), and the beginning of the *entente cordiale* with France. (*See* EUROPE: *History.*) When the duke of Devonshire resigned from Balfour's Government in 1903 Lord Lansdowne became leader of the Unionist Party in the House of Lords, and when the question of the powers of the House of Lords became urgent after 1906 he put forward a reform scheme of his own. In 1915 he joined the Asquith coalition Government without portfolio; at the close of that ministry he retired. In Nov. 1917, he published the famous letter in the *Daily Telegraph,* asking for a precise statement of the Allied peace terms with a view to the early termination of the World War. The letter aroused a storm of protest, though even those who deprecated it were compelled to admire Lansdowne's courage and sincerity. Lansdowne died on June 13, 1927. *See* Lord Newton, *Lord Lansdowne* (1929).

Lord Lansdowne was succeeded as 6th marquess by his son HENRY WILLIAM EDMUND (1872–1936). The 6th marquess commanded the 3rd (reserve) Irish Guards (1914–16), and sat in the House of Commons for West Derbyshire from 1908 to 1918; and was a senator of the Irish Free State from 1922. He was the author of various works, among them being *The First Napoleon* (1925), based on unpublished papers at Bowood.

LANSDOWNE, a hill cantonment in India, in Garhwal district of the United Provinces, about 6,000 ft. above the sea, 19 m. by cart road from the station of Kotdwara on the Oudh and Rohilkhand railway. The cantonment, founded in 1887, extends for more than 3 m. through pine and oak forests, and accommodates three Garhwali battalions.

LANSDOWNE, a borough of Delaware county, Pa., U.S.A., on the Pennsylvania railroad, 5m. S.W. of Philadelphia. It is a residential suburb, with a population in 1940 of 10,837.

LANSFORD, an anthracite-mining borough of Carbon county, Pa., U.S.A., 45 mi. S. of Wilkes-Barre. The population was 9,625 in 1925 (28% foreign-born white) and was 8,710 in 1940 by the federal census. The borough was incorporated in 1876. It is served by the Central of New Jersey and the Lehigh and New England railways.

LANSING, ROBERT (1864–1928), American diplomatist, was born at Watertown, N.Y., on Oct. 17, 1864. He graduated at Amherst in 1886, was admitted to the bar in 1889, and for the next 18 years practised at Watertown. In 1892 he was associate counsel for the United States on the Bering Sea Commission, and later was American counsel before several important arbitral tribunals, including the Alaskan Boundary Tribunal (1903), and the Hague Tribunal for the arbitration of the North Atlantic fisheries (1910). In 1914 he was appointed counsellor of the Department of State. When W. J. Bryan resigned (June 8, 1915), Mr. Lansing was appointed secretary of State. In his attempts to uphold American rights he was called upon to direct notes to all the countries at war. In reply to a note addressed by Britain to neutrals, asking that all belligerent submarines be excluded from neutral waters, he said that the nature of each submarine must govern the decision. He thus drew an important distinction between the "Deutschland," which had peacefully brought a cargo to America, and the U53, which had raided several ships off the New England coast, Oct. 7, 1916. In 1917 he notified President Carranza, of Mexico, that the United States would not adopt his proposed Pan-American plan of stopping the shipment of food and munitions to all the European belligerents. In Nov. 1917 he signed an agreement with Japan (The Lansing-Ishii agreement) which, while recognizing Japan's special interests in China, provided for a continuance of the "open door" policy for commerce.

Lansing was a member of the American commission to negotiate peace at Paris, 1918–19. On Feb. 13, 1920, he resigned as secretary of State and soon after opened a law office in Washington. He was the author of *The Peace Negotiations* (1921); and *The Big Four and Others* (1921). He died at Washington on Oct. 30, 1928.

LANSING, capital city of Michigan, U.S.A., Ingham county, on the Grand river at the mouth of the Cedar, 85 mi. W.N.W. of Detroit. It is on federal highways 16, 27 and 127; has a municipal airport; and is served by the Grand Trunk, the Michigan Central, the New York Central and the Pere Marquette railways, and by motor coach and motor truck lines in every direction. The population was 78,397 in 1930 (89·7% native white) and was 78,753 in 1940 by the federal census. The centre of the city is a small plateau, surrounded on three sides by a bend of the Grand river. Here, in a 10-acre park, stands the state capitol, erected in 1873–8. Near by is the fine state office and library building, completed in 1927 at a cost of $3,000,000. The state industrial school for boys and the state school for the blind occupy spacious grounds within the city limits. At East Lansing, a beautiful residential suburb, is the state college of agriculture and applied science, the oldest agricultural college in the United States, provided for by the state constitution in 1850 and opened in 1857. Water power from the Grand river has been an important factor in the development of Lansing throughout its history, and is still used to some extent. There are about 200 manufacturing establishments, employing 22,000 men and women, of whom 17,000 work in 18 plants, including those of the Reo Motor company, the Olds Motor works and Fisher Body corporation (subsidiaries of the General Motors corporation) and the Motor Wheel corporation. Among other important manufactures are automobile bodies, wheelbarrows and factory trucks, gasoline engines, diesel engines, hoists, pumps, air compressors and screw machine products. The aggregate output in 1940 was estimated at $230,000,000.

The city's assessed valuation of property in 1940 was $102,964,853.

Lansing was settled in 1837, and in 1847, when still isolated and covered with forests, was chosen as the site of the state capital, on the decision of the legislature to move the seat of government from Detroit to a more central spot. A plank road to Detroit was finished in 1852; the city was chartered in 1859; and in 1860 it had a population of 3,074. Between 1863 and 1873 five railroads entered the city, and soon the areas along the river marked on the first plats of the city as designed for "hydraulic manufacturing" were fully occupied. Between 1900 and 1910 the population of the city nearly doubled, and between 1910 and 1920 the increase was almost as great (84%).

LANSING MAN, the term applied by American ethnologists to certain human remains discovered in 1902 during the digging of a cellar near Lansing, Kan., and by some authorities believed to represent a prehistoric type of man. They include a skull and several large adult bones and a child's jaw. They were found beneath 20 ft. of undisturbed silt, in a position indicating intentional burial. The skull is preserved in the U.S. National Museum at Washington. It is similar in shape to those of historic Indians of the region. Its ethnological value as indicating the existence of man on the Missouri in the glacial period is doubtful, it being impossible accurately to determine the age of the deposits.

See *Handbook of American Indians* (Washington, 1907); and A. Hrdlicka, "Skeleton Remains in North America," *Bur. Amer. Ethnol., Bulletin 33* (1907).

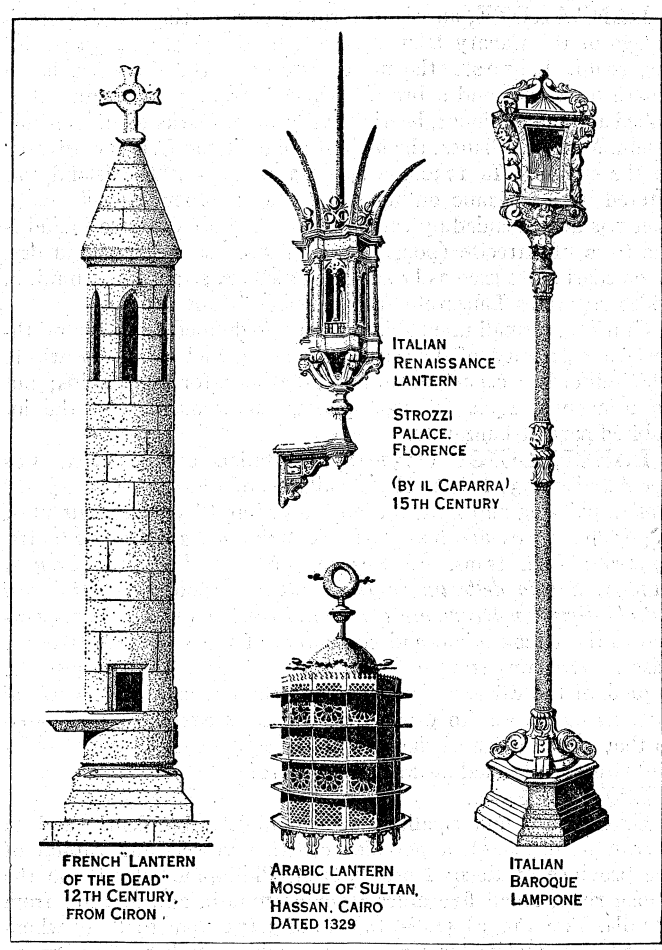
LANTERN, a container with transparent or translucent sides holding and protecting a lamp, most commonly a portable appliance. (An adaptation of the Fr. *lanterne* from Lat. *lanterna* or *laterna,* supposed to be from Gr. λαμπτήρ, a torch or lamp, λάμπειν, to shine, *cf.* "lamp"; the 16th- and 17th-century form "lanthorn" is due to a mistaken derivation from "horn," as a material frequently used in the making of lanterns.) The appliance is of two kinds—the hanging lantern and the hand lantern—both of which are ancient. At Pompeii and Herculaneum have been discovered two cylindrical bronze lanterns, with ornamented pillars, to which chains are attached for carrying or hanging the lantern. Plates of horn surround the bronze lamp within, and the cover at the top can be removed for lighting and for the escape of smoke. The hanging lantern for lighting rooms was composed of ornamental metal work, of which iron and brass were perhaps most frequently used. Silver, and even gold, were, however, sometimes employed, and the artificers in metal of the 17th and 18th centuries produced much exceedingly artistic work of this kind. Oriental lanterns in open-work bronze were often very beautiful. The early lantern had sides of horn, talc, bladder or oiled paper, and the primitive shape remains in the common square stable lantern with straight glass sides, to carry a candle. The hand lantern was usually a much more modest appliance than the hanging lantern, although in great houses it was sometimes richly worked and decorated. As glass grew cheaper it gradually ousted all other materials, but the horn lantern which was already ancient in the 13th century was still being used in the early part of the 19th. By the end of the 18th century lanterns in rooms had been superseded by the candlestick. Even into the 19th century, cheaper lanterns were made with iron sides punched with many small holes which would let out some light and yet to some extent keep the wind away from the lamp. As glass became more common, lanterns were made with flat glass sides and later with round blown glass sides called globes or chimneys.

The collapsible paper lanterns of the orient, usually known as Chinese lanterns, are globular or cylindrical in shape, and the paper is pleated and when not in use folds flat. For illuminative and decorative purposes they are coloured with patterns of flowers, etc. The lanterns carried by the ordinary foot passenger are made of oiled paper. In China the "Feast of Lanterns" takes place early in the New Year and lasts for four days. In Japan the festival of Bon is sometimes known as the "feast of lanterns." It is then that the spirits of the dead ancestors return to the household altar. The festival takes place in July.

Ships' lanterns are used as masthead or other signal lights. On Trajan's column is a representation of a heavy poop lantern on a ship. The ships' lanterns of the 16th and 17th centuries were highly ornamental, especially when placed on the poop. At the Armeria Real in Madrid is a collection of these 16th century ships' lanterns. The protected cages which contain the lights used in lighthouses are also known as "lanterns" (*see* LIGHTHOUSES).

In architecture a lantern is primarily a framework of timber, with windows all round, to admit ample light, placed on the top of a roof. In a broader sense, it is applied to those portions of buildings which are largely perforated with windows, and more

especially to the upper part of the towers of cathedrals and churches, as in the octagon of Ely cathedral, or the tower of Boston church, Lincolnshire. The term is also applied to the entire church, as in the case of Bath Abbey church, which was called the "lantern of England," from the number of its windows, and St. John's Priory at Kilkenny, the "lantern of Ireland," on account of the window on the south side of the choir which was



LANTERN OF THE DEAD FROM VIOLLET-LE-DUC, "DICTIONNAIRE RAISONNE DE L'ARCHITECTURE FRANCAISE"

FIG. 1.—(LEFT) LANTERN IN ARCHITECTURE; (RIGHT) LANTERNS USED FOR ILLUMINATION AND DECORATION

54 ft. long. In the Renaissance style the lantern was looked upon as a decorative feature surmounting the dome, as in St. Peter's, Rome, the Invalides, Paris, and St. Paul's, London.

As a source of light in lanterns, the lamps common at the time were used. The earliest lamps consisted of rags dipping into dishes of animal or vegetable oil. Later came candles, then kerosene lamps. Today many lamps are electric bulbs supplied by batteries carried in the base of the lanterns. (*See* LAMP.) The modern oil lantern used particularly on farms and on railroads is a kerosene lamp surrounded by a glass chimney and all protected by an outer wire frame. A series of tubes, baffles and vents permit the waste gases to escape without permitting wind to reach the flame. These lanterns are slowly being replaced by electric lanterns.

A number of specialized lanterns have been developed for particular purposes. The Davy safety lamp could be used in mines in which there was a dangerous amount of "fire damp." (*See* DAVY, SIR HUMPHRY.) Where greater illumination is desired than can be supplied by oil lamps, and where electric current is not available, as in some rural districts, high test gasoline is used to heat and light a Welsbach mantle. (*See* LIGHTING AND ARTIFICIAL ILLUMINATION.)

In order to have a lantern project its light in a particular direction, the sides of the lantern were made of metal into which was set a converging lens with the light source at approximately the focus of the lens. These were called "bull's eye" lanterns and, if equipped with a shutter which could close off the lens opening, "dark" lanterns. From the original "bull's eye" lantern have developed the "bicycle lamp," the automobile headlight and the searchlight in order of increasing size. Other developments are the portable and convenient electric battery flash light and the projection lantern. In each of these there is a bright concentrated source of light. Most powerful of the available sources is the direct current electric arc. Today the concentrated filament high power incandescent electric lamp, because of its greater simplicity where its lower intensity is not objectionable, is steadily becoming more useful. Where electric current is not available and more light is needed than can be supplied by batteries, two sources which are becoming obsolete may be mentioned. In the "calcium" light, or lime light (Drummond light), an oxygen-gas flame directed against a cylinder of quick lime heats the lime to a dazzling brightness. (*See* STAGE DESIGN.) The acetylene lamp burns acetylene gas in a double jet burner. This gas may be supplied from a tank of compressed gas or produced in the lamp by dripping water onto calcium carbide. (*See* ACETYLENE.) The light from any of these sources can be projected into a slightly divergent beam by either a mirror or a lens. If the source is placed at the focus of a parabolic reflector, the light after reflection will be in a roughly parallel beam. (*See* OPTICS.) Since the source is never a true point, the beam will be somewhat divergent. Similarly if the source is at a focus of a converging lens, the emergent beam will be nearly parallel. The use of both a mirror and a lens can increase the intensity of the beam. For large lamps, a lens would not be practicable and only the mirror can be used.

Projection Lantern.—The "projection lantern," modern form of the old "magic lantern," has become an instrument of great importance in teaching. When equipped for projection of moving pictures, the lantern known then as a "motion picture projector" supplies entertainment in thousands of motion picture theatres.

The conventional projection lantern is arranged to project images of transparent slides onto a screen of such size that they can be seen by as many people as desired. In the United States, standard lantern slides are 4 in. horizontal and 3¼ in. vertical, though with the increasing importance of the 35 mm. camera, lanterns for slides 2 in. square are becoming more common.

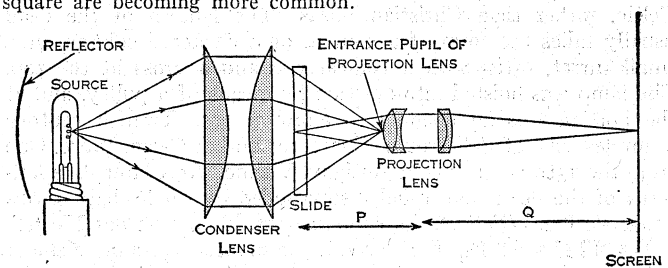


FIG. 2.—OPTICAL SYSTEM OF A PROJECTION LANTERN

The condenser lenses are as great in diameter as the diagonal of the slide. They need to be of a short focal length so that they can be placed near the light source and hence collect as much light as possible. The condenser does not need to be of the quality of the projection lens. In order that the whole field be properly illuminated, a real image of the source should fall on the entrance pupil of the projection lens and should cover the entire pupil. The location of the entrance pupil depends on the focal length of the projection lens and on the image distance. There is some adjustment of the position of the source with respect to the condenser lens in most projection lanterns. *However, if a projection lens of quite different focal length from that supplied by the manufacturer is introduced, it may well be necessary to change the condenser lens in order to get proper illumination.*

The projection lens must be corrected for chromatic aberration and spherical aberrations including flatness of field. It must be of rather large aperture in order to form a sufficiently bright image. Each manufacturer has his own design of lens. The one shown in the figure is a four element modification of the old Petzval portrait lens.

If P and Q are object and image distance respectively and I is the height of the desired image in feet, then the simple lens formulae gives for a 3¼ x 4 in. slide, $P=0.27\ Q/I$, as necessary to get the desired size of image, and $f=PQ/(P+Q)$ as the necessary focal length for sharpness of image at the given distance.

The better lanterns used for projection onto a large screen must have a quite intense source (750-1500 watts). Such lanterns often have a heat absorbing cell in the optical path to the left of the slide.

This cell consists of a glass box containing water or a heat resisting glass plate of a type of glass which absorbs the infra-red waves without reducing the visible light appreciably.

Opaque objects such as a printed picture are more difficult to project satisfactorily. They must be illuminated as highly as possible without overheating. The projection lens must be larger in diameter to pass enough light. With increased diameter, the focal length and hence the optical system of the lantern must be increased in length in order to keep down aberrations. Even with the best lanterns, the projection of images of opaque objects is much inferior in brightness and sharpness to that of images from transparent slides. (N. F. B.)

LANTERN FLY, the name given to insects belonging to the homopterous division of the Hemiptera, and referable to the genus *Fulgora* and allied forms. They are mostly of large size, with a superficial resemblance to Lepidoptera due to their brilliant and varied coloration. Characteristic of the group is the presence on the front of the head of a hollow process, simulating a snout, which is sometimes inflated and as large as the rest of the insect, sometimes elongated, narrow and apically upturned. It was believed that this process, the so-called "lantern," was luminous at night, but subsequent observations have failed to establish this contention which is now generally rejected. In *Fulgora laternaria,* the lantern has been modified to produce a resemblance to the head of a miniature crocodile or reptilelike monster. The lantern flies are the larger and more conspicuous members of the family Fulgoridae. Most of the 7,000 known species are small and inconspicuous. A few are medium sized insects with broad wings, whitish or greenish in colour, and are often mistaken for medium sized moths. Since the insects do not produce light, they should be known as plant hoppers. The most destructive pest in this group is the sugar cane plant hopper of the Hawaiian Islands which was causing an estimated damage of $3,000,000 annually to the sugar cane crop in Hawaii. Fortunately, the entomologists of Hawaii were able to discover parasites and predators of this pest in Australia so that by 1917 the damage by this insect had been practically eliminated. (Z. P. M.)

LANTERNS OF THE DEAD, small stone structures, with windows in the upper part, in which were placed lanterns to mark, at night, the position of a cemetery. (*See* illustration under LANTERN.) Their use, which seems limited to western and central France, is probably due to a traditional survival of primitive Celtic, rather than Christian, ideas. The lantern of the dead usually takes the form of a column or a clustered column, or a small turret, often with a conical cap and a cross at the top. The lamp was hoisted into position by means of a pulley, and at the bottom was an opening to allow access. Twelfth century examples exist at Cellefrouin, Charente; and at Ciron, Indre. One from the 13th century is at Antigny, Vienne. At a later date lanterns of the dead were usually superseded by small chapels. *See* Viollet-le-Duc, *Dictionnaire raisonné,* art. "Lanterne des Morts."

LANTHANUM, the second commonest metallic element belonging to the rare-earth group, was discovered in 1839 by Carl Mosander. (Symbol La, atomic number 57, atomic weight 138.9.) It occurs with other members of the group in monazite, cerite, allanite, etc. It is best purified by the fractional crystallization of the double ammonium nitrate. The oxide, La_2O_3, is white and the strongest base of the group. It will slake with water to give the hydroxide and is violently attacked by acids, giving colourless salts. Solutions of lanthanum show no absorption spectrum but give a brilliant spark spectrum. The metal is prepared by the electrolysis of its fused anhydrous chloride. It is ductile, melts at 810° C, oxidizes in air and is attacked slowly by cold water and rapidly by hot water. (*See* RARE EARTHS.)

LANUVIUM, ancient city of Latium (mod. *Civita Lavinia*), some 19 mi. southeast of Rome, a little southwest of the Via Appia, on an isolated southern projection of the Alban hills, and commanding an extensive view over the low country between it and the sea. It remained independent until conquered by Rome in 338 B.C., and even in imperial times its chief magistrate and municipal council kept the titles of *dictator* and *senatus* respectively. It was especially famous for its rich and much venerated temple of Juno Sospes, the possessions of which extended as far as the seacoast. Remains of theatre and city walls exist in the modern village, and above it is an area surrounded by a portico, upon the north side of which is a rectangular building, probably connected with the temple of Juno. Here archaic decorative terra cottas, and marble sculptures of a later period (A.D. 2nd cent.) belonging to an equestrian group (*see* A. M. Woodward in *Papers of the British School at Rome,* vii. 63 *sqq.*) were discovered in excavations carried on by Lord Savile. The objects are partly in the British museum, partly at Leeds.

LANZAROTE, an island forming part of the Spanish archipelago of the Canary Islands (*q.v.*). Pop. (1940) 27,476; area, 323 sq.mi. Lanzarote, the most easterly of the Canaries, has a length of 31 mi. and a breadth varying from 5 to 10 mi. It is naked and mountainous, bearing everywhere marks of its volcanic origin. Montaña Blanca, the highest point (2,000 ft.), is cultivated to the summit. In 1730 the appearance of half the island was altered by a volcanic outburst. In 1825 another volcanic eruption was accompanied by earthquakes. A short distance inland is the town of Arrecife (pop. 7,692). The climate is hot and dry. Dromedaries are used as beasts of burden. A strait about 6 mi. in width separates Lanzarote from Fuerteventura.

Graciosa, a small uninhabited island, is divided from the northeastern extremity of Lanzarote by a channel 1 mi. in width, which affords a capacious and safe harbour for large ships; but basaltic cliffs, 1,500 ft. high, prevent intercourse with the inhabited part of Lanzarote.

LANZI, LUIGI (1732–1810), Italian archaeologist, was appointed (1773) keeper of the galleries of Florence, and studied Italian painting and Etruscan antiquities and language. His most important works are his *Storia Pittorica della Italia* (2 parts, 1792–96; Eng. trans. by Roscoe); *Saggio di lingua Etrusca* (1789); *Saggio delle lingue Ital. antiche* (1806); and *Dei vasi antichi dipinti volgarmente chiamati Etruschi* (1806). Lanzi perceived the Greek origin and characters of the so-called Etruscan vases. What was true of the antiquities would be true also, he argued, of the Etruscan language, and the object of the *Saggio di lingua Etrusca* was to prove that this language must be related to that of the neighbouring peoples—Romans, Umbrians, Oscans and Greeks. He died on March 30, 1810.

LAO: *see* SHAN.

LAOAG, a municipality (with administrative centre and 33 *barrios* or districts), a port for coasting vessels and capital of the province of Ilocos Norte, Luzon, Philippine Islands, on the Laoag river, about five miles from its mouth, and 290 mi. from Manila. Pop. (1939) 41,842 (a gain of 3,373 from 1918) of whom 19,168 were males; ten persons were white. It lies on an extensive coast plain behind which is a picturesque range of hills, and is noted for its fine climate. The surrounding country produces palay (rice), maize (corn), sugar and tobacco. Cotton is also grown and is woven into fabrics by the native women and sold to the mountaineers who come to the town to trade. The vernacular is Ilocano. Of the inhabitants aged 6 to 19, inclusive, 51.3% were reported in 1939 as attending school, while 58% of the total population 10 years old and over was reported as literate.

LAOCOON (lā-ŏk'ō-ōn), in Greek legend a brother of Anchises, who had been a priest of Apollo, but having profaned the temple of the god he and his two sons, or one of them (*Iliou Persis* in Proclus' *Chrestomatheia*) were destroyed by serpents while preparing to sacrifice a bull at the altar of Poseidon, in whose service Laocoon was then acting as priest. An additional motive for his punishment consisted in his having warned the Trojans against the wooden horse left by the Greeks. The most famous expressions in literature and art respectively of this legend are in Virgil (*Aeneid,* ii, 109 et seq.) and in the Laocoon group of the Vatican. The group of the Vatican is of interest, not only for its great merits, but from the circumstance that Lessing's *Laocoon,* a landmark in art criticism, is written around it. Its date being now fixed (*see* AGESANDER) at 40–20 B.C., there can be no question of copying Virgil. The group represents the extreme of a pathetic tendency in sculpture (*see* GREEK ART).

LAODICEA, the name of at least eight cities, founded or renovated in the later Hellenic period. Most of them were founded by the Seleucid kings of Syria. Seleucus, founder of the dynasty, is said by Appian to have named five cities after his mother

Laodice. Thus in the immense realm of the Seleucidae from the Aegean Sea to the borders of India we find cities called Laodicea, as also Seleucia (*q.v.*). So long as Greek civilization held its ground, these were the commercial and social centres. The chief are Laodicea *ad Lycum* (*see* below); *Combusta* on the borders of Phrygia, Lycaonia and Pisidia; a third in Pontus; a fourth, *ad mare*, on the coast of Syria; a fifth, *ad Libanum*, beside the Lebanon mountains; and three others in the far east—Media, Persia and the lower Tigris valley. In the latter countries Greek civilization was short-lived, and the last three cities disappeared; the other five continued great throughout the Greek and Roman period, and the second, third and fourth retain to the present day the ancient name under the pronunciation Ladik, Ladikiyeh or Latakia (*q.v.*).

LAODICEA AD LYCUM (mod. *Denizli, q.v.*) was founded probably by Antiochus II. Theos. (261–246 B.C.) and named after his wife Laodice. Its site is close to the station of Gonjeli on the Anatolian railway. Here was one of the oldest homes of Christianity and the seat of one of the seven churches of the Apocalypse. Pliny states (v. 29) that the town was called in older times Diospolis and Rhoas; but at an early period Colossae, a few miles to the east, and Hierapolis, 6 m. to the north, were the great cities of the neighbourhood, and Laodicea was of no importance till the Seleucid foundation (Strabo, p. 578). A favourable site was found on some low hills of alluvial formation, about 2 m. S. of the river Lycus (Churuk Su) and 9 m. E. of the confluence of the Lycus and Maeander. The great trade route from the Euphrates and the interior passed to it through Apamea. There it forked, one branch going down the Maeander valley to Magnesia and thence north to Ephesus, a distance of about 90 m., and the other branch crossing the mountains by an easy pass to Philadelphia and the Hermus valley, Sardis, Thyatira and at last Pergamum. St. Paul (Col. iv. 15) alludes to the situation of Laodicea beside Colossae and Hierapolis; and the order in which the last five churches of the Apocalypse are enumerated (Rev. i. 11) is explained by their position on the road just described. Placed in this situation, in the centre of a very fertile district, Laodicea became a rich city. It was famous for its money transactions (Cic. *Ad. Fam.* ii. 17, iii. 5), and for the beautiful soft wool grown by the sheep of the country (Strabo 578). Both points are referred to in the message to the church (Rev. iii. 17, 18).

Little is known of the history of the town. It suffered greatly from a siege in the Mithradatic war, but soon recovered its prosperity under the Roman empire. The Zeus of Laodicea, with the curious epithet Aseis, is a frequent symbol on the city coins. He is represented standing, holding in the extended right hand an eagle, in the left a spear, the *hasta pura*. Not far from the city was the temple of Men Karou, with a great medical school; while Laodicea itself produced some famous Sceptic philosophers, and gave origin to the royal family of Polemon and Zenon. The city fell finally into decay in the frontier wars with the Turkish invaders. Its ruins are of wide extent. The district is subject to severe earthquakes (Strabo 580; Tac. *Ann.* xiv. 27).

LAODICEA, SYNOD OF, held at Laodicea in Phrygia, at a date in the second half of the 4th century, adopted a number of canons, chiefly disciplinary, of which the most significant are those affecting the clergy, who appear as a privileged class with carefully graded orders within itself. The canons were confirmed by the Council of Chalcedon in 451.

See article "Councils and Synods, Christian," in Hastings' *Encyclopaedia of Religion and Ethics;* also Hefele, *History of Councils*, Eng. trans., vol. ii.

LAOMEDON, in Greek legend, son of Ilus, king of Troy, and father of Podarces (Priam). Apollo and Poseidon served him for hire; when Laomedon refused to pay the reward agreed upon, Apollo visited the land with a pestilence, and Poseidon sent a sea-monster which could only be appeased by the sacrifice of one of the king's daughters. The lot fell upon Hesione; Heracles, on his way back from the land of the Amazons, offered to slay the monster and release her on condition that he should receive the divine horses of Tros. Again Laomedon broke his word; whereupon Heracles returned with a band of warriors, took Troy, and slew Laomedon and all his sons except Priam. Laomedon was buried near the Scaean gate, and it was said that so long as his grave remained undisturbed, so long would the walls of Troy remain impregnable.

See Homer, *Iliad*, v. 265, 640, vii. 452, xxi. 443; Apollodorus ii., 103 ff. Diod. Sic. iv. 32, 42, 49; Hyginus, *Fab.* 89; Ovid, *Metam.* xi. 194.

LAON, a town of northern France, capital of the department of Aisne, 87 mi. N.E. of Paris on the Northern railway. Pop. (1936) 16,907. The hilly district of Laon (Laudunum) has always had some strategic importance. Laon was fortified by the Romans, and successively checked the invasions of the Franks, Burgundians, Vandals, Alani and Huns. St. Remigius, the archbishop of Reims who baptized Clovis, was born in the Laonnais, and at the end of the 5th century, he instituted the bishopric of the town. Thenceforward Laon was one of the principal towns of the kingdom of the Franks, and the possession of it was often disputed. Charles the Bald had enriched its church with the gift of very numerous domains. After the fall of the Carolingians Laon took the part of Charles of Lorraine, their heir, and Hugh Capet only succeeded in making himself master of the town by the connivance of the bishop, who, in return for this service, was made second ecclesiastical peer of the kingdom. In the early 12th century the citizens profited by a temporary absence of Bishop Gaudry to secure from his representatives a communal charter, but he, on his return, purchased from the king of France the revocation of this document; the consequence was a revolt, in which the episcopal palace was burnt and the bishop and several of his partisans were put to death. The fire spread to the cathedral, and reduced it to ashes.

After 1239 the liberties of Laon were no more contested till 1331, when the commune was abolished. During the Hundred Years' War it was taken by the Burgundians, who gave it up to the English, and it was retaken by the French after the consecration of Charles VII. Under the League Laon took the part of the Leaguers, and was taken by Henry IV. During the campaign of 1814 Blücher successfully defended it against Napoleon. In 1870 an engineer blew up the powder magazine of the citadel at the moment when the German troops were entering the town. Many lives were lost; and the cathedral and the old episcopal palace were damaged. At the Revolution Laon permanently lost its rank as a bishopric. Laon could not resist Von Kluck's attack in Aug. 1914, and was held by the Germans until Gen. Mangin took it in Oct. 1918, when he succeeded in breaking the German salient south of the Aisne.

The town is situated on an isolated ridge some 330 ft. above the surrounding plain and the little river of Ardon. The suburbs of St. Marcel and Vaux extend along the foot of the ridge to the north. From the railway station, situated in the plain to the north, a straight staircase of several hundred steps leads to the gate of the town, and all the roads connecting Laon with the surrounding district are cut in zigzags on the steep slopes, crowned by promenades on the site of the old ramparts. The 13th century gates of Ardon, Chenizelles and Soissons, the latter in a state of ruin, have been preserved. At the eastern extremity of the ridge rises the citadel; at its apex is the parade-ground of St. Martin, and at the southern end stands the ancient abbey of St. Vincent. The cathedral of Laon, which was very little damaged during World War I, is very important artistically. It took the place of the old cathedral, burned in 1111 at the beginning of the communal struggles. The building is cruciform, and the choir terminates in a straight wall instead of in an apse. Of the six towers flanking the façades, only four are complete to the height of the base of the spires, two at the west front with huge figures of oxen beneath the arcades of their upper portion, and one at each end of the transept. A square central tower forms a lantern within the church. The west front, with three porches, the centre one surmounted by a fine rose window, ranks next to that of Notre-Dame at Paris in purity. The cathedral has stained glass of the 13th century and a choir grille of the 18th century. The chapter-house and the cloister are of the 13th century. The old episcopal palace is now used as a court-house. The front, flanked by turrets, is pierced by great pointed windows. There is

also a Gothic cloister and an old chapel of two stories, of a date anterior to the cathedral. The church of St. Martin dates from the middle of the 12th century. The old abbey buildings of the same foundation are now used as the hospital. The museum of Laon has collections of sculpture and painting. In its garden there is a chapel of the Templars belonging to the 12th century. The church of the suburb of Vaux near the railway station dates from the 11th and 12th centuries. Laon is the seat of a prefect and a court of assizes, and possesses a tribunal of first instance. Sugar-making and metal-founding are carried on, but neither industry nor trade, which is in grain and wine, is of much importance.

LAOS, a protectorate covering the northwestern third of French Indo-China, separated from Thailand and Burma by the Mekong river. It is very mountainous, with deep river valleys, the rivers being tributaries of the Mekong. Southern Laos, between that river and the summit of the Annamite chain of mountains, has a fairly regular westward slope, but there is little regularity in the tangled mass of mountains to the north. With a population (1936) of more than 1,012,000 in a pre-1941 area of 89,343 sq.mi., its population density was low for monsoon Asia.

Two-thirds of the population was Laotian, hence related to the Thai (Siamese) and the Shans of Burma. The remaining population was mostly uncivilized tribes, from the Moi, Indonesian aborigines whose name means "savage," to the Muong, Thai, Mans, Meos and Lolos—all probably being immigrants of past ages from south China. The primitive Mois cultivate rice by the hill-field system, burning off hillsides to secure tillable land, and seeking new fields when soil exhaustion makes the old ones undesirable. There are a few Chinese, who carry on most of the small amount of trade, but very few Europeans.

About A.D. 713 the kingdom of Nan-Tchao was founded by the Laotians, and in 877 the king married a daughter of the Chinese emperor. The Khmers (Cambodians) and Thai ruled most of Laos from the 11th to the 13th centuries, but Sam Sen Tai, ruler at Luang-Prabang from 1356 to 1406, appears to have restored Laotian power and enjoyed a secure reign. He built the important pagoda, Wat Manorom. The decadence of the Khmer empire permitted the Laotians to push back the Cambodians, but for several centuries thereafter they fought intermittent wars with the Thai and Burmese. By the end of the 18th century a large part of Laos was ruled by Siam, while Annam had established sovereignty over the southeast part of the country. After 1830 part of Luang-Prabang also paid tribute to Annam.

The French consul at Luang-Prabang, A. J. M. Pavie, was largely responsible for laying the groundwork for French conquest in the years just before 1893. In that year three French military expeditions occupied the more important towns. By that time Pavie was French minister to Siam, and his ultimatum gave the Siamese 48 hours in which to agree to the cession of Laotian territory and the payment of a large indemnity. The Siamese signed the treaty embodying the French demands on Oct. 3, 1893. Luang-Prabang west of the Mekong remained Siamese, but in 1904 it also was taken by the French. In 1940–41, when Indo-China was being invaded by the Japanese, Thailand fought a border war, largely on Laotian territory, and the treaty of March 11, 1941, secured the return of that part of Luang-Prabang lying west of the Mekong. The geography of Laos, with high mountains impeding intercommunication, is probably the reason why the Laotians proved much less able than the Thai or the Annamese to develop and maintain a unified state of their own.

Measuring 600 mi. from north to south, and with different mountain slopes facing all directions, while elevations vary from 250 ft. to well over a mile, Laos has a variety of climates. Chieng Khuang, three-fourths of a mile high, has freezing temperatures fairly often, while Vientiane, the capital, is on the Mekong and temperatures above 100° F. are as common as temperatures below 50°. The southwest monsoon, May to October, brings from 50 to 80 in. of rain to most parts of Laos.

There are no railways, and the Mekong has rapids that render some sections unsuitable for navigation. In 1943 the Japanese linked several sections of road previously built along the Mekong by the French, and completed the highway from Saigon to Luang-Prabang, according to radio reports. At least two motor roads connect this highway with the main Hanoi-Saigon road, skirting the coast of Annam. Laos is the least developed section of Indo-China, and most of its inhabitants grow their own food, spin and weave their own textiles, and are untouched by modern civilization. Forest and mineral wealth are largely unexploited.

See Teston and Percheron: *L'Indochine Moderne* (1931); M. J. F. Garnier, *Voyage d'exploration en Indo-Chine* (1873). (J. R. A.)

LÂO-TSE (properly LAO-TZŬ), the designation of Li Êrh, a pre-Confucian philosopher and metaphysician of China. The *Tâo–tê–king* or Classic of Reason and Virtue, commonly ascribed to him was obviously not from his brush although it embodies his precepts and speculations. Lao-tze means the "Old Philosopher." According to the *Shăn Hsien Chüan* the mother of Lao-tze, after a supernatural conception, carried him in her womb sixty-two years (or seventy-two, or eighty-one), so that, when he was born at last, his hair was white as with age.

All that Isŭ-ma Ch'ien tells us about Lao-tze goes into small compass. His surname was Lî, and his name Êrh. He was a native of the state of Ch'û, and was born in a hamlet not far from the present prefectural city of Kwei-te in Ho-nan province. He was one of the recorders or historiographers at the court of Chow, his special department being the charge of the whole or a portion of the royal library. He must thus have been able to make himself acquainted with the history of his country. The year of his birth is often said, though on what Chinese authority does not appear, to have taken place in the third year of King Ping, corresponding to 604 B.C. That date cannot be far from the truth. That he was contemporary with Confucius is established by the concurrent testimony of the *Lî Kî* and the *Kiâ Yü* on the Confucian side, and of Chwang-tsze and Sze-ma Ch'ien on the Tâoist. The two men whose influence has been so great on all the subsequent generations of the Chinese people—Kung-tsze (Confucius) and Lâo-tse—had perhaps one interview, in 517 B.C., when the former was in his thirty-fifth year. Lâo was in a mocking mood; Kung appears to the greater advantage. If it be true that Confucius, when he was fifty-one years old, visited Lâo-tse as Chwang-tsze says (in the *Tien Yun,* the fourteenth of his treatises), to ask about the *Tâo,* they must have had more than one interview. There may have been several meetings between the two in 517 B.C., but we have no evidence that they were together in the same place after that time: Ch'ien adds:—"Lâo-tse cultivated the *Tâo* and virtue, his chief aim in his studies being how to keep himself concealed and unknown. He resided at (the capital of) Chow; but after a long time, seeing the decay of the dynasty, he left it, and went away to the Gate (leading from the royal domain into the regions beyond—at the entrance of the pass of Han-kû, in the north-west of Ho-nan). Yin Hsî, the warden of the Gate, said to him, 'You are about to withdraw yourself out of sight; I pray you to compose for me a book (before you go).' On this Lâo-tse made a writing, setting forth his views on the *tâo* and virtue, in two sections, containing more than 5,000 characters. He then went away, and it is not known where he died." The historian then mentions the names of two other men whom some regarded as the true Lâo-tse. One of them was a Lâo Lâi, a contemporary of Confucius, who wrote fifteen treatises (or sections) on the practices of the school of *Tâo.* Subjoined to the notice of him is the remark that Lâo-tse was more than one hundred and sixty years old, or, as some say, more than two hundred, because by the cultivation of the *Tâo* he nourished his longevity. The other was "a grand historiographer" of Chow, called Tan, one hundred and twenty-nine (?one hundred and nineteen) years after the death of Confucius. The introduction of these disjointed notices detracts from the verisimilitude of the whole narrative in which they occur.

Finally, Ch'ien states that "Lâo-tse was a superior man, who liked to keep in obscurity," traces the line of his posterity down to the 2nd century B.C., and concludes with this important statement:—"Those who attach themselves to the doctrine of Lâo-tse condemn that of the literati, and the literati on their part condemn Lâo-tse, thus verifying the saying, 'Parties whose principles are different cannot take counsel together.' Lî Êrh taught that

transformation follows, as a matter of course, though doing nothing (to bring it about), and rectification ensues in the same way from being pure and still."

The Tâo-Tê-King.—The book for so long ascribed to Lâo-tse is small in size, slightly over 5,000 characters. The condensed style, with the mystic tendencies and poetical temperament of its inspiring genius, make its meaning extraordinarily obscure. Divided at first into two parts, it has subsequently and conveniently been subdivided into 82 chapters. The chief difficulty is to determine what we are to understand by the *Tâo,* for *Tê* is merely its outcome, especially in man, and is rightly translated by "virtue." Julien translated *Tâo* by "la voie." Chalmers leaves it untranslated. "No English word," he says, "is its exact equivalent. Three terms suggest themselves—the way, reason and the word; but they are all liable to objection. Were we guided by etymology, 'the way' would come nearest the original, and in one or two passages the idea of a way seems to be in the term; but this is too materialistic to serve the purpose of a translation. 'Reason,' again, seems to be more like a quality or attribute of some conscious being than *Tâo* is. It might even be translated by 'the Word' in the sense of Λογος."

Analysis of Tâo.—The character 道 (*Tâo*) was, primarily, the symbol of a way, road or path; and then, figuratively, it was used, as we also use *way,* in the senses of means and method—the *course* that we pursue in passing from one thing or concept to another as its end or result. It is the name of a quality. Sir Robert Douglas has well said (*Confucianism and Tâoism,* p. 189): "If we were compelled to adopt a single word to represent the *Tâo* of Lâo-tse, we should prefer the sense in which it is used by Confucius, 'the way,' that is, μέθοδος."

What, then, was the quality which Lâo-tse had in view, and which he thought of as the *Tâo*? It was the simplicity of spontaneity, action (which might be called non-action) without motive, free from all selfish purpose, resting in nothing but its own accomplishment. This is found in the phenomena of the material world. "All things spring up without a word spoken, and grow without a claim for their production. They go through their processes without any display of pride in them; and the results are realized without any assumption of ownership. It is owing to the absence of such assumption that the results and their processes do not disappear" (chap. ii.). It only needs the same quality in the arrangements and measures of government to make society beautiful and happy. "A government conducted by sages would free the hearts of the people from inordinate desires, fill their bellies, keep their ambitions feeble and strengthen their bones. They would constantly keep the people without knowledge and free from desires; and, where there were those who had knowledge, they would have them so that they would not dare to put it in practice" (chap. iii.). A corresponding course observed by individual man in his government of himself becoming again "as a little child" (chaps. x. and xxviii.) will have corresponding results. "His constant virtue will be complete, and he will return to the primitive simplicity" (chap. xxviii.).

Such is the subject matter of the *Tâo-Tê-King*—the operation of this method or *Tâo,* "without striving or crying," in nature, in society and in the individual. Much that is very beautiful and practical is inculcated in connection with its working in the individual character. The writer seems to feel that he cannot say enough on the virtue of humility (chap. viii., etc.). There were three things which he prized and held fast—gentle compassion, economy and the not presuming to take precedence in the world (chap. lxvii.). His teaching rises to its highest point in chap. lxiii.:—"It is the way of *Tâo* not to act from any personal motive, to conduct affairs without feeling the trouble of them, to taste without being aware of the flavour, to account the great as small and the small as great, to recompense injury with kindness." This last and noblest characteristic of the *Tâo,* the requiting "good for evil," is not touched on again in the treatise; but we know that it excited general attention at the time, and was the subject of conversation between Confucius and his disciples (*Confucian Analects,* xiv. 36).

Lâo-tse was for the most part a dreamer and his conception of the *Tâo* is mystical, comprising both "way" and "waygoer." He had a tremendous power of thought and was far ahead of his age. His metaphysics did not appeal to the omnipresent materialism and he was not practical enough to see means to combat it. *Tâo* is an eternal abstraction, beyond the reach of mere word or definition, but he who is possessed of it knows its force and its beauty. It is the supreme paradox, it is all and nothing; containing all it gives all, possesses all for ever and is not wasted or used. All things begin in *Tâo,* exist only in *Tâo* and end therein.

Tâo and Deity.—It is quite clear that there must have been some vague connection between *Tâo* and the sublime Intelligence, for while Lâo-tse "cannot tell whose son it is" yet he admits that "it might appear to have existed before God." May not God Himself have appeared to the mystic as a crystallized production of the inner essence of *Tâo*? Lâo-tse implicitly accepts the fact of a Divine Ruler but He too lives in, through and by *Tâo,* even as He originated therein.

Modern Tâoism.—The religion of Tâoism did not take shape until five centuries after the death of Lâo-tse who now occupies the second place in its trinity of "the three Pure or Holy Ones." There is hardly a word in his treatise that savours either of superstition or religion. In the works of Chwang-tsze, his earliest follower of note, we find abundance of grotesque superstitions; but his beliefs (if indeed we can say that he had beliefs) had not become embodied in any religious institutions. When we come to the Ch'in dynasty (221–206 B.C.), we meet with a Tâoism in the shape of a search for the fairy islands of the eastern sea, where the herb of immortality might be gathered. In the 1st century A.D. a magician, called Chang Tâo-ling, comes before us as the chief professor and controller of this Tâoism, preparing in retirement "the pill" which renewed his youth, supreme over all spirits, and destroying millions of demons by a stroke of his pencil. He left his books, talismans and charms, with his sword and seal, to his descendants, and one of them, professing to be animated by his soul, dwells on the Lung-hû mountain in Kiang-si, the acknowledged head or pope of Tâoism. But even then the system was not yet a religion, with temples or monasteries, liturgies and forms of public worship. It borrowed all these from Buddhism, which first obtained public recognition in China between A.D. 65 and 70, though at least a couple of centuries passed before it could be said to have free course in the country.

Even still, with the form of a religion, Tâoism is in reality a conglomeration of base and dangerous superstitions. Alchemy, geomancy and spiritualism have dwelt and dwell under its shadow. Each of its "three Holy Ones" has the title of *Tien Tsun,* "the Heavenly and Honoured," taken from Buddhism, and also of *Shang Ti* or God, taken from the old religion of the country. The most popular deity, however, is not one of them, but has the title of *Yü Wang Shang Tî,* "God, the Perfect King." But it would take long to tell of all its "celestial gods," "great gods," "divine rulers" and others. Modern Tâoism is a system of the wildest polytheism. The science and religion of the West meet from it a most determined opposition. The "Venerable Philosopher" himself would not have welcomed them; but he ought not to bear the obloquy of being the founder of the Tâoist religion. (*See* CHINA.)

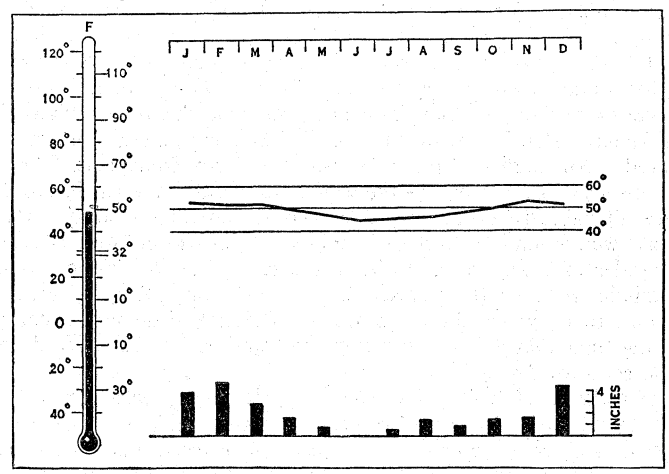
In recent years a superficial study of the writings of the early Tâo philosophers has brought into being a cult of what may be called Tâoist metaphysics and psychology, which is just as remote from the principles of Lâo-tse's original teaching as are the debased practices of the modern Tâoist temple. The fact that Lâo-tse and his followers did actually anticipate modern applied psychology in several of its more solid aspects, has led to much unscientific speculation as to the esoteric interpretation of the more obscure passages in Tâoist writings, and to very incautious and dogmatic pronouncements on the early mystics and their teachings. For this reason the welter of books on Lâo-tse and his teaching which appeared during the first quarter of the 20th century should be carefully sorted before the assertions contained in them are taken seriously. In spite of the existence of an excellent Manchu translation of the *Tâo-Tê-King,* there still remain several passages in the text of which the original meaning is obscure. The Manchu, easier of comprehension than the highly

elliptical style of the literary Chinese of Lâo-tse's time, does at best, in these passages, give a clue in the form of a paraphrase which may or may not accord with the original intention of the writer. All we can say with certainty is that the Manchu version gives the accepted meaning of the text as it was understood at that time (nearly 2,000 years after the original work had been written.

The whole of the period for several centuries before and after Lâo-tse was filled with metaphysical speculation and philosophic discussion. Lâo-tse marked out a new path and his unique gesture was one of strength in complete inactivity. His passivity was to be more potent than activity and in the restless age in which he was an almost voiceless prophet his mission was foredoomed to failure. (*See* CHINA.) (J. LE.; A. N. J. W.)

LA PAZ, a western department of Bolivia. Pop. (1940 estimate) 887,000, the majority of whom are Indians. Area 43,080 sq.mi. The department belongs to the great Bolivian plateau, and its greater part to the cold, bleak, *puna* climatic region. The Cordillera Real crosses it N.W. to S.E. and culminates in the snow-crowned summits of Sorata and Illimani. The west of the department includes a part of the Titicaca basin with about half the lake. This elevated plateau region is partially barren and inhospitable, its cold summers permitting the production of little besides potatoes, quinoa (*Chenopodium quinoa*) and barley, with a little Indian corn and wheat in favoured localities. Much attention is given to the rearing of llamas and alpacas, while cattle, sheep and mules are in common use. The bulk of the population in this region is Indian, living chiefly in small hamlets on the products of their own industry. In the deep valleys of the eastern slopes, where climatic conditions range from temperate to tropical, wheat, Indian corn and oats, as well as many fruits and vegetables, are cultivated. Farther down, coffee, cacao, coca, rice, sugar cane, tobacco, oranges, bananas and other tropical fruits are grown, and the forests yield cinchona bark and rubber. The mineral wealth of La Paz includes gold, silver, tin, tungsten, copper and bismuth. Tin and copper are the most important of these, the principal tin mines being in the vicinity of the capital and known under the names of Huayna-Potosí, Milluni and Quimza Cruz. The chief copper mines are the famous Corocoro group, about 50 mi. S.S.E. of Lake Titicaca near the Desaguadero river. The output of the Corocoro mines, which also includes gold and silver, finds its way to the coast via the Arica-La Paz railway. There are no modern roads in the department except a few short ones leading into the capital, but a section of the Pan-American highway is planned which will run from Guaqui on the Peruvian border to Oruro via La Paz, capital of the department and seat of the national government. A motor road from the capital to Corocoro parallels the Arica-La Paz railway. The Guaqui-La Paz railway provides transportation via steamer on Lake Titicaca to Mollendo, Peru, and there are direct rail connections between La Paz and Arica, Antofagasta and Buenos Aires, as well as most of the larger centres of population in the highlands of Bolivia. A short railway runs from the capital over the Cordillera Real into the region known as the Yungas.

LA PAZ (officially La Paz de Ayacucho), the *de facto* capital of Bolivia since 1898, the see of a bishopric created in 1605 and capital of the department of La Paz, 42 mi. S.E. of Lake Titicaca in 16° 30′ S., 68° W. Pop. (1942 census) 287,029. The city is built in the deeply eroded valley of the La Paz river, which a few miles below cuts its way eastward through the Cordillera Real to join the Beni. The valley is about 10 mi. long and 3 mi. wide. Its precipitous sides, deeply gullied by torrential rains and diversely coloured by mineral matter, rise 1,500 ft. above the city to the margin of the great plateau surrounding Lake Titicaca, and above these on the east are the snow-capped summits of Illimani and other giants of the Cordillera. The elevation of La Paz is 11,800 ft. above sea level, which places it within the *puna* climatic region, in which the temperatures are low throughout the year. Pneumonia and bronchial complaints are common, but consumption is rare. The valley's surface is very uneven, and the city's transverse streets are steep and irregular. Near the centre of the city is the Prado, a handsome public promenade with parallel rows of exotic trees, shrubs and flowers, which are maintained with no small effort in so inhospitable a climate. The trees which thrive best are the willow and eucalyptus. The older streets are narrow and roughly paved; a great many of the newer ones are spacious avenues. There are numerous bridges across the river. The dwellings of the poorer classes are commonly built with adobe



WEATHER GRAPH OF LA PAZ. THE THERMOMETER INDICATES THE NORMAL MEAN TEMPERATURE. THE CURVE SHOWS THE MONTHLY MEAN TEMPERATURE, AND THE COLUMNS THE NORMAL MONTHLY PRECIPITATION

walls and covered with tiles, but stone and brick are used for the better structures. The cathedral, which was begun in 1843 and finished only recently, is one of the largest in South America. It faces the Plaza Murillo which is named after the patriot who led (1809) the first uprising in La Paz against Spain. Facing the same plaza are the government palace and legislative chambers. Other notable edifices and institutions are the old university of San Andrés, the San Francisco church, a national college, a seminary, a public library and a museum rich in relics of the Inca and pre-Inca periods.

La Paz, important commercially, has three railway connections with the coast. A Peruvian line runs from Mollendo to Puno (via Arequipa), and a Bolivian extension from Guaqui to the Alto de La Paz (Heights of La Paz), the two lines being connected by a steamship service across Lake Titicaca. An electric railway 5 m. long extends from the Alto de La Paz to the city, 1,500 ft. below. This route is 528 m. long, and is expensive because of the elevations crossed, the trans-shipments at the lake, and the cost of handling cargo at Mollendo. A second railway 719 m. long connects La Paz with the port of Antofagasta in Chile, its steam locomotives descending into the city itself. The newest and shortest line is that constructed by the Chilean Government from Arica to Viacha, which affords La Paz an outlet to the sea, 273 m. in length. Two railways connect La Paz also with the interior of the country, the branch of the Bolivia-Antofagasta line which runs from Oruro to Cochabamba, and the recently built line from La Paz to the Yungas, on the eastern slope of Illimani. The vicinity of La Paz abounds in mineral wealth; most important are the tin deposits of Huayna-Potosí, Milluni and Quimza Cruz. The La Paz valley is auriferous and since long before the foundation of the city gold has been taken from the gravel washed down from the mountain sides.

La Paz was founded in 1548 by Alonzo de Mendoza on the site of an Indian village called Chuquiapu (Heritage of Gold) and was called the Pueblo Nuevo de Nuestra Señora de la Paz in commemoration of the reconciliation between Pizarro and Almagro, and soon became an important colony. At the close of the war of independence (1825) it was rechristened La Paz de Ayacucho, in honour of the last decisive battle of that protracted struggle. It was made one of the four capitals of the republic, but the revolution of 1898 permanently established the seat of government here because of its accessibility, wealth, trade and political influence. (G. M. McB.; X.)

LAPEER, city of south-eastern Michigan, U.S.A., 60 mi. N.N.W. of Detroit; the county seat of Lapeer county. It is served

by the Grand Trunk and the Michigan Central railways. The population was 5,008 in 1930 and 5,365 in 1940 by federal census. It is the seat of the Lapeer State Home and Training school for the feeble-minded, which has 4,000 patients and 550 attendants, nurses, doctors and teachers. The city is the centre of a rich agricultural district, and has several factories. There are over 100 lakes within 20 mi. of Lapeer. It was founded in 1831, incorporated as a village in 1857 and as a city in 1869, and in 1919 adopted a city-manager form of government. The court house, built in 1837, is the oldest in Michigan still in use.

LA PÉROUSE, JEAN-FRANÇOIS DE GALAUP, COMTE DE (1741–*c.* 1788), French navigator, was born near Albi, on Aug. 22, 1741. As a lad of 18 La Pérouse was wounded and made prisoner on board the "Formidable" when it was captured by Admiral Hawke in 1759; and during the war with England between 1778 and 1783 he served on the eastern coasts of Canada and in Hudson's bay, where he captured Fts. Prince of Wales and York (Aug. 8 and 21, 1782). In 1785 (Aug. 1) he sailed from Brest in command of the French government expedition of two vessels ("La Boussole" under La Pérouse himself, and "L'Astrolabe," under de Langle) for the discovery of the North-West passage, vainly essayed by Cook on his last voyage, from the Pacific side. He was to explore the Pacific coasts, to collect information as to the whale fishery in the southern oceans and as to the fur trade in North America. He reached Mt. St. Elias, Alaska, on June 23, 1786. He was driven from these regions by bad weather; and after visiting the Hawaiian islands, and discovering Necker island (Nov. 5, 1786), he crossed over to Asia (Macao, Jan. 3, 1787). Thence he passed to the Philippines, and so to the coasts of Japan, Korea and "Chinese Tartary," where his best results were gained. Touching at Quelpart, he reached De Castries bay, near the modern Vladivostok, on July 28, 1787; and on Aug. 2, following discovered the strait, still named after him, between Sakhalin and the Northern island of Japan. On Sept. 7, he put in at Petropavlovsk in Kamchatka; thence he sent home Lesseps, overland, with the journals, notes, plans and maps recording the work of the expedition. At Mauna in the Samoan group de Langle and ten of the crew of the "Astrolabe" were murdered. He quitted Samoa on Dec. 14, touched at the Friendly islands and Norfolk island and arrived in Botany bay on Jan. 26, 1788. After a letter written from Australia on Feb. 7, no more was heard of him and his squadron till in 1826 Captain Peter Dillon found the wreckage of what must have been the "Boussole" and the "Astrolabe" on the reefs of Vanikoro, an island to the north of the New Hebrides.

See Milet Mureau, *Voyage de la Pérouse autour du monde* (Paris, 1797) 4 vols.; Gérard, *Vies . . . des . . . marins français* (Paris, 1825), 197–200; Peter Dillon, *Narrative . . . of a Voyage in the South Seas for the Discovery of the Fate of La Pérouse* (London, 1829), 2 vols.

LAPIDARY and GEM CUTTING. The earliest examples of gem cutting and carving known (*see* also GEM) are the ancient engraved seals, which are of two principal types, the cylindrical or "rolling" seals of Babylonia and Assyria, suggested by a joint of the bamboo or the central whorl of a conch-like shell, and the peculiar scarabaeoid seals of Egypt. (*See* also SEALS.) Recent researches make it appear that both these types were in use by 4800 B.C. or earlier, though with some variations. The jewels of Queen Zer, and other jewels consisting of cut turquoise, lapis lazuli and amethyst, found by the French mission, date from 4777 B.C. to 4515 B.C. Until about 2500 B.C., the cylinder seals bore almost wholly animal designs; then cuneiform inscriptions were added. In the 6th century B.C., the scarabaeoid type was introduced from Egypt, while the rolling seals began to give place to a new form, that of a tall cone. These, in a century or two, were gradually shortened; the hole by which they were suspended was enlarged until it could admit the finger, and in time they passed into the familiar form of seal-rings.

500 B.C. to Renaissance.—The date of about 500 B.C. marks the beginning of a period of great artistic taste and skill in gem engraving, which extended throughout the ancient civilized world, and lasted until the 3rd or 4th century A.D. Prior to this period, all the work appears to have been done by hand with a sapphire point, or with a bow-drill, fed with sapphire dust; then the wheel was largely employed. The Greek cutters, in their best period, the 5th and 6th centuries B.C., knew the use of disks and drills, but preferred the sapphire point for their finest work, and continued to use it for two or three hundred years. Engraving by the bow-drill was introduced in Assyrian and Babylonian work as early as perhaps 3000 B.C., the earlier carving being all done with the sapphire point, which was secured in a handle for convenient application. This hand-work demanded the utmost skill and delicacy of touch in the artist. The bow-drill consisted of a similar point fastened in the end of a stick, which could be rotated by means of a horizontal cross-bar attached at each end to a string wound around the stick; as the cross-bar was moved up and down, the stick was made to rotate alternately in opposite directions. This has been a frequent device for such purposes among many peoples, both ancient and modern, civilized and uncivilized. The point used by hand, and the bow-drill, were afterwards variously combined in executing such work. Another modification was the substitution for the point, in either process, of a hollow tube or drill, probably in most cases the joint of a hollow reed, whereby very accurate circles could be made, as also crescent figures and the like. This process, used with fine hard sand, has also been widely employed among many peoples.

The Egyptian scarabs were an early and very characteristic type of seal cutting. The Greek gem cutters modified them by adding Greek and Etruscan symbols and talismanic signs; many of them also worked in Egypt and for Egyptians. Phoenician work shows a mixture of Assyrian and Egyptian designs; and Cypriote seals, principally on the agate gems, are known that are referred to the 9th century B.C.

In the later Roman period, the 3rd and 4th centuries, a great decline in the art is seen—so great that Castellani terms it "the idiotic age." Numbers of gems of this kind have been found together, as though they were the product of a single manufacturer, carved in the crudest manner, both in design and execution. The decline of the art went on until in the Byzantine period, especially the 6th century, it had reached a very low point. Most of the gems of this period show drill-work of poor quality, although hand-work is occasionally seen.

The Renaissance.—With the Renaissance, the art of gem carving revived, and the engravers from that time have produced results that equal the best Greek and Roman work; copies of ancient gem carvings made by some of the 18th-century masters are only distinguishable from true antiques by experts of great proficiency.

Until the 14th century, almost all the gems were cut *en cabochon* —that is, smoothly rounded, as carbuncles and agates are still— or else in the form of beads drilled from both sides for suspension or attachment, the two perforations often meeting but imperfectly. These latter may be of Asiatic origin, brought into Europe by commerce during the Crusades. Some of the finest gems in the Austrian, Russian and German crowns are stones of this perforated or bead type. An approach, or transition, to the modern facetting is seen in a style of cutting often used for rock-crystal in the 10th and 11th centuries: an oval cabochon was polished flat, and the sides of the dome were also trimmed flat, with a rounded back, and the upper side with a ridge in the centre, tapering off to the girdle of the stone below.

The plane facetted cutting is altogether modern; and hence the pictures which represent the breastplate of the ancient Jewish high-priest as set with facetted stones are wholly imaginary and probably incorrect, as we have no exact knowledge of the forms of the gems. The Orientals polish gems in all sorts of irregular, rounded shapes, according to the form of the piece as found, and with the one object of preserving as much of its original size and colour as possible. The greatest ingenuity is used to make a speck of colour, as in a sapphire, tone up an entire gem, by cutting it so that there is a point of high colour at the lower side of the gem

In later times a few facets are sometimes cut upon a generally rounded stone. The *cabochon* method is still used for opaque translucent and some transparent stones, as opal, carbuncle etc.; for most transparent gems the facetted cutting is almost

always employed, on account of its fine effect in producing brilliancy, by reflection or refraction of light from the under side of the gem. Occasionally the ancients used natural crystals with polished faces, or perhaps at times polished these to some extent artificially.

MODERN METHODS

Numerous facets, geometrically disposed to bring out the beauty of light and colour to the best advantage, are now cut. This is done at the sacrifice of material, often to the extent of half the stone or even more—the opposite of the Oriental idea. There are various forms of such cutting, but four are specially used: the brilliant, the rose, the baguette and the table-cut. The last, generally made from cleavage pieces, usually square or oblong, with a single facet or edge on each side, and occasionally four or more facets on the lower side of the stone, is used chiefly for emeralds, rubies and sapphires; the two former for diamonds in particular. The brilliant is essentially a low, double cone, its top truncated to form a large flat eight-sided face called the table, and its basal apex also truncated by a very small face known as the *culette* or *cullet*. The upper and lower slopes are cut into a series of triangular facets, 32 above the girdle, in four rows of eight, and 24 below, in three rows, making 56 facets in all. The rose form is used for diamonds not thick enough to cut as brilliants; it is flat below and has 12 to 24, or sometimes 32, triangular facets above, in three rows, meeting in a point. Stones thus cut are also known as "roses couronnées"; others with fewer facets, twelve or even six, are called "roses d'Anvers," and are a specialty at Antwerp. Baguettes are flat stones with four, eight, or more facets and a simple top.

Modern gem cutting and engraving are done by means of the lathe, which can be made to revolve with extreme rapidity, carrying a point or small disk of soft iron, with diamond-dust and oil. The disks vary in diameter from that of a pin-head to a quarter of an inch. Better than the lathe, also, is the S. S. White dental engine, which the present writer was the first to suggest for this use. The flexibility and sensitiveness of this machine enable it to respond to the touch of the artist and to impart a personal quality to his work not possible with the mechanical action of the lathe, and more like the hand-work with the sapphire point.

DIAMOND CUTTING

On account of its extreme hardness, the treatment of the diamond in preparation for use in jewellery constitutes a separate and special branch of the lapidary's art. Any valuable gem must first be trimmed, cleaved or sawed into suitable shape and size, then cut into the desired form, and finally polished upon the faces which have been cut. The stages in diamond working are, therefore, (1) cleavage or division; (2) cutting; (3) polishing; but in point of fact there are four processes, as the setting of the stone for cutting is a somewhat distinct branch, and the workers are classed in four groups—cleavers, setters, cutters and polishers.

1. **Cleaving or Dividing.**—Diamonds are always found as crystals, usually octahedral in form, though often irregular or distorted. The problem involved in each case is twofold: (1) to obtain the largest perfect stone possible, and (2) to remove any portions containing flaws or defects. These ends are generally met by cleaving the crystal, *i.e.*, causing it to split along certain natural planes of structural weakness, which are parallel with the faces of the octahedron. The stone is first examined closely, to determine the directions of the cleavage planes, which are recognizable only by an expert. The cleaver then cuts a narrow notch at the place selected, with another diamond having a sharp point; a rather dull iron or steel edge is then laid on this line, and a smart blow struck upon it. If all has been skilfully done, the diamond divides at once in the direction desired.

When the stone is large and very valuable, the cleaving is a most critical process. Wollaston in 1790 made many favourable transactions by buying very poor-looking flawed stones and cleaving off the good parts. In the case of the immense Excelsior diamond of 971 carats, which was divided at Amsterdam in 1904, and made into ten splendid stones, the most elaborate study extending over two months was given to the work beforehand, and many models were made of the very irregular stone and divided in different ways to determine those most advantageous. This process was in 1908 applied to the most remarkable piece of work of the kind ever undertaken—the cutting of the gigantic Cullinan diamond of 3,025¾ English carats. The stone was taken to Amsterdam to be treated by the old-fashioned hand method, with innumerable precautions of every kind at every step, and the cutting was successfully accomplished after nine months' work (see *The Times*, Nov. 10, 1908). (*See* DIAMOND.)

This process of cleavage is the old-established one, still used to a large extent, especially at Amsterdam. But a different method has recently been introduced, that of sawing, which is now generally employed in Antwerp.

After the cleaving or sawing, however, the diamond is rarely yet in a form for cutting the facets, and requires considerable shaping. This rough "blocking-out" of the final form it is to assume, by removing irregularities and making it symmetrical, is called "brutage." Well-shaped and flawless crystals, indeed, may not require to be cleaved, and then the brutage is the first process. Here again, the old hand methods are beginning to give place to mechanism. In either case two diamonds are taken, each fixed in cement on the end of a handle or support, and are rubbed one against the other until the irregularities are ground away and the general shape desired is attained. The old method was to do this by hand—an extremely tedious and laborious process. The machine method, invented about 1885 and first used by Field and Morse of Boston, is now used at Antwerp exclusively.

At Amsterdam a hand-process is employed, which lies between the cleavage and the brutage. This consists in cutting or trimming away angles and irregularities all over the stone by means of a sharp-edged or pointed diamond, both being mounted in cement on pear-shaped handles for firm holding.

2. **Cutting and Setting.**—The next process is that of cutting the facets; but an intervening step is the fixing or "setting" of the stone for that purpose. This is done by embedding it in a fusible alloy, melting at 440° Fahr., in a little cup-shaped depression on the end of a handle, the whole being called a "dop." Only the portion to be ground off is left exposed; and two such mounted diamonds are then rubbed against each other until a face is produced. This is the work of the cutter; it is very laborious, and requires great care and skill. The hands must be protected with leather gloves. The powder produced is carefully saved, as in the former processes, for use in the final polishing. When one face has been produced, the alloy is softened by heating, and the stone re-set for grinding another surface; and as this process is necessary for every face cut, it must be repeated many times for each stone. An adjustable dop has lately been devised in which the diamond is held by a system of claws so that all this heating and resetting can, it is claimed, be obviated, and the cutting completed with only two changes.

3. **Polishing.**—The faces having thus been cut, the last stage is the polishing. This is done upon horizontal iron wheels called "skaifs," made to rotate up to 2,500 revolutions per minute. The diamond-powder saved in the former operations, and also made by crushing very inferior diamonds, here comes into use as the only material for polishing. It is applied with oil, and the stones are fixed in a "dop" in much the same way as in the cutting process. Again, the utmost skill and watchfulness are necessary, as the angles of the faces must be mathematically exact, in order to yield the best effects by refraction and reflection of light, and their sizes must be accurately regulated to preserve symmetry.

The rapid development of mechanical and electrical devices for the several stages of diamond cutting has already greatly influenced the art. (G. F. K.)

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LAPIDOTH-SWART, HÉLÈNE (1859–), Dutch poet, was born at Amsterdam on Oct. 25, 1859. She was brought up in Brussels, and her first poems were written in French. The poetry of Pol de Mont showed her the beauty of the Flemish language, and she then began to write in her own native allied language, Dutch. Her poems were collected in the volumes

Poezie (1892), *Verzen* (1893), and *Gedichten* (1902). Her work ranks high in modern Dutch literature. She also wrote a number of prose works, including *Van Vrouwenleed* and *Van Vrouwenlot* (1896).

LAPILLI, a name applied to small fragments of lava ejected from a volcano (pl. of Ital. *lapillo,* from Lat. *lapillus,* dim. of *lapis,* a stone). They are generally subangular in shape and vesicular in structure, varying in size from a pea to a walnut. In the Neapolitan dialect the word becomes *rapilli*—a form sometimes used by English writers on volcanoes. (See VOLCANO.)

LAPIS LAZULI, a mineral substance valued for decorative purposes in consequence of its deep blue colour. It is opaque and takes a good polish, and since ancient times it has been much used for small ornaments and for inlaying. Its beautiful colour led to its employment, when ground and levigated, as ultramarine (*q.v.*), a valuable pigment now displaced by a chemical product (artificial ultramarine). Lapis lazuli occurs as compact masses, with finely granular structure, its specific gravity is 2·38 to 2·45, and its hardness about 5·5, so that being comparatively soft it tends, when polished, to lose its lustre rather readily. Chemical analyses show considerable variation in composition, and thin sections under the microscope show blue particles and various minerals embedded in a white matrix. The main constituents are minerals of the sodalite group, principally lazulite, which has chemical formula: $Na_4(NaS_3Al)Al_2(SiO_4)_3$, and is occasionally found as deep blue crystals of rhombic-dodecahedron form. In addition to the blue cubic minerals in lapis lazuli the following have also been found: diopside, amphibole, felspars, mica, apatite, sphene, zircon, calcite and pyrite.

Lapis lazuli usually occurs in crystalline limestone, and is a product of contact metamorphism near granite masses. The best known and probably the most important locality is in Badakshan, Afghanistan, where it occurs in limestone, in the valley of the Kokcha, a tributary to the Oxus south of Firgamu. The mines were visited by Marco Polo in 1271. Another important locality is in Siberia near the western end of Lake Baikal. Fine masses of paler blue lapis lazuli occur in the Andes, near Ovalle, Chile. In Europe it is found as a rarity in the peperino of Latium, near Rome, and in the ejected blocks of metamorphosed limestone on Monte Somma, Vesuvius. Much of the material now sold as "lapis" is an artificially coloured hornstone or jasper from Germany. This shows colourless specks of clear crystallized quartz; and never the gold-like specks of pyrite, so characteristic of true lapis lazuli, and fancifully compared with stars in the deep blue firmament. (L. J. S.)

LAPITHAE, a mythical race, whose home was said to be in Thessaly in the valley of the Peneus. The genealogies make them a kindred race with the Centaurs, their king, Peirithous, being the son, and the Centaurs the grand-children (or sons) of Ixion. The best known legends with which they are connected are those of Ixion (*q.v.*) and the battle with the Centaurs (*q.v.*). One Lapith was Caeneus, said to have been originally a girl named Caenis, loved of Poseidon, who changed her into a man and made her invulnerable (Ovid, *Metam.,* xii. 146 ff).

In the Centaur battle, having been crushed by rocks and trunks of trees, he was changed into a bird; or he disappeared into the depths of the earth unharmed. According to some, the Lapithae are representatives of the giants of fable, or spirits of the storm; more likely they are a semi-legendary, semi-historical race, like the Myrmidons and other Thessalian tribes. The Greek sculptors of the school of Pheidias conceived of the battle of the Lapithae and Centaurs as a struggle between mankind and mischievous monsters, and symbolical of the great conflict between the Greeks and Persians.

LAPLACE, PIERRE SIMON, MARQUIS DE (1749–1827), French mathematician and astronomer, was born at Beaumont-en-Auge, in Normandy, on March 28, 1749. His father was a small farmer and Laplace owed his education to the interest taken in him by some rich neighbours. He attended the military school at Beaumont, where he became mathematical teacher. In 1767 he went to Paris with letters of recommendation and approached D'Alembert, who was then at the height of his fame. These producing no result, he wrote a letter on the principles of mechanics which evoked the reply: "You needed no introduction, you have recommended yourself; my support is your due." Accordingly D'Alembert obtained for him an appointment as professor of mathematics at the École Militaire in Paris. Laplace had a mastery of analysis, which he proceeded to apply to problems in celestial mechanics. In a paper read before the Academy of Sciences on Feb. 10, 1773 (*Mém. présentés par divers savants,* tom. vii.) he announced the invariability of planetary mean motions. This was the first step in the establishment of the stability of the solar system. It was followed by a series of profound investigations, contributed by Laplace and Lagrange alternately, and ending in a brilliant memoir by Laplace (in three parts, vols. of the Academy, 1784–85–86). In various memoirs he demonstrated the cause of the long inequality of Jupiter and Saturn; completed the theory of the Jovian system; and announced the dependence of the lunar acceleration on the secular changes in the eccentricity of the earth's orbit.

The time had now come when the work of three generations of illustrious mathematicians on gravitation could be systematized. Laplace devoted himself to this task and produced his famous *Mécanique célèste* (5 vols., 1799–1825), a monument of mathematical genius. The declared aim of the author was to offer a complete solution of the mechanical problem presented by the solar system. In 1796 he published *Exposition du système du monde,* a more popular work; the summary of astronomical history with which it ends being one of the masterpieces of the French language. Laplace's nebular hypothesis made its appearance in a note in this work.

Laplace studied the figure of equilibrium of a rotating fluid mass, his first memoir on this subject being communicated to the Academy in 1773 and the last in 1817. The results of these papers are embodied in the *Mécanique Céleste.* In a celebrated memoir, "Théorie des attractions des sphéroids et de la figure des planètes" (published in Paris, *Memoirs,* 1785), he gave a complete solution of the general problem of the attraction of a spheroid on an external particle, and introduces the potential function and Laplace's coefficients. (*See* SPHERICAL HARMONICS.)

Laplace also displayed his genius in the theory of probabilities, publishing in 1812 his *Théorie analytique des probabilités,* and in 1814 *Essai philosophique,* a more popular exposition on the same subject.

He received many honours from various scientific societies, and during his later years retired to Arcueil where he was visited by distinguished people from all parts of the world. He died on March 5, 1827.

His complete works were published by the French Government: *Oeuvres complètes de Laplace* (7 vols., 1843–47). A second edition containing additional matter was completed in 1912.

LAPLACE'S EQUATION AND INTEGRAL: *see* SPHERICAL HARMONICS.

LAPLAND, a region of northern Europe inhabited by the Lapps, though not applied to any administrative district. It stretches across the north of Norway, Sweden, Finland and Russia, from the Norwegian coast to the White Sea.

Most of the Scandinavian portion of Lapland presents the usual characteristics of the mountain plateau of that peninsula—on the west side the bold headlands and fjords, deeply-grooved valleys and glaciers of Norway, on the east the mountain lakes and great lake-fed rivers of Sweden. All the eastern part, in Sweden, Finland and Russia, is part of the ancient worn-down Scandinavian land mass of Archaean rocks, comparatively low-lying and with innumerable lakes and swamps infested with mosquitoes. In the uplands of Swedish Lapland, and to some extent in Russian Lapland, the lakes afford the principal means of communication.

In Sweden the few farms are on the lake shores, and the traveller must be rowed in summer from one to another. Sailing is rarely practised, and squalls are often dangerous to the rowing-boats. On a few of the lakes wood-fired steam-launches are used in connection with the timber trade, which is considerable, as almost the whole region is forested. Between the lakes all journeying is made on foot. In winter sledge tracks serve as roads. Much

of the Kola peninsula is north of the forest belt and is tundra land with the bleak and barren Murman coast. Further west the influence of the warm Atlantic drift is sufficient to keep the ports (Vadsö, Vardö, Katarina, etc.) free from ice. The heads of the Swedish valleys are connected with the Norwegian fjords by passes generally traversed only by tracks; though from the head of the Ume a driving road crosses to Mo on Ranen fjord. Each principal valley has a village at or near the tail of the lake-chain, up to which a road runs along the valley. The village consists of wooden cottages with an inn, a church, and frequently a collection of huts without windows, closed in summer, but inhabited by the Lapps when they come down from the mountains to the winter fairs. Sometimes there is another church and small settlement in the upper valley, to which, once or twice in a summer, the Lapps come from great distances to attend service.

More than half of Lapland is within the Arctic Circle and the climate is Arctic. Temperatures are low all the year round; *e.g.,* at Karasuanda there are only five months with an average above freezing point. The hottest month is August (average 56·2° F) and the coldest Feb. (5·2°) with temperatures frequently below zero for long periods. In the northern parts unbroken daylight in summer and darkness in winter last from two to three months each. All preparations for winter are made during September and October, and full winter has set in by November.

Though Lapland gives little scope for husbandry, a bad summer being commonly followed by a winter famine, it has great wealth in its minerals. There are copper mines at the mountain of Sulitelma, and the iron deposits in Norrland of both magnetite and hematite with an average of 65% of iron in the ore, are among the most extensive in the world. Their working is facilitated by the railway from Stockholm to Gellivara, Kirunavara and Narvik on the Norwegian coast, which also connects them with the port of Luleå on the Gulf of Bothnia. The supply of timber (pine, fir, spruce and birch) is unlimited. There is an abundance of edible berries; the rivers and lakes abound with trout, perch, pike and other fish, and in the lower waters with salmon; and the cod, herring, halibut and Greenland shark in the northern seas attract numerous Norwegian and Russian fishermen. The Lapps keep great herds of reindeer, the total number in the district being estimated at over 350,000, and their skins, meat and horns form important articles of trade. There are great numbers of birds, including grouse, capercailzie, ptarmigan, etc., and eider down is collected off the coast.

See Homén, *East Carelia and Kola Lapmark,* 1921, *Kihlman Pflanzenbiologische Studien aus Russisch Lappland, Helsingfors,* 1890. (X.)

HISTORY

The people known as "Lapps," *i.e.,* nomads, which is the name the Swedes gave them, call themselves Samelats. They were in occupation of their present territory when first mentioned in history, having come like the Ugro-Finns, and, for the matter of that, the Slavs, as colonizers rather than as conquerors. The first reliable identification of them is in Procopius (*Goth* ii. 15) where the "Skritiphinoi" exhibit certain customs characteristic of the Lapps. Brachycephalic, with high cheek bones, flat noses and chestnut hair, they are racially, linguistically and by their demonology almost as closely allied to the Karelians as these in their turn are to the Finns. By the form of their crania a Mongolian tribe, they have been driven to the furthest north by successive migrations of kindred Ugro-Finns, as of Goths and Slavs, but cherish the memory of the hospitable southern lands traversed in their pristine wanderings.

They incurred the ordinary fate of a primitive people who, driven off the main arteries of civilization, remained isolated huntsmen and fishermen, with the reindeer as the only domestic animal (apart from the dog) capable of withstanding the severity of the climate. This fact precluded town settlements, even in the 20th century, because the reindeer feeds on lichens and mosses and requires an extensive pasturage. Consequently there was little cohesion among this people; they spread over a wide area, and, without knowledge of the use of iron, fell a prey to powerful neighbours: to Norsemen in the 9th century, thereafter to the Karelians, and, in the 11th century, to the princes of Novgorod. In 1326, by a treaty between Norway and Russia, the supremacy of the former was recognized as far east as Voljo, beyond Kandalaksha on the White sea, of the latter as far as Lyngen and Målself. After the disruption of the Kalmar Union (1523), Sweden began to assert its rights until, in 1595, by the Treaty of Teusina, the Lapps between eastern Bothnia and Varanger became subjects of the king of Sweden. In this capacity occurred their one intervention in the affairs of Europe, when they formed part of the armies of Gustavus Adolphus. By the peace of Knäröd (1613) this king gave up the Swedish claim to Finmark; in 1751, mutual renunciations brought the relations of Swedish and Norwegian (Danish) Lapland to their present (1928) position. In 1809, Alexander I. of Russia obtained the cession of Finland, and added to it the whole of Finnish Lapland to the east of the Muonio and the Köngäma. At the dissolution of the union between Norway and Sweden, in 1905, the migratory rights and pasturage privileges of the Lapps were respected in the desert lands between these two countries, which arrangement was confirmed in Feb. 1917 by a congress held between Norwegian and Finnish Lapps.

Of the many masters which the Lapps have had to bear, the Swedes and Russians left the strongest imprint, forcing upon them their respective creeds; the Russians through St. Tryphon, the Greek Orthodox religion, the Swedes, through Gustavus Adolphus, the Lutheran faith. In their wake came exploiters who farmed the Lapps and even owned them. In such circumstances the philanthropic legislation of a later age could do little to arrest the gradual decline of the population, which was largely absorbed by neighbouring races and assumed Swedish, Norwegian, Finnish and Russian family names.

In Sweden, the railway leading to the famous mining town of Gellivare and in Russia the Murman railway making for the ice-free port of Alexandrovsk (completed during the World War) opened up tracts of country hitherto almost inaccessible. In Sweden the Lapps have abandoned their nomadic habits; in the Kola peninsula they still live by fishing and fur-trapping.

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LA PLATA, a city of Argentina and capital of the province of Buenos Aires, 5 mi. inland from the south shore of the Río de la Plata and about 31 mi. southeast of the city of Buenos Aires, with which it is connected by rail. Pop. (1943 estimate) 256,680. La Plata was founded in 1882, two years after Buenos Aires had been constituted a federal district and made the national capital. This necessitated the selection of another provincial capital, which resulted in the choice of an open plain near the former port of Ensenada de Barragán, on which a city was laid out after the plan of Washington. The streets are so wide that they seem out of proportion to the low brick buildings. The principal public buildings, constructed of brick and stucco, are the government-house, assembly building, treasury, municipal hall, cathedral, courts of justice, police headquarters, provincial museum and railway station. The museum, originally presented by Francisco P. Moreno, has become one of the most important in South America, its palaeontological and anthropological collections being unique. There are also a university, national college, public library, astronomical observatory, several churches, hospitals and theatres. A noteworthy public park is formed by a large plantation of eucalyptus trees, which have grown to a great height and present an imposing appearance on the level, treeless plain. Electricity is in general use for public and private lighting, and tramways are laid down in the principal streets and extend eastward to the port. The harbour of the port of La Plata consists of a large artificial basin, 1,450 yd. long by 150 yd. wide, with approaches, in addition to the old port of Ensenada, which are capable of receiving the largest vessels that can navigate the La Plata estuary. Up to the opening of the new port works of Buenos Aires a large part of the ocean-going traffic of Buenos Aires passed through the port of La Plata. It has good railway connections with the interior, and exports cattle and agricultural produce.

It has become an important centre of the meat packing industry, with large plants located there.

LAPORTE, ROLAND (1675–1704), Camisard leader, better known as "Rowland," was born at Mas Soubeyran (Gard) in a cottage which still contains relics of the hero. He was a nephew of Laporte, the Camisard leader who was hunted down and shot in Oct. 1702, and he himself became the leader of a band of a thousand men which he formed into a disciplined army with magazines, arsenals and hospitals. For daring in action and rapidity of movement he was second only to Cavalier. These two leaders in 1702 secured entrance to the town of Sauve under the pretence of being royal officers, burnt the church and carried off provisions and ammunition for their forces. Roland, who called himself "general of the children of God," terrorized the country between Nîmes and Alais, burning churches and houses, and slaying those suspected of hostility against the Huguenots, though without personally taking any part of the spoil. Cavalier was already in negotiation with Marshal Villars when Roland cut to pieces a Catholic regiment at Fontmorte in May 1704. A parley with Villars led to nothing, but Roland was betrayed to his enemies, and on Aug. 14, 1704, was shot while defending himself against his captors.

LA PORTE, a city of northern Indiana, U.S.A., 59 mi. E. of Chicago and 12 mi. S. of Lake Michigan, at an altitude of 812 ft.; the county seat of La Porte county.

La Porte is on federal highway 35 and is served by the New. York Central, the Nickel Plate and the Pere Marquette railways, and has a landing field for aeroplanes.

The population was 15,158 in 1920 (84.5% native white); 15,755 in 1930; and was 16,180 in 1940 by federal census.

La Porte is in a region of rich farm lands and beautiful lakes, adjacent to the Calumet-Gary district. Its manufactures (valued in 1937 at $23,833,123) are important and diversified, including water heaters, steel doors, door-holding devices, bread and meat slicers, flour, woollen goods, furniture, machinery, artificial flowers, harvesters and road grading equipment. La Porte was settled in 1830 and was chartered as a city in 1852.

LAPPA, an island off the south coast of China (22° 15′ N. and 113° 30′ E.), on the left side of the entrance to the Canton river, where it forms the western flank of the inner harbour of Macao (Portuguese).

It was notable as being a Chinese customs station which supervised the junk traffic between Chinese ports (mainly around the Canton river) and Macao. This station bore the same relation to Macao as Kowloon to Hong Kong, and came into being in 1887 as a preventive measure to check smuggling (of opium and salt particularly) at the free port of Macao, where trade was free from customs duties or supervision. The Lappa customs station was controlled by the inspectorate-general of customs and had its head office in Macao. It was merely a "toll-gate" in the trade of the Canton area, functioning until the Japanese attack against the south China coast forced its closure. (*See* MACAO.)

LAPPARENT, ALBERT AUGUSTE COCHON DE (1838–1908), French geologist, was born at Bourges on Dec. 30, 1839, and died in Paris on May 5, 1908. He studied at the École Polytechnique (1858–60), became *ingénieur au corps des mines,* and helped to draw up the geological map of France; in 1875 he became professor of geology and mineralogy at the Catholic institute, Paris. In 1879 he prepared an important memoir for the geological survey of France on *Le Pays de Bray,* and in 1880 he served as president of the French Geological society. In 1881–83 he published his *Traité de géologie* (5th ed., 1905), the best European textbook of stratigraphical geology.

His other works include *Cours de minéralogie* (1884, 3rd ed., 1899), *La Formation des combustibles minéraux* (1886); *Le Niveau de la mer et ses variations* (1886), *Les Tremblements de terre* (1887), *La Géologie en chemin de fer* (1888), *Précis de minéralogie* (1888), *Le Siècle du fer* (1890), *Les Anciens Glaciers* (1893), *Leçons de géographie physique* (1896), *Notions générales sur l'écorce terrestre* (1897), *Le Globe terrestre* (1899), and *Science et apologétique* (1905).

LAPPENBERG, JOHANN MARTIN (1794–1865), German historian, was born on July 30, 1794 at Hamburg, and died there on Nov. 28, 1865. From 1823 to 1863 he was keeper of the Hamburg archives; an office in which he had the fullest opportunities for laborious and critical research work. In 1850 he represented Hamburg in the German parliament at Frankfort. Lappenberg had studied at Edinburgh and London, and his most important work is his *Geschichte von England* (Hamburg, 2 vols., 1834–37), which deals with the history of England from the earliest times to 1154. It was translated into English by B. Thorpe as *History of England under the Anglo-Saxon Kings* (1845) and *History of England under the Norman Kings* (Oxford, 1857). His other works deal mainly with the history of Hamburg. For the *Monumenta Germaniae historica* he edited the *Chronicon* of Thietmar of Merseburg, the *Gesta Hammenburgensis ecclesiae pontificum* of Adam of Bremen and the *Chronica Slavorum* of Helmold, with its continuation by Arnold of Lübeck. Lappenberg, who was a member of numerous learned societies in Europe, wrote many other historical works.

See E. H. Meyer, *Johann Martin Lappenberg* (Hamburg, 1867); and R. Pauli in the *Allgemeine deutsche Biographie,* Bånd xvii (Leipzig, 1883).

LAPRADE, PIERRE MARTIN VICTOR RICHARD DE (1812–1883), known as VICTOR DE LAPRADE, French poet and critic, was born at Montbrison (Loire). After completing his studies at Lyons, he produced in 1839 a small volume of religious verse, *Les Parfums de Madeleine.* This was followed in 1840 by *La Colère de Jésus,* in 1841 by the religious fantasy of *Psyché,* and in 1844 by *Odes et poèmes.* In 1845 Laprade visited Italy on a mission of literary research, and in 1847 he was appointed professor of French literature at Lyons. In 1857 he was elected to the Academy. In 1861 he lost his post at Lyons on account of a political satire in verse (*Les Muses d'État*), and in 1871 took his seat in the national assembly on the benches of the Right. He died on Dec. 13, 1883. Laprade wrote *Poèmes évangéliques* (1852), *Pernette* (1868), *Le Livre d'un père* (1877), *Varia* and *Livre des adieux* (1878–79); and other volumes of verse, which were collected as *Oeuvres poétiques* in 1878–81 (6 vols.). His *Questions d'art et de morale* (1861) was followed by other works on aesthetics. As a poet Laprade belonged to the school of Chateaubriand and Lamartine.

See J. Condamin, *La vie et les oeuvres de Victor de Laprade* (1886).

LAPSE, in law, a term used in several senses. (1) In ecclesiastical law, when a patron has neglected to present to a void benefice within six months next after the avoidance, the right of presentation is said to lapse (*see* ADVOWSON). (2) The failure of a testamentary disposition in favour of any person, by reason of the decease of its object in the testator's lifetime, is termed a lapse. (*See* LEGACY; WILL.)

LAPSE RATE OF TEMPERATURE refers to the vertical temperature distribution in the atmosphere, or the rate of change of temperature observed in passing upward through the atmosphere. The lapse rate is considered as positive when the temperature decreases upward, zero when the temperature is constant with elevation, and negative when the temperature increases with elevation (inversion of temperature). Two particular lapse rates are defined in terms of the dry and of the saturation adiabatic rates of cooling (*see* ADIABATIC PROCESSES IN ATMOSPHERE). The comparison between the prevailing lapse rate in the atmosphere and the dry and saturation adiabatic lapse rates determines the vertical stability of the atmosphere, that is, the tendency of an air particle to return to its original position or to accelerate away from its original position, after being given a slight vertical displacement. For this reason the lapse rate is of prime importance to meteorologists in forecasting certain types of cloud formations, incidence of thunderstorms, and intensity of turbulence in the atmosphere. (H. WR.)

LAPWING, GREEN PLOVER or PEEWIT (*Vanellus vanellus*), a common bird of the plover family, breeding throughout the temperate old world; it is migratory in the northern part of its range, reaching India and N. Africa in winter. The plumage is bottle-green above and white below, with a black erectile crest and bay tail-coverts. The wings are broad and rounded, and the flight rapid but leisurely. It runs swiftly.

The nest is a mere scrape on the ground, and in it are placed four pointed brown eggs, spotted with black. So closely do they resemble the surroundings, that only an expert can find them without a long search. These are the "plovers' eggs" of commerce, though the eggs of the redshank, golden plover and black-headed gull are also sold under this name. During courtship the male makes a number of nest scrapes and also performs a special flight ending in an aerial somersault. The lapwing is now protected in many parts of Great Britain by act of parliament. The food consists very largely of wireworms, leatherjackets and other injurious insects, so that this bird is one of the best friends of the farmer.

LARA, a northwestern state of Venezuela, lying in the angle formed by the parting of the N. and N.E. ranges of the Cordillera de Mérida. The area of the state is 7,645 sq.mi., and the population (1941) 332,975. The greater part of its surface is mountainous, with elevated fertile valleys which have a temperate climate. The Tocuyo river rises in the S.W. angle of the state and flows N.E. to the Caribbean with a total length of 287 miles. A narrow-gauge railway, the "Southwestern," owned by British interests, runs from the port of Tucacas 55 mi. S.W. to Barquisimeto by way of the Aroa copper-mining district. Lara produces wheat and other cereals, coffee, sugar, tobacco, cattle and sheep and various mineral ores, including silver, copper, iron, lead, bismuth and antimony. The capital, Barquisimeto, pop. (1941) 54,176, is one of the most progressive of the inland cities of Venezuela. Carora is also prominent as a commercial centre. El Tocuyo (pop. 5,417 in 1941), 40 mi. S.W. of Barquisimeto, is an important commercial and mining town, over 2,000 ft. above sea level, in the midst of a rich agricultural and pastoral region. Yaritagua, 20 mi. E. of Barquisimeto and 1,026 ft. above the sea, is known for its cigar manufactories.

LARACHE (EL ARAISH—THE VINE-ARBOURS), a port in northern Morocco, on the Atlantic coast, in the Spanish zone, in Lat. 35° 13′ N., in Long. 6° 9′ W., 43 mi. by sea S. by W. of Tangier, on the left bank of the estuary of the Lukus. The old town, surrounded by ruins, rises in terraces up to forts which dominate it on the north and south. The Spanish quarter has grown both towards the port and on the coastal plateau to the southwest and on the northwest. Gardens and orchards stretch along above the left bank of the Lukus, which describes wide meanders in its valley. The most interesting buildings are the ancient fortress of the Kibibat (the little domes) and the fort of La Cigogne (late 16th century) built by the Portuguese. The port has a jetty that prolongs the right bank of the river, quays with modern equipment and warehouses and a lighthouse at the end of the jetty. The water at the entrance varies in depth at high water from 10 to about 20 ft., according to the magnitude of the tide. Cork, beans, birdseed, wool, etc., are exported and European goods imported. The town is the most important agricultural and fishing centre in the Spanish zone. It is the centre of a Spanish circumscription; it had, in 1940, 36,132 inhabitants.

A narrow-gauge light railway connects the town with Kasr-el-Kebir (Alcazarquivir) and through it passes the main highway from Casablanca to Tangier.

Larache corresponds to the ancient Lixus, of which the ruins are to be seen at Tchemmich, 3 km. above the port, on the right bank of the Lukus. The ancients placed there the garden of the Hesperides, the golden apples of which may have been oranges. It was an important Phoenician settlement and, under the Romans, an imperial colony which reached its zenith in the days of Claudius. Larache belonged to Spain from 1610–89 and was later reconquered by Moulay-Ismaïl. It was bombarded by the French in 1765 and by the Spaniards in 1860. Spain regained possession of it in 1912.

LARAMIE (lăr′ą-mĭ), city, southeastern Wyoming, U.S.A., on the Laramie river, 50 mi. W. of Cheyenne; county seat of Albany county and the seat of the state university. It is a district division point on the Union Pacific, and is served also by the Laramie, North Park and Western railway; is on federal highways 30 and 287; and has a lighted aviation field. The population in 1940 (federal census) was 10,627. The city lies on the Laramie plains, 7,145 ft. above sea level, surrounded on three sides by picturesque mountains. It is a supply and shipping point for a wide area, with varied industries: cattle raising, sheep husbandry, lumbering (in the Medicine Bow national forest), general ranching and farming, the production of nonmetallic minerals and (since 1919) the production of oil, in the Rock Creek, Rex Dome and other fields. In the city are cement and plaster mills, railroad shops, machine shops, a forest products treating plant, the largest natural icing plant on the Union Pacific system and many smaller industries. Freight handled there by the Union Pacific railroad amounts to millions of tons annually. Receipts at the stockyards, one of the largest on the Union Pacific lines, include millions of sheep, cattle and hogs each year during the shipping season. Ten miles south is the state fish hatchery; 30 mi. W. is the Medicine Bow national forest (552,174 ac.); 12 mi. E. is the Pole mountain military reservation (a part of the forest). In every direction are opportunities for fishing and hunting, including big game and wild ducks, in their respective seasons. The University of Wyoming (established 1886) includes the state colleges of agriculture, engineering and education, liberal arts and law.

It is the location of a state stock farm and a state agricultural experiment station.

City, river, plains and mountains take their name from Jacques de La Ramie, a fur trader of the region (d. 1821). Laramie was on the Overland trail and the route of the Pony express. It was settled in 1868; chartered by Dakota the same year and by Wyoming in 1873. Bill Nye here established his *Boomerang,* and wrote the articles for the Cheyenne and Denver newspapers which made his reputation as a humorist.

LARBAUD, VALERY (1881–), French novelist and critic, made his reputation with *A. O. Barnabooth* (1913), the story of a South American millionaire in search of the absolute, who wants to find the means whereby the outer and the inner man may be at peace. This gives the frame for the description of a whimsical and ironical personage, and for much acute comment on contemporary life, art and mannerisms in various countries. Larbaud himself admits that in his *Amants, heureux amants* (10th ed. 1923) he was greatly influenced by James Joyce. *Enfantines* (1918) is a study of childhood, *Fermina Marquez* (1911) of adolescence.

His other works include: *Ce Vice impuni, la lecture* (1925); *Notes sur Maurice Scève* (1926); *Notes sur Antoine Héroët* (1927); *Domaine Anglais* (1937).

LARBERT, town and civil parish, Stirlingshire, Scotland. Pop. (1931) 13,028. The town is situated on the Carron, which divides it from Falkirk, and is 8 mi. S.E. of Stirling by the L.N.E. and L.M.S. railways, an important junction for traffic from the south by the West Coast (L.M.S.) route. There are iron foundries and saw-mills. The principal buildings are the church, finely placed overlooking the river, the Stirling district asylum and the Scottish National institution for imbecile children. In the churchyard is a monument to James Bruce, the Abyssinian traveller, who was born and died at Kinnaird house, 2½ mi. N.E. Two miles N. by W. are the ruins of Torwood castle and the remains of Torwood forest, to which Sir William Wallace retired after his defeat at Falkirk (1298). The fragment of an old round building is said to be the relic of one of the very few "brochs," or round towers, found in the Lowlands.

LARCENY, in law, is the unlawful taking and carrying away of things personal with intent to deprive the rightful owner of the same, and is now described by the English statute in force as "stealing." The term *theft,* sometimes used as a synonym of larceny, is in reality a broader term, applying to all cases of depriving another of his property whether by removing or withholding it, and includes larceny, robbery, cheating, embezzlement, breach of trust, etc.

Larceny is, in modern legal systems, universally treated as a crime, but the conception of it as a crime is not one belonging to the earliest stage of law. To its latest period Roman law regarded larceny or theft (*furtum*) as a delict *prima facie* pursued by a civil remedy—the *actio furti* for a penalty, the *vindicatio* or

condictio for the stolen property itself or its value. In later times, a criminal remedy to meet the graver crimes gradually grew up by the side of the civil, and in the time of Justinian the criminal remedy, where it existed, took precedence of the civil.

Under the common law of England larceny was a felony. It was affected by numerous statutes. A very large number of the old acts are named in the repealing act of 1827. An act of the same date removed the old distinction between grand and petit larceny. The former was theft of goods above the value of 12 pence, in the house of the owner, not from the person, or by night, and was a capital crime. It was petit larceny where the value was 12 pence or under, the punishment being imprisonment or whipping. In 1861 the Larceny Act of that year was passed, but many of its sections have been superseded by the Larceny Act, 1916.

Larceny Act of 1916.—By its first section it defines the offence of stealing (larceny). This definition makes no change in the law, but for the first time it puts into statutory form the various definitions that have been given of the offence, both at common law and in some acts of parliament. It provides:

"(1). A person steals who, without the consent of the owner, fraudulently and without a claim of right made in good faith, takes and carries away anything capable of being stolen with intent, at the time of such taking, permanently to deprive the owner thereof: Provided that a person may be guilty of stealing any such thing notwithstanding that he has lawful possession thereof, if, being a bailee or part owner thereof, he fraudulently converts the same to his own use or the use of any person other than the owner. (2). (i.) The expression 'takes' includes obtaining the possession—(*a*) by any trick; (b) by intimidation; (*c*) under a mistake on the part of the owner with knowledge on the part of the taker that possession has been so obtained; (*d*) by finding, where at the time of the finding the finder believes that the owner can be discovered by taking reasonable steps; (ii.) the expression 'carries away' includes any removal of anything from the place which it occupies, but in the case of a thing attached, only if it has been completely detached; (iii.) the expression 'owner' includes any part owner, or person having possession or control of, or a special property in, anything capable of being stolen. (3). Everything which has value and is the property of any person, and if adhering to the realty then after severance therefrom, shall be capable of being stolen: Provided that—(*a*) save as hereinafter expressly provided with respect to fixtures, growing things, and ore from mines, anything attached to or forming part of the realty shall not be capable of being stolen by the person who severs the same from the realty, unless after severance he has abandoned possession thereof; and (*b*) the carcase of a creature wild by nature and not reduced into possession while living shall not be capable of being stolen by the person who has killed such creature, unless after killing it he has abandoned possession of the carcase."

Forms of Larceny.—By the second section, stealing, for which no special punishment is provided under any act, is declared to be simple larceny and a felony punishable with penal servitude for any term not exceeding five years, and the offender, if a male under the age of 16 years, may be once privately whipped. Then follows a catena of sections (3–17) dealing with various forms of larceny and prescribing the punishments. They deal with larceny of horses and cattle; killing animals with intent to steal; larceny, after previous summary conviction, of dogs; larceny of wills; larceny of documents of title to lands and other legal documents; damaging fixtures, trees, etc., with intent to steal; larceny of goods in process of manufacture; abstracting of electricity; larceny of ore from mines; larceny of postal packets, etc.; larceny in dwelling-houses; larceny from the person; larceny from ships, docks, etc.; larceny by tenants or lodgers; larceny by clerks or servants. All, with the exception of larceny of dogs, after previous conviction, which is declared to be a misdemeanour punishable by imprisonment, with or without hard labour, for 18 months, are felonies, and the punishments vary from penal servitude for life in the cases of the larceny of wills or mail bags, to two years' imprisonment in the case of larceny of ore. Gas and water may also be the subject of larceny.

Questions of larceny at common law often arose where the relationship of husband and wife existed, and the matter was first dealt with by statute by the Married Women's Property Act, 1882. Now, by sec. 36 of the Larceny Act, 1916, a wife has the same remedies and redress for the protection and security of her own separate property as if such property belonged to her as a feme sole: Provided that no proceedings may be taken by a wife against her husband while they are living together as to or concerning any property claimed by her, nor while they are living apart as to or concerning any act done by the husband while they were living together concerning property claimed by the wife, unless such property has been wrongfully taken by the husband when leaving or deserting or about to leave or desert his wife. A wife doing an act with respect to any property of her husband which, if done by the husband in respect to property of the wife, would make the husband liable to criminal proceedings by the wife, is in like manner liable to criminal proceedings by her husband. The effect of this section and the proviso was considered by the Court of Criminal Appeal in *Rex* v. *Creamer* (26 Cox, C. C. 393).

At common law a joint owner of a chattel could not be guilty of larceny. Partnership property was dealt with by a statute, and now, by sec. 40 (4) of the Larceny Act, 1916.

Scotland.—A vast number of acts of the Scottish parliament dealt with larceny. The general policy of the acts was to make larceny what was not larceny at common law, *e.g.*, stealing fruit, dogs, hawks or deer, and to extend the remedies, *e.g.*, by giving the justiciar authority throughout the kingdom, by making the master in the case of theft by the servant liable to give the latter up to justice, or by allowing the use of fire-arms against thieves. The general result of legislation in England and Scotland has been to assimilate the law of larceny in both kingdoms. As a rule, what would be larceny in one would be larceny in the other.

Stolen Goods.—In English law, various points of importance arise in connection with chattels which have been the subject of larceny and have not been returned to the possession of their owner. The owner of the goods stolen has an action against the thief for the goods or their value. How far he is entitled to pursue his civil right to the exclusion of criminal prosecution does not seem very clear upon the authorities, but see *Midland Insurance Co.* v. *Smith* (1881, L.R. 6, Q.B.D., 568).

Receiving Stolen Property.—Formerly a misdemeanour at common law, this is now governed by the Larceny Act, 1916, which, by section 33, provides that every person who receives any property knowing the same to have been stolen or obtained in any way whatsoever under circumstances which amount to felony or misdemeanour shall be guilty of an offence of the like degree (whether felony or misdemeanour) and on conviction thereof liable—(*a*) in the case of felony, to penal servitude for any term not exceeding 14 years; (*b*) in the case of misdemeanour, to penal servitude for any term not exceeding seven years; (*c*) in either case, if a male under the age of 16 years, to be once privately whipped in addition to any punishment to which he may by law be liable. Receiving a mail bag or postal packet is made an equal felony with stealing. Every receiver may be indicted and convicted, whether the principal offender has or has not been previously convicted, or is or is not amenable to justice, and every person who, without lawful excuse, knowing the same to have been stolen or obtained in any way whatsoever under such circumstances that if the act had been committed in the United Kingdom the person committing it would have been guilty of felony or misdemeanour, receives or has in his possession any property so stolen or obtained outside the United Kingdom, is guilty of an offence of like degree.

Under the same act (sec. 42) a justice may issue a search warrant, and by sec. 43, whenever any person is being proceeded against for receiving any property, knowing it to have been stolen, or for having in his possession stolen property, for the purpose of proving guilty knowledge there may be given in evidence at any stage of the proceedings—(*a*) the fact that other property stolen within the period of 12 months preceding the

date of the offence charged was found or had been in his possession; (*b*) on certain conditions, the fact that within the five years preceding the date of the offence charged he was convicted of any offence involving fraud or dishonesty.

Restitution of Stolen Property.—For the general law as to the civil rights and liabilities of the owner and third parties in respect of stolen goods, *see* SALE OF GOODS, but the matter is dealt with by two acts of parliament which affect the criminal courts. Originally the law as to the restitution of stolen property was governed by sec. 100 of the Larceny Act, 1861, a section that was fully considered by the House of Lords in *Bentley* v. *Vilmont* (1887, 12 Ap. Cas. 471). That section has been replaced by sec. 45 of the Larceny Act, 1916, which provides that "If any person guilty of any such felony or misdemeanour as is mentioned in this act, in stealing, taking, obtaining, extorting, embezzling, converting, or disposing of, or in knowingly receiving, any property, is prosecuted to conviction by or on behalf of the owner of such property, the property shall be restored to the owner or his representative."

Compounding Theft.—As to compounding offences and corruptly taking rewards, compounding theft, or *theftbote* (*redemptio furti*), that is, taking back stolen goods or receiving compensation on condition of not prosecuting, is a misdemeanour at common law. It need not necessarily be committed by the owner of the goods. Under sec. 34 of the Larceny Act, 1916, it is a felony punishable by seven years' penal servitude to take money or reward corruptly for helping to recover stolen goods without using all due diligence to bring the offender to trial. By sec. 102 of the Larceny Act, 1861, to advertise or print or publish any advertisement offering a reward for the return of stolen goods, and using any words purporting that no questions will be asked, etc., renders the offender liable to a penalty of £50. This penalty must, by the Larceny (Advertisements) Act, 1870, be sued for within six months, and the assent of the attorney-general is necessary. Various acts provide for the liabilities of pawnbrokers, publicans, marine-store dealers and others into whose possession stolen goods come. (*See* also EMBEZZLEMENT; FALSE PRETENCES; ROBBERY.) (W. DE B. H.)

UNITED STATES

As the common law of the United States had its source in English precedents, the fundamental principles as to larceny are similar. They have, however, been altered and extended by statute and decision in every State to a widely varying degree. The common law requirement of asportation, for example, has been abolished by statute in Texas, while the courts in other States disagree as to what amounts to asportation. Legislation has dealt also with the requirement that the property be taken from the "possession" of another, but the principle is still difficult of application in some circumstances and the problem has not been consistently or even generally obviated. Various dealings with property which are not larceny, nor even criminal, at common law—such, *e. g.*, as embezzlement, theft of growing fruit, unauthorized taking of an automobile without intent permanently to deprive the owner thereof—have been made criminal by statute to some extent in every State and have frequently been either denominated larceny or made chargeable as larceny. A distinction between grand and petit larceny is still commonly recognized in legislation as affecting the amount or character of punishment, the jurisdiction of courts, powers of arrest, or other matters, but the diacritical value varies both in the different States and in some States according to the different objectives. Thus in New York the crime is divided into grand larceny in the first degree, punishable by a maximum of 10 years' imprisonment; grand larceny in the second degree, 5 years; petit larceny, 1 year. The division points are in general $500 and $50, but theft of property of less than $50 may be grand larceny in the first degree under some circumstances. In Michigan there are no degrees of larceny and the terms "grand" and "petit" are ignored in the statutes, but the circumstances or a value of over $25 determine the punishment. American statutes making the possession of certain things unlawful—notably the National Prohibition Act declaring that no property right shall exist in unlawfully possessed liquor—give greater importance in that country than in England to the question of whether one can be convicted of larceny for the theft of chattels which are incapable of lawful possession. By strictly legalistic reasoning one inferior court came to the decision that larceny of such things is impossible, but the great weight of authority holds the taker guilty of larceny. Because there is no common law of the United States as a nation, larceny as a crime against the Federal Government is wholly statutory. Congressional legislation has been confined to particular situations such as the theft of goods in interstate commerce, or in the possession of certain officials, etc. (J. B. WA.)

LARCH, a name applied to a small group of coniferous trees of the family *Pinaceae*. The members of the genus *Larix* are distinguished from the firs by their deciduous leaves, spirally arranged on the young shoots of the season, but on all older branchlets growing in whorl-like tufts, each surrounding the extremity of a rudimentary or abortive branch commonly called a spur; they differ from the cedars (*Cedrus*) not only in their deciduous habit, but in the cones, the scales of which are thinner and persistent at maturity. There are about 10 species, natives of Europe, the northern plains and mountain ranges of Asia and North America, though one (*Larix griffithii*) occurs only on the Himalayas.

The common European larch (*L. europaea*) is a stately tree with tall erect trunk, gradually tapering from root to summit, and horizontal branches springing at irregular intervals from the stem and in old trees often becoming more or less drooping, but rising again toward the extremities; the branchlets or side shoots, very slender and pendulous, are thickly studded with the spurs, each bearing a fascicle of 30 or more narrow linear leaves, of a peculiar bright light green when they first appear in the spring but becoming a deeper hue when mature. The erect, oblong cones, which persist on the branches for several seasons, are about 1 in. long, with reddish-brown scales. The tree flowers in April and May, and the terminally winged seeds are shed the following autumn. In the common European varieties the bark is reddish-gray, and rather rough and scarred in old trees. The trunk attains a height of 80–140 ft., with a diameter of 3–5 ft. near the ground, but in dense woods is comparatively slender.

The larch abounds on the Alps of Switzerland, on which it flourishes at an elevation of 5,000 ft., and also on those of Tirol and Savoy, on the Carpathians and in most of the hill regions of central Europe. It grows extremely rapidly, the stem attaining large size in from 60 to 80 years, although the tree yields good, useful timber at 40 or 50 years. The wood of large trees is fine-textured and in the best varieties ranges in colour from a deep reddish to brownish-yellow. When well prepared for use, larch is one of the most durable of coniferous woods. Its strength and toughness render it valuable for naval purposes; its freedom from any tendency to split adapts it for clinker-built boats. It is much employed for house-building in Switzerland, the log houses there deriving their fine brown tint from the hardened resin that slowly exudes from the wood after long exposure to the summer sun. It serves well for fence posts and river piles; many of the foundations of Venice rest upon larch.

In the trunk of the larch, where the sun is powerful in summer, a fine clear turpentine exists in great abundance; in Savoy and the south of Switzerland it is collected for sale, though not in such quantity as formerly, when, being taken to Venice for shipment, it was known in commerce as "Venice turpentine." Real larch turpentine is a thick tenacious fluid, of a deep yellow colour and nearly transparent; it does not harden with time; it contains 15% of the essential oil of turpentine, also resin.

The larch does not seem to have been propagated much in England until early in the 18th century. It grows as rapidly and attains as large a size in British habitats suited to it as in the Alps, and often produces equally good timber. The European larch has long been planted in the eastern United States for ornament and, to a limited extent, for timber. The Japanese larch (*L. kaempferi*) is widely planted. This oriental species attains a height of 90 ft., has horizontal branches, soft bluish-green

leaves marked with two white bands beneath, and ovoid cones ½ in. to 1½ in. long.

In North America there are four native species of larch. Of these the most widely distributed is the American larch (*L. laricina*), commonly called tamarack, known also as hackmatack and to the French Canadians as *épinette rouge*. It attains a height of 50 ft. to 60 ft. and a trunk diameter of 1½ ft. and resembles the European larch but has much smaller cones. The tamarack grows from Newfoundland and Labrador northwestward to Mackenzie, where it extends in dwarf forms to the Arctic ocean. It occurs sparingly southward to West Virginia, northern Indiana, Minnesota and the eastern base of the Rocky mountains in Alberta. In the south it is found only in deep, cold swamps, but in the north it often grows on well-drained uplands. The tamarack reaches its greatest size north of Lake Winnipeg and is the largest tree in Labrador. The hard, strong, durable wood is put to numerous uses, as for railway ties (sleepers), telegraph poles and fence posts.

The largest North American species is the western larch (*L. occidentalis*); this sometimes grows 250 ft. high, with a tapering, naked trunk 6 ft. to 8 ft. in diameter, terminating in a short, narrow pyramidal head of fine branches. It occurs, usually at from 2,000 ft. to 7,000 ft. altitude, from southern British Columbia to northern Oregon and eastward to Montana. The heavy, close-grained, very durable light red wood is suitable for many uses. In 1938 the total lumber cut of western larch was 125,600,000 bd. ft., valued at the mill at roughly $2,500,000. The alpine larch (*L. lyallii*), a tree usually 40 ft. to 50 ft. high, is restricted to a narrow belt near the timber line on high mountains from southern British Columbia and Alberta to Oregon and Montana. Alaska larch (*L. alaskensis*), is a small tree restricted to coastal forests of Alaska from Cook Inlet to the Yukon.

The golden larch (*Pseudolarix amabilis*) is a beautiful ornamental tree planted for its light green feathery foliage, which turns yellow in autumn. It is native to eastern China, where it grows to a height of 130 ft., and differs from the true larches in having larger cones with deciduous scales, longer and broader leaves and pendulous clusters of staminate flowers. (E. S. HR.)

LARCIUS (less accurately LARTIUS), **TITUS,** probably surnamed FLAVUS, a member of an Etruscan family (*cf.* Lars Porsena) early settled in Rome. When consul in 501 B.C. he was chosen dictator (the title and office being then introduced for the first time) to command against the thirty Latin cities, which had sworn to reinstate Tarquin in Rome. Other authorities put the appointment three years later, when the plebeians refused to serve against the Latins until they had been released from their debts. He opposed harsh measures against the Latins and also interested himself in the improvement of the lot of the plebeians. His brother Spurius is associated with Horatius Cocles in the defense of the Sublician bridge against the Etruscans.

See Livy ii. 10, 18, 21, 29; Dion. Halic. v. 50–77, vi. 37; Cicero, *De Re Publica,* ii. 32.

LARD, the rendered fats of the hog. Lard of various kinds is made in enormous quantities by the great pork-packing houses at Chicago and elsewhere in America. "Neutral lard" is prepared by melting the fat from leaf and back fat at low temperature. It is used (primarily) in the production of margarine. Prime steam lard is made by subjecting pork fats to pressure in closed vessels by injecting steam directly into the vessel. Kettle rendered and dry rendered lards are made by melting hog fats in steam jacketed kettles. The rendered lard is then drained and pressed from the resulting residue. Lard production in the U.S. in 1938 was approximately 1,754,000,000 lb. Lard exports in 1938 were 205,000,000 lb. compared with 137,000,000 lb. in 1937. Lard is a pure white fat of a butter-like consistency; its specific gravity is about 0.93, its solidifying point about 27°–30°C., and its melting point 35°–45°C. It contains about 60% of olein and 40% of palmitin and stearin. In the pharmacopoeia lard figures as adeps and is employed as a basis for ointments. Benzoated lard, used for the same purpose, is prepared by heating lard with 3% of powdered benzoin for two hours; it keeps somewhat better than ordinary lard but has slightly irritant properties.

Lard oil is the limpid, clear, colourless oil expressed by hydraulic pressure from pure lard after it has been "grained" by storage at a temperature of 45°F.; it is employed for burning and for lubrication.

The solid residue, lard stearin, is used for stiffening soft lards and also lards shipped to tropical climates. (*See* OILS, FATS AND WAXES.)

LARDNER, RING W. (1885–1933), American author and humorist, was born at Niles (Mich.), March 6, 1885. He received his education at the Niles high school and the Armour Institute of Technology, Chicago. He was a reporter on the South Bend (Ind.) *Times,* 1905–07, after which he spent four years in Chicago, contributing to the sporting columns of various newspapers there. He was editor of the *Sporting News,* St. Louis, 1910–11, and sporting writer for the Chicago *Tribune,* 1913–19, and later was connected with the Bell syndicate. His humour is based in part on its racy use of vernacular and the language of illiteracy. He has written a number of books, among which are *Bib Ballads* (1915); *You Know Me, Al* (1916); *Gullible's Travels* (1917); *Treat 'em Rough* (1918); *The Real Dope* (1919); *How to Write Short Stories* (1924); and *The Love Nest* (1926).

See T. L. Masson, *Our American Humorists* (1922).

LAREDO, a city of southern Texas, U.S.A., on the Rio Grande, opposite Nuevo Laredo, Mexico; a port of entry and the county seat of Webb county. It is the southern terminus of the Meridian highway; is served by the Missouri Pacific, the Rio Grande and Eagle Pass, and the Texas Mexican railways, the National railways of Mexico, and motorbus lines to Corpus Christi, Mission, San Antonio and Monterrey, Mexico. The Pan American highway connects Laredo and Mexico City, and a municipal airport is in operation. The population in 1930 was 32,618 (70% Mexicans) and was 39,274 in 1940.

Two international bridges cross the river here, with customs, immigration and health offices of the respective governments at either end. About 50,000 immigrants enter the United States annually through this gateway, and it is estimated that 100,000 other visitors come to the city. The climate is dry, with an average annual rainfall of 18·51 in., and the winter temperature rarely falls below 42° F. Laredo is the American trade centre nearest the large markets of Mexico. Over 50% of the commerce across the Rio Grande passes through it, and the exports amount to about $40,000,000 annually. It is also an important shipping point for Bermuda onions, spinach and other winter and early spring vegetables (2,700 carloads in recent years) to northern markets. Citrus fruits, figs, grapes, cotton, corn and alfalfa are other important crops of the region. There are 8,000 ac. of irrigated land along the river, just above and below the city, and a project is under way for irrigating 65,000 ac. more.

High-grade cannel coal is mined 28 mi. N.W. of Laredo. Natural gas was discovered about 28 mi. E. in 1908, and the production now is 4,000,000,000 cu.ft. daily. The first oil well came in on April 17, 1921. At the end of 1928 there were 613 producing wells, and the daily production now averages 20,000 barrels. Bricks and Spanish tile are important manufactures. There are several plants making Mexican products, a cotton-seed oil mill, and one of the few antimony smelters in the western hemisphere. Ft. McIntosh, a U.S. military post, is west of Laredo.

Laredo and Nuevo Laredo were originally one Mexican town, named after the seaport in Spain. The first settlement was made about 1755 by Capt. Tomás Sánchez, and in 1767 a city charter of liberal character was secured. The part on the left bank of the river was captured in 1846 by a force of Texas Rangers, occupied by U.S. troops under Gen. Lamar in 1847, and chartered as a city of Texas in 1848. It remained a quaint, somnolent adobe town until the first railroad reached it in 1881. After that, growth was rapid. By 1880 the population was 11,319, and in the next 30 years it doubled. A new impetus was given by the discovery of oil in 1921.

LAREN, a town of the Netherlands, 20 mi. southeast of Amsterdam, in the province of North-Holland. It is a quaint old village, with a large colony of painters.

On June 24th the only procession in Holland takes place to

St. Johns' cemetery (St. Jans-Processie).

LA RÉOLE, a town of south-western France, in the department of Gironde, on the right bank of the Gironde, 38 mi. S.E. of Bordeaux by rail. Pop. (1936) 3,062. La Réole grew up round a monastery of the 7th or 8th century, reformed in the 11th century under the name of *Regula,* whence that of the town. There are a church of the end of the 12th century and some of the buildings (18th century) of the abbey, a town hall of the 12th and 14th centuries, remains of the town fortifications from the 12th and 14th centuries, as well as a ruined château built by Henry II of England. The town is the centre of the district in which the well-known breed of Bazadais cattle is reared. It is an agricultural market, trades in wine and makes liqueur, casks, rope, etc.

LARES, older form *Lases,* Roman tutelary deities (etymology unknown, possibly connected with *lascivus*). They were originally gods of the cultivated fields, worshipped by each household at the *compitum* or crossroads where its allotment joined those of others (*see* below). Later, they were worshipped in the houses and the household Lar (*familiaris*) was conceived of as the centre-point of the family and of the family cult. The word itself (in the singular) came to be used in the general sense of "home." It is certain that originally each household had only one Lar; the plural was at first only used to include other classes of Lares, and only gradually, after the time of Cicero, ousted the singular. The image of the Lar stood in its special shrine (*lararium*) or niche, originally in the *atrium.* It was usually a youthful figure, dressed in a short, high-girt tunic, holding in one hand a *rhyton* (drinking horn), in the other a *patera* (cup). Under the empire we find usually two of these, one on each side of the central figure of the Genius, Vesta, or some other deity. The whole group was called indifferently Lares or Penates. A prayer was said to the Lar every morning and offerings made at family festivals, such as the Caristia (*see* MANES, PENATES). On these occasions the Lares were crowned with garlands, and offerings of wine and incense, cakes and honey, and swine were laid before them. Their worship persisted throughout the pagan period.

The public Lares belonged to the state religion. Among these must be included, especially after the time of Augustus, the *Lares compitales.* Generally two in number, they were the presiding deities of the crossroads (*compita*), where they had their special chapels. Their sphere of influence included not only the crossroads, but the whole neighbouring district of the town and country in which they were situated. They had a special annual festival, called *Compitalia,* to which public games were added some time during the republican period. The colleges of freedmen and slaves, who assisted the presidents of the festival, were abolished by Julius Caesar, but revived by Augustus, who added to these Lares his own Genius (*q.v.*).

The state itself had its own Lares, called *praestites,* the protecting patrons and guardians of the city. They had a temple and altar on the Via Sacra, near the Palatine, and were represented on coins as men wearing the chlamys, carrying lances, seated, with a dog, the emblem of watchfulness, at their feet. Mention may also be made of the *Lares grundules,* whose functions are unknown; the *viales,* who protected travellers; the *permarini,* connected with the sea, to whom L. Aemilius Regillus, after a naval victory over Antiochus (190 B.C.), vowed a temple in the Campus Martius, which was dedicated by M. Aemilius Lepidus, the censor, in 179.

The above is the view of Wissowa and Warde Fowler; the older idea, that the Lares are ancestral ghosts, is still maintained by some, especially E. Samter.

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LA RÉVELLIÈRE-LÉPEAUX, LOUIS MARIE DE (1753–1824), French politician, member of the directory, was born at Montaign (Vendée), on Aug. 24, 1753. A deputy to the states-general in 1789, he returned at the close of the session to Angers, where he sat on the council of Maine-et-Loire, and had to deal with the first Vendéen outbreaks. In 1792 he was returned to the Convention, and on Nov. 19 he proposed the famous decree by which France offered protection to foreign nations in their struggle for liberty. Proscribed with the Girondins in 1793 he was in hiding until the revolution of 9–10 Thermidor (July 27 and 28, 1794).

After serving on the commission to prepare the new constitution La Révellière became successively president of the assembly, a member of the committee of public safety and president of the directory. He was in alliance with Jean François Rewbell but the greatest of his fellow-directors, Lazare Carnot, was the object of his undying hatred. He was bitterly hostile to the Christian religion, which he proposed to supplant by theophilanthropy, a religion invented by the English deist David Williams. He was compelled to resign by the revolution of the 30th Prairial (June 18, 1799) and lived in retirement until his death on March 27, 1824. La Révellière's *Mémoires,* in which he took credit for the *coup d'état* of the 18th Fructidor (Sept. 4, 1797), must be read with caution.

The *Mémoires* were edited by R. D. D'Angers (3 vols., 1895). *See* also E. Charavay, *La Révellière-Lépeaux et ses mémoires* (1895), and A. Meynier, *Un Représentant de la bourgeoisie angevine* (1905).

LARGENTIÈRE, a town of southeastern France, capital of an arrondissement in the department of Ardèche, in the valley of the Ligne, 29 mi. S.W. of Privas by road. Pop. (1936) 1,396. A church of the 12th, 13th and 15th centuries and the old castle of the bishops of Viviers, lords of Largentière, now used as a hospital, are the chief buildings. The town is the seat of a subprefect and of a tribunal of first instance; and has silk mills, and carries on silk spinning, wine growing and trade in fruit and silk. It owes its name to silver mines worked in the vicinity in the middle ages.

LARGILLIÈRE, NICOLAS (1656–1746), French painter, was born at Paris on Oct. 20, 1656. His father, a merchant, took him to Antwerp at the age of three. He was the pupil of Goubeau in Antwerp and at the age of 18 went to England, where he was befriended by Lely, who employed him for four years at Windsor. His skill attracted the notice of Charles II, who wished to retain him in his service, but the fury aroused against Roman Catholics by the Rye House plot alarmed Largillière, and he went to Paris, where he was well received by Le Brun and Van der Meulen.

In spite of his Flemish training, his reputation as a portrait-painter was soon established; his brilliant colour and lively touch attracted the celebrities of the day—actresses, public men and popular preachers flocking to his studio. Huet, bishop of Avranches, Cardinal de Noailles, the Duclos and President Lambert, with his wife and daughter, are among his most noted subjects. In 1686 he was received by the Academy as a member, and presented as his diploma picture the fine portrait of Le Brun, now in the Louvre. He was received as an historical painter; but, although he occasionally produced works of that class ("Crucifixion," engraved by Roettiers), and also treated subjects of still life, it was in portraits that he excelled. Several of his works are at Versailles.

The church of St. Étienne du Mont at Paris contains the finest example of Largillière's work when dealing with large groups of figures; it is an *ex voto* offered by the city to St. Geneviève, painted in 1694, and containing portraits of all the leading officers of the municipality. Largillière passed through every post of honour in the Academy, until in 1743 he was made chancellor. He died on March 20, 1746.

LARGO (It. *broad*), musical term signifying that the style of performance is to be slow, broad and dignified. Also the name for a piece in this style, such as the famous arrangement of Handel's *Ombra mai fu,* from the opera *Serse.*

LARGS, a small burgh and watering place, Ayrshire, Scotland. Pop. (est. 1938) 6,129. It is situated 43 mi. S.W. of Glasgow by the L.M.S. railway. Its fine beach and dry, bracing climate attract many residents and summer visitors. Skelmorlie

Aisle, the sole relic of the old parish church of St. Columba, was converted into a mausoleum in 1636. Near it a mound covers remains, possibly those of the Norwegians who fell in the battle (1263) between Alexander III and Haco, king of Norway. The harbour is used mainly by Clyde passenger steamers and yachtsmen. From the quay a broad esplanade has been constructed northwards round the bay.

LARGUS, SCRIBONIUS, court physician to the Emperor Claudius, drew up (about A.D. 47) a list of 271 prescriptions (*Compositiones*), most of them his own. The greater part of it was transferred without acknowledgment to the work of Marcellus Empiricus (*c.* 410), *De Medicamentis Empiricis, Physicis, et Rationabilibus*. *See* the ed. of the *Compositiones* by G. Helmreich (Teubner series, 1887).

LARIDAE: *see* GULL; TERN.

LARINO, a town and episcopal see of Abruzzi e Molise (province of Campobasso), Italy (anc. *Larinum*), 32 mi. N.E. of Campobasso by rail (20 mi. direct), 984 ft. above sea-level. Pop. (1936) 4,872 (town), 7,615 (commune). The cathedral (1319) has a good Gothic façade. The campanile rests upon a Gothic arch erected in 1451. Palazzo Comunale has a courtyard of the 16th century. The ancient town, enclosed by megalithic walls, lay east of the modern, and was at first called Frenter. It was destroyed in 218 B.C. by Romans, and rebuilt under the name of Ladinod (found on its coins). It lay in the 2nd Augustan region (Apulia), but the people belonged to the Frentani by race. Its strong position gave it importance in the military history of Italy from the Hannibalic wars onwards. The town was situated on the main road to the south-east, which left the coast at Histonium (Vasto) and ran from Larinum east to Sipontum. From Larinum a branch road ran to Bovianum Vetus. Remains of its amphitheatre and of baths, etc., exist, and it did not cease to be inhabited until after the earthquake of 1300, when the modern city was established.

LARISSA (anc. LARISA), the chief town of the department of Larissa in Thessaly, on the Salambria river (anc. Peneios) 35 mi. N.W. of Volo, with which port, and with Athens and Salonika, it is connected by rail. Pop. (1928, last census before World War II) 23,899. When Thessaly was dominated by a few powerful clans, Larissa was the seat of the Aleuadae who until 369 B.C. furnished the commander-in-chief (*tagos*) of the Thessalian levies. Their rivals, the Scopadae, held Crannon ("Old Larissa") about 14 mi. southwest. The instability of Larissa as a city state was proverbial; in the 5th century, and under Philip V. of Macedon, it was short of citizens. It supported Athens in the Peloponnesian War, and its strategical position gave it importance to Macedonians, Romans and, more recently, to Turks. Since the 15th century it has been the seat of an archbishop, who has now 15 suffragans. Till 1881, when Thessaly was annexed to the Greek kingdom, it was the seat of a pasha in the vilayet of Jannina, and a military centre. During the Greek War of Independence it was headquarters of Ali Pasha. Until 1920 most of the inhabitants were still Turks, though many left in 1881, and after the Graeco-Turkish War of 1897. Larissa was the site of severe fighting between the Germans and the Greek-British army in World War II.

Larissa was a common place name in Greece and Western Asia Minor: probably it meant a "citadel," and was so applied at Argos. Another Thessalian *Larissa* (*cremaste*, "suspended," or *Pelasgia* [*Strabo* 440]) lay high on the slope of Mt. Othrys.

LARISTAN, an extensive district in the southeast of the province of Fars in Iran, extending on the south to the shores of the Persian gulf. The name has not now the political significance it had in former times when, for a long period, Laristan was a quasi-independent state. The last Khan was deposed and put to death by Shah Abbas I. The district consists largely of mountains and arid uplands with a narrow belt of coastal plain which in places is swampy and saline. It is very sparsely peopled by Iranians in the interior and Arabs in the maritime plains and is one of the least productive parts of Iran, having a most scanty rainfall which for drinking purposes is collected in cisterns. Sulphur and ironstone are found on the coast and elsewhere, and other minerals are possibly present, but almost certainly not in exploitable quantities. A noted local product is the condiment named *mahiabeh* (fish-jelly), a compound of pounded small sprat-like fish, salt, mustard, nutmeg, cloves and other spices, used as a relish with nearly all foods. It is somewhat similar to the compound of dried locusts, red pepper and honey which is made in Oman and is greatly prized.

Lar, the chief town, in 27° 43′ N., 54° 24′ E., at an elevation of 3,000 ft., is situated 180 mi. S.E. of Shiraz, on a caravan track from the coast at Bandar Abbas. Once a flourishing place with a population of 50,000 in the early part of the 18th century, its inhabitants now probably number fewer than 10,000.

LARIVEY, PIERRE (*c.* 1550–1612), French dramatist, belonged to a family of Italian origin, established at Troyes, which had gallicized its name from Giunta to L'Arrivey. Pierre Larivey appears to have cast horoscopes, and to have acted as clerk to the chapter of the church of St. Etienne, of which he eventually became a canon. Larivey was not the originator of French comedy, but he naturalized the Italian comedy of intrigue in France. He adapted, rather than translated, 12 Italian comedies into French prose. The first volume of the *Comédies facétieuses* appeared in 1579, and the second in 1611. Only nine in all were printed. The licence of the manners depicted in these plays is matched by the coarseness of the expression. Larivey's merit lies in the use of popular language in dialogue, which often rises to real excellence, and which was not without influence on Molière and Regnard. Molière's *L'Avare* owes something to the scene in Larivey's masterpiece, *Les Esprits*, where Séverin laments the loss of his purse, and the opening scene of the piece seems to have suggested Regnard's *Retour imprévu*.

It is quite likely that Molière may have played in some of Larivey's pieces while he was touring the provinces. Larivey was the author of many translations, varying in subject from the *Facétieuses nuits* (1573) of Straparola to the *Humanité de Jésus-Christ* (1604) from Pietro Aretino. The nine comedies printed were: *Le Laquais*, from the *Ragazzo* of Ludovico Dolce; *La Veuve*, from the *Vedova* of Nicolo Buonaparte; *Les Esprits*, from the *Aridosio* of Lorenzino de Medicis; *Le Morfondu*, from the *Gelosia* of Antonio Grazzini; *Les Jaloux*, from the *Gelosi* of Vincent Gabbiani; and *Les Escolliers*, from the *Cecca* of Girolamo Razzi, in the first volume; and in the second, *Constance*, from the *Costanza* of Razzi; *Le Fidèle*, from the *Fedele* of Luigi Pasqualigo; and *Les Tromperies*, from the *Inganni* of N. Secchi.

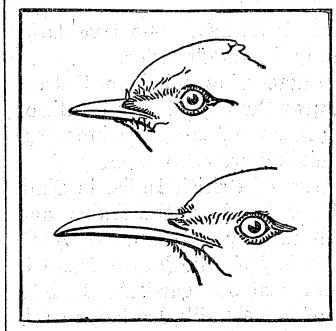


FIG. 1.—LULLULA ARBOREA (ABOVE) AND CERTHILAUDA (BELOW), LARKS WITH SLENDER BILLS, WHICH SHOW MARKED VARIATION IN LENGTH

LARK, applied with a prefix, *e.g.*, titlark, wood-lark, to a number of birds, but when used alone by Englishmen means the skylark, *Alauda arvensis*. This bird, a favourite cage-bird by reason of its beautiful song, and also esteemed for the table, inhabits the northern hemisphere of the old world from the Faeroes to the Kurile Islands, migrating southwards in winter to northern India, Iran and Egypt. It has been introduced to Long Island (N.Y.), Hawaii and New Zealand, and is abundant wherever there is open or agricultural country. It nests in grass and growing corn, the eggs varying from three to five, dull gray in colour, heavily mottled with purplish-brown. In the winter the birds congregate in flocks. It is resident in Great Britain throughout the year, though most numerous in the autumn. Both sexes are protectively coloured. The male mounts in wide circles as it sings. The food is injurious insects and seeds of weeds.

The wood-lark, *Lullula arborea*, is more local than the skylark and is never found far from trees. Its song is less varied but very beautiful. It is almost confined to Europe.

The crested lark, *Galerita cristata*, has a larger crest, a stronger and more curved bill and a rufous lining to the wings. It is common in France. Some of its relatives inhabit deserts and exhibit

a plumage of a light sandy hue. The harmony between plumage and soil is particularly striking in North African larks in the breeding season (see *Ibis,* supp. number, March, 1927). The larks present a great variety of structure. The bill may be long and thin (fig. 1) or short and stout (fig. 2). The hind claw, usually long, may be reduced to moderate dimensions (fig. 3). The first primary, which is almost aborted in the skylark, is well developed in *Melanocorypha* (fig. 4). The most constant feature is the *podotheca* or covering of the tarsus, which is scutellate both in front and behind.

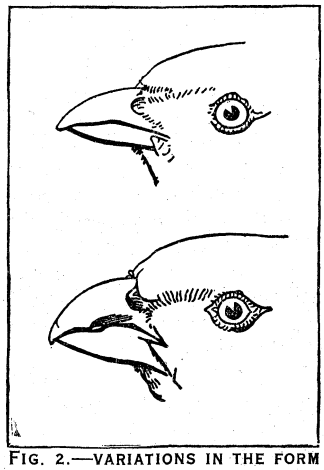


FIG. 2.—VARIATIONS IN THE FORM OF THE BILL BETWEEN MELANOCORYPHA CALANDRA (ABOVE) AND RHAMPHOCORYS CLOT-BEY (BELOW)

Only one genus, with a single species, *Mirafra horsfieldi,* inhabits Australia, and one genus, *Otocorys,* extends to America.

Among the birds popularly called larks are the mud-lark, rock-lark, titlark and tree-lark, which are pipits (*q.v.*), the grasshopper-lark, a warbler (*q.v.*), and the American meadow-lark,

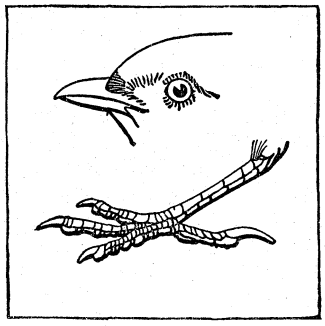


FIG. 3.—CALANDRELLA BRACHYDACTYLA, SHOWING THE HIND CLAW, REDUCED IN THIS SPECIES FROM THE USUALLY ELONGATED FORM TO A MODERATE SIZE

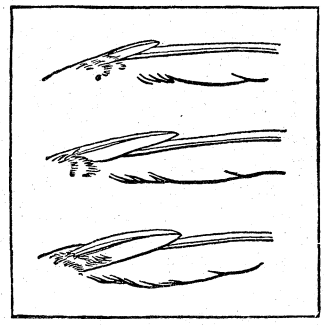


FIG. 4.—FIRST PRIMARIES, SHOWING VARYING DEGREES OF DEVELOPMENT IN RELATED LARK SPECIES Upper, *Alauda arborea;* centre, *Certhilauda;* lower, *Melanocorypha calandra*

which belongs to the *Icteridae* (*see* ICTERUS). The true larks moult but once a year, whereas the pipits moult twice.

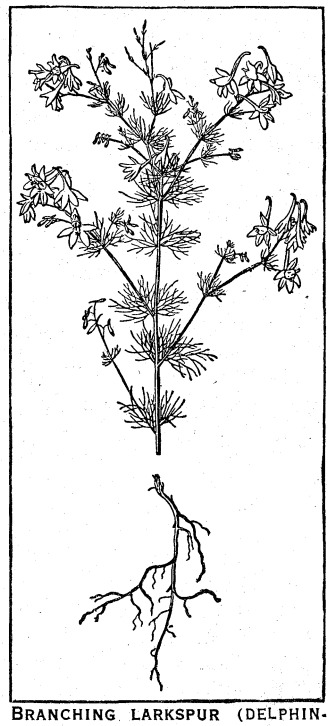
LARKHALL, mining and manufacturing town, in Dalserf civil parish, Lanarkshire, Scotland, near the Clyde, 16 mi. S.E. of Glasgow by the L.M.S.R. Pop. (1931) 17,310. Brickmaking, bleaching, silk-weaving, and coachbuilding are carried on.

LARKHANA, a town and district of British India, in Sind, Bombay. The town is on a canal not far from the Indus, and has a station on the North-western railway, 281 mi. N. by E. of Karachi. It is pleasantly situated in a fertile locality, and is well laid out with wide streets and spacious gardens. It is a centre of trade, with manufactures of cotton, silk, leather, metalware and paper. Pop. (1941) 28,713.

The DISTRICT OF LARKHANA, lying along the right bank of the Indus, was formed out of portions of Shikarpur and Karachi districts in 1901, and has an area of 2,857 sq.mi., pop. (1941) 511,208. Its western part is mountainous, but the remainder is a plain of alluvium watered by canals and well cultivated, being the most fertile part of Sind. The staple grain crops are rice, wheat and millets, which are exported, together with wool, cotton and other agricultural produce. Cotton cloth, carpets, salt and leather goods are manufactured, and dyeing is an important industry. The district is served by the North-western railway.

LARKSPUR, the popular name for species of *Delphinium,* a genus of hardy herbaceous plants belonging to the family Ranunculaceae (*q.v.*). They are of erect branching habit, with the flowers in terminal racemes, often of considerable length. Blue is the predominating colour, but purple, pink, yellow (*D. zalil*), scarlet (*D. cardinale*) and white also occur; the "spur" is produced by the elongation of the upper sepal. The field or rocket larkspur (*D. ajacis*), the branching larkspur (*D. consolida*), *D. cardiopetalum* and their varieties, are charming annuals; height about 18 in. The spotted larkspur (*D. requienii*) and a few others are biennials. The perennial larkspurs, however, are the most gorgeous of the family. There are upwards of 150 species, natives of the old and new worlds, and a great number of varieties the hybrid origin of which is veiled in obscurity. Members vary from 2 ft. to 6 ft. in height.

The larkspurs are of easy cultivation, either in beds or herbaceous borders; the soil should be deeply dug and manured. The annual varieties are best sown early in April, where they are intended to flower, and suitably thinned out as growth is made. The perennial kinds are increased by the division of existing plants in spring, or by cuttings taken in spring or autumn and rooted in pots in cold frames. The varieties cannot be perpetuated with certainty by seed. Seed is the most popular means, however, of raising larkspurs in the majority of gardens, and is suitable for all ordinary purposes; it should be sown as soon as gathered, preferably in rows in nursery beds, and the young plants transplanted when ready. They should be fit for the borders in the spring of the following year.



BRANCHING LARKSPUR (DELPHINIUM CONSOLIDA), SHOWING FLOWERS AND HABIT OF GROWTH

In North America there are upwards of 50 native species, widely distributed in the United States and southern Canada, but most numerous in the Rocky mountain region and on the Pacific coast, 16 being found in California. Many have exceedingly handsome flowers and various species are poisonous to grazing animals. Noteworthy representatives are the tall larkspur (*D. exaltatum*), of the eastern States; the Carolina larkspur (*D. carolinianum*), of the Southern States; the prairie larkspur (*D. virescens*), of the interior plains; the western larkspur (*D. occidentale*), of the higher Rocky mountains; and the scarlet larkspur (*D. cardinale*), of coastal California.

LARKSVILLE, an anthracite-mining borough of Luzerne county, Pa., U.S.A.; with a population in 1920 of 9,438 (25% foreign-born white; it was 9,322 in 1930 and 8,467 in 1940 by federal census. The borough was incorporated in 1909.

LARNACA (anc. *Citium* [*q.v.*], Turk, *Tuzla*), a seaport on the southeast coast of Cyprus, 26 mi. S.S.E. from Nicosia. Pop. (1944) 13,043. The oldest Phoenician settlement in prehistoric Cyprus was probably here, and many Roman remains have been found. Vessels anchor in an open roadstead, lighters carrying cargo to a pier, 900 ft. in length. The modern seafront and business street is called La Scala. Principal exports from Larnaca are gypsum, asbestos, terra umbra, barley, wheat, cotton and fruit.

See R. Gunnis, *Historic Cyprus* (1936).

LARNE, an urban district and seaport of Co. Antrim, Northern Ireland, 24½ mi. from Belfast by the northern counties (L.M.S.) railway. Pop. (1937) 11,090. Area, 1.8 sq.mi. From Larne to Stranraer, on the Scottish coast, is the shortest sea passage between Ireland and Great Britain, and a daily steamer service is maintained. There is an aluminum works; some shipbuilding and repairing is carried on, while at nearby Magheramourne are extensive cement works and quarries.

LA ROCHE, a small ancient town in the Belgian Ardennes, on a rock commanding the river Ourthe, which meanders round the little place and skirts the rock on which are ruins of the 11th cen-

tury castle. This is supposed to have been the site of a hunting box of Pippin, and certainly the counts of La Roche held it in fief from his descendants, the Carolingian rulers. In the 12th century they sold it to the counts of Luxemburg. In the 16th and 17th centuries the French and Imperialists frequently fought in its neighbourhood. La Roche is a tourist centre in fine sylvan scenery. The Diable-Château is a freak of nature, the apparent replica of a mediaeval castle. Pop. (est. 1939) 1,993.

LA ROCHEFOUCAULD, the name of an old French family which is derived from a castle in the province of Angoumois (department of Charente), which was in its possession in the 11th century. This castle was largely rebuilt in the reign of Francis I., and is one of the finest specimens of the Renaissance architecture in France. François de la Rochefoucauld (1494–1517), godson of King Francis I., was made count in 1515. At the time of the wars of religion the family fought for the Protestant cause. François (1588–1650) was created duke and peer of France by Louis XIII. in 1622. His son François was the author of the *Maxims,* and the son of the latter acquired for his house the estates of La Roche-Guyon and Liancourt by his marriage with Jeanne Charlotte du Plessis-Liancourt. Alexandre, duc de La Rochefoucauld (d. 1762), left two daughters, who married into the Roye branch of the family.

LA ROCHEFOUCAULD, FRANÇOIS DE (1613–1680), the greatest maxim writer of France, was born in Paris in the Rue des Petits Champs on Sept. 15, 1613. The author of the *Maxims,* who bore during the lifetime of his father (*see* above) the title of prince de Marcillac, joined the army before he was sixteen, and almost immediately began to make a figure in public life. He had been nominally married a year before to Andrée de Vivonne, who seems to have been an affectionate wife. For some years Marcillac continued to take part in the annual campaigns. Then he passed under the spell of Madame de Chevreuse, the first of three celebrated women who successively influenced his life. Through Madame de Chevreuse he became attached to the queen, Anne of Austria, and in one of her quarrels with Richelieu and her husband a scheme seems to have been formed, according to which Marcillac was to carry her off to Brussels on a pillion. These intrigues provided Marcillac an eight days' experience of the Bastille and occasional periods of exile to his father's estates. After the death of Richelieu (1642), Marcillac became one of the so-called *importants,* and took an active part in reconciling the queen and Condé in a league against Gaston of Orleans. But the growing credit of Mazarin came in his way, and the *liaison* in which about this time (1645) he became entangled with the beautiful duchess of Longueville made him irrevocably a Frondeur. He was a conspicuous figure in the siege of Paris, fought desperately in the desultory engagements which were constantly taking place, and was severely wounded at the siege of Mardyke. In the second Fronde Marcillac followed the fortunes of Condé. In the later Fronde La Rochefoucauld was always brave and generally unlucky. In the battle of the Faubourg Saint Antoine (1652), he was shot through the head, and it was thought that he would lose the sight of both eyes. It was nearly a year before he recovered, and then he found himself at his country seat of Verteuil. He did not return to court life much before Mazarin's death, when Louis XIV. was on the eve of assuming absolute power.

Somewhat earlier, La Rochefoucauld had taken his place in the salon of Madame de Sablé, a member of the old Rambouillet coterie. He, like almost all his more prominent contemporaries, had spent his solitude in writing memoirs, while the special literary employment of the Sablé salon was the fabrication of *Sentences* and *Maximes.* In 1662 a surreptitious publication of his memoirs, or what purported to be his memoirs, by the Elzevirs, called forth from him a flat denial of their authenticity. Three years later (1665) he published, anonymously, the *Maxims,* which at once established him high among the men of letters of the time. He might have entered the Academy for the asking; and in the altered measure of the times his son, the prince de Marcillac, to whom some time before his death he resigned his titles and honours, enjoyed a considerable position at court. Above all, La Rochefoucauld was generally recognized as a type of the older noblesse of the age of Louis XIV. He died in Paris on March 17, 1680, of the gout which had so long tormented him.

His literary work consists of three parts—letters, *Memoirs* and the *Maxims.* His letters exceed one hundred in number, and are biographically valuable, besides displaying not a few of his literary characteristics; but they need not further detain us. The *Memoirs,* when they are read in their proper form, yield in literary merit, in interest, and in value to no memoirs of the time, not even to those of Retz, between whom and La Rochefoucauld there was a strange mixture of enmity and esteem which resulted in a couple of most characteristic "portraits." Only in 1817 did anything like a genuine edition of the *Memoirs* (even then by no means perfect) appear.

The *Maxims* the author re-edited frequently during his life, with alterations and additions; they amount to about seven hundred in number, in hardly any case exceeding half a page in length, and more frequently confined to two or three lines. The view of conduct which they illustrate is usually summed up in the words "everything is reducible to the motive of self-interest." But the phrase is misleading. The *Maxims* are in no respect mere deductions from or applications of any such general theory. They are on the contrary independent judgments on different relations of life, different affections of the human mind, and so forth, from which, taken together, the general view may be deduced or rather composed. With a few exceptions La Rochefoucauld's maxims represent the matured result of the reflection of a man deeply versed in the business and pleasures of the world, and possessed of an extraordinarily fine and acute intellect. The excellence of the literary medium in which they are conveyed is even more remarkable than the soundness of their ethical import.

In uniting the four qualities of brevity, clearness, fulness of meaning and point, La Rochefoucauld has no rival. His *Maxims* are never mere epigrams; they are never platitudes; they are never dark sayings. He has packed them so full of meaning that it would be impossible to pack them closer, yet there is no undue compression.

The editions of La Rochefoucauld's *Maxims* (as the full title runs, *Reflexions ou sentences et maximes morales*) published in his lifetime bear the dates 1665 (*editio princeps*), 1666, 1671, 1675, 1678. An important edition which appeared after his death in 1693 may rank almost with these. Of the many modern editions may be mentioned the *édition des bibliophiles* (1870). The previous more or less complete editions of the *Mémoires* are all superseded by that of MM. Gilbert and Gourdault (1868–83), in the series of *Grands Écrivains de la France,* 3 vols. *See* an English version of the *Maximes* by G. H. Powell (1903). *See* also J. Bourdeau in the *Grands écrivains français* (1893); E. Gosse, *Three French Moralistes* (1918); E. Magne, *Le vrai visage de la Rochefoucauld* (1923).

LA ROCHEFOUCAULD-LIANCOURT, FRANÇOIS ALEXANDRE FRÉDÉRIC, DUC DE (1747–1827), French social reformer, was born at La Roche Guyon on Jan. 11, 1747, the son of François Armand de La Rochefoucauld, duc d'Estissac. The duc de Liancourt became an officer of carbineers, and married at seventeen. He established a model farm at Liancourt, where he reared cattle imported from England and Switzerland. He also founded a school of arts and crafts for the sons of soldiers, which became in 1788 the École des Enfants de la Patrie. Elected to the states-general of 1789 he became President of the Assembly on July 18. Established in command of a military division in Normany, he offered Louis a refuge in Rouen, and, failing in this effort, assisted him with a large sum of money. After the events of Aug. 10, 1792, he fled to England, and thence to America. After the assassination of his cousin, Louis Alexandre, duc de La Rochefoucauld d'Enville, in September 1792 he assumed the title of duc de La Rochefoucauld. He returned to Paris in 1799, and at the Restoration he entered the House of Peers. Successive governments, revolutionary and otherwise, recognized the value of his institutions at Liancourt, and he was for twenty-three years government inspector of his school of arts and crafts, which had been removed to Châlons. He was one of the first promoters of vaccination in France, and he was an active member of the central boards of administration for hospitals, prisons and agriculture. His opposition to the government in the House of Peers led to

his removal in 1823 from the honorary positions he held. His works, chiefly on economic questions, include books on the English system of taxation, poor-relief and education. He died on March 24, 1827.

His eldest son, FRANÇOIS, DUC DE LA ROCHEFOUCAULD (1765–1848), succeeded his father in the House of Peers. The second, ALEXANDRE, COMTE DE LA ROCHEFOUCAULD (1767–1841), married a San Domingo heiress allied to the Beauharnais family. Mme. de La Rochefoucauld became *dame d'honneur* to the empress Josephine, and their eldest daughter married a brother-in-law of Pauline Bonaparte, Princess Borghese. La Rochefoucauld became ambassador successively to Vienna (1805) and to The Hague (1808–10), where he negotiated the union of Holland with France. During the "Hundred Days" he was made a peer of France. He subsequently devoted himself to philanthropic work, and in 1822 became deputy to the Chamber and sat with the constitutional royalists. He was again raised to the peerage in 1831.

The third son, FRÉDÉRIC GAÉTAN, MARQUIS DE LA ROCHEFOUCAULD-LIANCOURT (1779–1863), wrote on social questions, notably on prison administration; he edited the works of La Rochefoucauld, and the memoirs of Condorcet; and he was the author of some vaudevilles, tragedies and poems. *See* A. de Castellane, *Gentilshommes démocrates; Les deux La Rochefoucauld,* etc. (1891).

LA ROCHEJACQUELEIN, DE, the name of an ancient French family of La Vendée, celebrated for its devotion to the throne during and after the Revolution.

At the outbreak of the Revolution the chief of the family was HENRI LOUIS AUGUSTE, marquis de La Rochejacquelein, *maréchal de camp* in the royal army, who had three sons named after himself—Henri, Louis and Auguste. The marquis emigrated with his second son Louis. He entered the service of Great Britain, and died in San Domingo in 1802.

HENRI, comte de La Rochejacquelein, born at Dubertien, near Châtillon, sur Sèvres, on Aug. 20, 1772, did not emigrate with his father. He served in the constitutional guard of the king, and remained in Paris till the execution of Louis XVI. He then took refuge with the marquis de Lescure on his own estates in Poitou. When the anti-clerical policy of the revolution provoked the rising of the peasants of La Vendée, he became one of their leaders. After the defeat of the Vendeans by the republicans at Cholet, he became their nominal commander-in-chief. But he had in fact to obey his army, and could only display his personal valour in action. He could not avert the mistaken policy which led to the rout at Le Mans, and was finally shot, March 4, 1794.

LOUIS, marquis de La Rochejacquelein, the younger brother of Henri, accompanied his father in the emigration, served in the army of Condé, and entered the service of England in America. He returned to France during the Consulate, and in 1801 married the marquise de Lescure, widow of his brother's friend, who was mortally wounded at Cholet. Her *Mémoires* (Bordeaux, 1815) give a remarkable picture of the war and the fortunes of the royalists. In 1815 the marquis endeavoured to bring about another Vendéan rising for the king, and was shot in a skirmish at the Pont des Marthes on June 4, 1815.

His grandson, JULIEN MARIE GASTON, born at Chartres on March 27, 1833, was an active legitimist deputy in the Assembly chosen at the close of the German War of 1870–1871. He was a strong opponent of Thiers, and continued to contest constituencies as a legitimist with varying fortunes till his death in 1897.

AUTHORITIES.—*Henri de La Rochejacquelein et la guerre de la Vendée d'après des documents inédits* (Niort, 1890); A. F. Nettement, *Vie de Mme. la Marquise de La Rochejacquelein* (Paris, 1876). The *Mémoires* of the marquise were translated into English by Sir Walter Scott, and issued as a volume of "Constable's Miscellany" (Edinburgh, 1827).

LA ROCHELLE, a seaport of France, capital of the department of Charente-Inférieure, 90 m. S. by E. of Nantes on the railway to Bordeaux. Pop. (1936) 47,318. La Rochelle stands on the Atlantic coast on an inlet opening off the great bay in which lie the islands of Ré and Oléron. Its fortifications have a circuit of $3\frac{1}{2}$ m. with seven gates. Towards the sea are three towers, of which the oldest (1384) is that of St. Nicholas. The 14th century Chain Tower is so called from the chain which closed the harbour; the entrance to the tidal basin was at one time spanned by a pointed arch between the two towers. The lantern tower (1445–76), surmounted by a spire, was once used as a lighthouse. Of the ancient gateways only one has been preserved in its entirety, that of the "Grosse Horloge," a square tower of the 15th century. The cathedral of La Rochelle (St. Louis or St. Bartholomew) is a heavy Grecian building (1742–1762) with an old 14th century tower, the only remnant of the old church of St. Bartholomew on the same site, destroyed in the 16th century. Externally the town-house is in the Gothic style of the latter years of the 15th century. In the old episcopal palace (which was in turn the residence of Sully, the prince of Condé, Louis XIII., and Anne of Austria, and the scene of the marriage of Alphonso VI. of Portugal with a princess of Savoy) accommodation has been provided for a library, a collection of records and a museum of art and antiquities. Of the old houses, the most interesting is one built in the middle of the 16th century and wrongly known as that of Henry II. The parade-ground, which forms the principal public square, occupies the site of the castle demolished in 1590.

Industries.—Ship-building, saw-milling and the manufacture of briquettes and chemicals, sardine and tunny-preserving and petroleum-refining are among the industries. The rearing of oysters and mussels and the exploitation of salt marshes is carried on.

The inlet of La Rochelle is protected by a mole built by Richelieu. The harbour, one of the safest on the coast, is entered by a channel 2,730 yd. long, and comprises an inner harbour, an interior dock and a larger exterior dock, outside which is the outer port. A large number of sailing ships are engaged in the fisheries, and the fish market of La Rochelle is the most important on the west coast. La Rochelle imports grain, coal, pitch, kaolin, wood and foreign wines, and its exports are French wines, oysters, pit props, etc. The harbour is, however, inaccessible to the largest vessels, for the accommodation of which the port of La Pallice was created. Lying about 3 mi. W.S.W. of La Rochelle, this port opens into the bay opposite the eastern extremity of the island of Ré. Vessels drawing 20 ft. are able to enter during three hours of each tide. The tidal basin is now open and the outer basin breakwater is in course of construction. The outer port, protected by two jetties, has an area of 31 ac. and a depth of $18\frac{1}{2}$ ft. below lowest tide-level. La Pallice has regular communication with South America, England, America, West Africa, Egypt and the far east. La Pallice imports coal, pitch, grain, dried codfish, nitrates, pyrites, jute, petroleum, gas, oil, wood pulp, phosphates. Exports are wines and brandy.

Known in the 10th century as Rupella, it belonged to the barony of Châtelaillon, which was annexed by the duke of Aquitaine and succeeded Châtelaillon as chief town in Aunis. Captured by Louis VIII in 1224, it was restored to the English in 1360, but it returned to France when Du Guesclin recovered Saintonge. During the 14th, 15th and 16th centuries La Rochelle, then an almost independent commune, was one of the great maritime cities of France. The salt-tax provoked a rebellion at Rochelle which Francis I repressed in person; in 1568 the town secured exemption by the payment of a large sum. At the Reformation La Rochelle became one of the chief centres of Calvinism, and during the religious wars it armed privateers which preyed on Catholic vessels. In 1571 a synod of the Protestant churches of France was held within its walls under the presidency of Beza for the purpose of drawing up a confession of faith. After the massacre of St. Bartholomew, La Rochelle was unsuccessfully besieged by the Catholic army. The peace of 1573, signed by the people of La Rochelle in the name of all the Protestant party, granted the Calvinists full liberty of worship in several places of safety. Under Louis XIII it put itself again at the head of the Huguenot party. Its vessels blockaded the mouth of the Gironde and stopped the commerce of Bordeaux, and also seized the islands of Ré and Oléron and several vessels. Richelieu then subdued the town. During this investment Richelieu raised the celebrated mole which cut off the town from the open sea. La Rochelle then became the principal port between France and the colony of Canada. But the revocation of the Edict of Nantes (1685) deprived it of some thousands of its most industrious inhabitants, and the loss of Canada by France for a time ruined its commerce.

LA ROCHE-SUR-YON, a town of western France, capital of the department of Vendée, on an eminence on the right bank of the Yon, 48 m. S. of Nantes on the railway to Bordeaux. Pop.

(1936) 15,258. The old castle was dismantled under Louis XIII. and the town almost destroyed in 1794. Napoleon re-erected it, using the stones of the ruins, and made it the chief town of Vendée. It was called Napoleon Vendée or Bourbon-Vendée, according to the ruling dynasty of the time, till 1870 when the old name was restored. The town is the seat of a prefect and a court of assizes, and has a tribunal of first instance and a chamber of commerce. It is a railway centre and is a market for cross-bred horses and cattle. La Roche-sur-Yon has an important *haras* (depôt for stallions) and flour mills, and is famous for its dog fairs.

LAROMIGUIÈRE, PIERRE (1756–1837), French philosopher, was born at Livignac on Nov. 3, 1756, and died on Aug. 12, 1837, in Paris. As professor of philosophy at Toulouse he incurred the censure of the parliament by a thesis on the rights of property in connection with taxation. Subsequently he was appointed professor of logic in the École Normale, Paris, and lectured in the Prytanée. In 1799 he was made a member of the Tribunate, and in 1833 of the Academy of Moral and Political Science. In 1793 he published *Projet d'éléments de métaphysique.* He wrote also two *Mémoires,* read before the Institute, *Les Paradoxes de Condillac* (1805) and *Leçons de philosophie* (1815–18). Laromiguière's philosophy was a revolt against the extreme physiological psychology of the natural scientists, such as Cabanis. He distinguished between those psychological phenomena which can be traced directly to purely physical causes, and the actions of the soul which originate from within itself. Psychology was not for him a branch of physiology, nor on the other hand did he give to his theory an abstruse metaphysical basis.

See F. P. G. Maine de Biran, *Examen des leçons de philosophie* (1817); J. P. Damiron, *Essai sur la philosophie en France au XIXe siècle* (1828); P. C. J. Daunou, *Notice sur Laromiguière* (1839); J. Victor Cousin, *Cours d'histoire de la philosophie moderne* (5 vols., 1841–46); H. Taine, *Les philosophes français du XIXe siècle* (1857); M. Ferraz, *Histoire de la philosophie en France: Spiritualisme et Libéralisme* (1887); F. Picavet, *Les Idéologues* (1891).

LARRA, MARIANO JOSÉ DE (1809–1837), Spanish satirist, was born at Madrid. His father, a regimental doctor in the French army, was compelled to leave the Peninsula with his family in 1812, and in 1817 Larra returned to Spain, knowing less Spanish than French. After an imprudent marriage in 1829, he broke with his relatives and became a journalist. His plays, *No más mostrador* (1831) and *Macias* (1834), and a historical novel, *El Doncel de Don Enrique el Doliente* (1834), are interesting as experiments only. Larra rapidly became famous under the pseudonyms of "Juan Pérez de Munguía" and "Figaro" which he used in *El Pobrecito Hablador* and *La Revista Española* respectively; a great career seemed to lie before him when, in 1837, in consequence of a disastrous love-affair, he committed suicide. But he lived long enough to prove himself the greatest Spanish prose writer of the 19th century. He wrote at great speed, with the constant fear of the censor before his eyes, but no sign of haste is discernible in his work, and the dexterity with which he aims his venomous shafts is amazing. His political instinct, his abundance of ideas and his forcible, mordant style would have given him a foremost position at any time and in any country; in Spain, they placed him beyond all rivalry.

LARSA (biblical Ellasar, modern Senkerah), an ancient town in southern Mesopotamia in 31° N. and 46° E. The town lay 15 miles south-east of the ancient Erech, on the west bank of the old Euphrates, and probably in early times on the shore of a fresh-water lake. It was one of the oldest of Sumerian cities, and though excavated by Loftus in 1854 it still awaits a modern excavator. The ruins are four and a half miles in circumference, the temple area being 220 × 320 feet, and Loftus found a large number of tablets here. Little is known at present about its relations in pre-Sargonic times but it was probably connected with Erech. During the Elamite conquest it plays a very interesting part as it formed an Elamite stronghold.

BIBLIOGRAPHY.—W. K. Loftus, *Chaldaea and Susiana* (original excavation); S. Langdon, *Cambridge Ancient History,* vol. i., 1923 (bibliography).

LARTET, EDOUARD (1801–1871), French archaeologist, was born in 1801 near Castelnau-Barbarens, department of Gers, France. The then recent work of Cuvier on fossil mammalia encouraged Lartet in excavations which led in 1834 to his first discovery of fossil remains in the neighbourhood of Auch. Thenceforward he devoted his whole time to a systematic examination of the French caves, his first publication on the subject being *The Antiquity of Man in Western Europe* (1860), followed in 1861 by *New Researches on the Coexistence of Man and of the Great Fossil Mammifers characteristic of the Last Geological Period.* In this paper he made public the results of his discoveries in the cave of Aurignac, where evidence existed of the contemporaneous existence of man and extinct mammals. In his work in the Périgord district Lartet had the aid of Henry Christy (*q.v.*). They published the important results of their researches as *Reliquiae Aquitanicae,* the first part appearing in 1865. The most modest and one of the most illustrious of the founders of modern palaeontology, Lartet, a foreign member of the Geological Society of London, had been made professor of palaeontology at the museum of the Jardin des Plantes a few weeks before his death, at Seissan, in January 1871.

LARVA, the name applied to the sexually immature stage or stages of an animal, when this is free-living and differs markedly in form and mode of life from that of the adult; *e.g.,* the tadpole of the frog, the caterpillar of the butterfly.

See INVERTEBRATE EMBRYOLOGY.

LARYNGITIS, inflammation of the mucous membrane of the *larynx.* There are three chief varieties—*acute, chronic* and *oedematous.* The larynx is also liable to inflammation in tuberculosis and syphilis.

Acute Laryngitis.—This may be independent or an extension from the nasal or bronchial mucous membrane. The chief causes are "catching cold," excessive use of the voice either in speaking or singing, inhalation of irritating particles, vapours, etc., and swallowing very hot fluids or corrosive poisons. It may also occur in measles and influenza. As a result of the inflammation there is a general swelling of the parts about the larynx and the epiglottis, the result being a narrowing of the channel for the entrance of the air, and to this the chief dangers are due. The symptoms vary with the intensity of the attack; there is first a sense of tickling, then of heat, dryness and pain in the throat, with some difficulty in swallowing. There is a dry cough, with expectoration later; phonation becomes painful, while the voice is husky, and may be completely lost. In children there is some dyspnoea. In favourable cases, which form the majority, the attack abates in a few days, but the inflammation may become oedematous and death may occur suddenly from an asphyxial paroxysm. Many cases of acute laryngitis are so slight as to make themselves known only by hoarseness and the character of the cough, nevertheless in every instance the attack demands serious attention. In children the question of diphtheria must not be lost sight of. The treatment is rest; no talking must be allowed. The patient should be kept in bed, in a room at an even temperature, and the air saturated with moisture. An ice-bag round the throat gives much relief, while internally diaphoretics may be given, and a full dose of Dover's powder if there be much pain or cough.

Chronic Laryngitis.—This follows repeated attacks of the acute form and is nearly always accompanied by granular pharyngitis. It is common in people who habitually over-use the voice, and causes the hoarse voice of street sellers. The constant inhalation of irritating vapours, such as tobacco smoke, may also cause it. There is usually little or no pain, only the unpleasant sensation of tickling in the larynx, with a constant desire to cough. The treatment consists in stopping the cause, where known, *e.g.,* the smoking or shouting, and local application of astringents.

Oedematous Laryngitis.—This is a very fatal condition, which may occur though rarely, in acute laryngitis. It is far more commonly seen in syphilitic and tuberculous conditions of the larynx, in kidney disease, in certain fevers, and in cases of cellulitis of the neck. The larynx is also one of the sites of *Angeioneurotic oedema.* There are all the symptoms of acute laryngitis on an exaggerated scale. The dyspnoea, accompanied by marked stridor, may arise and become dangerous within an hour. The mucous membrane round the epiglottis is enormously swollen.

The treatment is ice round the throat and scarification of the swollen parts; should that not relieve the symptoms, tracheotomy must be performed immediately.

Tuberculous Laryngitis.—This is practically always associated with phthisis. The mucous membrane is invaded by the tubercles, which first form small masses and later caseate and break down. The first indication is hoarseness, or, in certain forms, pains on swallowing. Cough is, as a rule, a late symptom. A sudden oedema may bring about rapidly a fatal termination. The general treatment is that for phthisis; locally, the affected parts may be removed by one or a series of operations, generally under local anaesthesia, or they may be treated with some destructive agent such as lactic acid. The pain on swallowing can be best alleviated by painting with a weak solution of cocaine. The condition is a very grave one; the prognosis depends largely on the associated pulmonary infection—if that be extensive, a very small amount of laryngeal mischief resists treatment and vice versa.

Syphilitic Laryngitis.—Invasion of the larynx in syphilis is very common. It may occur in both stages of the disease and in the inherited form. In the secondary stage the damage is superficial, and the symptoms those of a slight acute laryngitis. The injury in the tertiary stage is much more serious, deep ulcers, which in healing form strong cicatrices, may produce stenosis of the air-passage requiring surgical interference. Occasionally a fatal oedema may arise. The treatment is that of the primary condition. (*See* VENEREAL DISEASES.)

Paroxysmal Laryngitis, or Laryngismus Stridulus.—This is a nervous affection of the larynx that occurs in infants. It appears to be associated with adenoids and rickets. The disease consists of a reflex spasm of the glottis with complete occlusion of the air-passages. The attacks, which are recurrent, cause acute asphyxia. They may cease for no obvious reason, or one may prove fatal. The whole attack is of such short duration that the infant has either recovered or succumbed before assistance can be called. After an attack, careful examination should be made, and the adenoids, if present, removed by operation.

LARYNGOSCOPE, an instrument consisting of an arrangement of mirrors whereby the action of the vocal cords can be seen and studied. It was perfected and brought into general use, if not actually invented, by Manoel Garcia (*q.v.*), the famous singing teacher. A further development of the instrument is the laryngostroboscope. (*See* VOICE.)

LA SABLIÈRE, MARGUERITE DE (*c.* 1640–1693), friend and patron of La Fontaine, was the wife of Antoine Rambouillet, sieur de la Sablière (1624–1679), a Protestant financier entrusted with the administration of the royal estates, her maiden name being Marguerite Hessein. She received an excellent education in Latin, mathematics, physics and anatomy from the best scholars of her time, and her house became a meeting-place for poets, scientists, men of letters, and courtiers, members of the court of Louis XIV. About 1673 Mme. de la Sablière received into her house La Fontaine, whom for twenty years she relieved of every kind of material anxiety. La Fontaine dedicated one of his poems to her. Another friend and inmate of the house was the traveller and physician François Bernier. The abbé Chaulieu and his fellow-poet, Charles Auguste, marquis de La Fare, were among her most intimate associates. La Fare sold his commission in the army to be able to spend his time with her. This liaison, which seems to have been the only serious passion of her life, was broken in 1679. She died in Paris on Jan. 8, 1693.

See P. Blanchemain (ed.), *Madrégaux de la Sablière* (Paris, 1879).

LA SALE (or LA SALLE), **ANTOINE DE** (*c.* 1388–1462?), French writer, was born in Provence, probably at Arles. He was a natural son of Bernard de la Salle, a famous soldier of fortune, who served many masters, among others the Angevin dukes. In 1402 Antoine entered the court of Anjou, probably as a page, and in 1407 he was at Messina with Duke Louis II, who had gone there to enforce his claim to the kingdom of Sicily. The next years he perhaps spent in Brabant, for he was present at two tournaments given at Brussels and Ghent. With other gentlemen from Brabant, whose names he has preserved, he took part in the expedition of 1415 against the Moors, organized by John I of Portugal. In 1420 he accompanied Louis III on another expedition to Naples, making in that year an excursion from Norcia to the Monte della Sibilla, and the neighbouring Lake of Pilate, the story of which forms one of the episodes of *La Salade*. La Sale probably returned with Louis III of Anjou, who was also comte de Provence, in 1426 to Provence, where he was acting as *viguier* of Arles in 1429. In 1434 René, Louis's successor, made La Sale tutor to his son Jean d'Anjou, duc de Calabre, to whom he dedicated, between the years 1438 and 1447, his *La Salade,* which is a textbook of the studies necessary for a prince. Between 1439 and 1442 he was again in Italy with René. After 40 years' service of the house of Anjou, La Sale left it to become tutor to the sons of Louis de Luxembourg, comte de Saint Pol, who took him to Flanders and presented him at the court of Philippe le Bon, duke of Burgundy. For his new pupils he wrote at Châtelet-sur-Oise, in 1451, a moral work entitled *La Salle.*

He was nearly 70 years of age when he completed, in 1456, the famous *Hystoire et plaisante cronicque du petit Jehan de Saintré et de la jeune dame des Belles-Cousines, Sans autre nom nommer,* dedicated to his former pupil, Jean de Calabre. The *Réconfort à Madame de Neufville,* a consolatory epistle including two stories of parental fortitude, was written at Vendeuil-sur-Oise about 1458, and in 1459 La Sale produced his treatise *Des anciens tournois et faictz d'armes* and the *Journée d'Onneur et de Prouesse.* He followed his patron to Genappe in Brabant when the Dauphin took refuge at the Burgundian court.

La Sale is generally accepted as the author of one of the most famous satires in the French language, *Les Quinze Joyes de mariage,* because his name has been disengaged from an acrostic at the end of the Rouen ms. He has been credited with the famous collection of stories supposed to be narrated by various persons at the court of Philippe le Bon, and which was entitled the *Cent Nouvelles,* for which Louis XI was long held responsible, but modern criticism is against the attribution. The last mention of La Sale's name is in 1461. *Petit Jehan de Saintré* gives an account of the education of an ideal knight and rules for his conduct under many different circumstances. When Petit Jehan, aged 13, is persuaded by the Dame des Belles-Cousines to accept her as his lady, she gives him systematic instruction in religion, courtesy, chivalry and the arts of success. Saintré becomes an accomplished knight, the fame of whose prowess spreads throughout Europe. This section of the romance gives a very charming picture of the manners of the time. Unfortunately in the second part this virtuous lady falls a victim to a vulgar intrigue with Damp Abbé. One of La Sale's commentators, M. Joseph Nève, makes the too ingenious suggestion that the second section is designed simply to show how the hero, after passing through the other grades of education, learns at last by experience to arm himself against coquetry. *Petit Jehan de Saintré* was dedicated to the duc de Calabre. His wife, Marie de Bourbon, was one of the "Belles-Cousines" who contended for the favour of Jacques or Jacquet de Lalaing in the *Livre des faits de Jacques Lalaing* which forms the chief source of the early exploits of Petit Jehan and is usually attributed to the Burgundian herald Lefèvre. Jehan de Saintré flourished in the Hundred Years' War, was taken prisoner after Poitiers, with the elder Boucicaut, and was employed in negotiating the treaty of Bretigny. Froissart mentioned him as "le meilleur et le plus vaillant chevalier de France."

Evidence in favour of La Sale's authorship of *Les Quinze Joyes de Mariage* is brought forward by M. E. Gossart (*Bibliophile belge,* 1871, pp. 83–87). Gaston Paris (*Revue de Paris,* Dec. 1897) expressed an opinion that to find anything like the malicious penetration by which La Sale divines the most intimate details of married life, it is necessary to travel as far as Balzac.

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secolo (1895), and a review of it by Gaston Paris in the *Journal des Savants* (May 1895); L. Stern, "Versuch über Antoine de la Salle," in *Archiv für das Studium der neueren Sprachen,* vol. xlvi.; G. Raynaud, "Un Nouveau Manuscrit du Petit Jehan de Saintré," in *Romania,* vol. xxxi.

LASALLE, ANTOINE CHEVALIER LOUIS COLLINET, COUNT (1775–1809), French soldier, was the grandson of Abraham Fabert, marshal of France. He had reached the rank of lieutenant when the Revolution broke out. As an aristocrat, he lost his commission, but enlisted in the ranks, and by 1795 was serving as a staff-officer in the army of Italy. By 1800 he had become colonel, and in one combat in that year he had two horses killed under him, and broke seven swords. In 1805 as general of brigade, he was present at Austerlitz. In the pursuit after Jena in 1806, though he had but 600 hussars and no artillery, he terrified the strong fortress of Stettin into surrender, a feat rarely equalled save by that of Cromwell on Bletchingdon House. Made general of division for this exploit, he was next in the Polish campaign, and at Heilsberg saved the life of Murat. He distinguished himself further in the Peninsular War. A year later, at the head of one of the cavalry divisions of the *Grande Armée* he took part in the Austrian war and was killed at Wagram. With the possible exception of Curély, who was in 1809 still unknown, Napoleon never possessed a better leader of light horse.

LA SALLE, RENÉ ROBERT CAVELIER, SIEUR DE (1643–1687), French explorer in North America, was baptized at Rouen, France, on Nov. 22, 1643. He received the best education of the period, that of the Jesuits, but acquired an enmity for the organization which influenced many of his later acts. In 1666 he emigrated to Montreal where he received a grant of land on the St. Lawrence river. An impetus to explore, however, led him constantly into the wilderness and in 1669 and 1670 he undertook explorations south of Lakes Ontario and Erie. The claim often made that he discovered the Ohio river in 1671 is not accepted by modern historians. His services and ability made him a favourite with Frontenac, the governor of Canada, and in 1674 he was sent to France as the governor's representative to defend the building of Fort Frontenac (on the site of Kingston, Ont.), which Frontenac had undertaken upon his own initiative, and also to petition for the command of the fort. His petitions were successful. In 1677 he again visited France to seek further privileges and financial assistance in extending his explorations and the fur trade westward, together with the permission to build forts. He was rewarded with a monopoly of the trade in the Mississippi valley.

In 1679, after thorough preparation, members of his expedition boarded the "Griffin," the first commercial vessel on Lake Erie, and proceeded to Green Bay, Wisconsin, where the ship was loaded with a cargo of furs and started on its return voyage, La Salle hoping the cargo would pay his creditors at Montreal. The ship was never heard from again, an inauspicious start. Unaware of this, La Salle continued down the west shore of Lake Michigan to the mouth of the river St. Joseph where Fort Miami was built. From there, joined by a party under his lieutenant, Henri de Tonti, his expedition of 34 men ascended the river and portaged to the Illinois, where near Lake Peoria they erected Fort Crèvecoeur. Preparations were here made for the voyage down the Mississippi, while Michael Accault, Father Hennepin and another *voyageur* were sent on a successful trip up that river beyond the Falls of St. Anthony in Minnesota. La Salle and four companions started on a flying trip back to Fort Frontenac to straighten out finances and bring supplies, while Tonti led a small party in search of a better site for a fort. Messengers met La Salle upon his return with the news that Fort Crèvecoeur had been abandoned and the men deserted. La Salle, fearing for Tonti's safety, rapidly canoed westward and descended the Illinois to the Mississippi without finding him. He and his men then returned on foot to Fort Miami, from where La Salle returned to Fort Frontenac for a third time. Tonti and his men, after being captured by the Indians, had meantime made their way to Green Bay.

La Salle, having been able to raise funds, returned in the spring full of courage for another attempt. Tonti rejoined him and the party of over fifty proceeded via the Chicago-Illinois portage to the Mississippi river, down which they descended without difficulty to its long-sought mouth. There on April 9, 1682, La Salle took possession of the region watered by the Mississippi and all its tributaries for King Louis of France and named it "Louisiana."

La Salle was on the verge of success. He intended to build forts and plant colonies both in the Illinois region and at the mouth of the Mississippi, through which he could control the resources of his vast empire. He hoped soon to free himself of the entanglements of Canada and become governor of an independent realm. In Dec. 1682, he began the construction of Fort St. Louis on the Illinois river, the first post of a permanent character in the Illinois country. To facilitate the transportation of supplies he sent two men to build a post on the present site of Chicago to guard the Chicago portage. Unfortunately, however, Frontenac, his loyal supporter, was recalled to France. La Salle's merchant rivals, who resented his monopoly, carried on a campaign against him, succeeding first with Frontenac's successor, and finally with the French government at home. La Salle, convinced of the hostility of the new governor, started east to treat with him, but on the way met officials sent by the governor to take over the Illinois forts. La Salle was forced to carry his troubles direct to France.

There he met with favour, and the ministry, convinced that a colony at the mouth of the Mississippi was a strategic move of first importance against Spain, with whom France was then at war, authorized and aided La Salle to attempt it. La Salle was made governor of all Louisiana and the forts in the Illinois country were restored to him and repossessed by Tonti. In 1684 La Salle left France with four ships and about 400 men to make the settlement. The naval commander, Beaujeu, however, refused to obey La Salle from the first, and before long was responsible for the loss of the main supply ship to the Spanish. In the West Indies La Salle was seized with the fever and during his long illness the expedition became completely disorganized. When he finally continued with only 180 men it was only to miss the mouth of the Mississippi by proceeding too far to the westward. He retraced his steps and, conditions on shipboard becoming desperate, disembarked his colonists on the present Matagorda bay, Texas, the inlet of which he supposed to be the western outlet of the Mississippi. A short land journey soon convinced him of his mistake, and a longer land expedition to find the Mississippi was unsuccessful. Two of his remaining three ships were wrecked and the third had returned to France. The plight of the colony—reduced to 45 men—had become so desperate that La Salle and a small party made a fruitless attempt to reach Canada where their situation might be made known. Finally, in January 1687, he determined to make a second attempt and took about half the remaining survivors with him. On the way a mutiny occurred and La Salle was assassinated by one of his own men. A few reached Fort St. Louis on the Illinois river. Most of the colonists who had remained were murdered by the Indians. Magnificent in his personal failures, La Salle by his courage against odds has always made a great appeal. Though he seemed to fail, his explorations gave France claim to a splendid empire.

For sources *see* P. Margry, *Découvertes et Établissements* (1878); I. J. Cox, *Journeys of La Salle* (1922); L. P. Kellogg, *Early Narratives of the Northwest* (1917). For secondary works: F. Parkman, *The Discovery of the Great West* (1869); H. Lorin, *Le Comte de Frontenac* (1895); G. Gravier, *Cavelier de La Salle* (1871); L. S. Hasbrouck, *La Salle* (1916).

LA SALLE, ST. JEAN BAPTISTE DE (1651–1719), founder of the order of Christian Brothers, born at Reims, became a canon of the cathedral. He established a school at Reims, where free elementary instruction was given to poor children. His assistants were organized into a community, which gradually rooted itself all over France; and a training-school for teachers, the Collège de Saint-Yon, was set up at Rouen. In 1725, six years after the founder's death, the society was recognized by the pope, under the official title of "Brothers of the Christian Schools"; its members took the usual monastic vows, but did not aspire to the priesthood. During the first hundred years of its existence its activities were mainly confined to France; during the 19th century it spread to most of the countries of western Europe, and to the United States. When La Salle was canonized

in 1900, the total number of brothers was estimated at 15,000.

LA SALLE, a city of La Salle county, Ill., U.S.A., 100 mi. S.W. of Chicago, at the head of navigation on the Illinois river. It is on federal highways 6 and 51, is the western terminus of the Illinois and Michigan canal, and is served by the Burlington, the Chicago, Milwaukee, St. Paul and Pacific, the Illinois Central, the La Salle and Bureau County and the Rock Island railways. The population was 13,050 in 1920 (22·5% foreign-born white), and was 12,812 in 1940 by the federal census. There are coal mines, quarries of fine building stone, glass sand and clay in the vicinity. The city has extensive manufactures of zinc, sulphuric acid, cement, brick and clocks, with an aggregate factory output in 1937 valued at $4,091,871. La Salle was settled in 1830 and chartered as a city in 1852. Six miles east is Starved Rock (in a state park of 900 ac.), rising abruptly out of the river to a height of 160 ft., where La Salle about 1683 erected Fort St. Louis.

LASCAR, the name for all oriental, and especially Indian, sailors, which has been adopted in England into the Merchant Shipping Acts, though without any definition. It is derived from the Persian *lashkar*=army, or camp, and seems to have been applied by the Portuguese, first to an inferior class of men in military service (*cf.* "gun-lascars"), and then to sailors as early as the 17th century. The form *askari* on the east coast of Africa, meaning "sepoy," comes from the Arabic *'askar*=army.

LASCARIS, CONSTANTINE (d. 1493 or 1500), Greek scholar and grammarian, one of the promoters of the revival of Greek learning in Italy, was born at Constantinople. He was a member of the Bithynian family which had furnished three emperors of Nicaea during the 13th century. After the fall of Constantinople in 1453, he took refuge first in Corfu and then in Italy, where Francesco Sforza, duke of Milan, appointed him Greek tutor to his daughter. Here was published his *Grammatica Graeca, sive compendium octo orationis partium,* remarkable as being the first book entirely in Greek issued from the printing press. After leaving Milan, Lascaris taught in Rome and Naples. Ultimately he settled in Messina, Sicily, where he continued to teach publicly until his death.

LASCARIS, JOANNES (JOHN) or **JANUS** (*c.* 1445–1535), Greek scholar, probably the younger brother of Constantine Lascaris, surnamed Rhyndacenus. After the fall of Constantinople he was taken to the Peloponnese, thence to Crete, and ultimately found refuge in Florence at the court of Lorenzo de' Medici, whose intermediary he was with the sultan Bayezid II. in the purchase of Greek mss. for the Medicean library. On the expulsion of the Medici from Florence, at the invitation of Charles VIII. of France, Lascaris removed to Paris (1495), where he gave public instruction in Greek. By Louis XII. he was several times employed on public missions, amongst others to Venice (1503–08), and in 1515 he appears to have accepted the invitation of Leo X. to take charge of the Greek college he had founded at Rome. We afterwards (1518) find Lascaris employed along with Budaeus (Budé) by Francis I. in the formation of the royal library at Fontainebleau, and also again sent in the service of the French Crown to Venice. He died at Rome, whither he had been summoned by Pope Paul III., in 1535. Among his pupils was Musurus. Amongst other works, Lascaris edited or wrote: *Anthologia epigrammatum Graecorum* (1494), in which he ascribed the collection of the Anthology to Agathias, not to Planudes; *Didymi Alexandrini scholia in Iliadem* (1517); Porphyrius of Tyre's *Homericarum quaestionum liber* (1518).

See H. Hody, *De Graecis illustribus* (1742); W. Roscoe, *Life of Leo X.* ii. (1846); C. F. Börner, *De doctis hominibus Graecis* (Leipzig, 1750); A. Horawitz in Ersch and Gruber's *Allgemeine Encyclopädie;* J. E. Sandys, *Hist. Class. Schol.,* ed. 2, vol. ii. (1908), p. 78.

LAS CASAS, BARTOLOMÉ DE (1474–1566), bishop of Chiapas, known to posterity as the "Apostle of the Indians," was born in Seville in 1474, of noble family; and educated at the University of Salamanca. In 1510 he took holy orders, the first to be granted in the New World, and as a member of Diego Velasquez's colonizing expedition to Cuba in 1511–12 tried vainly to check the massacre of Indians at Caonas.

In 1514 he became suddenly convinced of the unextenuated evil of the *repartimiento* system (allotment of Indians for forced labour), and in 1515 he went to Spain to plead the cause of the Indians before the king (Ferdinand the Catholic). Despite the opposition with which he was confronted from a powerful vested interest in high places, he persisted, and on the death of the king in Jan. 1516, the regent, Cardinal Jimenes de Cisneros, placed him at the head of a commission of Hieronymite fathers to inquire into the means of alleviating the wrongs suffered by the Indians. When the commission arrived at Hispaniola, Las Casas' zeal rebelled at the caution of his colleagues, and he returned to Spain in 1517. Las Casas vigorously pressed his cause with the advisers of the new king, Charles V. He drew up a plan for colonizing the Indians, advocating the importation of negro slaves. The plan failed, and he soon repented the fallacy of substituting negro for Indian slavery. His attempt to found a model colony on the mainland (Cumuná) was defeated through the rapacious brutality of the conquistadors from the islands, and in 1522 he retired to a Dominican convent in Hispaniola.

In 1530 he returned to Spain and obtained a royal cedula prohibiting the enforcement of slavery in Peru, which he delivered in person. His mission concluded, he converted a fierce tribe of Indians in the interior of central America (Tuzutlan), founding the first example of what was to become a system under the Jesuits. It was during this period (*c.* 1535) that he wrote the treatise *De unico vocationis modo.* In 1539 he was sent by his order to gather Dominican recruits in Spain and wrote his best known work—*Brevísima relación de la Destruycion de las Indias occidentales* and in 1542 his *Veynte Razones* in defence of the liberties of the Indians. The emperor, perhaps to get him out of the country, offered him the diocese of Cuzco; this he refused, but accepted the arid bishopric of Chiapas (in Southern Mexico), to which he was confirmed in 1544. When he reached his diocese, he encountered immediate opposition: disloyalty on the part of the clergy, hostility on that of the authorities. He left for Spain in 1547 and surrendered his episcopal dignity. In 1550 he met the famous scholar Gines de Sepúlveda in an open debate on the thesis of the enslavement and destruction of aboriginal peoples. Soon afterward he retired from politics, but in 1555 he followed Prince Philip to England to thwart an attempt on the part of the colonists to obtain the prince's assent to the perpetual bondage of the Indians. Most of his last days were spent in the convents of San Gregorio at Valladolid and of the Atocha in Madrid, where he died in the latter days of July, 1566, one of the few humane and kindly figures in the history of the Spanish conquests in America. Much biographical material appears in his *Obras* (1552); his *Historia de las Indias* was not published until 1875–76.

See also: Sir Arthur Helps, *Life of Las Casas* (1868); F. A. MacNutt, *Bartholomew de las Casas* (1909). (W. B. P.)

LAS CASES, EMMANUEL AUGUSTIN DIEUDONNÉ MARIN JOSEPH, MARQUIS (1766–1842), French official, was born near Revel in Languedoc. He was educated at the military schools of Vendôme and Paris; he entered the navy and took part in various engagements of the years 1781–1782. The outbreak of the revolution in 1789 caused him to "emigrate," and he spent some years in Germany and England, sharing in the disastrous Quiberon expedition (1795). After some years in London he returned to France during the consulate with other royalists who rallied to the side of Napoleon. In 1810 Napoleon made him a chamberlain and created him a count of the empire (he was marquis by hereditary right). After the first abdication of the emperor (April 11, 1814), Las Cases retired to England, but returned to serve Napoleon during the Hundred Days. At the second abdication he proposed that the emperor should appeal to the British nation, afterwards accompanying him to St. Helena. He afterwards published the *Mémorial de Ste. Hélène,* from which he gained an enormous sum. This work should be read with great caution. He infringed the British regulations in such a way as to lead to his expulsion by the governor, Sir Hudson Lowe (Nov. 1816). He died in 1842 at Passy.

See *Mémoires de E. A. D., comte de Las Cases* (Brussels, 1818); *Mémorial de Ste. Hélène* (4 vols., London and Paris, 1823; often republished and translated); *Suite au mémorial de Ste. Hélène, ou observations critiques,* etc. (2 vols., 1824), anonymous, but known to

be by Grille and Musset-Pathay. *See* also GOURGAUD, GASPAR; LOWE, SIR HUDSON; MONTHOLON, CHARLES TRISLAU; NAPOLEON I.

LASCELLES, HENRY GEORGE CHARLES, VISCOUNT (1882–), eldest son of Henry Ulick Lascelles, 5th Earl of Harewood, was born on Sept. 9, 1882. He was educated at Eton and entered the army as a lieutenant in the Grenadier Guards. For a time he exchanged military for diplomatic service, becoming an honorary attaché to the Embassy in Rome 1905–07, and A.D.C. to the governor-general of Canada (Earl Grey) 1907–11. He served in France during the World War, being three times wounded and winning the D.S.O. with bar, as well as the Croix de Guerre. In 1922 (Feb. 28) he married Princess Mary, only daughter of King George V., and he was the same year created a Knight of the Garter. Succeeding his father in 1929 he became the 6th Earl of Harewood. His two sons are: George Henry Hubert, Viscount Lascelles (born Feb. 7, 1923), and Gerald David (born Aug. 22, 1924).

LAS CRUCES, a town of southern New Mexico, U.S.A., on the Rio Grande, at an altitude of 3,700 ft., 40 m. N.N.W. of El Paso; the county seat of Dona Ana county. It is at the intersection of federal highways 70, 80 and 85, and is served by the Santa Fe railway. The population was 8,385 in 1940 by the federal census. It is the commercial centre of the Elephant Butte irrigation district (90,000 ac.). The dam is 80 m. north of the city. At Mesilla park, 3 m. south, is the New Mexico college of Agriculture and Mechanic Arts (established 1889) and the agricultural experiment station. Just west of the college is the old adobe town of Mesilla (now inhabited exclusively by Mexicans), once the capital of the South-West Territory, where the Gadsden Purchase was consummated in 1854. Las Cruces was founded in 1849 and incorporated in 1907.

LASHIO: *see* SHAN STATES.

LASKER, EDUARD (1829–1884), German publicist, was born on Oct. 14, 1829, at Jarotschin, Posen, being the son of a Jewish tradesman. He attended the gymnasium, and afterwards the university of Breslau. In 1848, after the outbreak of the revolution, he went to Vienna and entered the students' legion, fighting against the imperial troops during the siege of the city in October. He then continued his legal studies at Breslau and Berlin, and after a visit of three years to England, then the model state for German liberals, entered the Prussian judicial service. In 1870 he left the government service, and in 1873 was appointed to an administrative post in the service of the city of Berlin. In 1865 he was elected member for one of the divisions of Berlin in the Prussian parliament. He joined the radical or *Fortschritts* party, and in 1867 was also elected to the German parliament, but he helped to form the national liberal party, and in consequence lost his seat in Berlin, which remained faithful to the radicals; after this he represented Magdeburg and Frankfort-on-Main in the Prussian, and Meiningen in the German, parliament. His motion that Baden should be included in the North German Confederation in Jan. 1870 caused much embarrassment to Bismarck, but probably hastened the crisis of 1870. His great work was his share in the judicial reform during the ten years 1867–77. To him more than to any other single individual is due the great codification of the law. He compelled the government to withdraw or amend many proposals which seemed dangerous to liberty, but opposed those liberals who, unable to obtain all the concessions which they called for, refused to vote for the new laws as a whole. A speech by Lasker on Feb. 7, 1873, attacking the management of the Pomeranian railway and the revelations which followed led to the fall of Hermann Wagener, one of Bismarck's most trusted assistants. This episode is generally regarded as the beginning of the reaction against economic liberalism by which he and his party were to be deprived of their influence. He refused to follow Bismarck in his financial and economic policy after 1878; always unsympathetic to the chancellor, he was now selected for his most bitter attacks. In 1879 he lost his seat in the Prussian parliament; he joined the *Sezession,* but was ill at ease in his new position. He died suddenly in New York on Jan. 5, 1884.

See L. Bamberger, *Eduard Lasker, Gedenkrede* (Leipzig, 1884); A. Wolff, *Zur Erinnerung an Eduard Lasker* (Berlin, 1884); Freund, *Einiges über Eduard Lasker* (Leipzig, 1885); and *Eduard Lasker, seine Biographie und letzte öffentliche Rede,* by various writers (Stuttgart, 1884).

LASKI, the name of a noble and powerful Polish family, is taken from the town of Lask, the seat of their lordship.

JAN LASKI, the elder (1456–1531), Polish statesman and ecclesiastic, took orders at an early age, and in 1495 was secretary to the Polish chancellor Zawisza Kurozwecki, in which position he acquired both influence and experience, and was sent on important diplomatic missions to Rome in 1495 and again in 1500, and once on a special embassy to Flanders, of which he has left an account. On the accession to the Polish throne in 1501 of the indolent Alexander, who had little knowledge of Polish affairs and chiefly resided in Lithuania, Laski was appointed by the senate the king's secretary, in which capacity he successfully opposed the growing separatist tendencies of the grand-duchy and maintained the influence of Catholicism, now seriously threatened there by the Muscovite propaganda. In 1503 his king appointed him chancellor, in which capacity Laski supported the *szlachta,* or country-gentlemen, against the lower orders, going so far as to pass an edict excluding henceforth all plebeians from the higher benefices of the church. In 1511 Laski became archbishop of Gnesen, and thus primate of the Polish Church. He carried out difficult negotiations for King Sigismund I. with the Teutonic Knights with conspicuous ability, which he also displayed at the Lateran Council convened by Pope Julius II. in 1513, where he attended to plead the cause of Poland against the Knights.

This mission was equally profitable to his country and himself, and he succeeded in obtaining from the pope for the archbishops of Gnesen the title of *Legati nati.* In his old age Laski's partiality for his nephew, Hieronymus, led him to support the candidature of John Zapolya, the protégé of the Turks, for the Hungarian crown so vehemently against the Hapsburgs that Clement VII. excommunicated him, and the shock of this disgrace was the cause of his sudden death in 1531. Of his numerous works the most noteworthy are his collection of Polish statutes entitled *Statuta provinciae gnesnensis antiqua,* etc. (Cracow, 1525–28) and *De Ruthenorum nationibus eorumque erroribus,* printed at Nuremberg.

See Heinrich R. von Zeissberg, *Joh. Laski, Erzbischof in Gnesen* (Vienna, 1874); and Jan Korytkowski, *Jan Laski, Archbishop of Gnesen* (Gnesen, 1880).

HIERONYMUS JAROSLAW LASKI (1496–1542), Polish diplomatist, nephew of Archbishop Laski, was successively palatine of Inowroclaw and of Sieradia. On the death of Ladislaus V. (*q.v.*), Laski, contrary to the wish of his own sovereign, Sigismund I., who favoured the Hapsburgs, entered the service of John Zapolya, the rival claimant, thus seriously compromising Poland both with the emperor and the pope. Laski acted as Zapolya's envoy to Paris, Copenhagen and Munich, and finally to the Sultan, under whose protection Zapolya had placed himself. On his way to Constantinople he was attacked and robbed both of his credentials and the rich presents he was bearing to the Sultan. In spite of this, he persuaded the Sultan to recognize Zapolya, and even, on his own authority, concluded a ten years' truce between his old master King Sigismund of Poland and the Porte. He then returned to Hungary at the head of 10,000 men, with whose aid he enabled Zapolya to re-establish his position and defeat Ferdinand. He was rewarded with the countship of Zips and the governor-generalship of Transylvania. But his influence excited the jealousy of the Magyars, and Zapolya was persuaded to imprison him. On being released by the interposition of the Polish grand hetman, Tarnowski, he became Zapolya's most violent opponent. Shortly after his return to Poland, Laski died suddenly at Cracow, probably poisoned by one of his innumerable enemies.

See Alexander Hirschberg, *Hieronymus Laski* (Pol.) (Lemberg, 1888).

JAN LASKI, the younger (1499–1560), also known as *Johannes a Lasco,* Polish reformer, son of Jaroslaw (d. 1523) voivode of Sieradia and nephew of Archbishop Laski, while studying abroad made the acquaintance of Zwingli and Erasmus and returned to Poland in 1526 saturated with the new doctrines. Nevertheless, he took orders, and owing to the influence of his uncle obtained the bishopric of Veszprem in Hungary from King John Zapolya,

besides holding a canonry of Cracow and the office of royal secretary. In 1531 he resigned all his benefices rather than give up a woman whom he had secretly married, and having incurred general reprobation and the lasting displeasure of his uncle the archbishop, he fled to Germany, where ultimately (1543) he adopted the Augsburg Confession. For the next 13 years Laski wandered through western Europe, preaching the new doctrines and urging Poland to adopt them. In 1556, during the brief triumph of the anti-Catholics, he returned to Poland, took part in the synod of Brzesc, and published a number of important polemical works.

See H. Dalton, *Johannes a Lasco* (1881), English version of the earlier portion by J. Evans (1886); Bartels, *Johannes a Lasco* (1860); Harboe, *Schicksale des Johannes a Lasco* (1758); R. Wallace, *Anti-trinitarian Biography* (1850); Bonet-Maury, *Early Sources of Eng. Unit. Christianity* (1884); W. A. Archbold, "Laski," in *Dict. Nat. Biog.* (1892); George Pascal, *Jean de Lasco* (Paris, 1894); *Life* in Polish by Antoni Walewski (Warsaw, 1872); and Juljan Bukowski, *History of the Reformation in Poland* (Pol.) (Cracow, 1883).

LASKOWSKI, LADISLAS (1841–1928), Polish anatomist, was born in Warsaw. He was imprisoned for his part in the insurrection of 1863, but escaped to Cambridge, continuing his medical studies there, and later in Paris. He joined the French Army medical service during the Franco-Prussian War. He was for many years professor of human anatomy at the University of Geneva. On his retirement, in 1916, he took up the study of astronomy, and, with the aid of a small observatory in his own house, discovered a star, nova Aquilae. His chief contribution to science, which gained him several academic honours, was his discovery of a method of preserving bodies for dissection. He died in Geneva on April 16, 1928.

LAS PALMAS, the capital of the Spanish island of Grand Canary, in the Canary archipelago, in 28° 7′ N. and 5° 24′ W. With pop. (1940) of 97,856 (mun., 119,595), it is the largest city in the Canary islands, and is the capital of one part of the group. Its bishop is subordinate to the archbishop of Seville. The palms from which the city derives its name are still characteristic of the fertile valley which it occupies. Las Palmas is built on both banks of a small river, and although parts of it date from the 16th century, it is on the whole a clean and modern city, well drained, and supplied with pure water, conveyed by an aqueduct from the highlands of the interior. Its principal buildings include a handsome cathedral, founded in the 16th century but only completed in the 19th, a theatre, a museum, an academy of art, and several hospitals and good schools. The modern development of Las Palmas is largely due to the foreign merchants, and especially to the British who control the greater portion of the local commerce. La Luz, the port, is connected with Las Palmas by a railway 4 mi. long. It is strongly fortified. The harbour, protected by the promontory of La Isleta, which is connected with the mainland by a narrow bar of sand, can accommodate the largest ships, and affords secure anchorage in all weathers. Ships can discharge at the breakwater (1,257 yd. long) or at the Santa Catalina mole, constructed in 1883–1902. The minimum depth of water alongside the quays is $4\frac{1}{2}$ ft.

La Luz is one of the principal Atlantic coaling stations. The chief exports are fruit, vegetables, sugar, wine and cochineal; coal, iron, cement, timber, petroleum, manure, textiles and provisions are ordinarily the chief imports. (*See* also CANARY ISLANDS.)

LASSALLE, FERDINAND (1825–1864), German Socialist, of Jewish extraction, was born at Breslau on April 11, 1825. He took a keen interest in public affairs, and early resolved to devote himself to the realization of democratic liberty; but after studying at Berlin university, where his brilliance gained for him the name of *Das Wunderkind,* he joined the group of Young Hegelians, and settled down to a scholastic career. His meeting with the Countess Sophie von Hatzfeldt in 1846, however, plunged him into a life of activity, and his prosecution of her suit throughout the next 11 years, in a trial for separation and alimony against her husband, Edmund von Hatzfeldt-Wildenburg, constitutes one of the most dramatic episodes in Lassalle's meteoric career. His only other entrance into public life during this earlier period was in 1848, when he suffered imprisonment for his revolutionary activities. For the most part these years were spent in study and the completion of his three most famous works. In 1857, he published *Die Philosophie Herakleitos dargestellt,* a study of Heraclitus from the Hegelian point of view; this was followed in 1859 by a pamphlet on *The Italian War and Prussia's Mission,* in which Bismarck's policy is foreshadowed; while in 1861 appeared *Das System des erworbenen Rechts,* a brilliant treatise on property.

In the following year began the short-lived activity which was to give Lassalle an historical significance. At that time, when political life in Germany was paralysed by the opposition of the Prussian Liberals to Bismarck's constitutional changes, Lassalle came forward as the antagonist of both Government and Opposition. Seeing an opportunity to realize his youthful ideals, and to fight for democracy, he called on the German workers to form their own party and to concentrate on their political and economic emancipation. The two main points in his programme were universal suffrage and a form of State Socialism, but he regarded the latter as the more important, the former being merely a means to that end. For two and a half years he struggled to arouse the workers from their apathy, and by means of pamphlets and speeches, succeeded in inflaming the country, particularly in the Rhineland area, where he was received with enthusiasm. His most important publications at this time were *The Working Man's Programme* (1862), and *The Open Letter* (1863), a succinct statement of the principles which should guide the workers in their establishment of a new era. In 1863, Lassalle founded the *Allgemeiner Deutscher Arbeiterverein,* the embryo of the German Social Democratic Party, a permanent memento of his work.

He died on Aug. 31, 1864, from a wound received in a duel at Carouge, Geneva. The duel arose from a love affair, which is familiar to English readers from its treatment by George Meredith in the *Tragic Comedians.* Although a champion of the working classes, Lassalle was a great figure in society. In the summer of 1864 he met in Switzerland Fräulein von Dönniges, for whom he had had earlier in Berlin a passion which was fully reciprocated. She was the daughter of the Bavarian envoy at Geneva, who would not hear of Lassalle as a suitor, and she was married, under pressure, to the Wallachian Count von Racowitza. Thereupon Lassalle challenged the father and the husband. The challenge was accepted by Racowitza, and the duel proved fatal.

Lassalle left no clear exposition of his theories, and it was only after his death that an examination of his letters and writings revealed his capacity both as a thinker and an agitator. During his years of study (1848–62), he worked out his philosophy of life, but as a propagandist he subordinated his philosophy to the needs of the moment. His investigations into the history of man led him to conceive of three stages of development: the ancient and feudal, which, through the subjection of the labourer, sought solidarity without freedom; the reign of capital and the middle classes, established in 1789, which sought freedom by destroying solidarity; and the new era, beginning in 1848, which would reconcile both by the introduction of the principle of association. But by association, Lassalle meant productive associations of working men under the benevolent guidance of the State, not the co-operative institutions which were then being organized by Schulze-Delitzsch, to which he was bitterly opposed.

But if, as a propagandist, Lassalle merely accepted the orthodox political economy, as a thinker he made several valuable contributions to economic theory. His explanation of trade cycles, or, as he called them, conjunctures, though incomplete, is yet worthy of consideration; while his discussion of property, which he maintained is an historical category, and of capital, was developed by later socialist writers. It must be admitted, however, that Lassalle's greatest work is in the political sphere, and it is as a propagandist who successfully placed a socialist programme before the German workers, and who succeeded in forming the first effective socialist party, that he will chiefly be remembered.

Lassalle's most important works, apart from those already mentioned are: *Über Verfassungswesen; Arbeiterprogramm; Zur Arbeiterfrage; Arbeiterlesebuch; Herr Bastiat-Schulze von Delitzsch, oder Kapital und Arbeit.* His *Collected Works* appeared at Leipzig (1899–1901).

The best biography of Lassalle is H. Oncken's *Lassalle* (Stuttgart, 1904); another excellent work on his life and writings is George

Brandes' Danish work, *Ferdinand Lassalle* (German translaton, 4th ed., Leipzig, 1900). *See* also A. Aaberg, *Ferdinand Lassalle* (Leipzig, 1883); C. v. Plener, *Lassalle* (Leipzig, 1884); G. Meyer, *Lassalle als Sozialökonom* (1894); Brandt, *F. Lassalles Sozialökonomische Anschauungen und praktische Vorschläge* (Jena, 1895); Seillière, *Études sur Ferdinand Lassalle* (1897); E. Bernstein, *Ferd. Lassalle und seine Bedeutung für die Arbeiterklasse* (1904). For details of his private life *see* Helene von Racowitza, *Meine Beziehungen zu F. Lassalle;* B. Becker, *Enthüllungen über das tragische Lebensende F. Lassalles;* A. Kutschbach, *Im Anschluss an die Memoiren der H. von Racowitza. See* further W. H. Dawson, *German Socialism and Lassalle* (1888); K. Haenisch, *Lassalle; Mensch und Politiker* (1925).

(T. Ki.)

LASSEN, CHRISTIAN (1800–1876), German orientalist, was born at Bergen, Norway, on Oct. 22, 1800. He was educated at Christiania (Oslo), at Heidelberg and at Bonn, where he acquired a sound knowledge of Sanskrit. He spent the next three years in Paris and London, collecting materials for future research, especially with reference to the Hindu drama and philosophy. On his return to Bonn he studied Arabic and took the degree of Ph.D. In 1829–31 he brought out, with August W. von Schlegel, a critical annotated edition of the Hitopadesá. He also directed his attention to the Zend, and to Iranian studies generally, and in *Die altpersischen Keilinschriften von Persepolis* (1836) revealed the true character of the Old Persian cuneiform inscriptions. He published in the 6th volume of his journal (1845), a collection of all the old Persian cuneiform inscriptions known up to that date. He also deciphered the newly-discovered Bactrian coins (*see* his *Zur Geschichte der griechischen und indo-skythischen Könige in Bakterien, Kabul, und Indien,* 1838). The great work of Lassen's life was his *Indische Altertumskunde* (1847–61).

His works include: an edition and translation (with von Schlegel) of the first two cantos of the *Ramayana* (1829–38); an edition of the first act of Bhavabhuti's drama *Malatimadhava* (1832); a complete edition with Latin translation, of the *Sankhyakarika* (1832); an edition and translation of Jayadeva's lyrical drama *Gitagovinda* and his *Institutiones linguae Pracriticae* (1837); *Anthologia Sanscritica* (1838, new ed. J. Gildemeister, 1868).

LASSEN, EDUARD (1830–1904), Belgian musical composer, was born in Copenhagen, but educated at the Brussels Conservatoire. He won the *Prix de Rome* in 1851, and went for a long tour in Germany and Italy. He settled at Weimar, where in 1861 he succeeded Liszt as conductor of the opera, and he died there on Jan. 15, 1904. Besides many well-known songs, he wrote operas—*Landgraf Ludwig's Brautfahrt* (1857), *Frauenlob* (1861), *Le Captif* (1868)—instrumental music to dramas, notably to Goethe's *Faust* (1876), two symphonies and various choral works.

LASSO (LASSUS), ORLANDO (*c.* 1530–1594), Belgian musical composer, whose real name was probably Roland Delattre, was born at Mons in Hainault, not much earlier than 1532. He seems to have visited England in 1554 and to have been introduced to Cardinal Pole, to whom an adulatory motet appears in 1556.

His first book of motets appeared at Antwerp in 1556, containing the motet in honour of Cardinal Pole. The style of Orlando had already begun to purify itself from the experimental incongruities that led Burney, who seems to have known only his earlier works, to call him "a dwarf on stilts" as compared with Palestrina. But where he is orthodox he is as yet stiff, and his secular compositions are, so far, better than his more serious efforts. In 1557, if not before, he was invited by Albrecht IV., duke of Bavaria, to go to Munich. The duke was an intelligent patron of the fine arts, a notable athlete, and a man of strict principles. Munich now became Orlando's permanent home; though he sometimes paid long visits to Italy and France, whether in response to royal invitations or with projects of his own. In 1558 he made a happy marriage by which he had four sons and two daughters. The four sons all became good musicians; and the two eldest (under the patronage of Duke Maximilian I., the second successor of Orlando's master) published the enormous collection of Orlando's Latin motets known as the Magnum opus musicum.

Like Haydn at Esterhaz, but in no provincial isolation, Orlando at Munich worked out his art under ideal circumstances. His duty was to make music all day and every day, and to make it according to his own taste. Nothing was too good, too severe or too new for the duke. Church music was not more in demand than secular. Instrumental music, which in the 16th century had hardly any independent existence, accompanied the meals of the court; and Orlando would rise from dessert to sing trios and quartets with picked voices. The daily prayers included a full mass with polyphonic music. Such things were possible in those days, for 16th century music was no sooner written than it could be performed, entailing as little expense and preparation as a game of billiards in a good billiard room. From Munich Orlando's fame radiated throughout Europe, and every contemporary authority attests that he was received with acclamation wherever his travels took him. Experience rapidly taught him a style as pure as Palestrina's, without narrowing his range or curbing his originality. He was omnivorous of the literary culture of the time; and during his stay at the court of France in 1571 he became a friend of the poet Ronsard.

In 1579 Duke Albrecht died. Orlando's salary had already been guaranteed to him for life, and the new duke was very kind to him. But the loss of his master was a great grief and seems to have checked his activity for some time. In 1589, after the publication of six Masses, ending with a beautiful Missa pro defunctis, his strength began to fail; and a sudden serious illness left him alarmingly depressed and inactive until his death on June 14, 1594.

If Palestrina represents the supreme height attained by 16th century music, Orlando represents the whole century. The swiftness of his intellectual and artistic development is astonishing. His first four volumes of madrigals show but an intermittent sense of beauty. Many a number in them is a solid mass of "false relations" between twin major and minor chords, such as make an unenviable mark of distinction between English styles and the purity of the Italians. In the Italian madrigal (as distinguished from the *villanella* and other light forms), Orlando seldom attained or attempted a pure style, though some of his later madrigals are indeed glorious. But in his French chansons, many of which are settings of the poems of his friend Ronsard, his wit and deftness are unfailing, and it would be worth while to find appropriate but decent texts for those compositions, German, French and Italian, which modern singers cannot sing to the gross original words. In 1562 when the Council of Trent was censuring the abuses of Flemish church music, Orlando had already purified his ecclesiastical style; though he saw no reason why it should cease to be Flemish. At the same time Orlando's Masses are not among his greatest works. Perhaps the uses of Duke Albrecht's private chapel were less favourable to finely proportioned liturgical music than the uses of metropolitan Rome. But, in any case, the music of a 16th century Mass demands, before all other technical qualities, the power of composition. No power of illustration can replace power of composition where the composer has to deal with a text of universal import. And Orlando is primarily not a composer, but an illustrator.

Palestrina and Victoria are as inveterate composers as Beethoven and Schubert. When Palestrina is uninspired his composition remains efficient; and when Victoria is uninspired his composition becomes diffuse. Dullness results in both cases. The uninspired Orlando does not become dull, though he may become very ugly. But he reveals to us that he is not normally a composer at all. Like Max Reger, he can sit down to write, with nothing in his head, and brew a kind of musical audit-ale alarming in its concentration. But for him, as for the listener, a long pull at such stuff is impossible. When inspiration comes, the gift of composition comes with it: the sections coalesce and relieve each other with incalculable variety of proportion in forms uniquely right; and the inveterate illustrator is not repressed but raised to a sublime activity. In the wonderful "Justorum animae" (Magnum opus No. 266 [301]) the rhythms of "sunt in pace" become vast like the beating of an angel's wings in space. It is one of the supreme passages in music, and is perfectly poised upon its context. Orlando can also become a composer on less powerful impulse. His high spirits will suffice, together with his Shakespearian love of puns, for which the solmization syllables "ut, re, mi, fa, sol, la" give abundant musical opportunities. It is not surprising, then, to find him enjoying caricature, and setting a whole Latin poem written exclusively in false quantities; and

making a long motet out of the words "super flumina Babylonis" spelled syllabically (s, u—su; p, e, r—per—super). Even these follies become musical and when the text is itself inspired by genuine high spirits Orlando again rises to power of composition. His setting of Walter de Mapes's "Fertur in conviviis" (given in the Magnum Opus with a stupid moral derangement of the text), and most of his French chansons, are among the most deeply humorous music in the world.

If 16th century music could have covered the range of 16th century drama or of 19th century symphony and opera, Orlando might more easily have proved to us that his humour came from a Shakespearian understanding of the sublime. His Penitential Psalms stand with Josquin's Miserere and Palestrina's first book of Lamentations as artistic monuments of 16th century penitential religion, just as Bach's Matthew Passion stands alone among such monuments in later art. Yet the passage (quoted by Sir Hubert Parry in vol. 3 of the *Oxford History of Music*) "Nolite fieri sicut mulus" is one among many traits which are grotesquely descriptive without losing harmony with the austere depths of their context. Such music, if only from its peculiar technique of crossing parts and unexpected intervals, is exceptionally difficult to read; and hence intelligent conducting and performance of it are rare.

Orlando's works as shown by the plan of Messrs. Breitkopf and Härtel's complete critical edition (begun in 1894) comprise: (1) The Magnum opus musicum, a posthumous collection containing Latin pieces for from two to twelve voices, 516 in number (or, counting by single movements, over 700); not all of these are to the original texts. The Magnum opus fills eleven volumes. (2) Five volumes of madrigals, containing six books, and a large number of single madrigals, and about half a volume of lighter Italian songs (villanellas, etc.). (3) Three volumes (not four as in the prospectus) of French chansons. (4) Two volumes of German four-part and five-part *Lieder*. (5) Serial church music: three volumes, containing Lessons from the Book of Job (two settings); Passion according to St. Matthew (*i.e.*, like the Passions of Victoria and Soriano, a setting of the words of the crowds and of the disciples); Lamentations of Jeremiah; Morning Lessons; the Officia printed in the third volume of the Patroncinium (a publication suggested and supported by Orlando's patrons and containing eight entire volumes of his works); the Seven Penitential Psalms; German Psalms and Prophetiae Sibyllarum. (6) One hundred Magnificats (Jubilus B. M. Virginis) 3 vols. (7) Eight volumes of Masses. (8) Two volumes of Latin songs not in the Magnum opus. (9) Five volumes of unpublished works.

(D. F. T.)

LASSO (Span. *lazo*, snare, ultimately from Lat. *laqueus, cf.* "lace"), a rope 60 to 100 ft. in length with a slip noose at one end, used in the Spanish and Portuguese parts of America and in the western United States for catching wild horses and cattle. It is now less employed in South America than in the vast grazing country west of the Mississippi river, where the herders, called locally cowboys or cowpunchers, are provided with it. When not in use, the lasso, called rope or lariat in the west, is coiled at the right of the saddle in front of the rider. When an animal is to be caught, the herder, galloping after it, swings the coiled lasso round his head and casts it straight forward in such a manner that the noose settles over the head or round the legs of the quarry, when it is speedily brought into submission.

LASUS, Greek lyric poet, of Hermione in Argolis, flourished about 510 B.C. A member of the literary and artistic circle of the Peisistratidae, he was the instructor of Pindar in music and poetry and the rival of Simonides. He developed the structure of the dithyramb, made it more mimetic in character and enlarged its scope beyond the story of Dionysus. He also instituted prize contests. Athenaeus (xiv. 624 E.) has preserved a fragment of one of his poems, a hymn to Demeter of Hermione. Lasus was also the author of the first theoretical treatise on music.

See Suïdas *s.v.*; Aristophanes, *Wasps*, 1410, *Birds*, 1403 and schol.; Plutarch, *De Musica*, xxix.; F. W. Schneidewin, *De Laso Hermionensi Comment.* (Göttingen, 1842); Fragm. in Bergk, *Poet. Lyr.*

LAS VEGAS (lăs vāg′ ăs), a city of Nevada, U.S.A., on federal highways 91, 93, 95 and 466 and the Union Pacific railway, at an altitude of 2,034 ft.; the county seat of Clark county. It is a station on two air-mail routes and is served by two air lines. The population was 5,165 in 1930 and 8,422 in 1940 by the federal census. Mining (gold, silver and most metals, lime, borax and gypsum) is the leading occupation.

Las Vegas' water supply comes from artesian wells, and the power for the city and the trade area surrounding comes from Boulder dam, which is now supplying the major part of the electricity used in the Los Angeles metropolitan area, and irrigating lands and supplying water for Imperial valley agriculture.

The dam is 29 mi. E. of Las Vegas.

Las Vegas was settled in 1905 and was incorporated in 1912.

LAS VEGAS, an urban community of northern New Mexico, U.S.A., formed of two adjoining municipal corporations (a city and a town) 45 mi. E. by S. of Santa Fe, at an elevation of 6,400 ft., on the Gallinas river, the Santa Fe railway, and federal highway 85.

The city, on the east bank of the river, is the county seat of San Miguel county.

Its population in 1940 was 5,941; that of the town, on the west bank, was 6,421.

The combined population of the city and town was therefore 12,362.

Las Vegas is a division headquarters of the Santa Fe, a regular air stop for Continental Air Lines and an important market for wool, hides and pelts. It is also the supply centre for 47,000 ac. of irrigated land. It is the home of the New Mexico Normal university (opened 1898), and of the state hospital for the insane.

The county courthouse is in the old town. There are medicinal hot springs and a seminary six miles northwest. The old town was a Mexican settlement on the Santa Fe trail, founded in 1835, under the Mexican republic. Its plaza was a refuge for traders' caravans and on one of its roofs Gen. Stephen W. Kearny (on Aug. 15, 1846) administered to the Mexican citizens the oath of allegiance to the United States. After the railway arrived in 1879 a community grew up around the station, which was incorporated in 1888 as East Las Vegas, and in 1896 as the city of Las Vegas. The old town was incorporated in 1903.

LASWARI, one of the decisive battles of India. It was fought on Nov. 1, 1803, between the British, under Gen. Lake, and the Mahratta troops of Sindia, consisting of the remnant of Perron's battalions. Laswari is a village in the state of Alwar some 80m. S. of Delhi, and here Lake overtook the enemy and attacked them with his cavalry before the infantry arrived. The result was indecisive, but when the infantry came up there ensued one of the most evenly contested battles ever fought between the British and the natives of India, which ended in a complete victory for the British.

LASZLO DE LOMBOS, PHILIP ALEXIUS (1869–1937), naturalized British portrait painter, was born in Budapest, and studied art there in the Industrial art school and the National drawing school. He went later to Munich, where he was a pupil of A. Liezenmayer, and to Paris where he studied under Lefebre and Benjamin Constant. His portrait of Prince Hohenlohe obtained a gold medal at the Paris Salon in 1899, and in the following year a second gold medal was awarded to him for a portrait of Pope Leo XIII. His work afterwards brought him many other awards, and he was the recipient of many honours.

Among his best-known works are the portraits of King Edward VII., Queen Alexandra, the ex-Kaiser and Signor Mussolini.

LATACUNGA (in local parlance, TACUNGA), a plateau town of Ecuador, capital of the province of Cotopaxi, 46 mi. S. of Quito, near the confluence of the Alagues and Cutuchi to form the Patate, the headstream of the Pastaza. Pop. (1943 estimate) 19,815, largely Indian. Latacunga is on the Pan-American highway and the Guayaquil-Quito railway. It is 9,141 ft. above sea level; its climate is cold and unpleasant, owing to the winds from the neighbouring snow-clad heights, and the barren, pumice-covered tableland on which it stands. Cotopaxi is only 25 mi. distant, and the town has suffered repeatedly from eruptions. Founded in 1534, it was four times destroyed by earthquakes between 1698 and 1798.

LA TAILLE, JEAN DE (*c.* 1540–1608), French poet and dramatist, was born at Bondaroy. He studied the humanities in Paris under Muret, and law at Orleans under Anne de Bourg. He began his career as a Huguenot, but afterwards adopted a mild Catholicism. He was wounded at the battle of Arnay-le-Duc in 1570, and retired to his estate at Bondaroy, where he wrote a political pamphlet entitled *Histoire abrégée des singeries de la ligue,* often published with the *Satire Ménippée.* His chief poem is a satire on the follies of court life, *Le Courtisan retiré;* he also wrote a political poem, *Le Prince nécessaire.* In 1572 appeared his tragedy of *Saül le furieux,* with a preface on *L'Art de la tragédie.* Like Jodelle, Grévin, La Péruse and their followers, he wrote, not for the general public to which the mysteries and farces had addressed themselves, but for the limited audience of a lettered aristocracy. He therefore depreciated the native drama and insisted on the Senecan model. A second tragedy, *La Famine ou les Gabéonites* (1573), is inferior in construction. He wrote, about 1562, two comedies, *Le Négromant* and *Les Corrivaux,* which were published in 1573. *Les Corrivaux* is remarkable for its colloquial prose dialogue.

The works of Jean de la Taille were edited by René de Maulde (4 vols., 1878–82). *See* also E. Faguet, *La Tragédie française au XVIe siècle* (1883).

LATAKIA, a seaport of Syria opposite the island of Cyprus, pop. about 22,000 (12,000 Muslims). The ancient Phoenician name was Ramitha and it received the name Laodicea from Seleucus Nicator with the addition *ad mare* to distinguish it from five others. In the Roman period it was favoured by Caesar and took the name Julia. The town received the *jus italicum* from Severus. In Christian times it became the see of a bishop. In the period of the crusades it was a wealthy city, fell to Tancred (1102) and was recaptured by Saladin (1188). A Christian settlement here which had been granted certain privileges was driven forth by Sultan Kalaūn. Its fortunes gradually receding were at a low ebb in the 16th century, but trade (notably tobacco) brought a new revival of prosperity in the following century. It has suffered much damage from earthquakes (1170, 1287, 1822).

In classical times its slopes were covered with vines. It had, for those times, a good harbour and the native wine was much exported. On its looms a celebrated kind of linen was manufactured and cloaks and cloths from Laodicea always commanded a good price. The chief object of archaeological interest is a triumphal arch probably of the time of Septimius Severus. Four Corinthian pillars with entablature perhaps belonged to the portico of a temple. The chief modern industry is the cultivation of the well-known Latakia tobacco and other industries include silk, oil, poultry and sponge-fishing. Formerly it produced a beautiful type of rug.

On the French occupation of the country under the League of Nations mandate the littoral north of Lebanon was made into a territory of the 'Alāwīyīn with Latakia as centre of administration (1920) and later erected into a state (1922). In 1926 it became an autonomous part of the Syrian republic.

(E. Ro.)

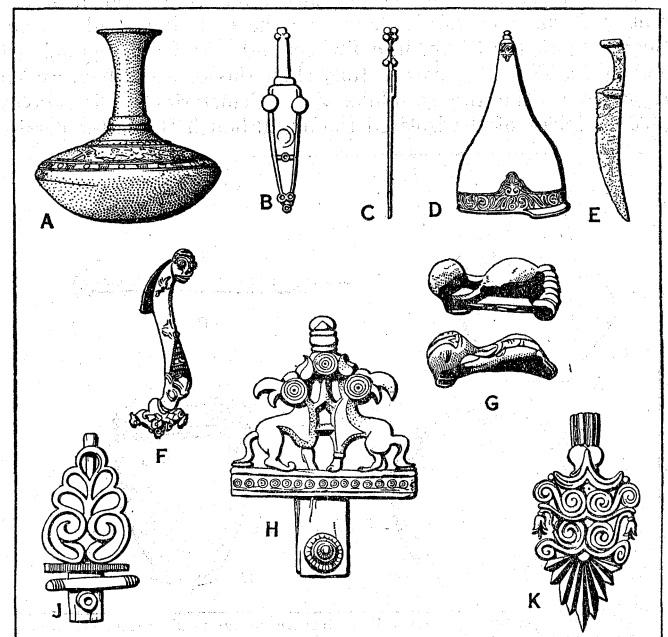
LATEEN, a certain kind of triangular sail, having a long yard by which it is suspended to the mast. A "lateener" is a vessel rigged with a lateen sail and yard. This rig was formerly much used, and is still the typical sail of the *felucca* of the Mediterranean and *dhow* of the Arabian sea.

LATENCY IN INFECTIVE DISEASE, a condition in which, infection having occurred, the manifestations of bacterial disease are postponed. In one sense, latency is an excessive prolongation of incubation period, but the following case, reported by Abraham in a discussion on the subject at the Royal Medical and Chirurgical Society (now Royal Society of Medicine) in 1896 is remarkable. A man became leprous 40 years after his last exposure to the disease. During this period of 40 years he had lived continuously in England and had held no communication, even by letter, with lepers or regions in which leprosy is endemic. It must be assumed that in this case the leprosy bacilli were introduced into the body of the man at least 40 years before he manifested the disease, and that during that period they remained living and latent. In the disease of silkworms known as "pébrine" the micro-organisms which cause the disease can actually be seen in the eggs laid by an infected moth. But though the eggs are kept under conditions not unfavourable to bacterial growth the micro-organisms in the eggs do not begin to develop until the changes occur which lead to the formation of a caterpillar. Hence a strict latency, as distinguished from an undue prolongation of incubation period, in infective disease, must be allowed. It is quite conceivable that the balance between the micro-organism and the tissues in which it is deposited, may, on occasions, be such that the micro-organism neither dies nor exerts its vital functions, but remains, so to speak, in a state of suspended animation and capable of development, if, at any time, the opposing force exerted by the tissues becomes lessened. Clinically "latent" disease almost always becomes manifest at a time when the patient has been subject to depressing conditions of some kind. (For the meaning of the term "latency" in biology *see* HEREDITY.)

(W. S. L.-B.)

LA TÈNE ("the Shallows"), the site which gave its name to the culture of the second Iron Age of Central and Western Europe, lies in Switzerland, at the east end of the Lake of Neuchâtel. It was not the starting-point of that culture, as it seems only to have been occupied from the Middle La Tène period; but it was here that objects characteristic of the La Tène civilization were first identified. Déchelette and Forrer hold it to be a prehistoric customs station, but P. Vouga is probably correct in regarding it as a fortified and garrisoned dépôt, a distributing-centre of weapons and other objects. Reinecke divides the La Tène Period into four phases (A–D), the first two corresponding to Déchelette's I.; the third and fourth to Déchelette's II. and III.

Phase A.—The domain of phase A, the Earliest La Tène period, which according to Reinecke's latest chronology, began *c.* 550 and



A, E, F, G. FROM LINDENSCHMIT, "DIE ALTERTÜMER UNSERER HEIDNISCHEN VORZEIT" (ZABERN); B, D, H, J, K. FROM DÉCHELETTE, "MANUEL D'ARCHÉOLOGIE PRÉHISTORIQUE" (LIBRAIRIE ALPHONSE PICARD); C. FROM KOSSINNA, "GESELLSCHAFT FÜR DEUTSCHE VORGESCHICHTE."

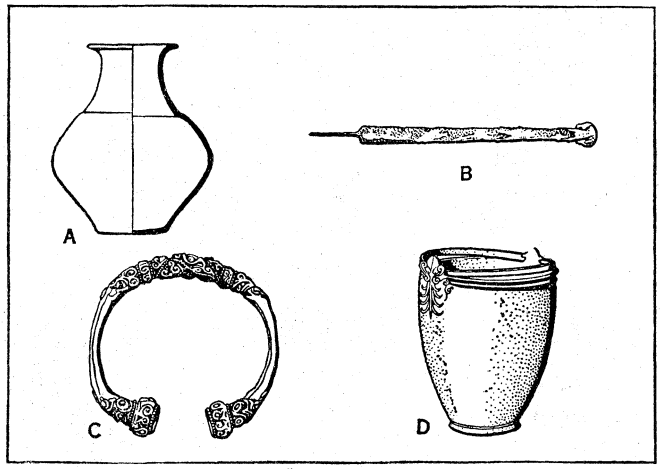
FIG. 1.—POTTERY AND BRONZE OF THE EARLIEST LA TÈNE PERIOD (C. 550–420 B.C.)

A. Lenticular pottery flask; B. Short dagger-sword; C. Long sword; D. High conic helmet; E. Heavy knife (Hiebmesser); F & G. Mask and bird-headed fibulae; H, J, K. Girdle clasps

lasted till *c.* 425 or 420 B.C., may be divided into a central, western and eastern area. In the first, the middle Rhine and adjacent regions, A is best represented by the remarkably rich group of burials known as the "chieftains' graves" which extend from Württemberg to the province of Luxembourg (Eygenbilsen). The western area is situated in east and north-east France. Most of the rich chariot-burials in Champagne may be assigned to phase A.

The eastern area lies in east Bavaria, west Bohemia, etc. Here a strong influence from upper Italy made itself felt; but in the central and western areas the Greek influence was paramount, reaching those regions from the Greek colonies in south France. Although flat-graves already occur (as in the Marne area), the rite is usually inhumation under a tumulus; cremation is occasionally met with in the "chieftains' graves." In the latter, native pottery is rare; it is replaced by metal vessels. In the west, we find mono- and polychrome pottery, and vessels influenced by Etruscan bucchero ware. Unpainted vessels occur in Brittany with rich curvilinear incised ornamentation and bird motifs. As phase A has not been worked out in France, we cannot yet say which examples of these types belong to phase A and which to B (the Breton Group probably survived into C) but Greek influence is apparent both in form and ornamentation. In the east, we find distinctive pottery, the most typical, perhaps, being the flask with lenticular body (fig. 1*a*). In the eastern group, contemporary Greek influence was far less strongly felt. The potter's wheel was introduced in A but many vessels are hand-made. Attic pottery and Greek wine-jars occur on a few sites in the western and central areas. Among the chief metal types are:—the short dagger-sword (fig. 1*b*); long swords (fig. 1*c*); high, conic helmets (fig. 1*d*); large heavy knives (*Hiebmesser*) (fig. 1*e*); the Ceatosa, mask and bird-headed fibulae (brooches) (fig. 1, *f* and *g*); torcs, arm- and finger-rings (bronze and gold); girdle clasps (fig. 1, *h, j, k*); horse harness and parts of chariots. Most important is the series of Greek bronze vessels (6th and 5th centuries B.C.): wine-flagons, stamnoi, dishes, etc. Barbaric copies of the flagons occur. The Earliest La Tène period is not represented in the British Isles.

Phase B.—The Early La Tène period reveals a greater uniformity of culture than phase A and embraces a wider area. We find it in Britain, and in the provinces immediately north of the central German mountain-chain. To the east, it spread beyond Budapest; to the south, into Switzerland and Italy. Associated finds in La Tène B graves in Italy show this phase to have ended *c.* 300 B.C. The rite is inhumation. Cemeteries of flat-graves take the place of the isolated tumuli, although the latter persist



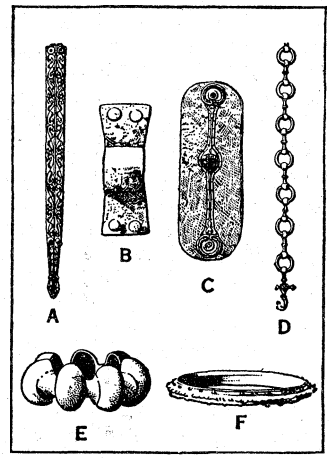
A FROM LINDENSCHMIT, "DIE ALTERTÜMER UNSERER HEIDNISCHEN VORZEIT" (ZABERN); B. & C. FROM DÉCHELETTE, "MANUEL D'ARCHÉOLOGIE PRÉHISTORIQUE" (LIBRAIRIE ALPHONSE PICARD); D. FROM "GUIDE TO EARLY IRON AGE ANTIQUITIES" (BRITISH MUSEUM)

FIG. 2.—POTTERY AND METAL OF THE EARLY LA TÈNE PERIOD (C. 420–300 B.C.)

A. Large bottle shaped urn. Rhenish; B. Short sword; C. Armlet; D. Bronze bucket found at Waldalgesheim, Coblenz

here and there. Large bottle shaped urns occur in the middle Rhenish area (fig. 2*a*). Among the most important metal types are:—the shortish sword, the scabbard ending in a trefoil or open-work chape (fig. 2*b*), the fibula with foot bent back towards the bow, a number of torcs and armlets, the types with "buffer" or "seal-top" terminals being very characteristic (fig. 2*c*); small phallic figurines in bronze. There was a great falling off in the imported Greek bronze vessels, the bucket found at Waldalgesheim (*see* fig. 2*d*) being the only new type. The earliest Celtic coins were struck in this period, which also saw the spread of the La Tène culture into Britain.

Phase C.—The Middle La Tène Period covers the time before and after 200 B.C. The Celts abandoned to the conquering Teutonic peoples the provinces to the north of the central German mountains. A great expansion of Celtic power took place to the east into the middle and lower Danubian areas, the Balkan peninsula and Asia Minor. The rite is the same as in B, for, cremation, though not unknown, is exceptional. In the Marne area, pottery is rare; the forms of the vessels in south Germany reveal Hellenistic influence. Among the chief metal types are:—longer swords (the points less tapered than in B) with bell-shaped guards, their scabbards, often finely decorated, ending in strangulated (fig. 3*a*) or cordiform chapes; broad-bladed spear-heads; large oval to oblong wooden shields with iron "trigger-guard" bosses (*see* fig. 3*b*); fibulae with feet *clasping* the bows; chain girdles (fig. 3*d*); a variety of bronze armlets (fig. 3*e*); band-shaped glass bangles (fig. 3*f*). Torcs are rare. On the continent red enamel is substituted for coral though enamelled objects are found as early as the fifth century. Coinage becomes more general among the mainland Celts. This phase is sparsely represented in England. The La Tène culture also appears in Ireland.

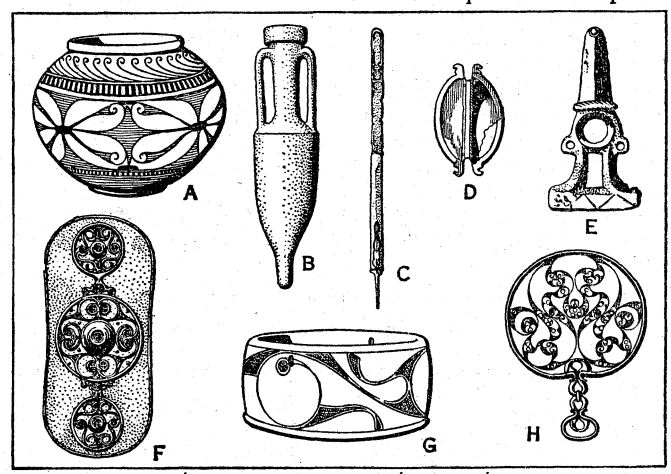


A & C. FROM "GUIDE TO EARLY IRON AGE ANTIQUITIES" (BRITISH MUSEUM); B, E, F. FROM LINDENSCHMIT, "DIE ALTERTÜMER UNSERER HEIDNISCHEN VORZEIT" (ZABERN); D. FROM DÉCHELETTE, "MANUEL D'ARCHÉOLOGIE PRÉHISTORIQUE" (LIBRAIRIE ALPHONSE PICARD)

FIG. 3.—METAL AND GLASS WORK OF THE MIDDLE LA TÈNE PERIOD (C. 300–120 B.C.)

A. Finely decorated sword scabbard; B. Shield boss; C. Oblong shield; D. Chain girdle; E. Bronze armlet; F. Band-shaped glass bangle

Phase D.—The Late La Tène Period extends from 120 or 100 B.C. to 15 B.C. or A.D. 1. The rite is cremation. Unpainted and painted (fig. 4*a*) pottery is found, the latter only on the continent. Wheel-made vessels are more frequent than in phases



A, B, C, E. FROM DÉCHELETTE, "MANUEL D'ARCHÉOLOGIE PRÉHISTORIQUE" (LIBRAIRIE ALPHONSE PICARD); D, F, G. FROM "GUIDE TO EARLY IRON AGE ANTIQUITIES" (BRITISH MUSEUM); H. FROM "ARCHAEOLOGIA" (SOCIETY OF ANTIQUARIES OF LONDON)

FIG. 4.—POTTERY, METAL AND WOOD OF THE LATE LA TÈNE PERIOD (C. 120 B.C.–A.D. 1)

A. Painted Continental pottery; B. Italian amphora; C. Long slashing sword; D. Ellipsoid iron shield boss; E. Clasp; F. Enamelled Bronze shield from the Thames at Battersea; G. Wooden bowl (restored) from Glastonbury; H. Mirror with engraved back, from Desborough, Northants

A–C. Arretine ware and narrow Italian amphorae (fig. 4*b*) are also found. In south-east Britain, the Belgic or Aylesford pottery is well represented; in the western regions we find the "Glastonbury" ware. Among the more typical metal objects are:—the long slashing sword with blunt point and rounded chape (fig. 4*c*); scabbards, often "laddered"; ellipsoid (fig. 4*d*) and round iron shield-bosses; shields, wooden on the continent, bronze in Britain

(Witham [C], Battersea [D] [figs. 3*c* and 4*f*]); spear-heads are frequent as in A–C; the fibula with open catch-piece, the foot and bow forming a continuous line; clasps (fig. 4*e*); smooth glass bangles; iron (and clay) fire-dogs; many tools of iron; bronze imported vessels of southern origin (situlae, lidded flagons and skillets). Minting of coins in south-east and east Britain began in the Late La Tène period. The introduction of writing probably took place in this phase. When the La Tène culture in the mainland had been brought to a close by Roman conquest, it continued to flourish in Britain into the first century A.D. The engraved mirrors (fig. 4*h*), and much of the best British enamel-work dates from this period. Phase D witnessed a marked development in industry and agriculture, and the growth of towns (Bibracte—Stradonitz—Velem St. Veit, etc.). It was largely due to the development of town-life that the culture of the Late La Tène period was more homogeneous than that of the phases which preceded it.

Continental Celts.—Among the continental Celts, art reached its zenith at the outset of the La Tène period; in each succeeding phase it declined, till, in D, it had lost much of its vitality. The chief formative influences were:—(1) Legacies of the Hallstatt and Bronze Age styles. These are discernible both in technique and ornamentation, the latter being for the most part rigidly geometric. (2) The influence of more or less contemporary Greek art. This was chiefly felt in the ornamentation, the plant-motifs being mainly derived from Greek models (the palmette, free tendril designs, etc.); we also find S-patterns and other motifs. The figural art was to some extent derived from upper Italy (viz., influence of the situla style; and the finely incised zoomorphic designs, as on the Rodenbach field-flask; *see* Ebert, *Reallexikon.* "Rodenbach" *s.v.*) but Greek influence must also be taken into account. Reinecke traces three stages in the development of La Tène art: more or less faithful representations of Greek originals; a perversion of Greek prototypes, some of the features being exaggerated, others suppressed, disintegrations and combinations taking place; and the development of new forms from these barbarized reproductions of Greek models. By phase C the art had developed so far along these lines that it is often difficult to recognize the classical tradition. As opposed to the Hallstatt style, the design as a whole was treated in a freer and more organic manner, though a tendency to mechanical repetition does occur, especially during the Earliest Period. As the influence of classic tradition diminished, the art grew to be less representational and more abstract in feeling. The Scythic influence, though possibly of importance later, can hardly have played a part in the genesis of La Tène style. Among the insular Celts, La Tène art did not reach its zenith until the latter part of the period (*cf.* the wooden bowl from Glastonbury, fig. 4*g* and figs. 3*a*, 3*c*, 4*b* and 4*h*). As zoomorphic ornamentation played a leading rôle in Teutonic art of later times, so, in the Celtic art of the La Tène period, plant-motifs and their derivatives, especially eccentric geometrical patterns, were of paramount importance. (J. M. DE N.)

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LATENT HEAT. The heat absorbed when unit mass of any substance changes its state *without* change of temperature; *e.g.,* when 1 gm. of ice at 0° C melts to form water at 0° C, 79·6 calories of heat are absorbed. Latent heat of fusion and latent heat of vaporization are the most familiar examples of the phenomenon, but a similar absorption (or liberation) of heat occurs in all changes of state, *e.g.,* sublimation, solution, dilution, expansion. The term was introduced by Joseph Black, *c.* 1760. For details *see* the articles on HEAT; THERMODYNAMICS; STEAM.

The mechanism of latent heat is explained by the kinetic theory of heat, which describes the motions of the atoms. As an example, water is composed of atoms of hydrogen and oxygen in the ratio of two to one. These atoms are associated into groups called molecules, each group consisting of an oxygen atom and of two hydrogen atoms, one on each side, as H-O-H; the conventional chemical formula is thus written H_2O. As a result of the heat which water contains, within each molecule the atoms vibrate toward and away from each other like balls joined by spiral springs; the molecules themselves also rotate, bounce against and slide past one another in a random manner like rubber balls shaken in a basket. These two parts of the heat or thermal energy are referred to as kinetic energy in so far as they depend on the velocity of motion. Kinetic energy thus imparts a disruptive force to the molecules tending to make them fly apart from one another. This tendency is opposed by the forces of attraction between the molecules; and the balance between these two forces keeps the molecules separated at a certain average distance and provides a reservoir of potential energy. As contrasted with this fluid state, the molecules in ice are held relatively fixed in a regular ordered manner, analogous to a pile of uniform shot where each layer sits in the pattern of crevices of the layers immediately above and below; motion is primarily vibration or rocking which causes only momentary small displacements from these regular positions. As a result of this restricted arrangement, both the kinetic energy and potential energy are less in ice than in water; and in passing from the ordered state (ice) to the random state (liquid water), the removal of the restrictions on motion is accompanied by a net increase in the energy content of each gram of water; and this additional energy is acquired by the absorption of heat from the surroundings. The heat thus absorbed is called the *latent heat of melting.* Similarly the *latent heat of vaporization* is due to the further removal of restrictions on motion in passing at the boiling point from the random state (liquid water) to the even more random state (water vapour) with consequent increases in kinetic and potential energy, as the average distance between molecules increases by a factor of 12.

Latent heat is measured most accurately by passing a quantity of electrical energy into a heating coil wound on a calorimeter vessel which contains a weighed quantity of the substance to be studied; and calculating the amount of heat so generated which is just sufficient to cause the change of state. A relation discovered by Frederick T. Trouton in 1884, states that the latent heat of vaporization divided by the boiling point expressed in absolute temperature is usually equal to about 21 calories per degree.

(D. H. A.)

LATERAN COUNCILS, the ecclesiastical councils or synods held at Rome in the Lateran basilica, which was dedicated to Christ under the title of Salvator, and further called the basilica of Constantinople or the church of John the Baptist. Ranking as a papal cathedral, this became a much-favoured place of assembly for ecclesiastical councils both in antiquity (313, 487) and more especially during the middle ages. Among these numerous synods the most prominent are those which the tradition of the Roman Catholic Church has classed as oecumenical councils. In the view of the Greek Church, however, the councils held in later centuries are not recognized as oecumenical, since they did not represent all Christendom.

The fourth Lateran council (twelfth oecumenical), convened by Pope Innocent III. in 1215, was the most brilliant and the

most numerously attended of all, and marks the culminating point of a pontificate which itself represents the zenith attained by the mediaeval papacy. Prelates assembled from every country in Christendom, and with them the deputies of numerous princes. The total included 412 bishops, with 800 priors and abbots, besides the representatives of absent prelates and a number of inferior clerics. The seventy decrees of the council begin with a confession of faith directed against the Cathari and Waldenses, which is significant if only for the mention of a transubstantiation of the elements in the Lord's Supper. A series of resolutions provided in detail for the organized suppression of heresy and for the institution of the episcopal inquisition (Canon 3). On every Christian, of either sex, arrived at years of discretion, the duty was imposed of confessing at least once annually and of receiving the Eucharist at least at Easter (Canon 21). Enactments were also passed touching procedure in the ecclesiastical courts, the creation of new monastic orders, appointments to offices in the church, marriage-law, conventual discipline, the veneration of relics, pilgrimages and intercourse with Jews and Saracens. Finally, a great crusade was resolved upon, to defray the expenses of which it was determined that the clergy should lay aside one-twentieth—the pope and the cardinals one-tenth—of their revenues for the next three years; while the crusaders were to be held free of all burdens during the period of their absence.

BIBLIOGRAPHY.—*See* Mansi, vol. xxii.; Hefele, *Conciliengeschichte*, 2nd ed. vol. v. and viii. (by Hergenröther); and the general Church histories of the period. On the 4th Lateran Council *see* also INNOCENT III.

LATERITE. The name laterite (*later*, a brick) was given by F. Buchanan-Hamilton (1807) to the peculiar mantle of ferruginous rock which covers large areas in southern India. Similar material from the Futah Jallon territory of west Africa, analysed by P. Berthier (1820), yielded 2·8% silica, 8·6% alumina, 77·2% ferric oxide and 11·4% combined water. Laterite is recognized today as a curious residual weathering product of such rocks as basalts, granites and shales. Its formation appears to have been remarkably restricted to a relatively recent geological period—subsequent to Cretaceous times. Laterite is in process of formation in many tropical countries subject to monsoon conditions.

Normal laterite is a porous clay-like rock largely impregnated with ferric hydroxide. Not infrequently this ferric hydrate occurs as small pisolitic nodules. Exposed surfaces of laterite are of a blackish brown colour and often have a scoriaceous, lava-like appearance. When freshly broken, laterite shows a vermicular structure, has a porous texture and is mottled with various tints of brown, red and yellow. Creamy aluminous hydroxide often fills the tubular cavities. When first quarried this rock is generally soft enough to be cut with a pick. After exposure it hardens—the result of dehydration. Lateritic débris possesses the property of re-cementing into masses which resemble the primary material. Two types of laterite are generally recognized—a high-level, primary or *in situ* type, and low-level, secondary or detrital (Buchanan's) laterite. There is a curious association of lithomarge beneath laterite clearly suggestive of a genetic relationship.

Laterite occurs widely in Peninsular India, in Malaya and the East Indies, in the Northern Territories and Western Australia, in the equatorial regions of Africa, and in various parts of South America and Cuba. There is little doubt that J. D. Falconer's (1911) iron clay from Nigeria is laterite, and J. H. Goodchild (1913) has shown that the *canga* of Brazil has the same composition as laterite. The variable chemical composition of primary laterite depends largely on relative proportions of the two lateritic constituents—the hydroxides of ferric iron and aluminium. When these two constituents are present in equal amounts—*e.g.*, 50% limonitic matter (Fe_2O_3 42·75%, H_2O 32·70%) and 50% trihydrate of aluminium (Al_2O_3 32·70%, H_2O 17·30%)—the substance represents typical laterite. If the ferruginous matter exceeds 50% the rock would be limonitic laterite (hematitic if dehydrated). When the aluminous proportion exceeds 50% the rock is bauxitic. (*See* BAUXITE.) The nature of its constituents makes laterite greatly resistant to atmospheric weathering. It makes a fair building stone. Ferruginous laterite has been used as iron ore, and aluminous laterite (bauxite) is aluminium ore.

W. G. McGee (1879) considered certain upper Mississippi ferruginous deposits were similar to laterite. F. R. Mallet (1881) thought the same of the iron clays of Ulster and suggested a lacustrine origin for both. J. Walther (1889) was of the opinion that nitric acid, introduced during thunderstorms with tropical rain, interacted to produce easily hydrolysed iron salts which effected the lateritization of the rock *in situ*. Philip Lake (1890) suggested that laterite was the direct weathering product of various rocks. This opinion was supported by R. D. Oldham (1893). Solfataric action was advanced by C. W. Hayes (1895), and by G. A. J. Cole (1896) for the formation of the bauxites of Arkansas (U.S.A.) and Antrim (Ireland) respectively. The idea of laterite in association with pyritiferous rocks, and resulting from the reactions of free sulphuric acid, was put forward by G. C. Dubois (1903) to account for the laterite of Surinam. T. H. Holland (1903) elaborated the conception of micro-organisms breaking up rock silicates, taking the silica necessary for their existence and leaving the alumina they did not want—the silica being subsequently removed by alkaline solutions. J. M. Maclaren (1903) and J. Morrow Campbell (1910) independently arrived at the conclusion that laterite was a sub-soil replacement product resulting from the action of ascending, heated, mineralized waters. C. K. Leith and W. J. Mead have produced evidence to show that the laterite of Cuba (1912) and the bauxite of Arkansas (1915) are the residual weathering products of serpentine (peridotite) and syenite, respectively. F. W. Clarke (1920) concludes that "Bauxite, like laterite, occurs under a variety of conditions, which suggest a dissimilarity of origin." W. A. K. Christie, on the field evidence obtained by C. S. Fox (1923), expressed the opinion that capillary pressures, dialysis and electrolytic migration must play an important rôle in the formation of so obvious a mixture of colloidal substance as Indian laterite. These data, this suggestion of electro-kinetic phenomena, and the field observations of various investigators have been incorporated (1927) in the tropical residual, weathering-product theory of laterite formation. The conditions stipulated in the revised theory are briefly:—

(1) A tropical climate subject to alternations of dry or wet seasons or monsoons.

(2) A level, or very gently sloping, elevated land surface which is not subject to appreciable mechanical erosion (abrasion by rain and wind).

(3) The chemical and mineralogical composition of the exposed rocks to be suitable for a supply of the lateritic constituents—alumina and ferric oxide.

(4) The texture of the rock to be (or rapidly become during weathering) sufficiently porous for the entry of percolating water, so that the conditions for chemical action will be at a maximum.

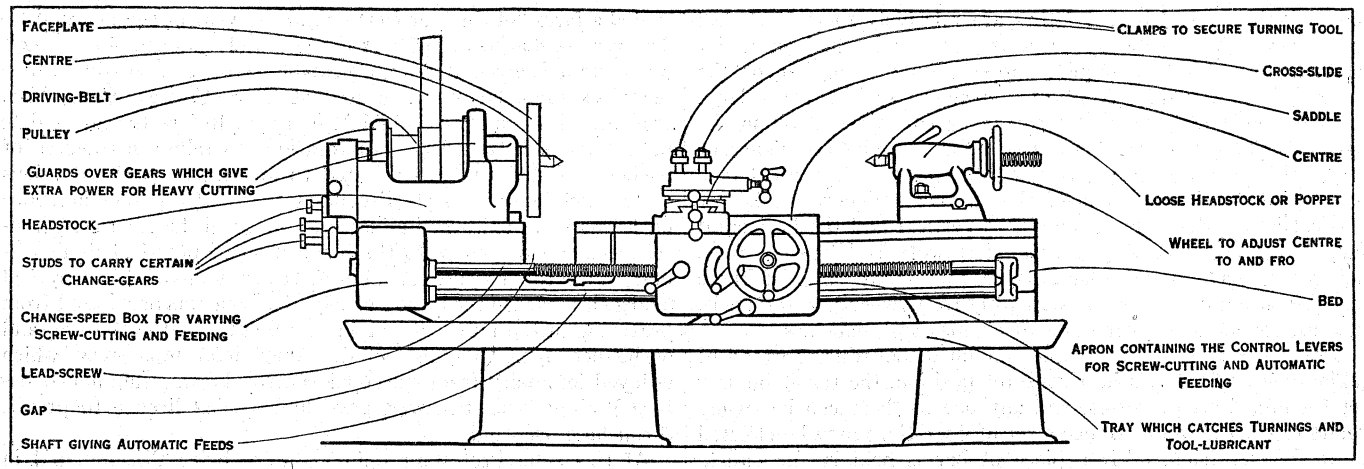
(5) The infiltrating water to remain in the interstices of the rock for long periods annually; *i.e.*, during the wet monsoon, but eventually to drain away in the dry period, thus giving maximum play to chemical erosion.

(6) The infiltrating water to contain either an acid or alkaline substance with which to react on the rock components as well as to constitute an electrolyte and allow electro-kinetic phenomena to operate.

(7) These annual processes to be in operation continuously for at least a geological epoch of roughly a million years.

(C. S. F.)

LATEX, a fluid found in the cells of angiospermous plants, consisting of an emulsion of various substances suspended in a watery medium in which salts, sugars, tannins, alkaloids, enzymes and other substances are dissolved. This lactiferous fluid circulates in branched tubes which penetrate the tissues of the plant in a longitudinal direction. It has an important function in conducting plastic substances in addition to acting as an excretory reservoir. The Para rubber tree (*Hevea brasiliensis*) is regularly tapped, the coagulated latex which it exudes being worked up into rubber. Opium is obtained from the latex of the opium poppy (*Papaver somniferum*) which contains the alkaloid morphine. *See* PLANTS and PLANT SCIENCE: *Anatomy of Plants.*



DIAGRAMMATIC SKETCH SHOWING AN ENGINEER'S LATHE CAPABLE OF TURNING, BORING, DRILLING, SCREW-CUTTING AND, WITH ADDITIONAL FITMENTS, MILLING, GRINDING AND GEAR-CUTTING

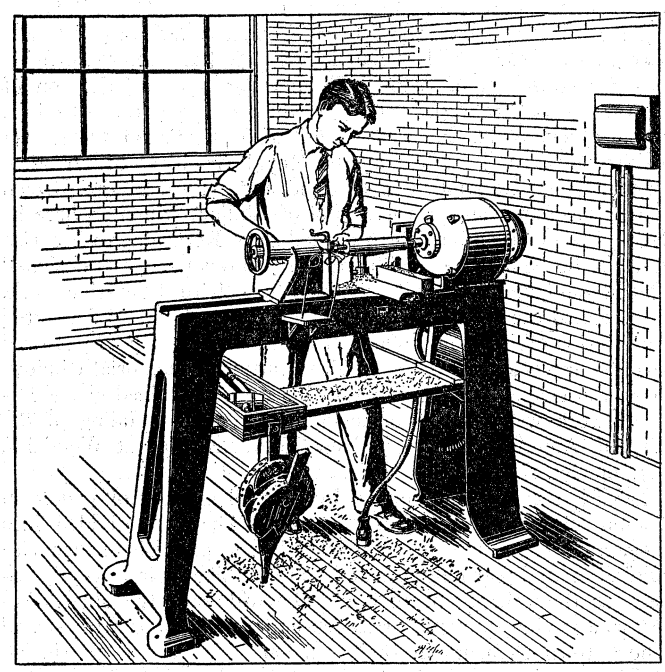
LATH, a thin flat strip of wood or other material used in building to form a base or groundwork for plaster, or for tiles, slates, or other covering for roofs. Such strips of wood are employed to form lattice-work, or for the bars of Venetian blinds or shutters. A "lattice" is an interlaced structure of laths fastened together so as to form a screen, with diamond-shaped or square interstices. Such a screen was used, as it still is in the East, as a shutter for a window admitting air rather than light; it was hence used of the window closed by such a screen. In modern usage the term is applied to a window with diamond-shaped panes set in lead-work.

LATHE is a machine for holding securely and rotating a piece of wood, metal or other material, in order that it may be cut, scraped, or polished by the turning. The primitive lathe consists of two tree trunks, each holding a pointed centre, between which a cylinder of wood is spun while a tool is held to cut it to shape. This elementary type has been in use in the East since remote times and may still be seen at work in India. An assistant imparts a to and fro motion to the wood by pulling alternately at the ends of a cord wound round it. The turner holds the turning tool between his toes and controls it with his hands.

All modern lathes have a continuous rotation (with the exception of the little ones used in watch-making) and the power is received from a treadle or prime mover. The usual method is to rotate the mandrel or spindle of the headstock, and cause this to turn the work by a driver or a chuck. Articles such as disks and wheels, that cannot be mounted between the centres, are held on a faceplate or in a chuck, the resemblance to the potter's wheel being obvious. The biggest lathes, for gun and marine work, will take pieces 100 feet long; and the chuck will carry a weight of 100 tons in its jaws. The number of tools used in a modern metal-turning lathe varies. Hand tools are still used in small lathes for wood and metal turning, but the slide-rest has practically displaced these. It holds the tool or tools rigidly and gives a controlled movement in the direction required to produce a parallel cylinder, a taper, or a flat face, or to bore a hole. Handles effect the movement, or an automatic feed is derived from the drive. If a long screw is fitted, and connected to the spindle with appropriately chosen toothed gears, called change-wheels, the slide can be caused to travel at a definite rate in regard to the number of turns of the work, and so to cut a true screw upon it. In some turning operations, the operator has constantly to manipulate the handles so as to guide the tool into the necessary paths, while in other cases the lathe may be set up and the automatic feed thrown into action so that no attention is required for some time.

The widely-varying requirements of watchmakers, engineers, etc., have resulted in the development of numerous types of lathe. The watchmaker's lathe is finely built, and many other processes besides simple turning and boring are accomplished, with the help of special attachments; *e.g.*, drilling, milling, gear-tooth cutting, grinding, polishing. The bench lathe is also a small high-precision design of rather larger size, and capable of an even greater variety of operations; it is used by the makers of fine instruments, tools, gauges and small mechanisms. Plain or simple lathes may be worked by boys or girls on repetition articles, for turning, boring, drilling, etc., at a great rate of output. The more complicated lathes employed for a varied range of processes are termed engine lathes (*see* the diagram), and possess the full equipment of chucks and fittings, a wide range of speeds, and automatic feeds as well as the screw-cutting apparatus mentioned. These are made in all sizes; one, of moderate size and great precision, and with additional devices for use in the preparation of tools and cutters, is called a tool-room lathe, and it cuts very accurate screws. The high-precision screw-cutting lathe prepares screws possessing the utmost possible degree of accuracy.

Large lathes for turning shafting, pulleys, wheels, etc., required



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STUDENT OF A MANUAL TRAINING CLASS OPERATING A LATHE

in various engineering construction are made in varied designs. Shafting lathes turn long shafts rapidly, and have multiple tools which cut at the front and the rear, the shaft being supported in steadies to prevent it from running out of true. The gun lathes are big and have numerous tool-rests, some being arranged for the deep boring of the tubes. In railway works the axle-turning lathes are important; they deal with the two journals of the axle simultaneously. Locomotive and tramcar wheels are also bored and turned on lathes made specially for the purpose, these dealing with two wheels on separate chucks, or wheels mounted on the

axle. Surfacing and boring lathes are relatively short, and deal with wheels, disks, pulleys, flywheels, gear blanks, and many flat castings which do not require support other than that of the chuck jaws. A gap in front of the chuck enables extra large diameters to be "swung," this gap being sometimes a pit in the floor; this type is classed as a face lathe. The inconvenience of attempting to fasten heavy pieces to a chuck with vertical face has led to the development of the turning and boring mills or vertical lathes. The chuck spindle is vertical and the horizontal face of the chuck consequently renders work setting easy. The advantages have become so obvious that many sizes of these machines are now employed extensively for flywheels, gear wheels, pistons, covers, and other parts of engines and machines.

Capstan or turret lathes possess modified tool-rests. Instead of taking one or two tools in a constant position, the turret holds a set for numerous processes, and any one of them can be swung round to cut the work. Hence a set of operations may be effected in rapid succession, or if a piece of bar is held in the chuck, screws, bolts, pins, nuts, washers and a host of other articles can be machined and parted off, the bar being fed through for another cycle. When a turret lathe for dealing with bars is actuated entirely by automatic means instead of by an operator manipulating various levers, it is called an automatic screw machine. If it deals with separate pieces gripped in the chuck in succession, it is termed an auto turning lathe (*see* AUTOMATIC MACHINES). Lathes in which there is no actual turning action include the spinning and the polishing lathes. The first shapes sheet-metal pieces by the pressure of hard steel tools or rollers, and is used to produce parts of silver and gold ware, tin, brass, aluminium domestic and other articles. Sometimes spinning is an alternative to stamping in dies, sometimes it is also used to smooth out the creases made when cup-shaped stampings are done in dies. The polishing lathe is just a head which carries a spindle run at very high speed, and drives the polishing agent, which is a leather wheel or a cotton bob or mop. (F. H.)

LATHROP, FRANCIS (1849–1909), American artist, was born at sea, near the Hawaiian islands, on June 22, 1849, being the great-grandson of Samuel Holden Parsons, and the son of George Alfred Lathrop (1819–77) who for some time was U.S. consul at Honolulu. He was a pupil of T. C. Farrar (1838–91) in New York and studied at the Royal Academy of Dresden. From 1870–73 he studied in England under Ford Madox Brown and Burne-Jones, and in the school of William Morris, where he devoted particular attention to stained glass. Returning to America in 1873, he worked as an illustrator, painted portraits, designed stained glass, and eventually confined himself to decorative work. He designed the chancel of Trinity church, Boston, and decorated the interior of Bowdoin college chapel, at Brunswick (Me.), and several churches in New York. The Marquand memorial window, Princeton chapel, is an example of his work in stained glass. His latest work was a series of medallions for the building of the Hispanic-American society in New York. He died at Woodcliff, N.J., on Oct. 18, 1909.

LATI, the language spoken by a small number of people in Tonkin, close to the Chinese frontier. They are divided into exogamous clans, live in compact villages, practise terrace rice cultivation and rear buffaloes and poultry. The levirate is allowed between the younger brother and the widow of the elder. Ancestor worship, animistic attitudes and food taboos with sexual taboos form elements in their religion. Marriage is patrilocal, but the transfer of the bride is often deferred until she is pregnant. Funerals are directed by the elders of the community and there is a second ritual a year later. They call themselves *A'K'hu,* "the men." The language is monosyllabic in form, with tones, and a complete decimal system. Very few loan words appear in the vocabulary and it is regarded provisionally as detached from any of the main language families of S.E. Asia.

See *Bulletin* École Française de l'Extrême Orient vi., p. 271–8, ditto xxi., p. 179 *sq.*

LATIMER, HUGH (*c.* 1490–1555), English bishop, and one of the chief promoters of the Reformation in England, was born at Thurcaston, Leicestershire. He was the son of a yeoman, who rented a farm "of three or four pounds by year at the uttermost." The year of Latimer's birth is not definitely known. In the *Life* by Gilpin it is given at 1470, a palpable error, and possibly a misprint for 1490. He was educated at Clare College, Cambridge, graduated B.A. in 1510 and M.A. in 1514. Before the latter date he had taken holy orders. His oration, on taking his degree of bachelor of divinity, was devoted to an attack on the opinions of Melanchthon. Soon his discourses exercised a potent influence on learned and unlearned alike; and, although he restricted himself, as was his custom, to the inculcation of practical righteousness, and the censure of abuses, a rumour of his heretical tendencies reached the bishop of Ely. Latimer was prohibited from preaching in the university or in any pulpits of the diocese, and on his occupying the pulpit of the Augustinian monastery, which enjoyed immunity from episcopal control, he was summoned before Wolsey, who, however, gave him special licence to preach throughout England.

At this time Protestant opinions were being disseminated in England chiefly by the surreptitious circulation of Wycliffe's translations of the New Testament. Latimer had a ready and formidable wit which thoroughly disconcerted his opponents, but he had also a natural distaste for theological discussion, and the truths he was in the habit of inculcating could scarcely be controverted, although, as he stated them, they were diametrically contradictory of prevailing errors both in doctrine and practice. In Dec. 1529 he preached his two "sermons on the cards," which awakened a turbulent controversy in the university. But he was protected from his enemies by Henry VIII., who invited him to preach before him in the Lent of 1530. Latimer then wrote to the king the famous letter on the free circulation of the Bible, an address remarkable, not only for what Froude justly calls "its almost unexampled grandeur," but for its repudiation of the aid of temporal weapons to defend the faith. Shortly afterwards Henry appointed Latimer one of the royal chaplains. He soon became "weary of the court," but he gladly accepted the living of West Kington, Wiltshire, conferred on him by the king in 1531. Harassed by severe bodily ailments, encompassed by a tumult of religious conflict and persecution, he continued to preach the cause he had at heart. At last a sermon which he was persuaded to preach in London exasperated John Stokesley, bishop of the diocese, and furnished an opportunity for summoning Latimer to answer before the bishops in the consistory. After a tedious and captious examination, he was in March brought before convocation, and, on refusing to subscribe to certain articles, was excommunicated and imprisoned; but by the king's intervention he was released after he had accepted all the articles except two, and confessed that he had erred not only "in discretion but in doctrine." After the consecration of Cranmer to the archbishopric of Canterbury in 1533 Latimer's position was changed. In 1534 Henry formally repudiated the authority of the pope, and from this time Latimer was the chief co-operator with Cranmer and Cromwell in advising the king on the legislative measures entailed by that repudiation.

It was, however, Latimer's preaching more than the edicts of Henry that established the principles of the Reformation in the minds and hearts of the people. His sermons are classics of their kind. Vivid, racy, terse in expression; profound in religious feeling, sagacious in their advice on human conduct. To the historical student they are of great value as a mirror of the social and political life of the period.

In Sept. 1535 Latimer was consecrated bishop of Worcester. While holding this office he was selected to officiate as preacher when the friar, John Forest, whom he vainly endeavoured to move to submission, was burned at the stake for denying the royal supremacy. In 1539, being opposed to the "act of the six articles," Latimer resigned his bishopric, learning from Cromwell that this was the wish of the king. On this point he was apparently deceived, but as he now declined to accept the articles he was confined within the precincts of the bishop of Chichester's palace. After the attainder of Cromwell little is known of Latimer until 1546, when, on account of his connection with the preacher Edward Crome, he was summoned before the council at Green-

wich, and committed to the Tower of London. Henry died before his final trial could take place, and the general pardon at the accession of Edward VI. procured him his liberty. He declined to resume his see, notwithstanding the special request of the Commons, but in Jan. 1548 again began to preach, and with more effectiveness than ever; crowds thronged to listen to him both in London and in the country. Shortly after the accession of Mary in 1553 a summons was sent to Latimer to appear before the council at Westminster. Though he might have escaped by flight, and though he knew that "Smithfield already groaned for him," he at once joyfully obeyed. The hardships of his imprisonment, and the long disputations at Oxford, told severely on his health, but he endured all with unbroken cheerfulness. On Oct. 16, 1555 he and Ridley were led to the stake at Oxford. The motives which now inspired his courage placed him beyond the influence of fear, and enabled him to taste in dying the thrill of victorious achievement. Ridley he greeted with the words, "Be of good comfort, Master Ridley, and play the man; we shall this day light such a candle by God's grace in England as (I trust) shall never be put out." He "received the flame (as it were) embracing it. After he had stroked his face with his hands, and (as it were) bathed them a little in the fire, he soon died (as it appeared) with very little pain or none."

BIBLIOGRAPHY.—Two volumes of Latimer's sermons were published in 1549. A complete edition of his works, edited by G. E. Corrie for the Parker Society, appeared in two volumes (1844–45). His *Sermon on the Ploughers* and *Seven Sermons preached before Edward VI.* were reprinted by E. Arber (1869). The chief contemporary authorities for his life are his own *Sermons,* John Stow's *Chronicle* and Foxe's *Book of Martyrs.* In addition to memoirs prefixed to editions of his sermons, there are lives of Latimer by R. Demaus (1869, new and revised ed. 1881), and by R. M. and A. J. Carlyle (1899).

LATINA, VIA, an ancient highroad of Italy, leading south-east from Rome. It was probably one of the oldest Roman roads, leading to the pass of Algidus, important in early military history; and it must have preceded the Via Appia as a route to Campania, inasmuch as the Latin colony at Cales was founded in 334 B.C. and must have been accessible from Rome by road, whereas the Via Appia was only made twenty-two years later. It follows, too, a far more natural line of communication, without the engineering difficulties of the Via Appia. As a through route it no doubt preceded the Via Labicana (*see* LABICANA, VIA), though the latter may have been preferred later. After their junction, the Via Latina continued to follow the valley of the Trerus, following the line taken by the railway to Naples via Cassino, and passing below the Hernican hill-towns, Anagnia, Ferentinum, Frusino, etc. At Fregellae it crossed the Liris, and then passed through Aquinum and Casinum, both low-lying. It then entered the interval between the Apennines and the volcanic group of Rocca Monfina, and the original road, instead of traversing it, turned abruptly northeast over the mountains to Venafrum, thus giving direct communication with the interior of Samnium by roads, to Aesernia and Telesia. Later, however, there was in all probability a short cut by Rufrae along the line of the modern road and railway. The two lines rejoined near the present railway station of Caianello and the road ran to Teanum and Cales, and so to Casilinum, where was the crossing of the Volturnus and the junction with the Via Appia. The distance from Rome to Casilinum was 129 m. by the Via Appia, 135 m. by the old Via Latina through Venafrum, 126 m. by the short cut by Rufrae. Considerable remains of the road exist in the neighbourhood of Rome; for the first 40 m., as far as Compitum Anagninum, it is not followed by any modern road; while farther on in its course it is in the main identical with the modern highroad.

See T. Ashby in *Papers of the British School at Rome* iv. 1 *sq.*, v. 1 *sq.* for a full account of its remains for the first 40 miles.

LATINI, BRUNETTO (1210?–1294?), Italian philosopher, was born in Florence, and belonged to the Guelph party. After the disaster of Montaperti he took refuge for some years (1261–68) in France, but in 1269 returned to Tuscany and for some twenty years held successive high offices. Giovanni Villani says that "he was a great philosopher and a consummate master of rhetoric. . . . He began and directed the growth of the Florentines, both in making them ready in speaking well and in knowing how to guide and direct our republic according to the rules of politics." While in France he wrote in French his prose *Trésor,* a summary of the encyclopaedic knowledge of the day (translated into Italian as *Tesoro* by Bono Giamboni in the 13th century), and in Italian his poem *Tesoretto,* rhymed couplets in heptasyllabic metre, a sort of abridgment put in allegorical form, the earliest Italian didactic verse. He is famous as the friend of Dante (see *Inferno,* xv. 82–87).

For the *Trésor see* P. Chabville's edition (1863); for the *Tesoro,* Gaiter's edition (1878); for the *Tesoretto,* B. Wiese's study in *Zeitschrift für romanische Philologie,* vii. *See* also the biographical and critical accounts of Brunetto Latini by Thoe Sundby (1884), and Marchesini (1887 and 1890).

LATIN LANGUAGE. To write the history of a language is to trace the *changes* which it underwent in form with special reference to time and place, from its earliest records, and indeed before, to its latest. For a spoken language is constantly in a state of change, never fixed; it is dynamic, not static. Strictly speaking, languages do not "live" or "die" or have "family" relationships; such terms are purely metaphorical. Thus the Romance languages (*q.v.*), said to be "descended" from Latin, really represent Latin in its *changed* form in various localities at various dates down to the present. In the same way, Latin itself is a *changed* form, a developed dialect, of an earlier tongue, a so-called "parent" language, which is commonly known as Indo-European (*q.v.*), since most of its members in the Old World are located mainly either in India or Europe. If Latin is said to be "related" to these other members, all that is meant by the phrase is that it possesses in common with them, not by borrowing but by "inheritance" (*i.e.*, by direct derivation from I.E.), a fund of words (its vocabulary), certain types of word-formation and inflexion (morphology), and certain modes of expression (syntax). The I.E. tongue itself must by no means be thought of as primitive or original. Even in its pre-ethnic state (*i.e.,* before cleavage into dialects, and before the distribution of these dialects from a common centre), it was a highly developed speech, with an age-long evolution behind it.

Naturally and inevitably Latin had diverged considerably from this pre-ethnic tongue by the time (*c.* 600 B.C.) from which the oldest extant records of it, inscriptions, date. Destined to survive over 1,000 years more as a distinct though constantly changing language, but itself split, as I.E. had been, into separate dialects long before the close of its career, it had acquired, by the end of the 1st century B.C., a *norm* which, by standards not really arbitrary, is judged classical, and which, in prose style especially, but also in verse, at once reflects and is reflected by that grave, restrained, stately and impressive character of the Roman people who first spoke it, and whose empire made it a world language.

Pre-history.—For, to begin with, Latin was not even the language of Italy but only of the Latins or people of Latium, that is of the Romans themselves and of their immediate neighbours. Precisely whence, at what date, and by what route this tongue was brought to the banks of the Tiber we do not know; from somewhere in Europe, across the Alps and Apennines, we may conjecture, and certainly before the Etruscan invasion of Italy by sea in the 8th century B.C. More exact definition cannot be given. Spoken contemporaneously with it, in Italy, say about the 5th century B.C., were other more or less closely related I.E. languages and dialects, from the very Latin-like Sicel, known now only from Sicily, to Ligurian, linguistically as well as geographically intermediate between Italic and Keltic, in the north-west; an Illyrian group of dialects (Messapic, Venetic, Raetic, and perhaps the so-called old Sabellic, *q.v.*) on the Adriatic coast; and finally, the Italic dialects proper—Oscan (*q.v.*), Umbrian and the minor dialects. There were also the less nearly related, but still I.E. Keltic, brought in by the invading Gauls, and Greek of Magna Graecia. Lastly there was Etruscan (*q.v.*) spoken north of the Tiber, and for a time in Campania. This last was not I.E.; but until the coming of Hannibal's Carthaginian troops, Etruscan is the only non-I.E. tongue of which there is any record in ancient Italy. Outside Italy, the Italic group of dialects (includ-

ing Latin itself, and its closest congeners like Faliscan) is most nearly linked to Keltic, and next to Greek and Germanic, but the historical implications of their similarities are clear only in the case of Keltic and Italic (*see* CELTIC LANGUAGES; ITALIC LANGUAGES). In this case, striking phenomena, among them the subdivision of Keltic into two main branches, Goedelic and Brythonic, strictly parallel to the subdivision of Italic into Latin-Faliscan and Osco-Umbrian, make it certain that the linguistic ancestors of the Keltic and Italic speaking peoples must have lived for a long period in close community. Inside Italy itself, Latin was early subjected to considerable influence from the non-I.E. Etruscan, and from its nearest Italic neighbour, Sabine. Greek influence only became important later, and Keltic influence was never great, being limited to a few elements borrowed by the Latin vocabulary, *e.g., petorritum,* "four wheeler"; *gaesum,* "spear." Not only individual names like *Casca, Sulla,* but characteristic features of the Roman name system, and formative suffixes used in name formation, have been ascribed to Etruscan sources, and with them a number of borrowed words (*e.g., histrio,* "actor"; *persona,* "mask"; and even the stem of the verb *am-are,* "love"); the substitution of breathed for voiced sounds, *e.g.,* in *sporta* (Gr. *σπυρίδα,* acc. sg., "basket"), *catamitus* (Gr. *Γανυμήδης,* "Ganymede"), and other words; the aspiration in names like *Gracchus, Cethegus* (and perhaps in the *chommoda* for *commoda* of Arrius in Catullus); loss or weakening of syllables as in Latin *Pollux* (from Gr. *Πολυδεύκης*) consequent upon a shift of accent to the initial syllable of the word; that mode of accentuation itself; and the names of the three old tribes said to have constituted the early Roman people—*Ramnes, Tities, Luceres*—even the very name of Rome, *Roma,* where the existence of an Etruscan quarter, *vicus Tuscus,* is well known. Finally, reason has been shown for rejecting the older view, which derived the Latin alphabet directly from the Greek, in favour of an origin at least partly Etruscan.

From the Sabines were taken a number of forms showing *f* medially, as *rufus,* "red haired" (contrast *ruber,* "red," with pure Latin *b*); or *f* initially, *e.g., fordicidia,* "sacrifice of unborn calves" (pure Latin *h,* as in *hordicalia*), *filum,* "thread," beside Latin *ni-hil,* "nothing"—literally "not a thread"; and *l* for pure Latin *d,* as in *lacrima,* "tear." It has also been plausibly held that the peculiar hodge-podge of six or eight different means of forming non-present or non-continuous tenses which in Latin were fused together into a single "perfect" tense, and also the shaping of forms in *-r* in the passive voice, were the work of a large Sabine element in the population of Rome which some have identified with the Patrician class. Finally, if not from Sabine itself, from some one of the Italic dialects outside the Latinian group, were imported words with *p* or *b* for pure Latin *qu* (*c*) or *u* (*g*), as *Pompilius, lupus,* "wolf," *popina,* "cook-shop"; *bos,* "ox." Thus does the evidence of language confirm the historical tradition of Sabine and Etruscan kings in Rome.

Latin in the Historical Period.—Certain differences too in sounds (*e.g., losna,* Lat. *luna,* "moon"; *nefrones,* Lat. *nebrundines,* "testes"), in usage (*e.g., tammodo,* properly "just as," in the sense of "on the spot, straightway"), in word forms (*e.g., magistreis* for the n. pl. *magistri;* or the dual form *Cestio,* "the two Cestiuses"), and in vocabulary (*e.g., tongitio,* "idea," Lat. "notio") are clearly marked in early rustic Latin as spoken at Praeneste, some 20 miles from Rome; but besides such local peculiarities of dialectic Latin, account must be taken of distinctions of date, and further, subsequent to the development, for the most part after Greek models, of an elaborate literature, also of (1) differences which may be called social, though they are not merely as between educated and uneducated usage, but also between the "stylized" language of literary forms and the popular spoken language of everyday life; and (2) differences, at least in expression and style, between prose and poetry, or between the language of oratory and that of philosophy, science, law or of correspondence. Slangy Latin, for example, is occasionally to be recognized in the letters of some of Cicero's friends. Naturally the popular language ("vulgar Latin") appears, not only in the artless inscriptions of plain folk, but from time to time in the literature too, as in the plays of Plautus, and later in the *Satyricon* of Petronius, and, at the end of the story, it is spoken Latin which wins the day and which is the true basis of the Romance languages. And again in Romance, it is important to discriminate with regard to date and locality. The language of Spain, for example, was superimposed upon a different linguistic substratum from, say that of Rumania; it was planted there by speakers of quite different stock, and that 300 years earlier. Such considerations help to explain the divergent development of the Romance languages from a common spoken Latin. The oldest documents of what can no longer be called Latin do not, it is true, go back beyond the 9th century A.D.; but it is certain that, as regularly happens, the development of the written had lagged far behind that of the spoken tongue. The artificiality of the Latin of writers later than the 4th or 5th century is self-evident. Indeed the very conditions—central government, stability and security of life, ease of intercommunication and the rest—which had ensured the spread and maintenance of a common language, were already seriously impaired and destined soon to fail. As an official language for correspondence and ritual Latin has been retained by the Roman Church; and it remained the language of instruction throughout western Europe for many centuries. But in both cases it was divorced from the living tongues developing around it. Recent serious suggestions (as made by a committee of the British Association for the Advancement of Science) to revive Latin as an international auxiliary language for learned use, are hardly likely to result in actual practice. Amongst classical scholars it has always been so used.

The sources of our knowledge of the history of Latin are mainly the language itself as recorded in inscriptions and in the literature; the testimony of ancient grammarians and glossographers; and the light shed by comparison with related languages and dialects, and by the history of the Romance languages themselves. Chronologically we may distinguish six periods, beginning with (1) *pre-literary Latin* (to *c.* 250 B.C.). The oldest document is a presentation inscription on a brooch found, not at Rome itself, but at Praeneste, so that perhaps it would be better counted dialectic. It runs *Manios med fhefhaked Numasioi,* "Manius made me for Numerius," and is not later than *c.* 600 B.C. The differences between this and the classical Latin (*Manius me fecit Numerio*) are striking. Next in date we have two 5th century inscriptions, from the Roman Forum and Tivoli (*Tibur*) respectively, the latter discovered in 1926, neither perfectly understood, the former indeed being so much mutilated as to defy all attempt at restoration and interpretation. But it shows among others the following interesting forms which are certain: *recei* "for the king, regi," *sakros,* "holy, sacer"; *iouxmenta,* "beasts of burden, iumenta"; *diouestod,* "lawfully, iusto"; and the Tibur inscription contains *mitat* 3rd sg. pres. subj. (mittat), a spelling which had long been known from the Quirinal vase inscription (4th century), a curse beginning with the words *iouesat deiuos qoi med mitat,* "whoso sends me adjures the gods. . . ." The epitaphs of the Scipios, the laws of the Twelve Tables, the Saliar and Arval hymns, and the commemorative inscription of Gaius Duilius—these were nearly all more or less "restored" in a later age—are the more important surviving documents of this period.

(2) The period of *archaic Latin* (from *c.* 250 to *c.* 90 B.C.) is represented not only by numerous inscriptions of all kinds, but also by considerable literary remains (of Livius Andronicus, Naevius, Plautus, Ennius, the elder Cato, Terence, Pacuvius, Accius and Lucilius). Speaking broadly, we may say that the written still reflected with fidelity the spoken language, which is the reason why certain idioms of old Latin, judged by the standards of the classical language to be "incorrect," reappear in late Latin and Romance; *e.g.,* the use of the present instead of the future tense in an *if*-clause such as *si venis, te videbo,* "if you come, I shall see you" (in classical Latin, *si venies,* "if you [shall] come"), like French *si tu viens, je te verrai,* although Italian has the literary idiom, *se tu verrai* (fut.), *io te vedrò.* Similarly, the versification of Plautus is intelligible only if it is recognized that the diction of his plays was in accord with

popular usage (*e.g.*, note the loss of final *-s* and *-m*, as in Romance, or the scansion of *ille* as a monosyllable, *cf.* Fr. and Ital. *il*); orthography was not yet standardized (thus consonants really pronounced double, or prolonged, were commonly written single, as in *habuise* for *-isse*—at least in inscriptions—the manuscripts of Plautus have had their spelling continually modernized, like texts of Shakespeare); and old verbal and nominal forms still, though precariously, held their own (*e.g.*, the future perfect in *-[s]so* and perfect subjunctive in *-[s]sim*, the passive infinitive in *-ier*, the ablative singular in *-d*, the dissyllabic genitive singular of *a*-stems in *-āī*, and, in a few words, the genitive plural of *o*-stems in *-um* instead of *-orum*). Finally, Greek words imported during the period were, as a rule, completely Latinized in form and sound; no attempt was made to preserve rigorously their native shape. But already there was in process of development a national prose style, not very well represented, however, by Cato's treatise on agriculture. For its most characteristic features show that Latin prose had its springs in oratory.

(3) In the *classical period*, roughly contemporary with the Golden Age of Latin literature, *c.* 90 B.C. to A.D. 14, we may note of the poets, Lucretius, who was old-fashioned in language as well as in style, Catullus representing the new school, Virgil and Horace with their finished style and highly elaborated language; and in prose, the archaizing Sallust, the simple and direct Caesar, and the polished Cicero. Inscriptions of this period are reckoned in thousands from Rome alone. The cleft between the popular and the literary language can be shown to have become wide by the end of the Republic. Steadily increasing Greek influence is marked, though in syntax its extent has certainly been exaggerated by commentators and grammarians. But viewed as a whole, in respect of vocabulary, accent, sounds, forms and syntax, the Latin language had, by the last century B.C., developed all the characteristics which may be regarded as typical of it: of these the salient features are indicated below.

(4) *Silver Latin: from Tiberius to Trajan* (A.D. 14 to 117). In earlier ages often not Roman, Latin authors were now seldom even Italian by birth. Of Livy it was said by a contemporary that marks of his Paduan origin were discernible in his language, though modern criticism cannot claim to be able to recognize them. But into the language of later writers provincialisms and vulgarisms creep in increasing numbers and frequency. Ovid's diction is at times distinctly artificial. Characteristic, too, is the straining after effect which reveals itself in writers like Tacitus, trained as rhetoricians, and which was responsible for many a queerly turned sentence; archaisms and Graecisms are both of them needlessly frequent; and prose was invaded by expressions and style hitherto considered proper to verse. Seneca, Lucan, Martial, Quintilian—these all Spaniards—the elder and the younger Pliny, and Juvenal, are the other outstanding writers of this period.

(5) Archaism is so pronounced in the succeeding age (A.D. 117 to *c.* 180, Gellius, Fronto, Apuleius) that we may even speak of an *archaizing period*. But it is accompanied by daring innovation, especially in the creation of new forms and in the admission of popular ones.

(6) To the *period of decadence* which followed belong the Christian writers, among them the famous *Africans*, Tertullian, Cyprian, Arnobius and Augustine. The classical standard was gradually and unconsciously being lost. The written Latin of learned ecclesiastics of still later date—Gregory of Tours (6th century) may be taken as a fair sample—was an artificial survival, full of corruptions, and remote from the living dialects into which the spoken Latin of the Empire was developing wherever it had really taken root, that is, except in Dacia and Illyricum, mainly in the West.

The Developed Language.—The more striking features which distinguish Latin may now be briefly noted: one of that group of I.E. known as the *centum*-languages, which may be broadly designated Western, and is characterized by the preservation of *k*-sounds (Latin *centum*, "hundred," but Sanskrit *šatam*) and the more or less complete labialization of *q*-sounds (Latin *quis;* "who?"; Oscan *pis*, but Skr. *ka-s*), it has modified considerably the inherited system of accentuation, and with it the original vowel sounds by extruding or weakening them in final and (if unaccented) medial syllables, and by generally substituting simple sounds for original diphthongs (*see* below, 2. *Accent*, for examples); of the I.E. consonants it represented in most cases certain sounds which in Sanskrit became mainly voiced aspirates (*bh, dh, gh*) by spirant (*f, h*) or stopped sounds (*b, d, g*), *e.g.*, corresponding to Latin *fero*, "carry," *fumus*, "smoke," *formus*, "warm," we have in Sanskrit *bharati, dhuma-s, gharma-s*, and similarly Lat. *haurio*, "drain," but Skr. *ghasati*, "consumes," Lat. *tibi*, "to thee"; *iubeo*, "bid"; *medius*, "middle"; *in-dulgere*, "be complaisant" (literally "go a long way"); *muger*, "false at play"; but Skt. *tubhy-am, yodhayati*, "stirs to battle," *madhya-s, dirgha-s*, "long"; *mogha-s* "vain"; Latin also changed *-s-* standing between vowels into *-r-*, a change which can be dated to *c.* 450–350 B.C., *e.g.*, *Furius* from an older *Fusios*, cited by the grammarians—exceptions, when not phonetically explicable (as in *causa*, older *caussa*, "a case of law") being due to borrowing, *e.g.*, *carbasus*, "linen," which was probably taken from Sabine. In the sphere of declension it preserved almost intact six of the original eight cases, the functions of the other two being absorbed by the six that were kept; it tended to fuse stems in *-i-* and stems ending in a consonant (*e.g.*, *-es* came to be the termination of the nom. and acc. pl. in both classes), and in conjugation, among other innovations, it developed a new set of forms in *-b-* (*e.g.*, *amabam*, "I loved," *amabo*, "I shall love") for the imperfect and future tenses, and in *-r* for the passive voice, it amalgamated the old perfect and aorist tenses, and the old subjunctive and optative moods. Finally, in syntax, the development of the elaborate and somewhat rigid principles which govern the "sequence" of tenses and the forms of indirect quotation, is perhaps the most noteworthy feature.

1. The *pronunciation* of Latin in Italy in the classical period has been determined with approximate accuracy by the application of strict philological method. Thus in the last century B.C. the Romans never pronounced C like an English *s*, or G as *j*, but always like *k* and *g* (in *get*) respectively, I and V, as consonants, were sounded like English *y* and *w* respectively (not *j* and *v*), S was always as *-ss* in *hiss*, and the vowels had roughly much the same sounds as in modern Italian.

2. *Accent.* In pre-ethnic I.E. the position of the chief accent of a word (or word group) was not limited either by the quantities or the number of the syllables. But in an early stage of the development of Latin the I.E. accent, which in character had been predominantly *musical*, at least in the final period of I.E., gave way to a system of accentuation by which the initial syllable of a word was uttered with more force, and subsequently the Latin accent remained a *stress* accent, though before the classical period it had come to be restricted to the last three syllables of a word, the precise position being determined by quantity, and the penultimate being accented if long (*e.g.*, *amā́re*), the antepenultimate if the penultimate was short (*e.g.*, *ámābimus*). The chief difference between this and a somewhat earlier system of accentuation, which prevailed as late as the days of Plautus, is that in words of four or more syllables, in which the penultimate and the two preceding syllables were all short, the *fourth* syllable from the end was accented (*e.g.*, *fácĭlĭus*). A few typical examples of the changes dependent upon these conditions of accent may serve to indicate their importance (the position of the accent, where indicated, is that not of classical but of pre-Plautine Latin):—

(*a*) Syncope of short medial and final unaccented vowels, *e.g.*, in *árdēre*, "to be parched," beside *aridus*, "dry, parched" (unsyncopated), *mens*, "mind," from an older **méntis* (*denotes a form which is not recorded, but which can be proved to have existed); syncope with vocalization of a neighbouring consonant; *e.g.*, *amicio*, "throw around," from **am-iacio* (the *y*-sound of the initial *i* in *iacio* "throw," has become the vowel *i* at the same time that the *-a-* was lost), *sákros*, "holy," became *sacer* (*-ros* first passed into *-rs*, in which *r* is vocalic, like a French final *-re*, and this successively into *-ers*, *-err* and *-er*).

(*b*) Weakening of short medial vowels in unaccented syllables; *e.g.*, *óbsideo*, "beset," beside *sĕdeo*, "sit"; *éfficio*, "complete"

but *făcio,* "do, make"—contrast (before two consonants) *éffectus,* "completed," or (before *r*) *péperi,* "have borne," but *părio,* "bring forth"; *ílico,* "on the spot" beside *lŏcus,* "place"—contrast (after *i*) *píetas,* "sense of duty," but old Latin **piŏs* (classical *pius*), "dutiful," or (before two consonants) *vénustus,* "charming," but old Latin *Venos,* "(the goddess) love"; *capitis* gen. sg. "head," but *caput* n. sg.; weakening of diphthongs in unaccented syllables; *e.g., cecīdi,* "have slain," but *caedo* (older *caid-*), "slay," *éxclūdo,* "shut out," but *claudo,* "shut."

(*c*) Dependent upon stress accent, too, is the regular shortening of a long syllable when preceded by a short syllable and also immediately either preceded or followed by the accent; thus *bene,* "well" (order *-ē*), but, *e.g., honestē,* in which the second syllable is long.

3. In addition to those already mentioned, some of the more important *changes of sound* are:—

(A) Of the vowels and diphthongs: *e* followed by *l* became *o* (except before *e, i,* or a second *l*), hence *volo,* "wish," *volebam, volam,* but *velim, vellem, velle; -e* before *nc, ng,* and *gn* (pronounced *ngn*) became *i, e.g., septingenti,* "seven hundred," but *septem,* "seven"; *-ei* became *ī, e.g., dīco,* "say," older *deico,* and similarly *ai* became *ae, e.g., aedes,* "temple" (older *ai-*), but in rustic Latin a long open *e,* as in *ēdus* for *haedus,* "goat," *oi* became successively *oe* and *ū, e.g., ūnus* (older *oi-*); *eu* became first *ou* and then *ū, e.g., iūmentum,* "beast of burden," old Latin pl. *iouxmenta* (*see* above), but in Greek *ζεύγ-νυ-μι* "yoke"; and with this *ou* original *ou* also became *ū, e.g., lūcus,* "grove," lit. "a clearing," in old Latin *loucom* (acc. sg.), except in rustic Latin, in which both *ou* and *au* (ordinarily preserved in polite Latin) gave *ō, e.g., lōsna,* "moon" at Praeneste (*see* above), cognate with *lux,* "light," *lucas,* "grove," and *ōrum,* "gold" (hence Ital. *oro,* Fr. *or*) but polite *aurum.*

(B) Of the consonants: after *c.* A.D. 50 *b* between vowels became a sound like English *v* (*cf.* Ital. *avere,* Fr. *avoir* from Latin *habere,* "have"); and about the same time Latin *v* (pronounced like English *w*) passed into the same sound (*cf.* Ital. *voce,* Fr. *voix* from Latin *vōcem,* "word, voice"), but the corresponding change of consonantal *i* (=English *y*) into a *j*-sound (*cf.* Ital. *giusto,* Fr. *juste* from Latin *iustum,* "legal, fair") took place some 400 years later; whereas consonantal *i* and consonantal *u* inherited from I.E., were lost at a very early date, the former between any two vowels, the latter between two like vowels of which the first was accented: thus in *torreo,* "scorch," the ending was originally *-ēio,* the gen. sg. *divitis* (nom. *dives*) became, with the loss of *u* and contraction, *dītis.* Where for any reason *i* occurs in the developed language between vowels it really stands for *-iy-* in pronunciation, *e.g.,* in *eius* pronounced *ei-y-us.* From the group *du* (*u* being consonantal) at the beginning of a word arose *b-*: thus we have *bis,* "twice," from **dwis,* beside *duo,* "two." In popular Latin a single breathed consonant (*p, t, k*) seems regularly to have been doubled in the middle of a word when preceded by a long vowel, and the vowel shortened at the same time—but not in the literary language. Hence arose a number of "doublets"; *e.g.,* in the popular language *cuppa,* "cask" (Fr. *coupe*), beside *cūpa* (Fr. *cuve*) in the literary language. On the other hand, *-ss-* became *-s-* in the first century B.C. after a long vowel or diphthong; *e.g., cāsum* supine of *cado,* "fall," from *cāssum,* older **cad-tum* (I.E. *t*+*t, d*+*t, dh*+*t* regularly becoming *-ss-* except before *r*), and *-ll-* became *l* after a long vowel when *i* stood in the following syllable: thus the plural of *mīlle,* "thousand," is *mīlia.* Assimilation of neighbouring unlike consonants, characteristic of all languages, is prevalent in Latin: *āctus,* "driven," from **ag-tos* (*cf. ag-o*); *ferre,* "carry," from **fer-se* (*cf. es-se*). Before *d, m, n, l* and *v, -s-* was always lost and the preceding vowel lengthened; *e.g., prīmus,* "first," for **pris-mos* (*cf. pris-cus,* "ancient").

4. The Latin *vocabulary* is in the main inherited directly from I.E., but there are numerous borrowed words from other tongues; moreover, the popular speech retained the power freely to form compounds much longer than the written language. Some of these are half-comic, as the *vaniloquidorus,* "generous in talk," of Plautus (there the element *-doro-* is also Greek). Prepositional compounds, however, in which the true force of the preposition was not felt, so that the compound (*e.g.,* in *con-, de-, in-*) gains merely in emphasis, were common in the spoken tongue throughout its history. Many suffixes remained or became productive, and new words were constantly being built up on old patterns from existing stems.

5. As to the *numerals,* they reflect an I.E. system of reckoning that was mainly decimal. Only the first three of cardinal numerals up to 100 were declined; the decades, however, were originally neuter plurals, and the hundreds and thousands (except *centum* and *mille*) are regularly declined. Even where originally nouns the numerals have almost all become adjectival.

6. *Noun and Verb Forms.* Certain peculiarities have been noted above; observe in addition the almost complete loss of the dual number, the employment of a termination *-i* in the gen. sg. of the first (*-ae* from *-āī*) and second declensions (peculiar to Italic and Keltic in the *o*-stems), and the adoption (as in Greek) of pronominal terminations in the nom. pl. of the same two declensions, the extension of *-ti-* abstract nouns by an *-ōn-* suffix (*e.g., ratio,* "thought"), the wider development of the *dies*-type of declension, and the loss of the *u*-declension of adjectives. In verbs we note the disuse of the augment in the past tenses (Greek *ἔ-θη-κ-α,* "I put," but Latin *fē-c-i,* "I did"), and the growth of new forms for the future perfect and pluperfect tenses and for the imperfect subjunctive. Even the syntactical categories of the future-perfect and imperfect subjunctive were new.

7. Further features of special interest from the point of view of *syntax* are the running together of the true ablative, the instrumental, and (for the most part) the locative of I.E. into a single ablative case, and sharp definition in the use of all the cases; the development of constructions by which the subjunctive was regularly used in dependent questions, in clauses of definition, purpose, and result; and the peculiarly Latin idiom of the gerundive.

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LATIN LITERATURE. Pre-literary Period, to 240 B.C.—The germs of an indigenous literature had existed at an early period in Italy in forms such as we might expect in a people just emerging from barbarism. The art of writing was first employed in the service of the State and of religion for books of ritual, treaties with other States, laws of the Twelve Tables, etc. An approach to literature was made in the chronicles, public and private, funeral orations and tomb-inscriptions. A nearer approach was probably made in oratory, as we learn from Cicero that the famous speech delivered by Appius Claudius Caecus against concluding peace with Pyrrhus (280 B.C.) was extant in his time. Appius also published a collection of moral maxims and reflections in verse.

But it was rather in the chants and litanies of the ancient

religion, such as those of the Salii and the Fratres Arvales, and the dirges for the dead (*neniae*), and in certain extemporaneous effusions, that some germs of a native poetry might have been detected; these seem to have been in Saturnian (*q.v.*) or other rude and probably accentual metre. We may also mention the *vates* (bards or soothsayers), of whom the most famous was one Marcius, and the "Fescennine verses" (*q.v.*). There were also commemorative poems, accompanied with music, which were sung at funeral banquets, in celebration of the exploits and virtues of distinguished men. The latest and probably the most important of these rude and inchoate forms was that of quasi-dramatic *saturae* (medleys), put together without any regular plot and said to have consisted of jocular dialogue in verse,[1] accompanied with music (Livy vii. 2). These have a real bearing on the subsequent development of Latin literature. They may have contributed to the formation of the style of comedy which appears at the very outset much more mature than that of serious poetry, tragic or epic. They gave the name and some of the characteristics to that special literary product of the Roman soil, the *satura,* addressed to readers, not to spectators, which ultimately was developed by Lucilius, Horace, Persius and Juvenal.

First Literary Period: 240 to 80 B.C.—*Livius Andronicus.*—The historical event which brought about the greatest change in the intellectual condition of the Romans, and thereby exercised a decisive influence on the whole course of human culture, was the capture of Tarentum in 272. After the capture many Greek slaves were brought to Rome, and among them the young Livius Andronicus (*c.* 284–204), who was employed in teaching Greek in the family of his master, a member of the Livian gens. From that time to learn Greek became a regular part of the education of a Roman noble. In the year after the first Punic war (240), when the armies had returned and the people were at leisure to enjoy the fruits of victory, Livius Andronicus substituted at one of the public festivals a regular drama, translated or adapted from the Greek for the musical medleys (*saturae*) hitherto in use. From this time dramatic performances became a regular accompaniment of the public games, and came more and more to drive out or transform the native compositions. The dramatic work of Livius was mainly of educative value. The same may be said of his translation of the *Odyssey,* which was still used as a school-book in the days of Horace, and the religious hymn which he was called upon to compose in 207 had no high literary pretensions. He was, however, the first to familiarize the Romans with the forms of the Greek drama and the Greek epic, and thus to determine the main lines which Latin literature followed for more than a century afterwards.

Naevius.—His immediate successor, Cn. Naevius (d. *c.* 200 B.C.), was not, like Livius, a Greek, but either a Roman citizen or, more probably, a Campanian who enjoyed the limited citizenship of a Latin and who had served in the Roman army in the first Punic war. His first appearance as a dramatic author was in 235. He adapted both tragedies and comedies from the Greek, but seems to have been more successful in the latter. An attempt to introduce political satire (against the Metelli) led to his imprisonment, and henceforth personalities are absent or carefully veiled in Roman drama, save for a few very mild jests against persons of little importance. Even complimentary allusions are seldom very outspoken. Besides celebrating the success of M. Claudius Marcellus in 222 over the Gauls in a play called *Clastidium,* he gave the first specimen of the *fabula praetexta* or tragedy on a Roman subject in his *Alimonium Romuli et Remi.* In his long Saturnian poem on the first Punic war, he not only told the story of contemporary events but helped to shape the legend of the settlement of Aeneas in Latium.

Plautus.—His younger contemporary, T. Maccius Plautus (*c.* 254–184), was the greatest comic dramatist of Rome, a thorough Roman despite his Umbrian origin, and possessing a range and vigour of wit almost Shakespearean, which breathes into the faded prettiness of New Comedy something of the heartiness of Aristophanes. His work survives fairly complete. Apart from his merits as a dramatist, Plautus is of great interest to philologists, as the largest specimen we have of early Latin. Moreover, he was a very skilful metrician, showing an extraordinary power of adapting the foreign (Greek) metres in which he wrote to the rhythm, largely accentual, of spoken Latin. In consequence of this, careful examination of his text has led to the recovery, in considerable measure, of the very cadences of ancient Latin speech.[1]

Ennius.—Thus far Latin literature had some claim to be considered popular. But a new spirit, which henceforth became predominant, appeared in the time of Plautus. Latin literature became the expression of the ideas, sentiment and culture of the aristocratic governing class. It was by Q. Ennius (239–169) of Rudiae in Messapia, that a new direction was given to Latin literature. Deriving from his birthplace the culture, literary and philosophical, of Magna Graecia, and having gained the friendship of the Scipionic circle, he was of all the early writers most fitted to be the medium of conciliation between the serious genius of ancient Greece and the serious genius of Rome.

First among his special services to Latin literature was the fresh impulse which he gave to tragedy. He turned the eyes of his contemporaries from the commonplace social humours of later Greek life to the contemplation of the heroic age. To judge from rather scanty fragments, he introduced into his Greek plots a genuinely Roman tone. Although Rome wanted creative force to add a great series of tragic dramas to the literature of the world, yet the spirit of elevation and moral authority breathed into tragedy by Ennius passed into the ethical and didactic writings and the oratory of a later time.

Another work was the *Saturae,* written in various metres, but chiefly in the trochaic tetrameter. He thus became the inventor of a new form of literature; and, if in his hands the *satura* was rude and indeterminate in its scope, it became a vehicle by which to address a reading public on matters of the day, or on the materials of his wide reading, in a style not far removed from the language of common life. His greatest work, which made the Romans regard him as the father of their literature, was his epic poem, in 18 books, the *Annales,* a chronicle in verse of the whole history of Rome. The idea which inspired Ennius was ultimately realized in both the national epic of Virgil and the national history of Livy. Its metre, the hexameter (*q.v.*) was, although still rude, the first step in the development which culminated in Virgil. As grammarian and poet, he fixed Greek rules of scansion upon the literary Latin. Although of his writings only fragments remain, these fragments are enough, along with what we know of him from ancient testimony, to justify us in regarding him as the most important among the makers of Latin literature before the age of Cicero.

Cato.—M. Porcius Cato the Censor (234–149), was a younger contemporary of Ennius, whom he brought to Rome. More than Naevius and Plautus he represented the pure native, especially the plebeian element. His lack of imagination and his narrow patriotism made him the natural leader of the reaction against the new Hellenic culture. He strove to make literature ancillary to politics and to objects of practical utility, and thus started prose literature on the chief lines that it afterwards followed. Through his industry and vigorous understanding he gave a great impulse to the creation of Roman oratory, history and systematic didactic writing. He was one of the first to publish his speeches and thus to bring them into the domain of literature. Cicero, who speaks of 150 of these speeches as extant in his day, praises them for their acuteness, their wit, their conciseness. He speaks with emphasis of the impressiveness of Cato's eulogy and the satiric bitterness of his invective.

Cato was the first historical writer of Rome to use his native tongue. His *Origines,* the work of his old age, was written with that thoroughly Roman conception of history which regarded actions and events solely as they affected the continuous and pro-

[1]The reliability of Livy's account is uncertain; *see* Schanz-Hosius, p. 20, for the controversy.

[1]The best and fullest treatment of this matter is to be found in W. M. Lindsay, *Early Latin Verse;* for discussion of a rather important point in connection with the accentual element in Plautine verse, *see* Sonnenschein in *Class. Rev.* XX. (1906), p. 156, Eton, *ibid.,* p. 31, Wallstedt, *Studia Plautina* (Lund, 1909).

gressive life of a State. It was an attempt, apparently somewhat in the style of the Greek logographi (*q.v.*), to record the early history of the Italian communities which Rome had conquered. Its loss is much to be deplored.

Terence, Lucilius, etc.—In Naevius, Plautus, Ennius and Cato are represented the contending forces which strove for ascendancy in determining what was to be the character of the new literature. The work, begun by them, was carried on by younger contemporaries and successors; by Statius Caecilius (*c.* 220–168), an Insubrian Gaul, in comedy; in tragedy by M. Pacuvius (*c.* 220–132), the nephew of Ennius, called by Cicero the greatest of Roman tragedians; and, in the following generation, by L. Accius (*c.* 170–86), who was more usually placed in this position. The impulse given to oratory by Cato, Ser. Sulpicius Galba and others, and along with it the development of prose composition, went on with increased momentum till the age of Cicero. But the interval between the death of Ennius (169) and the beginning of Cicero's career, while one of progressive advance in the appreciation of literary form and style, was much less distinguished by original force than the time immediately before and after the end of the second Punic War. The one complete survival of the generation after the death of Ennius, the comedy of P. Terentius Afer or Terence (*c.* 185–159), exemplifies the gain in literary accomplishment and the loss in literary freedom. Terence has nothing Roman or Italian except his pure and idiomatic Latinity. His Athenian elegance affords the strongest contrast to the Italian rudeness of Cato's *De Re Rustica.* What makes Terence an important witness of the culture of his time is that he wrote from the centre of the Scipionic circle, in which what was most humane and liberal in Roman statesmanship was combined with the appreciation of what was most vital in the Greek thought and literature of the time. The comedies of Terence may therefore be held to give some indication of the tastes of Scipio, Laelius and their friends in their youth. The influence of Panaetius and Polybius was more adapted to their maturity. But in the last years during which this circle kept together a new spirit of discontent, powerfully voiced by the Gracchi in politics and in oratory, arose and with it a new literary *genre,* satire. Roman satire, though in form a legitimate development of the indigenous dramatic *satura* through the written *satura* of Ennius and Pacuvius, is really a birth of this time, and its author was the youngest of those admitted into the intimacy of the Scipionic circle, C. Lucilius of Suessa Aurunca (*c.* 180–103). The loss of his works, which seem to have been full of originality and pungent criticism, is most regrettable. The years that intervened between his death and the beginning of the Ciceronian age are singularly barren in works of original value. But in one direction there was some novelty. The tragic writers had occasionally taken their subjects from Roman life (*fabulae praetextae*), and in comedy we find the corresponding *togatae* of Lucius Afranius and others.

Summary of the Period.—The general results of the last 50 years of the first period (130 to 80) may be thus summed up. In poetry we have the satires of Lucilius, the tragedies of Accius and of a few successors among the Roman aristocracy; various annalistic poems intended to serve as continuations of the great poem of Ennius; minor poems of an epigrammatic and erotic character, unimportant anticipations of the Alexandrian tendency operative in the following period; and works of criticism in trochaic tetrameters by Porcius Licinus and others, forming part of the critical and grammatical movement which almost from the first accompanied the creative movement in Latin literature.

The only extant prose work which may be assigned to the end of this period is the treatise on rhetoric known by the title *Ad Herennium* (*c.* 84) a work indicative of the attention bestowed on prose style and rhetorical studies during the last century of the republic, and which may be regarded as a precursor of the oratorical treatises of Cicero and Quintilian. But the great literary product of this period was oratory, developed indeed with the aid of these rhetorical studies, but itself the immediate outcome of practical needs. The speakers and writers of a later age looked back on Scipio and Laelius, the Gracchi and their contemporaries, L. Crassus and M. Antonius, as masters of their art.

Cicero denies to Rome the existence, before his own time, of any adequate historical literature. Nevertheless it was during this period that the annalists (*q.v.*) flourished, and formed the traditional history and chronology of Rome. There were also special works on antiquities, and contemporary memoirs and autobiographies such as those of M. Aemilius, Scaurus, the elder, Q. Lutatius Catulus (consul 102 B.C.), and P. Rutilius Rufus, which formed the sources of future historians. (*See,* further, ROME: *Ancient History.*)

So far, then, we find drama, which was not destined to play any leading part in the future literature, a fairly well developed, dignified prose style; imaginative poetry, and its vehicle, the hexameter, albeit rude and unmelodious as yet; satire, using the hexameter as one of its media (it afterwards discarded all others); but, so far, no personal lyric and no elegy or none of importance. The influences of Greek literature to which Latin literature owed its birth had not as yet spread beyond Rome and Latium. The Sabellian races of central and eastern Italy and the Italo-Celtic and Venetian races of the north, in whom the poetic susceptibility of Italy was most manifest two generations later, were not, until after the Social war, sufficiently in sympathy with Rome, and were probably not as yet sufficiently educated to contribute their share to the national literature. Hence the end of the Social war, and of the Civil war, which arose out of it, is most clearly a determining factor in Roman literature, and may most appropriately be taken as marking the end of one period and the beginning of another.

Second Period: 80 to 42 B.C.—The last age of the republic coincides with the first half of the Golden age of Roman literature. It is generally known as the Ciceronian age from the name of its greatest literary representative, whose activity as a speaker and writer was unremitting during nearly the whole period. The five chief representatives of this age who still hold their rank among the great classical writers are Cicero, Caesar and Sallust in prose, Lucretius and Catullus in verse. The works of other prose writers, Varro and Cornelius Nepos, have been partially preserved; but these writers have no claim to rank with those already mentioned as creators and masters of literary style. There was by this time a not inconsiderable educated reading public, and regular publishing had begun. Joined to the national love of oratory, this produced not only the published speech, which already existed, but the pamphlet in speech form, *e.g.,* Cicero's second *Philippic,* which was never delivered.

Cicero.—Thus the speeches of M. Tullius Cicero (106–43) belong to the domain of literature quite as much as to that of forensic or political oratory. It is urged with justice that the greater part of Cicero's *Defence of Archias* was irrelevant to the issue and would not have been listened to by a modern jury. But it was fortunate for the interests of literature that a court of educated Romans could be influenced by the considerations there submitted to them. In this way a dispute about the status of an unimportant person has produced one of the most impressive vindications of literature ever spoken or written. In many other orations, the largeness of the issues involved adds interest and elevation. The Roman oratory of the law courts had to deal, not only with petty questions of disputed property, of fraud, or violence, but with great imperial questions, with matters affecting the well-being of large provinces and the honour and safety of the republic; and no man ever lived who, in these respects, was better fitted than Cicero to be the representative of the type of oratory demanded by the condition of the later republic. A patriot, a sensitive artist, a master of technique, he was also, if not exactly a dramatist, an excellent portrayer of the broad outlines of character. The Verres, Catiline, Antony of Cicero are living and permanent types. The story told in the *Pro Cluentio* may be true or false, but the picture of provincial crime which it represents is alive. Had we only known Cicero in his speeches we should, even so, recognize him as the master and perfecter of Latin style. But to his services to Roman oratory we have to add his services not indeed to philosophy but to the literature of philosophy. Perhaps no one, save Plato and Aristotle, has so influenced the views of later ages as this brilliant pleader, who gave

part of his leisure to embodying, in an attractive form, ethical doctrines of which he had but a superficial and inaccurate knowledge, but in whose practical applications he, like a true Roman, took a most lively interest. His works on rhetoric place him high among critics of prose style.

The *Letters* of Cicero are of at least three kinds: the manifesto or *apologia* in letter form; the official or semi-official *communiqué;* and the genuine intimate letters like those to Atticus, in which we learn, not only the innermost thoughts of a complex mind, but the rich, varied and easy speech of a Roman of high education.

Caesar.—Among the many rival orators of the age the most eminent were Quintus Hortensius Hortalus and C. Julius Caesar. The former was the leading representative of the Asianic style of oratory, and, like other members of the aristocracy, such as C. Memmius and L. Manlius Torquatus, and like Q. Catulus in the preceding generation, was a kind of dilettante poet and a precursor of the poetry of pleasure, which attained such prominence in the elegiac poets of the Augustan age. Of Julius Caesar (102–44) as an orator we can judge only by his reputation and by the testimony of Cicero; but we are able to appreciate the special praise of perfect taste in the use of language attributed to him.[1] In his *Commentaries,* by laying aside the ornaments of oratory, he created the most admirable style of prose narrative, the style which presents interesting events rapidly and vividly, with scarcely any colouring of personal or moral feeling, any oratorical passion, any pictorial illustration. While he shows the persuasive art of an orator by presenting the subjugation of Gaul and his own action in the Civil War in the light most favourable to his claims, he is entirely free from self-laudation or disparagement of an adversary. The character of the man reveals itself especially in a perfect simplicity of style, the result of the clearest intelligence and the strongest sense of personal dignity. Rhetorical colouring is never used, or at least never displayed; yet the narrative is never cold nor dry.

Sallust.—In the simplicity of his style, the directness of his narrative, the entire absence of any didactic tendency, Caesar presents a marked contrast to another prose writer of that age—the historian C. Sallustius Crispus or Sallust (86–34). Like Varro, he survived Cicero by some years, but the tone and spirit in which his works are written assign him to the republican era. He was the first of the purely artistic historians, as distinct from the annalists and the writers of personal memoirs. He imitated the Greek historians in taking particular actions—the *Jugurthan War* and the *Catilinarian Conspiracy*—as the subjects of artistic treatment. He wrote also a continuous work, *Historiae,* treating of the events of the 12 years following the death of Sulla, of which only fragments are preserved. His two extant works are more valuable as first-rate party pamphlets than as trustworthy narratives of facts. His style aims at effectiveness by pregnant expression, sententiousness, archaism. He produces the impression of caring more for the manner of saying a thing than for its truth, and his vehement bias in favour of Caesar colours everything he writes. Of the other historians, or rather annalists, who belong to this period, such as Q. Claudius Quadrigarius, Q. Valerius Antias, and C. Licinius Macer, the father of Calvus, we have only fragments remaining.

Varro.—The period also produced learned writers on philology and antiquities, whereof one is entitled to a separate mention. This was M. Terentius Varro, the most learned not only of the Romans but of the Greeks, as he has been called. The list of Varro's writings includes over 70 treatises and more than 600 books dealing with topics of every conceivable kind. His *Menippeae Saturae,* miscellanies in prose and verse, of which unfortunately only fragments are left, was a work of singular literary interest.

Lucretius.—Since the *Annals* of Ennius no great and original poem had appeared. The powerful poetical force which for half a century continued to be the strongest force in literature, and which created masterpieces of art and genius, first revealed itself in the latter part of the Ciceronian age. The conditions which enabled it to come to maturity in the person of T. Lucretius Carus (96–55) were entire seclusion from public life and absorption in the ideal pleasures of contemplation and artistic production. His *De Rerum Natura* stands forth as the greatest philosophical poem in any language. Form and metre are Greek, and the subject is the philosophy of Epicurus; but all that is of deep human and poetical meaning in the poem is his own. Lucretius's death left the poem unfinished, and he did not possess the perfect poetical technique of Virgil. Yet, apart altogether from its independent value, by his speculative power and enthusiasm, by his revelation of the life and spectacle of nature, by the fresh creativeness of his diction and the elevated movement of his rhythm, Lucretius exercised a more powerful influence than any other on the art of his successors, and particularly on Virgil himself.

Catullus.—While the imaginative and emotional side of Roman poetry was so powerfully represented by Lucretius, attention was directed to its artistic side by a younger generation, who moulded themselves in a great degree on Alexandrian models. Such were Valerius Cato, also a distinguished literary critic, and C. Licinius Calvus, an eminent orator. Of this small group of poets one only has survived, fortunately the man of most genius among them, and probably the least Alexandrian, the bosom-friend of Calvus, C. Valerius Catullus (84–54). He, too, was a new force in Roman literature. He was a provincial by birth, although early brought into intimate relations with members of the great Roman families. The subjects of his best art are taken immediately from his own life—his loves, his friendships, his travels, his animosities, personal and political. No poet has surpassed him in the power of vitally reproducing the pleasure and pain of the passing hour, not recalled by idealizing reflection as in Horace, nor overlaid with mythological ornaments as in Propertius, but in all the keenness of immediate impression. He also is perhaps the most polished and mordant lampooner in any language. His greatest contribution to poetic art consisted in the perfection which he attained in several lyric metres, and in the ease and grace with which he used the language of familiar intercourse to give at once a lifelike and an artistic expression to his feelings. In his life and in his art he was the precursor of those poets who used their genius as the interpreter and minister of pleasure; but he rises above them in the spirit of personal independence, in his affection for his friends, in his keen enjoyment of natural and simple pleasures, and in his power of giving vital expression to these feelings.

Third Period: Augustan Age, 42 B.C. to A.D. 17.—The poetic impulse and culture communicated to Roman literature in the last years of the republic passed on without any break of continuity into the literature of the succeeding age. One or two of the circle of Catullus survived into that age; but an entirely new spirit came over the literature of the new period, and it is by new men, educated indeed under the same literary influences, but living in an altered world and belonging originally to a different order in the State, that the new spirit was expressed. The literature of the later republic reflects the sympathies and prejudices of an aristocratic class, sharing in the conduct of national affairs and living on terms of equality with one another; that of the Augustan age, first in its early serious enthusiasm, and then in the licence and levity of its later development, represents the hopes and aspirations with which the new monarchy was ushered into the world, and the pursuit of pleasure and amusement, which becomes the chief interest of a class cut off from the higher energies of practical life, and moving in the refining and enervating atmosphere of an imperial court. The great inspiring influence of the new literature was the enthusiasm produced first by the hope and afterwards by the fulfilment of the restoration of peace, order and national glory, under the rule of Augustus. That distracted age longed for a deliverer and peacemaker, and in Augustus it found him. It was not, however, by his equals in station that the first feeling was likely to be entertained. The earliest to give expression to it was Virgil; but the spell was soon acknowledged by the colder and more worldly-wise Horace. Before, but still more after, his defeat of Antony and Orientalism,

[1] *Latine loqui elegantissime.*

Virgil hailed him as more than mortal, a kind of Messiah, and Horace echoed Virgil.

The empire of Augustus gave literature an environment both good and bad. On the one hand, its suppression of the turbulence of republican times meant a certain amount of restriction in public life and, in particular, left political oratory almost without any excuse for existence. On the other, it furnished to those who had eyes to see it the noblest of political ideals, that of a world-wide empire of peace and justice. Almost of necessity, therefore, literature became idealistic, or reflective, or purely personal, wherefore, apart from the prose epic of Livy, to be considered later, the work of this age is largely in verse, which includes epic and didactic poetry (Virgil), lyrics, in large measure personal (Horace), satire, avoiding personalities (Horace again), and elegiac poetry, fanciful or dealing with the affections (Gallus, Tibullus, Propertius, Ovid).

Gallus.—The work of Gallus is unfortunately lost, unless, as Skutsch has plausibly suggested (*Aus Vergils Frühzeit,* 1901; *Gallus und Vergil,* 1906), the pseudo-Virgilian poem *Ciris,* an *epullion* in the Alexandrian manner, is his, and the Sixth and Tenth Eclogues of Virgil contain a poetical summary of his elegies. He certainly was Virgil's friend, and an elegiac poet of considerable merit, to judge by the references to him in the later elegiasts. As governor of Egypt, in 26 B.C. he allowed his vanity to lead him into appropriating honours to himself, or at least allowing them to be paid him, which properly belonged to Augustus. Disgrace and suicide followed, and Virgil found himself obliged to mutilate the fourth Georgic, which should have ended with a panegyric on his friend, and substitute the episode of Orpheus, perhaps originally an independent composition, beautiful in itself but dragged in very unnaturally where it stands. Gallus's amatory pieces were addressed to a lady whom he called Lycoris, no doubt a feigned name.

Virgil.—The greatest surviving Augustan poet, and also the earliest, is P. Vergilius (often miswritten Virgilius, whence the English spelling Virgil) Maro (70–19 B.C.). A native of Andes (Calvisano? certainly not Pietole) in the Mantuan territory, he began his poetical career with a few fugitive pieces in various styles, represented for us by the so-called *Appendix Vergiliana,* a miscellaneous collection, ranging from compositions in all probability his to others which can by no sound criticism be attributed to him, even in his salad days. The little pieces called *catalepta* ("trifles") are an example of the former, the *Culex* ("Gnat") of the latter.[1]

Next came the *Eclogues* or *Bucolics,* a series of ten pieces somewhat in the manner of Theocritus's pastorals, the scene of the odd-numbered ones at least being laid in the Mantuan territory or the neighbouring Italian Alps, and containing many allusions to the poet and his friends. They are slight, but full of exquisitely accurate observation of nature, a mastery of metre and style, and what Horace calls tender humour (*molle atque facetum,* Sat., 1, 10, 44) in the handling of the subject-matter.

In the *Georgics* we are struck by the great advance in the originality and self-dependence of the artist, in the mature perfection of his workmanship, in the deepening and strengthening of all his sympathies and convictions. Although he draws upon Greek authors for material and form, yet by sheer force of original genius he, like Lucretius, has put the didactic poem among the highest forms of serious poetry, so transmuting his material that, without violation of truth, he has made the whole poem alive with poetic feeling. The homeliest details of the farmer's work are transfigured through the poet's love of nature; through his religious feeling and his pious sympathy with the sanctities of human affection; through his patriotic sympathy with the national greatness; and through the rich allusiveness of his art to everything in poetry and legend which can illustrate and glorify his theme.

In the *Eclogues* and *Georgics* Virgil is the idealizing poet of the Italian countryside. In the *Aeneid* he is the idealizing poet of the empire and of Augustus. The epic of national life, vividly conceived but rudely executed by Ennius, was perfected in the years that followed the decisive victory at Actium. To do justice to his idea Virgil enters into rivalry with no less a poet than Homer. That he does not thereby make himself ridiculous is no small tribute to his greatness; that out of the poor, late and artificial legend of Aeneas he has reared up a lasting monument of the grandeur of Rome marks him a consummate artist and a master of epic.

Horace.—The second great poet of the time—Q. Horatius Flaccus or Horace (65–8 B.C.) is both the realist and the idealist of his age. If we want to know the actual lives, manners and ways of thinking of the Romans of the generation succeeding the overthrow of the republic it is in the *Satires* and partially in the *Epistles* of Horace that we shall find them. If we ask what that time provided to stir the fancy and move the mood of imaginative reflection, it is in the lyrical poems of Horace that we shall find the most varied and trustworthy answer. His literary activity extends over about 30 years and naturally divides itself into three periods, each marked by a distinct character. The first—extending from about 40 to 29—is that of the *Epodes* and *Satires.* In the former he imitates the lampooning style of the Greek iambic writers, but the objects of his attack are all, or mostly, imaginary. In the *Satires* we find realistic pictures of social life, and the conduct and opinions of the world submitted to the standard of good feeling and common sense. The style is natural and familiar. The hexameter no longer, as in Lucilius, moves awkwardly, but easily and as if carelessly, as befits the colloquial tone. The next period is the meridian of his genius, the time of his greatest lyrical inspiration, which he himself associates with the peace and leisure secured to him by his Sabine farm. The life of pleasure which he had lived in his youth comes back to him in the idealizing light of meditative retrospect. He had not only become reconciled to the new order of things, but was moved by his intimate friendship with Maecenas to aid in raising the world to sympathy with the imperial rule through the medium of his lyrical inspiration, as Virgil had through the glory of his epic art. With the completion of the three books of *Odes* he cast aside for a time the office of the *vates,* and resumed that of the critical spectator of human life, but in the spirit of a moralist rather than a satirist. In his *Epistles* he combines the ease of the best epistolary style with the grace and concentration of poetry—the style, as it has been called, of "idealized common sense," that of the *urbanus* and cultivated man of the world who is also in his hours of inspiration a genuine poet. In the last ten years of his life Horace published his fourth, and poorest, volume of *Odes* under pressure of the imperial command. But his chief activity is devoted to criticism, vindicating the claims of his own age to literary pre-eminence, and seeking to stimulate the younger writers of the day to what he regarded as the manlier forms of poetry and especially to tragedy (*Epistles* ii. and *Ars Poetica*).

But the poetry of the latter half of the Augustan age destined to survive did not follow the lines either of lyrical or of dramatic art marked out by Horace. There now came to perfection another vehicle for poetic expression, the *elegy.* Here the influence of Alexandria was great; but the pupils seem to have surpassed their teachers. The greatest masters of this kind of poetry are Tibullus, Propertius and Ovid.

Tibullus.—Of the ill-fated C. Cornelius Gallus, their predecessor, we have already spoken. Of the three Tibullus (*c.* 54–19) is the most refined and tender. As the poet of love he gives utterance to the pensive melancholy rather than to the pleasures associated with it. In his sympathy with the life and beliefs of the country people he shows an affinity both to the idyllic spirit and to the piety of Virgil.

Propertius.—A poet of more strength and more powerful imagination, but of less exquisite taste in his art, is Sextus Propertius (*c.* 50–*c.* 15). His youth was spent in Rome. His passion for

[1] The objection to attributing the *Culex* to Virgil, despite good ancient testimony that he wrote a poem so called, is not that it is trash, for the early efforts of great poets have often been rubbish, but that it is a kind of trash, both in content and in style, which could by no psychological possibility have been the fore-runner of Virgil's acknowledged works. R. Radford (*Trans. Amer. Phil. Ass.,* li., p. 159, and elsewhere), and one or two others, would attribute much of the *Appendix* to Ovid.

Cynthia (Hostia, probably a *libertina*) was the inspiration of his best work; and of her he has left a finished portrait. Sometimes heavy from too much Alexandrian learning, at times macabre, he shows more power of dealing gravely with a great or tragic situation than either Tibullus or Ovid, and his diction and rhythm at times approach sublimity.

Ovid.—The most facile and brilliant of the elegiac poets and the least poetical is P. Ovidius Naso or Ovid (43 B.C.–A.D. 18). As an amatory poet he is the poet of pleasure and intrigue rather than of tender sentiment or absorbing passion. Though he treated his subject in relation to himself with more levity and irony than real feeling, yet by his sparkling wit and fancy he created a literature of sentiment and adventure adapted to amuse the idle and luxurious society of which the elder Julia was the centre. His power of continuous narrative is best seen in the *Metamorphoses,* written in hexameters to which he has imparted a rapidity and precision of movement more suited to romantic and picturesque narrative than the weighty verse of Virgil. In his *Fasti* he successfully adapts to Roman themes the manner of Callimachus's *Aitia.* In his latest works—the *Tristia* and *Ex Ponto*—he imparts the interest of personal confessions to the record of a unique experience. Latin poetry is more rich in the expression of personal feeling than of dramatic realism. In Ovid we have both. We know him in the intense liveliness of his feeling and the human weakness of his nature more intimately than any other writer of antiquity, except perhaps Cicero. For the next 15 centuries or so, amatory poets and romantic versifiers learned their trade from him. His elegiacs are to Latin poetry what the Popian couplet is to English.

Livy.—The past of Rome had always a peculiar fascination for Roman writers. But it was in the great historical work of T. Livius or Livy (59 B.C.–A.D 17) that the record of the national life received its most systematic exposition. Its execution was the work of a life prolonged through the languor and dissolution following so soon upon the promise of the new era, during which time the past became glorified by contrast with the disheartening aspect of the present. The value of the work consists not in any power of critical investigation or weighing of historical evidence, but in the intense sympathy of the writer with the national ideal, and the vivid imagination with which under the influence of this sympathy he gives life to the events and personages, the wars and political struggles, of times remote from his own. He makes us feel more than any one the majesty of the Roman State, of its great magistracies, and of the august council by which its policy was guided. The vast scale on which the work was conceived and the thoroughness of artistic execution with which the details are finished are characteristically Roman. The prose style of Rome, as a vehicle for the continuous narration of events coloured by a rich and picturesque imagination and instinct with dignified emotion, attained its perfection in Livy.

Fourth Period: The Silver Age, A.D. 17 to 130.—For more than a century after the death of Augustus, Rome, though drawing from the provinces, remains the centre of the literary movement. The Silver Age, as it is called, is alternately overpraised and undervalued, as taste swings from one extreme to another. In many respects it resembled the Alexandrian period in Greek literature, more especially in its verse. Here, alongside of great virtuosity and improvements in technical skill, we find a lack of real inspiration, a merely imitative continuation of old forms side by side with a restless search for new ones. In prose the story would be much the same were it not for the appearance of one very great writer, Tacitus. An interesting point is that enough of the work of this period survives to enable us clearly to trace schools and tendencies. We may say, as regards the former, that there was a Ciceronian and an anti-Ciceronian school in prose, a Virgilian school and one which, if not exactly anti-Virgilian, was at least decidedly Ovidian, in verse. As in Greek oratory Atticism and Asianism strove with one another, so in Latin literature we may distinguish very clearly an anti-classical and a classicizing or archaizing school.

The Senecas, Lucan.—Under Tiberius and Caligula, literature did not flourish greatly. Apart from Manilius (*see* p. 752) those principates have left us nothing save the fables of Phaedrus, slight, graceful, and not especially poetical versifyings of the traditional Aesopic apologues by a Macedonian freedman with a mastery of Latin very remarkable in a foreigner, the historical compendium of Velleius Paterculus, a work which expands, when it reaches Tiberius, into a rhetorical panegyric of his military and political career, and one or two trifles like the collection of anecdotes by Valerius Maximus. We have no reason to suppose that the lost literature of the period included any works of first-rate importance. Cremutius Cordus, for instance, wrote a history rabidly republican in tone, which was made a ground for a charge of treason against him in A.D. 25. The public burning of his work, and his own suicide, increased the popularity of his writings enormously, as might have been expected (Tacitus, *Annal.* iv., 34–35), but there is no evidence that they were in themselves remarkable for style or content. The emperor Claudius was himself an author, if a dull and pedantic one, and had a genuine love of learning; under him the Senecas became prominent, particularly the younger, Seneca Philosophus, as he is called to distinguish him from his father, Seneca Rhetor, who has left us a most interesting collection of literary gossip and specimens of compositions then admired, the so-called *Controversiae* and *Suasoriae.* This was published sometime between A.D. 34 and 41, and shows us, even in the curtailed form in which we have it, how the taste of the day was formed and training in style given. Rhetorical instruction had long been in vogue, and to make speeches on imaginary topics, the more absurd and paradoxical the better, was the standard method of learning. As political oratory ceased to be necessary, and the great majority of forensic speeches (trials before the Senate were an exception at times) were perforce short and businesslike, these schoolboy themes were cultivated for their own sake, and there were men who grew grey in declaiming, as it was called, but never made a real speech in their lives. This declamation, being wholly artificial, was highly spiced. Cleverly-turned phrases (*sententiae*), ingenious setting of the facts in a particular light (*colores*), and all manner of tricks of language (figurae, σχήματα) were its outstanding characteristics. This not only governed the prose style of that age, it pervaded its verse also. Here Ovid was a pioneer, for his works are full of clever declamations in verse, of which the letter of Phaedra in the *Heroides* and the debate of Ajax and Ulysses in the *Metamorphoses* may serve as specimens.

The elder Seneca was a great admirer of Cicero; his son, whether consciously or not, headed the anti-Ciceronian school. It is highly likely that political ideals had something to do with this; so outstanding a champion of the dying Republic was not likely to be *persona grata* with the Caesars, and at least one prominent Augustan writer, the historian Pollio had vehemently attacked him. But the altered literary tastes induced by too exclusive a fondness for declamation had still more weight. The younger Seneca (L. Annaeus Seneca, about 4 B.C.–A.D. 65) was banished for a while under Claudius by Messalina's influence but recalled by her successor Agrippina, who made him the tutor of her young son Nero. From that day till his death in the conspiracy of Piso against his former pupil, he was almost literary dictator of Rome. He deserted the stately Ciceronian period for short, elaborately rhythmical, balanced clauses in the Asianic manner. His productions for the most part were essays and open letters on philosophic themes, and he is perhaps the most insincere writer on ethics who ever lived. It is difficult to read without impatience the praises of poverty and simplicity from the richest subject of the Empire, and quite impossible not to be nauseated by the abject flattery of Claudius which, the moment that emperor was dead, gave place to the clever, but mean pasquinade against his memory known as the *Apocolocyntosis.* However, he is highly moral in tone, and later ages valued him for his morality as his own admired him for his style.

A much better writer was his nephew Lucan (M. Annaeus Lucanus, A.D. 39–65), author of an unfinished poem on the civil wars between Caesar and Pompey, generally known as the *Pharsalia,* besides several other works now lost. It is versified rhetoric and not poetry; its faults of taste are glaring; and Lucan's sen-

timental republicanism leads him into depreciating Caesar and making a hero out of the impossible pedant, Cato the Younger; yet it is full of passages of the most glowing eloquence and fervid imagination, which all the schoolboy learning and other immaturities cannot efface.[1] For the work of a man under 30, at first favoured and then snubbed by Nero—who wished well by poetry, but was too madly jealous of all whose talents surpassed his own to be a reassuring patron—it is an astonishing achievement.

Manilius, Persius, Statius, etc.—It is interesting to contrast with these three clever Spaniards the work of two men, one of unknown nationality, the other an Etruscan, who wrote verse in the times of Tiberius and Nero respectively. Marcus Manilius, author of the *Astronomica,* in five books, which has come down to us, seems to have been moved to write a counterblast to the Epicureanism of Lucretius, of whose style he has now and then an echo, although his technique in general bears witness that he comes after Ovid. He appears fully to have believed in astrology, which he expounds at length in his poem, and to have been, like many Stoics, a man of a genuine moral earnestness; and these qualities give rise to a certain number of passages not without poetical worth. But in general he was no great poet, and his crabbed subject often results in a most contorted and obscure style.[2] A. Persius Flaccus (Persius), like Lucan, died young; like him, he was a Stoic, and lived in the time of Nero. There the resemblance ends. His surviving work consists of six satires, in a style which, although reminiscent of Horace, is singularly difficult, allusive, and cloudy, yet not without a fascination of its own. The first of these is literary and contains a vigorous onslaught on those who despise the older Roman writers and spend their time over Ovidian prettinesses.[3] The rest are on ethical topics, and marked quite as much by their earnest and obviously sincere tone as by their quaintness of diction. Persius was admired and imitated in antiquity, Manilius neglected.

The old forms of literature, of course, continued one and all to be practised, and several examples have come down to us. Bucolic poetry, neat and pretty but wholly artificial, was written in the time of Nero by T. Calpurnius Siculus, who of course imitated Virgil; much later he himself found an imitator, not wholly contemptible, in the person of M. Aurelius Olympius Nemesianus, who lived in the time of Carus and his sons. Fragments of a third bucolic poet, unknown, are preserved in an Einsiedeln ms.

Epic proper—for the poem of Lucan is rather chronicle-epic—is represented chiefly by P. Papinius Statius, who was exceedingly popular in the time of Domitian and exercised great influence in the middle ages, partly because of his merits as a rhetorician, partly from a legend that he was secretly a Christian.[4] In modern times he has found much less favour. If learning and industry could make a poet, he would be one of the greatest; as it is, his *Thebais* is somewhat heavy reading, although here and there passages genuinely poetical occur. His unfinished *Achilleis,* so far as it goes, is rather better; the five books of occasional poems called *Silvae* ("Leaves from a Notebook") contain much that is of interest. A poet rather neglected since his own day, but admired and regretted by his contemporary Quintilian, is Valerius Flaccus (C. Valerius Flaccus Balbus Sentinus), author of an unfinished *Argonautica,* in which the well-worn theme is handled not without originality, grace and romantic feeling.[5]

Martial, the Plinies.—But the best verse, on the whole, was satiric and epigrammatic. Martial (C. Valerius Martialis, another Spaniard), did most of his work under Domitian. A poor hanger-on of Roman society and distinguished neither for self-respect, elevation of character, or fastidiousness in his choice of topics, he had a mordant and cynical wit, coupled with a genuine fondness for children and a sufficiency of good taste to prevent his *Epigrams,* whereof there are altogether 15 books, degenerating into mere lampoons; while his great skill gave them vividness, polish, variety, and point that have hardly been excelled. A much more bitter commentator on society was his contemporary Juvenal (D. Iunius Iuvenalis), who has left us 16 satires, the last unfinished. His merits, which have won him readers ever since his own day, are remarkable powers of eloquent invective, inspired by a righteous indignation certainly not always simulated, and a mastery of solemn and impressive commonplace, as in the famous tenth Satire, the original of Johnson's *Vanity of Human Wishes.* His defects are a too great fondness for lingering over the details of the vices he attacks, and an utter lack of any sense of proportion, which leads him to inveigh as violently against mere bad form as against the most hideous crimes.

All this time, what may be called scientific prose had continued to flourish. Of the great antiquary, Verrius Flaccus, who wrote under Augustus, we possess only a meagre epitome, made in the 4th century by one Festus, and even that is largely lost and must be supplied as well as may be from the Carolingian epitome of it by Paulus Diaconus, and from sundry glosses which drew upon it.[1] But apart from such writers as Pomponius Mela (? time of Claudius), who wrote a respectable little handbook of geography, L. Iunius Moderatus Columella, contemporary of the younger Seneca and author of a treatise on agriculture, A. Cornelius Celsus, the writer on medicine (part of an encyclopaedia, the rest of which is lost), the jurists, whereof the *Digest* preserves us fragments, and other writers, of whom many are now lost, this age produced the very remarkable *Naturalis Historia* of the elder C. Plinius Secundus (Pliny), dedicated to Vespasian. When Pliny tries to be eloquent and impressive, the result is not happy; he is credulous, uncritical, and very inaccurate; but his prodigious learning makes the book perhaps the most valuable epitome of the science and pseudo-science of a whole age that ever was written. His nephew, the younger Pliny (C. Plinius Caecilius Secundus), who proved a good civil servant and an able barrister, under Trajan, was a faithful imitator of Cicero, whom indeed he resembled alike in his disarmingly childish vanity and in his real honesty and kindness of heart. His letters, including a series of dispatches to Trajan, with the emperor's answers, have obviously been revised for publication, but are none the less full of interest and paint a far less depressing picture of the times than that given by Juvenal or Tacitus; his one surviving speech, a panegyric on Trajan, is of some historical importance, but exceedingly dull. It was, however, much admired at the time.

Tacitus, Other Writers.—But by far the greatest writer of the Silver Age, one of the greatest of all time, is Tacitus (Cornelius Tacitus, friend of the younger Pliny, exact dates unknown). To explain the extreme bitterness with which he handles everything belonging to the Empire, it is necessary to remember that a great part of his manhood was spent under Domitian, and that he lived through the reign of terror, directed especially against the senatorial class, with which that unhappy and morbid prince closed his career. Add to this the sentimental republicanism of the older senatorial families, and the bias against which Tacitus honestly but vainly struggles is easily explained. It is also easily allowed for, and so does not greatly affect the historical worth of his writings. Much more serious than any of his faults as a historian is the lamentable chance which has lost us the greater part of the *Histories* and much of the *Annals.* Of his minor works, the *Germania* is the most important of our scanty documents for the early history of Germany; the *Agricola* holds a corresponding place for Roman Britain; and the *Dialogus* is of especial interest as showing clear traces of the Ciceronian movement in literature of which Quintilian was the foremost champion. A later and much lesser historian was the polymath Suetonius (C. Suetonius Tranquillus) from whom we have *Lives* of the Caesars from Julius to Domitian, brilliant things of their kind, if superficial, also fragments of a biographical work on literary men (*De Grammaticis et Rhetoribus,* a section of a

[1]After much useful work on the mss. by Carl Hosius, the *Pharsalia* has at last been satisfactorily edited by A. E. Housman (first ed., 1926).

[2]A. E. Housman thinks better of him, and in his edition emends away many faults of argument and diction. The mss. are poor.

[3]*See* Rose in *Class. Rev.* xxxviii. (1924), p. 64.

[4]*See* Dante, *Purgatorio,* xxii., 64 ff.

[5]Modern editions of his text (which is none of the best) by J. B. Bury (in Postgate's *Corpus Poetarum Latinorum*), 1900; C. Giarratano, Milan, Panormus and Naples, 1904; and O. Kramer, Leipzig, 1913.

[1]A large edition by W. M. Lindsay was in course of preparation in 1928.

longer treatise *De Viris illustribus*).[1] A minor writer, Q. Curtius Rufus, wrote a history of Alexander, of more literary than historical merit; one might almost class him among the writers of the Alexander-romance. His date is uncertain.

The drama flourished, but only in its lower forms. It is a pity that we have quite lost the mimes, or farces, which delighted this and the preceding age, and appear to have been very curious and not over-decent performances; but the loss to literature as such is probably not great. Lost also are the libretti of the pieces played by *pantomimi* or dancers, whose writers included Statius. They were the ancient equivalent of our film-dramas. Closet-drama is represented for us by the tragedies of the younger Seneca and his imitators. Despite Seneca's ingenuity of style and good command of metre, they are wretched compositions; but their great influence on later European play-writing makes them important in the history of literature. Of the imitators, one, the author of the *Octavia,* has some merit.

The novel was also of some importance, to judge by the considerable fragments of a picaresque romance, the *Satyricon,* by Petronius, the *arbiter elegantiarum* or semi-official Master of the Revels in Nero's court, and one of those who perished in the conspiracy of Piso. Apart from literary interest, it throws a great light on the colloquial speech of the time.

In literary criticism the great name is that of M. Fabius Quintilianus (Quintilian, *c.* 35–*c.* 100), also the greatest Latin writer, save Cicero, on rhetoric and literary education generally. His chief work, the *Institutio Oratoria* ("Training of an Orator") was written probably about the last decade of the 1st century.[2] He was a classicizer, and a passionate admirer of Cicero's style, yet by no means in favour of mere imitation of classical models; for him, the decay of Latin literature had not begun. Like so many writers of this age, he was a Spaniard.

Later Writers.—For two centuries after Juvenal we can name no verse-writers but Q. Serenus Sammonicus, with his pharmacopoeia in verse (*c.* 225), and M. Aurelius Olympius Nemesianus, who, besides imitating Calpurnius, as mentioned above, wrote (283) a dull piece on the training of dogs for the chase.[3] Towards the middle of the 4th century we have Decimus Magnus Ausonius, a professor of Bordeaux and afterwards consul (379), whose style is as little like that of classical poetry as is his prosody. His *Mosella,* a detailed description of the river Moselle, is the least unattractive of his works. A little better is his contemporary, Rufius Festus Avienus, who made some free translations of astronomical and geographical poems in Greek. A generation later, in what might be called the expiring effort of Latin poetry, appeared two writers of much greater merit. The first is Claudius Claudianus (*c.* 400), the court poet of the emperor Honorius and his minister Stilicho. Claudian may be properly styled the last of the poets of Rome. He breathes the old national spirit, and his mastery of classical idiom and versification is for his age extraordinary. Something of the same may be seen in Rutilius Namatianus, a Gaul by birth, who wrote in 416 a description of his voyage from the capital to his native land, which contains the most glowing eulogy of Rome ever penned by an ancient hand. Of the Christian poets only Aurelius Prudentius Clemens (*c.* 348–410) need be mentioned. He was well read in the ancient literature; but the task of embodying the Christian spirit in the classical form was one far beyond his powers.

Prose.—In prose, the rise of M. Cornelius Fronto (*c.* 100–175), a native of Cirta, marks the beginning of an African influence. Fronto, a distinguished orator and intimate friend of the emperor M. Aurelius, broke away from the traditional Latin of the Silver and Golden ages, and took as his models the pre-classical authors. The reaction was shortlived; but the same affectation of antiquity is seen in the writings of Apuleius, also an African, who lived a little later than Fronto and was a man of much greater natural parts. In his *Metamorphoses,* which were based upon a Greek original, he takes the wonderful story of the adventures of Lucius of Madaura, and interweaves the famous legend of Cupid and Psyche. His bizarre and mystical style has a strange fascination for the reader; but there is nothing Roman or Italian about it. Two epitomists of previous histories may be mentioned; Justinus (of uncertain date) who abridged the history of Pompeius Trogus, an Augustan writer; and P. Annius Florus, who wrote in the reign of Hadrian a rhetorical sketch based upon Livy. The Augustan History (*q.v.*) is marked by puerility and poverty of style. Ammianus Marcellinus (*c.* 330–400) had a higher conception of the historian's function. His narrative of the years 353–378 (all that now remains) is honest and straightforward, but his diction is awkward and obscure. The last pagan prose writer who need be mentioned is Q. Aurelius Symmachus (*c.* 350–410), the author of some speeches and a collection of letters. All the art of his ornate and courtly periods cannot disguise the fact that there was nothing now for paganism to say.

It is in Christian writers alone that we find the vigour of life. The earliest work of Christian apologetics is the *Octavius* of Minucius Felix, a contemporary of Fronto. It is thoroughly classical in style. Quite different is the work of Q. Septimius Florens Tertullianus (Tertullian, *c.* 150–230), a native of Carthage, the most vigorous of the Latin champions of the new faith. His style shows the African revolt of which we have already spoken, and in its medley of archaisms, Graecisms and Hebraisms reveals the strength of the disintegrating forces at work upon the Latin language. A more commanding figure is that of Aurelius Augustinus or St. Augustine (354–430), bishop of Hippo, who for comprehensiveness and dialectical power stands out in the same way as Hieronymus or St. Jerome (*c.* 331 or 340–420), a native of Stridon in Dalmatia, does for many-sided learning and scholarship.

Grammarians and Jurists.—The decline of literature proper was attended by an increased output of grammatical and critical studies. The grammarian M. Valerius Probus (*c.* A.D. 60) was the first critical editor of Latin texts. In the next century we have Velius Longus's treatise *De Orthographia,* and then a very interesting miscellany, the *Noctes Atticae* of Aulus Gellius, and (*c.* 200) a treatise in verse by Terentianus, an African, upon Latin pronunciation, prosody and metre. The tradition was continued in the 4th century by Nonius Marcellus and C. Marius Victorinus, both Africans, Flavius Sosipater Charisius and Diomedes. Commentaries on Terence, Horace, and Virgil have come down to us under the names of Acro, Porphyrio, Donatus, and Servius; of these "Donatus" on Terence and "Servius" on Virgil preserve a great deal of ancient learning. Ambrosius Macrobius Theodosius (*c.* 400) wrote a treatise on Cicero's *Somnium Scipionis* and seven books of miscellanies (*Saturnalia*); and Martianus Capella (*c.* 430), a native of Africa, published a compendium of the seven liberal arts, written in a mixture of prose and verse, with some literary pretensions. The last grammarian who need be named is the most widely known of all, the celebrated Priscianus, who published his text-book at Constantinople probably in the middle of the 5th century.

In jurisprudence, which may be regarded as one of the outlying regions of literature, Roman genius had had some of its greatest triumphs, and, if we take account of the "codes," was active to the end. The most distinguished of the early jurists (whose works are lost) were Q. Mucius Scaevola, who died in 82 B.C., and following him Ser. Sulpicius Rufus, who died in 43 B.C. In the Augustan age M. Antistius Labeo and C. Ateius Capito headed two opposing schools in jurisprudence, Labeo being an advocate of method and reform, and Capito being a conservative and empiricist. The strife, which reflects the controversy between the "analogists" and the "anomalists" in philology, continued long after their death. Salvius Iulianus was entrusted by Hadrian with the task of reducing into shape the immense mass of law which had grown up in the edicts of successive praetors—thus taking the first step towards a code. Sex. Pomponius, a contemporary, wrote an important legal manual of which fragments

[1]Editions of the *Life* of Julius (H. E. Butler and M. Cary) and that of Vespasian (A. W. Braithwaite) have been published by the Clarendon Press, 1927.

[2]Good editions are available in English of Book i. (F. H. Colson, 1924) and Book x. (W. Peterson, 1891).

[3]The *Pervigilium Veneris,* or Vigil of Venus, is of unknown date, but probably early in this period. Its 90-odd lines would do credit to any age, but it stands alone.

are preserved. The most celebrated handbook, however, is the *Institutiones* of Gaius, who lived under Antoninus Pius. The most eminent of all the Roman jurists was Aemilius Papinianus, the intimate friend of Septimius Severus; of his works only fragments remain. Other considerable writers were Domitius Ulpianus (*c.* 215) and Iulius Paulus, his contemporary. The last juristical writer of note was Herennius Modestinus (*c.* 240). But the effects of their work remained and are clearly visible long after in the "codes"—the code of Theodosius (438) and that of Justinian (529 and 533), with which is associated the name of Tribonianus.

This vast mass of literature has been studied with more or less intelligence ever since it was written, and especially since the Revival of Letters (*see* CLASSICS). But in the present century there has been a healthy tendency to treat the literature along with the other means open to us of understanding the life and thought of antiquity, and break down the barriers which the 19th century was prone to set up between "pure scholarship," or philology, and history, archaeology, and so forth (*realien*, to use the convenient German title). Thus, the observations on Virgil and on Gallus in this article rest largely on the application to literature of Mommsen's interpretation of an inscription found in Egypt, on first-hand investigations of Virgil's country, and on the works of men such as the late W. Warde Fowler, who have investigated Roman religious ideas.[1]

At the same time, the actual text of the great authors is being set upon a sounder basis than before by the study, not simply of their language, but of their mss. tradition (*überlieferungsgeschichte*). Thanks to modern methods of palaeographical study and the history of mss., it is often possible to some extent to reverse the process of copying, with its necessary accumulation of small corruptions, and reconstruct, more or less exactly, the text as it was in the 4th century, for instance. The danger of this method is that in the hands of an inferior editor it may be taken as a substitute for, instead of a help to, the sympathetic understanding of the thought and language of the author.[2]

Another aspect of this tendency is the readiness to study authors, not as isolated literary phenomena, but against the background of their own time and in relation to the movements of literature and thought of which they formed a part; to consider Quintilian, for example, not in the abstract as a monument of literary criticism or educational theory, but as part of the long history of the development of certain ideas.

Yet another side of modern research is an abandonment of the last century's excessive classicism, which turned attention away from such interesting fields as the ecclesiastical writers, the grammarians and glossarists, and the monuments of vulgar Latin.[3]

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For recent progress in the study, *see* the classical periodicals (*Classical Review, Classical Quarterly, Journal of Roman Studies,* England; *American Journal of Philology, Classical Philology, Classical Journal,* U.S.A.); these mostly contain accounts also of Continental periodicals. Good reviews of literature in *Philologische Wochenschrift* (Leipzig, weekly), *Revue de Philologie* (quarterly), *Bursians Jahresberichte* and *Year's Work in Classical Studies* (annual).

(H. J. R.; J. P. P.; W. Y. S.)

[1] *See* for example R. S. Conway, *New Studies of a Great Inheritance* (1921); W. Warde Fowler, *Virgil's Gathering of the Clans* (1916); *Aeneas at the Site of Rome* (1918); *Death of Turnus* (1919).

[2] For vigorous protests against such an error, *see* especially A. E. Housman (Prefaces to his editions of Juvenal, Manilius, and Lucan).

[3] Examples in Great Britain of the new attitude are the works of A. Souter (patristics) and W. M. Lindsay (grammarians and glossators). It has been longer in vogue on the Continent, witness the activities of Traube, Götz, Friedländer and others, and the great Viennese *Corpus scriptorum ecclesiasticorum Latinorum.*

MEDIAEVAL

Latin literature which is classed as "mediaeval" is usually accounted as beginning after the death (A.D. 524) of Boethius, "the last of the Romans," with Cassiodorus (*c.* 490–*c.* 585), of a noble family in the Abruzzi. While still "in the world" he compiled a universal history and a more particular account of the Goths, and, after retiring to the Benedictine monastery of Vibarium in Squillace (*c.* 540), a series of theological treatises important because he considered the retention of the secular learning then still existing, essential to his fellow monks. His immediate successor in Italy was Pope Gregory the Great (d. 604), the first great Latin writer who knew no Greek; the mission of St. Augustine of Canterbury to England originated the Latin culture there which was to have a great reflex action in western Europe through Aldhelm at the Carolingian revival.

After Gregory the Great, the lamp of learning in Italy was dim for a time; we must look to Africa, where the tradition of St. Augustine of Hippo lingered, and to Spain, the home of the Roman gentleman and poet Prudentius. In the former, Verecundus (d. 552) was an expositor of the Old Testament canticles; Corippus (*c.* 550) wrote historical epics on the wars against the Moors; in the latter, St. Martin of Braga (d. 580) writing on Christian morals and doctrine leads up to the encyclopaedist, St. Isidore of Seville (*c.* 570–636) whose *Chronicle of the World* and *Etymologies* are of magistral authority throughout the middle ages. In Gaul we find the troubador Venantius Fortunatus, whose courtier's trifles in honour of Queen Radegund are redeemed by his magnificent hymns (*Vexilla regis* and *Pange lingua*) for the fragment of the True Cross received at Poitiers in 569, and Gregory of Tours (d. 594) the historian of the Franks.

Latin Culture in the British Isles.—The centre of Latin learning now moves yet further away from Rome. There is some still unexplained connection between the Irish writers and the amusing pedant Virgilius Maro Grammaticus (in the south-west of France, 7th century); but apart from this, scholars fled to the peaceful island to escape the wars and invasions that were devastating Europe; they carried some Greek with them, which was strangely kept alive for centuries. Much of the work of their successors is in Irish: in Latin we may mention at the beginning of the period the fine, rugged cosmogonical and eschatological poem *Altus prosator* of St. Columba (d. 597) and at its end Adamnan (642–704), the prose author of a pilgrimage to the Holy Land, a life of Columba, and commentaries on the *Georgics* and *Eclogues* of Virgil. For 150 years there is a Latin literary culture in Ireland while Europe is sunk in war and ignorance, though the record of England is only less glorious than that of the sister isle; scholars and writers are fewer, but of almost equal merit. Fastidius (5th century, the writer of a tract on the Christian life for widows) is unimportant: in the 6th century Giidas "the Wise" is our authority for the history of the last days of Roman Britain. Later, there is a succession of figures of high literary merit, Aldhelm (640–709), the Venerable Bede (673–735) and Alcuin (730–793): Bede's *Ecclesiastical History* is a work of first-rate importance, and Alcuin was summoned by Charlemagne to his court to revive that learning in Europe which had almost flickered out.

The Birth of Rhyme.—Before considering the writers of the Carolingian revival brief mention must be made of the poets omitted in this historical sketch. St. Ambrose (*c.* 340–397) is before the period ordinarily accounted mediaeval, but his adoption of a Latin iambic measure and modification of it, perhaps under the influence of Hebrew psalmody and music, set a model for hymnology for 1,000 years. He is followed by Sedulius in the 5th century and about this time rhyme begins to appear: first assonance, then time rhyme, monosyllabic only; to the Irish we owe the richer double rhymes found in the rest of the period. At the same time the ancient classical measures were kept in being by such writers as Prudentius in early days and Bede and the

Anglo-Saxon poets later on.

Paul the Deacon, the historian of the Lombards, who died towards the end of the 8th century, was at Charlemagne's court, after the emperor had summoned Alcuin to revive learning by the institution of schools in France and Germany: among Alcuin's more famous pupils were Einhart (d. 840), the biographer of Charlemagne, the Spaniard Theodulf (d. 821), bishop of Orleans and the best poet of his day and Angilbert (d. 814), of less literary merit than the two others; also Hrabanus Maurus (784–856), archbishop of Mayence, possibly the author of the *Veni creator spiritus,* and his pupil Walafrid Strabo (808–849), abbot of Reichenau, a writer in the Virgilian tradition. To this period belong the unfortunate but gifted Godescalc of Orbais (*c.* 805–869) the monk persecuted by Hincmar of Rheims for his erroneous doctrine of predestination, a tender poet in his short pieces and possibly, under the assumed name of Theodulus, the author of an *Eclogue* full of classical learning, which was read until the close of the middle ages; and the intriguing figure of Johannes Scotus Erigena, brought in to write against Godescalc's doctrine; an Irishman who knew Greek well, almost alone of his age, and a free thinker and untamed spirit beyond his time.

Irish Influence.—The Irish exercised further influence on the Continent through their pupils, such as Heiric of Auxerre (841–876), who had a knowledge of classical writers lost elsewhere and in the monastery of St. Gall, when Notker Balbulus (840–912) wrote the *Gesta Karoli,* anecdotes of the life of Charlemagne, and brought into existence a new form of sacred poetry, the sequence: first a kind of *vers libre,* then taking metrical form, important both for itself and for the influence it afterwards had on secular poetry. At St. Gall also was Ekkehard I. (d. 973), whose *Waltharius,* a poem of heroism and love, is one of the best romances of the middle ages. Luitprand, bishop of Cremona (*c.* 920–972), Lombard, and historian of the Lombards, is the best historian of the time, and gives lively pictures of the Eastern empire, having twice gone on embassy to Constantinople. The nun Hrosvitha (*c.* 960), wrote a series of plays, modelled on Terence with subjects drawn from hagiographical sources, in which the dialogue is lively and sometimes even humorous. To the latter part of the 10th century also belong a few anonymous but beautiful lyrics, such as *Jam dulcis amica venito* and *Levis exurgit zephyrus,* preserved to us by happy chance in a collection called the *Carmina Cantabrigiensia,* which foreshadows the *Carmina Burana* of more than 100 years later. The inspiration of those early love lyrics is the Song of Songs; later, the love poems of Ovid exercise more and more influence.

The next century is, from a purely literary aspect, a period of decline. At the beginning of it the great figure is Gerbert (d. as Pope Sylvester II., 1003), so learned in the ancients and in natural science that he was suspected of being a magician; then Fulbert of Chartres (d. 1029), a great theological teacher, whose influence lasted throughout France for more than one generation, and came through Lanfranc (d. 1089) and Anselm (d. 1109) to England. Much of the intellectual life of this century is connected with the controversies aroused by Fulbert's pupil, Berengarius of Tours (d. 1088), who refused to be bound by the traditional authority of Priscian, Donatus, and Boethius; but the interest of this and of his attack on transubstantiation is philosophical rather than literary, as are the early contests between realists (such as Anselm) and nominalists (such as Roscellinus, d. 1106). In poetry mention may be made of the Burgundian Wipo, who flourished in the middle of the century, best known to us by the Eastern sequence *Victimae paschali,* and Peter Damian (d. 1072), author of two or three hymns of deep religious feeling.

A Century of Revival.—The next century witnesses a revival as important as that of Charlemagne, and Peter Abelard (d. 1142) in the first great figure of it. His controversy with nominalist and realist alike, his struggles with Bernard of Clairvaux, interest us less than his studies of Plato and Aristotle, and his *History of his own misfortunes* in which he relates his tragic love of Heloïse. He was a master of metre, and left a set of six *Dirges* of high merit, and a hymn-book for the nuns of Heloïse's convent, the Paraclete, of which one (*O quanta qualia*) is still famous in western Christendom. The literary revival of the first half of the century was rich in poetry of all kinds: religious, such as that of Bernardus Morlanensis' *De contemptu Mundi,* whence comes *Jerusalem the golden* and other popular hymns; learned, such as the epics of the excellent poet Hildebert (d. 1134), archbishop of Tours; dramatic, such as the mystery plays of the Englishman Hilarius (*c.* 1130), though he lived mostly in France; and purely secular, such as the famous *Phyllis and Flora,* a lively discussion between two girls on the topic whether a soldier or a clerk made the better lover. The second half is no less rich: there is the *Rosy Sequence,* ordinarily attributed to St. Bernard but more probably English, and the works of Adam of St. Victor (1130–80), one of the great hymn-writers of the world. To this period also we may ascribe many of the tender lyrics (most of French, a few of German origin) of the *Carmina Burana,* and the "Goliardic" poems, sung in praise of love and wine, and in satire of the great in Church and State by the "Wandering Scholars." A few stanzas from one of these, beginning *Meum est propositum in taberna mori* has lasted as a drinking song to this day, and is the best-known mediaeval secular poem. Its author, a mysterious figure known as the "Archipoeta," was a man of genius.

It will be difficult even to enumerate the more serious writers of this age, but mention must be made of John of Salisbury (1110–80) friend of St. Thomas of Canterbury and perhaps the ripest scholar of his time, whose *Polycraticus* expounds an important theory of government, supported by use of the Latin classics; of Giraldus Cambrensis, the lively Welsh bishop, historian and reformer (*c.* 1147–1220); and of Walter Map (*c.* 1200), Archdeacon of Oxford and chronicler of the folklore of the Welsh Marches. On the borderline between this century and the next one must place the two authors of *Artes Poeticae,* Matthew of Vendôme and Geoffrey de Vinsauf (an Englishman) whose works were carefully studied and followed for the rest of the mediaeval period.

The Schoolmen.—The 13th century is the age of the recovery of the forgotten works of Aristotle and the perfecting of the work of the schoolmen rather than of pure literature: but mention may be made of the learned figures of Robert Grosseteste (*c.* 1175–1253), bishop of Lincoln, and the encyclopaedist Vincent of Beauvais (d. 1264), a tutor of French princes, who digested into his *Specula* all the learning of his time, and of the Dominican Albertus Magnus (1193–1280), who first systematized the use of the whole of Aristotle in the scholastic philosophy. His great pupil, St. Thomas Aquinas of noble south Italian birth (d. 1274, less than 50 years old) is remembered as much by his noble Eucharistic hymns, *Pange lingua, Verbum Supernum,* and the sequence *Lauda Sion* as by his vast prose philosophical works. The grandest Latin poem of the middle ages, the *Dies irae* is probably the work of Thomas of Celano (d. shortly after 1250), the friend and biographer of St. Francis of Assisi. Two archbishops of Canterbury, Stephen Langton (d. 1228) and John Pecham (d. 1292) wrote hymns of some beauty: a greater hymn-writer than either was Philip de Grève (d. 1236), chancellor of the University of Paris. Late in this century we find the scientific and sceptical spirit of Roger Bacon (1214–94), and the beginning of Dante (1265–1321), whose Latin writings must not be forgotten because of his greater Italian works.

We are now on the eve of the Renaissance, and the middle ages near their close with the most typical of schoolmen, Johannes Duns Scotus (possibly from Northumberland, d. 1308) and John Wycliffe (1324–84), and the humanist and bibliophile Richard of Bury, bishop of Durham (d. 1345). If Wycliffe was "the morning star of the Reformation," Petrarch (1304–74) was "the morning star of the Renaissance," and with him may be said to be the beginning of a new era.

Modern Latin Literature.—Latin is no longer an instrument to be developed or modified at will (often to be debased), but a revival, and the neo-latin writers confine themselves to the usage of the classical models, attaining a more correct but less flexible medium for thought: with Petrarch, Boccaccio (1313–75) is naturally classed, the greatest recoverer of the classical authors, himself an elegant writer in Latin, and Poggio (1380–1459), who lived

into the time when the whole intellectual world was changed by the Greek immigrants from fallen Constantinople and the discovery of printing. Among these humanists were some true poets, writing in Latin, such as Angelo Poliziano (1454–94), Giovanni Gioviano Pontano (1426–1503), Sannazaro (1458–1530), Giovanni Battista Spagnuoli (John Baptist Mantuanus, 1448–1516), and their prose, after Pope Pius II (Aeneas Sylvius Piccolomini, d. 1464), culminates in Erasmus (1466–1536), the greatest of the later humanists. For its comical humour and wide effects mention must here be made of the *Epistolae obscurorum virorum,* a terrific and effective, if sometimes unfair, satire on mediaeval piety, learning and style, the work of Johann Reuchlin (1455–1522) and his friends.

After the Reformation and the growth of nationalism, Latin was still more the medium of a learned few than the common language of all cultured persons. In Scotland, George Buchanan (1506–82) was a Latin poet of rare merit; in Wales, the epigrammatist, John Owen (d. 1622); in England, Ascham and Cheke descend in direct succession to Milton. In France, the Estiennes ("Stephens") and the Scaligers; in Spain, Antonio de Lebrixa ("Nebrissensis," 1444–1522) were great writers of Latin as well as classical scholars.

Later, though it keeps a certain position in the world as the official language of the Roman Catholic Church, Latin writing is more an elegant accomplishment than a natural form of expression. Leaving aside the international lawyers, who wrote in Latin on account of the universality of their subject, mention may be made in France of the brothers Santeuil (second half of the 17th century) and Charles Coffin (1676–1749) who wrote Latin hymns with much of mediaeval spirit and feeling. Elsewhere the tradition of Latin poetry survived in a somewhat narrow stream in Italy and in England; as examples may be mentioned the Westminster and Eton schoolmasters, Vincent Bourne (1695–1747) and William Johnson (later Cory, 1823–92), the works of both of whom were not unworthy to be compared with the minor poets of ancient Rome.

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LATIN MONETARY UNION: *see* MONETARY AGREEMENT.

LATINUS, in Roman legend, king of the aborigines in Latium, and eponymous hero of the Latin race. In Hesiod (*Theogony,* 1013) he is the son of Odysseus and Circe, and ruler of the Tyrsenians; in Virgil, the son of Faunus and the nymph Marica, a national genealogy being substituted for the Hesiodic, which probably originated from a Greek source. Latinus was a shadowy personality, invented to explain the origin of Rome and its relations with Latium. According to Virgil (*Aeneid,* vii.–xii.), Aeneas, on landing at the mouth of the Tiber, was welcomed by Latinus, the peaceful ruler whose seat of government was Laurentum, and ultimately married his daughter Lavinia.

Other accounts of Latinus are to be found in the fragments of Cato's *Origines* (in Servius's commentary on Virgil) and in Dionysius of Halicarnassus; *see* further in the article by J. A. Hild, in Daremberg and Saglio, *Dictionnaire des antiquités.*

LATITUDE, a word meaning breadth or width, hence, figuratively, freedom from restriction, but more generally used in the geographical and astronomical sense here treated. The latitude of a point on the earth's surface is its angular distance from the equator, measured on the curved surface of the earth. The direct measure of this distance being impracticable, it has to be determined by astronomical observations. As thus determined it is the angle between the direction of the plumb-line at the place and the plane of the equator. This is identical with the angle between the horizontal planes at the place and at the equator, and also with the elevation of the celestial pole above the horizon (*see* ASTRONOMY: *Spherical Astronomy*). Latitude thus determined by the plumb-line is termed *astronomical.* The *geocentric latitude* of a place is the angle which the line from the earth's centre to the place makes with the plane of the equator. *Geographical latitude,* which is used in mapping, is based on the supposition that the earth is an elliptic spheroid of known compression, and is the angle which the normal to this spheroid makes with the equator. It differs from the astronomical latitude only in being corrected for local deviation of the plumb-line.

The latitude of a celestial object is the angle which the line drawn from some fixed point of reference to the object makes with the plane of the ecliptic. *See* also GEODESY.

LATIUM, the ancient name of the portion of central Italy, bounded on the north-west by Etruria, on the south-west by the Tyrrhenian sea, on the south-east by Campania, on the east by Samnium and on the north-east by the mountainous district inhabited by the Sabini, Aequi and Marsi. Latium, originally the land of the Latini, a tract of limited extent, was, after the overthrow of the Latin confederacy, when the neighbouring tribes of the Rutuli, Hernici, Volsci and Aurunci were also reduced to the condition of subjects and citizens of Rome, extended to comprise them all. It thus denoted the whole country from the Tiber to the mouth of the Savo, and just included the Mons Massicus. This change was not formally established till Augustus formed of this larger Latium, taken together with Campania, the first region of Italy: but it is already recognized by Strabo (as well as by Pliny, who terms the additional territory thus incorporated *Latium Adjectum,* designating the original Latium from the Tiber to Circeii as *Latium Antiquum.*

Latium Antiquum.—This consisted principally of an extensive plain now known as the Campagna di Roma, in the centre of which rise the volcanic Alban hills, bounded towards the interior by the Apennines, which rise very abruptly from it to a height of 4,000–5,000 feet. Several of the Latin cities, including Tibur and Praeneste, were situated on the terrace-like underfalls of these mountains, while Cora, Norba and Setia were placed in like manner on the slopes of the Volscian mountains (Monti Lepini), a rugged and lofty limestone range, which runs parallel to the main mass of the Apennines, being separated from them, however, by the valley of the Trerus (Sacco), and forms a continuous barrier from there to Terracina. No volcanic eruptions are known to have taken place in the Alban hills within the historic period, though Livy sometimes speaks of it "raining stones in the Alban hills" (i. 31, xxxv. 9—on the latter occasion it even did so on the Aventine). It has been recently ascertained, too, that the earliest tombs of the necropolis of Alba Longa (*q.v.*) do not, as has been asserted, lie beneath a stratum of peperino. Earthquakes (not of a violent character within recent centuries, though the ruin of the Colosseum, and many other buildings of ancient Rome is certainly to be ascribed to this cause, and most probably to an earthquake in A.D. 854) are not unknown even at the present day in Rome and in the Alban hills, and there is a seismographic observatory at Rocca di Papa. The surface is by no means a uniform plain, but is a broad undulating tract, furrowed throughout by numerous depressions, with precipitous banks, serving as water-courses, though rarely traversed by any considerable stream. As the general level of the plain rises, these channels by degrees assume the character of ravines.

Geology.—The hills on the right bank of the Tiber culminating in Monte Mario (455 ft.) belong to the Pliocene; they consist of a lower bluish-grey clay and an upper group of yellow sands and gravels. This clay since Roman times has supplied the material for brick-making, and the valleys which now separate the summits (Janiculum, Vatican, Monte Mario) are partly artificial. On the left bank this clay has been reached at a lower level, at the foot of the Pincian hill, while in the Campagna it extends below the later volcanic formations. The earlier eruptions occurred at the bottom of the Pliocene sea, and the tufa, which extends over the whole Campagna to a thickness of 300 ft. or more, was formed. At the same time, hot springs, containing abundant carbonate of lime in solution, produced deposits of travertine. Later, after the Campagna, by a great general uplift, had become a land surface, volcanic energy found an outlet in comparatively few large craters, which emitted streams of hard lava as well as fragmentary materials, the latter forming sperone (*lapis Gabinus*) and peperino (*lapis Albanus*), while upon one of the former, which runs from the Alban hills to within 2 mi. of Rome, the Via Appia was carried. The two main areas near Rome are formed by the group of craters on the north (Bracciano, Bolsena, etc.) and the Alban hills on the south, the latter consisting of one great crater with a base about 12 mi. in diameter, in the centre of which a smaller crater was later on built up (the basin is now known as the Campo di Annibale) with several lateral vents (the Lake of Albano, the Lake of Nemi, etc.). The Alban Mount (Monte Cavo) is almost the highest point on the

rim of the inner crater, while Mount Algidus and Tusculum are on the outer ring wall of the larger (earlier) crater.

Subsequently, rain and rivers have made gullies in the plain. The communities which inhabited the detached hills and projecting ridges which later on formed the city of Rome were in a specially favourable position. These hills (especially the Palatine, the site of the original settlement) with their naturally steep sides, partly surrounded at the base by marshes and situated not far from the confluence of the Anio with the Tiber, possessed natural advantages not shared by the other primitive settlements of the district; and their proximity to one another rendered it easy to bring them into a larger whole. The volcanic materials available in Rome and its neighbourhood were especially useful in building. The tufa, sperone and peperino were easy to quarry, and could be employed by those who possessed comparatively elementary tools, while travertine, which came into use later, was an excellent building stone, and the lava (*selce*) served for paving stones and as material for concrete. The strength of the renowned Roman concrete is largely due to the use of pozzolana (*see* PUTEOLI), which also is found in plenty in the Campagna.

Between the volcanic tract of the Campagna and the sea there is a broad strip of sandy plain, evidently formed merely by the accumulation of sand from the sea, and constituting a barren tract, still covered almost entirely with wood as it was in ancient times, except for the almost uninterrupted line of villas along the ancient coastline, which is now marked by a line of sandhills, some ½ mi. or more inland. (*See* LAVINIUM; TIBER.) This long belt of sandy shore extends without a break for a distance of more than 30 mi. from the mouth of the Tiber to the promontory of Antium (Porto d'Anzio), a low rocky headland, projecting out into the sea, and forming the only considerable angle in this line of coast. Thence again a low sandy shore of similar character, but with extensive shore lagoons which served in Roman times and serve still for fish-breeding, extends for about 24 mi. to the foot of the Monte Circeo (*Circeius Mons, q.v.*). The region of the Pomptine marshes (*q.v.*) occupies almost the whole tract between the sandy belt on the seashore and the Volscian mountains, extending from the southern foot of the Alban hills below Velletri to the sea near Terracina.

Drainage.—The district sloping down from Velletri to the dead level of the Pontine (Pomptine) marshes has not, like the western and northern slopes of the Alban hills, drainage toward the Tiber. The subsoil too is differently formed: the surface consists of very absorbent materials, then comes a stratum of less permeable tufa or peperino (sometimes clay is present), and below that again more permeable materials. In ancient, and probably pre-Roman, times this district was drained by an elaborate system of *cuniculi,* small drainage tunnels, about 5 ft. high and 2 ft. wide, which ran, not at the bottom of the valleys, where there were sometimes streams already, and where, in any case, erosion would have broken through their roofs, but along the slopes, through the less permeable tufa, their object being to drain the hills on each side of the valleys. They had probably much to do with the relative healthfulness of this district in early times. Some of them have been observed to be earlier in date than the Via Appia (312 B.C.). When they fell into desuetude, malaria gained the upper hand, the lack of drainage providing breeding-places for the malarial mosquito. Remains of similar drainage channels exist in many parts of the Campagna Romana and of southern Etruria (especially to the north of Veii) at points where the natural drainage was not sufficient, and especially in cultivated or inhabited hills (though it was not necessary here, as in the neighbourhood of Velletri, to create a drainage system, as streams and rivers were already present as natural collectors), and streams very frequently pass through them at the present day. The drainage channels which were dug for the various crater lakes in the neighbourhood of Rome are also interesting in this regard. That of the Alban lake is the most famous; that of Nemi has been cleared in connection with the partial drainage of the lake, and found to be precisely similar; but all the other crater lakes are similarly provided. As the drainage by *cuniculi* removed the moisture in the subsoil, so the drainage of the lakes by *emissaria,* outlet channels at a low level, prevented the permeable strata below the tufa from becoming impregnated with moisture which they would otherwise have derived from the lakes of the Alban hills. The slopes below Velletri, on the other hand, derive much of their moisture from the space between the inner and outer ring of the Alban volcano, which it was impossible to drain; and this in turn receives much moisture from the basin of the extinct inner crater. (*See* R. de la Blanchère, in *Dictionnaire des Antiquités, s. vv., Cuniculus, Emissarium.*)

Prehistoric Remains.—Numerous isolated Palaeolithic objects of the Mousterian type have been found in the neighbourhood of Rome in the quaternary gravels of the Tiber and Anio; but no certain traces of the Neolithic period have come to light, as the various flint implements found sporadically round Rome probably belong to the period which succeeded Neolithic (called by Italian archaeologists the Eneolithic period) inasmuch as both stone and metal (not, however, bronze, but copper) were in use. At Sgurgola, in the valley of the Sacco, a skeleton was found in a rock-cut tomb of this period which still bears traces of painting with cinnabar. A similar rock-cut tomb was found at Mandela, in the Anio valley. Both are outside the limits of the Campagna in the narrower sense; but similar tombs were found (though less accurately observed) in travertine quarries between Rome and Tivoli. Objects of the Bronze age, too, have only been found sporadically. The earliest cemeteries and hut foundations of the Alban hills belong to the Iron age, and cemeteries and objects of a similar character have been found in Rome itself and in Etruria, belonging to the civilization of the Villanovans (*q.v.*). It was her possession of the crossing of the Tiber that gave Rome her importance from the first. (*See* ROME.) For the prehistoric period *see* B. Modestov, *Introduction à l'histoire romaine* (Paris, 1907); T. E. Peet, *The Stone and Bronze Ages in Italy* (Oxford, 1909); D. Randall-MacIver, *Villanovans and Early Etruscans* (Oxford, 1924).

The oldest linguistic monument of the Latini is the gold brooch of Praeneste (7th or early 6th century B.C.) and next comes the stele found in the Forum in Rome (6th century B.C.)

It is uncertain to what extent reliance can be placed upon the traditional accounts of the gradual spread of supremacy of Rome in Latium, and the question cannot be discussed here. Nor can we deal with the list of 30 communities belonging to the Latin league (*c.* 370 B.C.) accounts of which are given by Dionysius of Halicarnassus.

At a still earlier period there existed another confederacy of 30 towns, of which Alba was the supreme head. A list of those who were wont to participate in the sacrifices on the Alban Mount is given us by Pliny (*N.H.* iii, 5, 69) under the name of *populi albenses,* which includes only six or eight of the list of Dionysius; and these among the least known. Many of the rest are unknown; while the more powerful cities of Aricia, Lanuvium and Tusculum, are not included, and appear to have maintained a wholly independent position. This earlier league was doubtless broken up by the fall of Alba; it was probably the increasing power of the Volsci and Aequi that led to the formation of the later league, including all the more powerful cities of Latium, as well as to the alliance concluded by them with the Romans in the consulship of Spurius Cassius (493 B.C.). Other cities of the Latin league had already (according to the traditional dates) received Latin colonies—Velitrae (494 B.C.), Norba (492), Ardea (442), Labici (418), Circei (393), Satricum (385), Setia (382).

The cities of the Latin league continued to hold general meetings or assemblies from time to time at the grove of the Aqua Ferentina, a sanctuary at the foot of the Alban hills, perhaps in a valley below Marino, while they had also a common place of worship on the summit of the Alban Mount (Monte Cavo), where stood the celebrated temple of Jupiter Latiaris. The participation in the annual sacrifices at this sanctuary was regarded as typical of a Latin city (hence the name "prisci Latini" given to the participating peoples); and they continued to be celebrated long after the Latins had lost their independence and been incorporated in the Roman State.

Roman Supremacy.—We are on firmer ground in dealing with the spread of the supremacy of Rome in Latium when we take account of the foundation of new colonies and of the formation of new tribes, processes which as a rule go together. The information that we have as to the districts in which the 16 earliest clans (*tribus rusticae*) were settled shows us that, except along the Tiber, Rome's dominion extended only a few miles beyond the city gates. Thus, the confines of the Roman territory on the right bank of the Tiber, toward the sea, must be fixed at the 5th mile of the Via Portuensis at the grove of the Arvales and toward the S.E. it was again at the 5th milestone.

The boundary of the *Ager Romanus antiquus* toward the northwest is similarly fixed by the festival of the Robigalia at the 5th milestone of the Via Clodia. Within this area fall the districts inhabited by the earliest tribes, so far as these are known to us. The *tribus Romilia* was settled on the right bank of the Tiber near the sanctuary of the Arvales, the *Galeria* perhaps a little farther west on the lower course of the stream now known as Galera, and the *Fabia* perhaps on the Cremera toward Veii. We know that the *pagus Lemonius* was on the Via Latina, and that the *tribus Pupinia* dwelt between Tusculum and the city, while the territory of the *Papiria* possibly lay nearer Tusculum, as it was to this tribe that the Roman citizens in Tusculum belonged in later days. It is possible that the *Camilia* was situated in the direction of Tibur, inasmuch as this town was afterward enrolled in this tribe. The *tribus Claudia,* probably the last of the 16 older *tribus rusticae,* was, according to tradition, founded in 504 B.C. Its territory lay beyond the Anio, between Fidenae and Ficulea. The locality of the *pagi* round which the other tribes were grouped is not known to us.

With the earliest extensions of the Roman territory coincided the first beginnings of the Roman road system. After the Latin communities on the lower Anio had fallen under the dominion of Rome, we may well believe that the first portion of the Via Salaria, leading to Antemnae, Fidenae and Crustumerium, came into existence. The formation of the *tribus Clustumina* (the only one of the earlier 21 tribes which bears a local name) is both a consequence of an extension of territory and of the establishment of the assembly of the plebs by tribes, for which an inequality of the total number of divisions was desirable. The correlative of the Via Salaria was the Via Campana, so called because it led past the grove of the Arvales along the right bank of the Tiber to the Campus Salinarum Romanarum, the salt marshes, from which the Via Salaria took its name, inasmuch as it was the route by which Sabine traders came from the interior to fetch the salt, crossing the Tiber at Rome, just below the island. To

this period would also belong the Via Ficulensis, leading to Ficulea, and afterward prolonged to Nomentum, and the Via Collatina, which led to Collatia. Gabii became Roman in fairly early times, though at what period is uncertain, and with its subjugation must have originated the Via Gabina, afterward prolonged to Praeneste. The Via Latina, too, must be of very early origin; and tradition places the important conquest of the pass of Algidus through which it led, in 431 B.C. Not long after the capture of Fidenae, the main outpost of Veii, the chief city itself fell (396 B.C.) and a road (still traceable) was probably made thither. The rival trade route from Veii to Fidenae (the Tiber being crossed by a ferry), Collatia, Gabii and Praeneste must then have fallen into desuetude. There was also probably a road to Caere in early times, inasmuch as we hear of the flight of the Vestals thither in 389 B.C. The origin of the rest of the roads is, no doubt, to be connected with the gradual establishment of the Latin league. We find that while the later (long distance) roads bear as a rule the name of their constructor, all the short distance roads on the left bank of the Tiber bear the names of towns which belonged to the league—Nomentum, Tibur, Praeneste, Labici, Ardea, Laurentum—while Ficulea and Collatia do not appear. The Via Pedana, leading to Pedum, may be of much later origin; it was a branch of the Via Praenestina.

There must, too, have been a road, along the line of the later Via Appia, to Bovillae, Aricia, Lanuvium and Velitrae, going thence to Cora, Norba and Setia along the foot of the Volscian mountains; while nameless roads, which can still be traced, led direct from Rome to Satricum and to Lavinium.

We can trace the advance of the Roman supremacy with greater ease after 387 B.C., inasmuch as from this year (adopting the traditional dating for what it is worth) until 299 B.C. every accession of territory is marked by the foundation of a group of new tribes; the limit of 35 in all was reached in the latter year. In 387, after the departure of the Gauls, southern Etruria was conquered, and four new tribes were formed: *Arnensis* (probably derived from Aro, mod. Arrone—the stream which forms the outlet to the lake of Bracciano, anc. *Lacus Sabatinus*), *Sabatina* (called after this lake), *Stellatina* (named from the Campus Stellatinus, near Capena); and *Tromentina*. Four years later were founded the Latin colonies of Sutrium and Nepeta. In 358 B.C. Roman preponderance in the Pomptine territory was shown by the formation of the *tribus Pomptina* and *Publilia*, while in 338 and 329 respectively Antium (founded as a Latin colony in 494 B.C.) and Terracina became colonies of Roman citizens.

After the dissolution of the Latin league which followed upon the defeat of the united forces of the Samnites and of those Latin and Volscian cities which had revolted against Rome, two new tribes, *Maecia* and *Scaptia*, were created in 332 B.C. in connection with the distribution of the newly-acquired lands. A further advance in the same direction, ending in the capture of Privernum in 329 B.C., is marked by the establishment in 318 B.C. of the *tribus Oufentina* (from the river Ufens which runs below Setia, mod. *Sezze*, and Privernum, mod. *Piperno*) and the *tribus Falerna* (in the Ager Falernus), while the foundation of the colonies of Cales (334) and Fregellae (328) secured the newly-won south Volscian and Campanian territories, and led no doubt to a prolongation of the Via Latina. The moment had now come for the pushing forward of another line of communication, which had no doubt reached Terracina in 329 B.C. but was now definitely constructed (*munita*) as a permanent military highway as far as Capua in 312 B.C. by Appius Claudius, after whom it was named. To him, no doubt, is due the direct line of road through the Pomptine marshes from Velitrae to Terracina. Its construction may fairly be taken to mark the period at which the roads of which we have spoken, hitherto probably mere tracks, began to be transformed into real highways.

In the same year (312) the colony of Interamna Lirenas was founded, while Luceria, Suessa (Aurunca) and Saticula had been established a year or two previously. Sora followed nine years later. In 299 B.C. further successes led to the establishment of two new tribes—the *Teretina* in the upper valley of the Trerus (Sacco) and the *Aniensis*, in the upper valley of the Anio—while to about the same time we must attribute the construction of two new military roads, both secured by fortresses. The southern road, the Via Valeria, led to Carsioli and Alba Fucens (founded as Latin colonies respectively in 298 and 303 B.C.), and the northern (afterward the Via Flaminia) to Narnia (founded as a Latin colony in 299 B.C.). There is little doubt that the formation of the *tribus Quirina* (deriving its name possibly from the town of Cures) and the *tribus Velina* (from the river Velinus, which forms the well-known waterfalls near Terni) is to be connected with the construction of the latter highroad, though its date is not certainly known. The further history of Roman supremacy in Italy will be found in the article ROME: *Ancient History*. We notice, however, that the continual warfare in which the Roman state was engaged led to the decadence of the free population of Latium, and that the extension of the empire of Rome was fatal to the prosperity of the territory adjoining the city.

Causes of Depopulation.—What had previously, it seems, been a well-peopled region, with peasant proprietors, kept healthy by careful drainage, became in the 4th and 3rd centuries B.C. a district consisting in large measure of huge estates (*latifundia*) owned by the Roman aristocracy, cultivated by gangs of slaves. This led to the disappearance of the agricultural population, to a decline in public safety, and to the spread of malaria in many parts; indeed, it is quite possible that it was not introduced into Latium before the 4th century B.C. The evil increased in the later period of the republic, and many of the old towns of Latium sank into a very decayed condition; with this the continual competition of the provinces as sources of food-supply no doubt had a good deal to do. Cicero speaks of Gabii, Labici and Bovillae as places that had fallen into abject poverty, while Horace refers to Gabii and Fidenae as mere "deserted villages," and Strabo as "once fortified towns, but now villages, belonging to private individuals." Many of the smaller places mentioned in the list of Dionysius, or the early wars of the Romans, had altogether ceased to exist, but the statement of Pliny that 53 communities (*populi*) had thus perished within the boundaries of Old Latium is perhaps exaggerated. By the end of the Republic a good many parts of Latium were infected, and Rome itself was highly malarious in the warm months. The emperors Claudius, Nerva and Trajan turned their attention to the district, and under their example and exhortation the Roman aristocracy erected numerous villas within its boundaries, and used them at least for summer residences. During the 2nd century the Campagna seems to have entered on a new era of prosperity. The roads radiating in all directions from Rome were connected by a network of crossroads leading to the very numerous villas with which the Campagna was strewn and which seem in large measure to belong to this period. Some of these are of enormous extent, *e.g.*, the villa of the Quintilii on the Via Appia, that known as Sette Bassi on the Via Latina, and that of Hadrian near Tibur, the largest of all.

Latium Novum or Adjectum.—This comprised the territories of the Volsci and Hernici, a rugged and mountainous country, extending from the frontier of the Sabines to the sea coast between Terracina and Sinuessa. But it was not separated from the adjacent territories by any natural frontier or physical boundaries. It included the Hernican cities of Anagnia, Ferentinum, Alatrium, and Verulae—a group of mountain strongholds on the north side of the valley of the Trerus (Sacco); together with the Volscian cities on the south of the same valley, and in that of the Liris, the whole of which, with the exception of its extreme upper end, was included in the Volscian territory. Here were situated Signia, Frusino, Fabrateria, Fregellae, Sora, Arpinum, Atina, Aquinum, Casinum and Interamna; Anxur (Terracina) was the only seaport that properly belonged to the Volscians, the coast from thence to the mouth of the Liris being included in the territory of the Aurunci, or Ausones, who possessed the maritime towns of Fundi, Formiae, Caieta and Minturnae, together with Suessa in the interior, which had replaced their more ancient capital of Aurunca. Sinuessa, on the sea coast between the Liris (Garigliano) and the Vulturnus, at the foot of the Monte Massico, was the last town in Latium. The Pons Campanus, by which the Via Appia crossed the Savo some 9 mi. S.E. of Sinuessa, indicates by its name the position of the old Campanian frontier. In the interior the boundary fell between Casinum and Teanum Sidicinum, at about the 100th milestone of the Via Latina—a fact which led later to the jurisdiction of the Roman courts being extended on every side to the 100th mile from the city, and to this being the limit beyond which banishment from Rome was considered to begin.

The Apennines comprised within the boundaries of Latium form rugged mountain masses from 4,000 to 5,000 ft. high. In them three streams rise; (1) the Anio, now called Teverone, descending from above Subiaco to Tivoli, where it enters the plain of the Campagna; (2) the Trerus (Sacco), rising below Palestrina (Praeneste) and flowing through a valley which separates the main mass of the Apennines from the Volscian mountains or Monti Lepini to join the Liris below Ceprano; (3) the Liris (Garigliano) which enters New Latium about 20 mi. from its source and flows past Sora tortuously to the sea at Minturnae. The lower part of its wide valley is fertile, bordered with hills covered with vines, olives and fruit-trees, and well populated. Long after the Latins had ceased to exist as a separate people Roman writers used the phrase *nomen Latinum*, in a purely political sense, to designate the inhabitants of all cities on which the Romans had conferred "Latin rights" (*jus Latinum*), an inferior form of the Roman franchise, granted in the first instance to certain cities of the Latins when they became subjects of Rome, and later to many other cities of Italy, especially the so-called Latin colonies. Later still the same privileges were granted to places in other countries also—*e.g.*, to most of the cities in Sicily and Spain. All persons enjoying these rights were termed in legal phraseology *Latini* or *Latinae conditionis*.

Several of the popes, as Sixtus IV and Julius III, made unsuccessful attempts to improve the condition of the Campagna, the former making a serious attempt to revive agriculture as against pasture, while in the latter part of the 16th century a line of watch-towers was erected along the coast. In the Renaissance, it is true, falls the erection of many fine villas in the neighbourhood of Rome—not only in the hills round the Campagna, but even in certain places in the lower ground, *e.g.*, those of Julius II at La Magliana and of Cardinal Trivulzio at Salone—and these continued to be frequented until the end of the 18th century, when the French Revolution dealt a fatal blow to the prosperity of the Roman nobility. The 17th and 18th centuries, however, mark the worst period of depopulation in the more malarious parts

of the Campagna, which seems to have begun in the 15th century, though we hear of malaria throughout the middle ages. A new epoch was marked by the discovery of its cause. (*See* MALARIA; MOSQUITO.) The soil in many parts is very fertile, and springs are plentiful and abundant; the water is in some cases sulphurous or ferruginous. In the winter it furnishes abundant pasture to herds of silver-gray oxen and shaggy black horses, as well as to some 2,000,000 sheep, which pass in the summer to the mountain pastures of the Abruzzi. The shepherds, who live in conical huts, with their fierce dogs, are a characteristic feature of the Campagna. The wool is sold in Rome; the sheep are milked and cheese (*pecorino*) and (*ricotta*) made. A certain amount of horse-breeding is done, and the government has, as elsewhere in Italy, a certain number of stallions.

The modern "region" of Latium (Lazio) includes the five provinces of Frosinone, Littoria, Rieti, Rome and Viterbo. (*See* ITALY.) The rise in its population since 1901 has been mainly due to the growth of the city of Rome, but also to the enlargement of the "region." Pop. (1936) 2,647,088; area 6,626 sq.mi.

See G. and F. Tomassetti, *La Campagna romana* (Rome, 1910); R. A. Lanciani, *Wanderings in the Roman Campagna* (London, 1909); T. Ashby, "The Classical Topography of the Roman Campagna," in *Papers of the British School at Rome*, i, iii–v (London, 1902), and *The Roman Campagna in Classical Times* (London, 1927).

LATONA: *see* LETO.

LA TOUR, MAURICE QUENTIN DE (1704–1788), French pastellist, was born at St. Quentin on Sept. 5, 1704. He went to Paris in 1727 and entered the studio of Spoède, rector of the academy of St. Luke, who still continued the traditions of the old guild of the master painters of Paris. In 1737 La Tour exhibited the first of that splendid series of 150 portraits which formed the glory of the salon for the succeeding 37 years. In 1746 he was received into the academy; in 1750 he received the title of painter to the king, and in 1751 he was councillor of the academy. La Tour retired at the age of 80 to St. Quentin, where he died on Feb. 17, 1788.

See C. Desmeze, *M. Q. de La Tour, peintre du roi* (1854); "La Tour" in the *Collection des artistes célèbres* (1886); E. and J. de Goncourt, *La Tour* (1867); Guiffrey and M. Tourneux, *Correspondance inédite de M. G. de La Tour* (1885); Tourneux, *La Tour, biographie critique* (1904); Henry Lapauzé, *Les Pastels de Maurice-Quentin de La Tour du Musée à Saint Quentin* (1919).

LA TOUR D'AUVERGNE, THÉOPHILE MALO (1743–1800), French soldier, was born at Carhaix in Brittany on Dec. 23, 1743, the son of an advocate named Corret. In 1771 he assumed the surname of La Tour d'Auvergne, being descended from an illegitimate half-brother of the great Turenne. He entered the army in 1767, and in the early part of the Revolution he opposed the proposals of his brother officers in the Angoumois regiment to emigrate rather than to swear to the constitution. In 1792 his lifelong interest in numismatics and questions of language was shown by a work which he published on the Bretons while serving under Montesquiou in the Alps. After fighting in the Pyrenees his health broke down and he retired in 1795. On his return by sea to Brittany he was captured by the English and held prisoner for two years. When released, he settled at Passy and published *Origines gauloises*, but in 1797 he served, with the rank of captain, as substitute for a friend, on the Rhine (1797) and in Switzerland (1798–9), and was named by Carnot "first grenadier of France" (April 27, 1800). He was killed in action at Oberhausen, near Donauwörth, on June 27, 1800. La Tour d'Auvergne's almost legendary courage had captivated the imagination of the French soldier, and his memory was not suffered to die. It was customary for the French troops and their allies of the Rhine confederation under Napoleon to march at attention when passing his burial-place on the battlefield. The most striking tribute to his memory was paid, by order of the first consul in 1800, on all occasions when the colour was taken on parade: "His name is to be kept on the pay list and roll of his company. It will be called at all parades and a noncommissioned officer will reply, *Mort au champ d'honneur.*" In 1814, the practice ceased.

LATREILLE, PIERRE ANDRÉ (1762–1833), French naturalist, was born at Brives-la-Gaillarde (Corrèze), on Nov. 20, 1762. In 1778 he entered the collège Lemoine at Paris, and on taking orders in 1786, retired to Brives, where he devoted his leisure to the study of entomology. In 1788 he returned to Paris, but during the Revolution was imprisoned at Bordeaux. His *Précis des caractères génériques des insectes, disposés dans un ordre naturel*, which appeared at Brives in 1796, led to his being entrusted with the arranging of the entomological collection at the recently organized Muséum d'Histoire Naturelle (Jardin des Plantes). He died in Paris on Feb. 6, 1833.

His other works include: *Histoire naturelle générale et particulière des crustacés et insectes* (14 vols., 1802–05); *Genera crustaceorum et insectorum, secundum ordinem naturalem in familias disposita* (4 vols., 1806–07); *Considérations générales sur l'ordre naturel des animaux composant les classes des crustacés, des arachnides, et des insectes* (1810); *Familles naturelles du règne animal, exposées succinctement et dans un ordre analytique* (1825); *Cours d'entomologie* (vol. i, 1831).

LA TRÉMOILLE, an old French family which derives its name from a village (the modern La Trimouille) in the department of Vienne. Guy, sire de la Trémoille, standard-bearer of France, was taken prisoner at the battle of Nicopolis (1396), and Georges, the favourite of King Charles VII, was captured at Agincourt (1415). Louis (2), called the *chevalier sans reproche*, defeated and captured the duke of Orleans at the battle of Saint-Aubin-du-Cormier (1488), distinguished himself in the wars in Italy, and was killed at Pavia (1525). In 1521 François (2) acquired a claim on the kingdom of Naples by his marriage with Anne de Laval, daughter of Charlotte of Aragon. Louis (3) became duke of Thouars in 1563, and his son Claude turned Protestant, was created a peer of France in 1595, and married a daughter of William the Silent in 1598. To this family belonged the lines of the counts of Joigny, the marquises of Royan and counts of Olonne, and the marquises and dukes of Noirmoutier.

LATROBE, CHARLES JOSEPH (1801–1875), Australian governor, was born in London on March 20, 1801. The Latrobes belonged to the Moravian community. C. J. Latrobe was an excellent mountaineer, and made some important ascents in Switzerland in 1824–1826. In 1832 he went to America with Count Albert Pourtales, and in 1834 crossed the prairies from New Orleans to Mexico with Washington Irving. In 1837 he was invested with a government commission in the West Indies, and in 1839 was made superintendent of the Port Philip district of New South Wales. When Port Philip was erected into a separate colony as Victoria in 1851, Latrobe became lieutenant-governor. He retired in 1854 and died in London on Dec. 2, 1875.

See *Brief Notices of the Latrobe Family* (1864), a privately printed translation of an article revised by members of the family in the Moravian *Brüderbote* (November 1864).

LATROBE, a borough of Westmoreland county, Pennsylvania, U.S.A., 41 mi. E.S.E. of Pittsburgh, served by the Ligonier Valley and the Pennsylvania railways. The population was 9,484 in 1920 (86% native white) and 11,111 in 1940 (federal census). It is in a fertile agricultural region, which is also an important coking-coal district. In the immediate vicinity are numerous collieries, each with its coking ovens and employing many men. The borough has also steel works, woollen mills and other manufacturing industries. In Latrobe is St. Vincent college (founded 1846). Latrobe was settled about 1851 and was incorporated as a borough in 1854.

LATTEN, a mixed metal like brass, composed of copper and zinc, generally made in thin sheets, and used especially for monumental brasses and effigies. A fine example is in the screen of Henry VII's tomb in Westminister abbey. There are three forms of latten: "black latten," unpolished and rolled; "shaven latten," of extreme thinness; and "roll latten," of the thickness either of black or shaven latten, but with both sides polished.

LATTICE LEAF PLANT, the common name for *Aponogeton fenestralis*, an aquatic monocotyledonous plant belonging to the small family Aponogetonaceae and a native of Madagascar. The plant has a singular appearance from the structure of the leaves, which are oblong in shape, from 6 to 18 in. long and from 2 to 4 in. broad; they spread horizontally beneath the surface of the water, and are reduced to little more than a latticelike network of veins. The tuberculate roots are edible. The plant is grown in cultivation as a stove- or greenhouse-aquatic, as is also the closely allied Cape pondweed or water hawthorne (*A. distachyus*), of South Africa.

LATTICE THEORY, discusses in precise mathematical language the relation of different parts of the same whole to

each other. The fundamental concept is that one part x may *include* (or contain) another part y, written $x \geqq y$.

Properties of Inclusion.—Mathematically, the relation of inclusion is characterized by the *reflexive* law, which states that $x \geqq x$ for all x; the *transitive* law, which states that if $x \geqq y$ and $y \geqq z$, then $x \geqq z$; and the *antisymmetric* law, which states that if $x \geqq y$ and $y \geqq x$, then $x = y$.

The inclusion relation is fundamental in the study of the subclasses of a class (aggregate). It also corresponds directly to implication in logic (*see* AGGREGATE; LOGISTIC). Thus the reflexive law of logic states that any statement p implies itself; the transitive law, that if p implies q and q implies r, then p implies r; the antisymmetric law, that if p implies q and q implies p, then p and q are logically equivalent.

There are many other relations which have the formal properties of inclusion. Thus the relation $x \geqq y$ of ordinary inequality between real numbers is reflexive, symmetric and transitive. Again, with the non-negative integers, if we define $x \geqq y$ to mean $x = ny$ for some non-negative integer (that x is a *multiple* of y), the same three laws are satisfied. Thus if x is a multiple of y and y a multiple of z, then x is a multiple of z.

Lattices.—By a *lattice*, is meant in general any abstract system L of elements $x, y, z, \cdots$, in which a reflexive, transitive, and antisymmetric relation is defined which satisfies the following lattice condition. *For any two elements x and y of L there is a least element including both x and y, denoted by $x \cup y$, and a greatest element included in both x and y, denoted by $x \cap y$.*

The four preceding examples satisfy the lattice condition. In the case of the subsets of an aggregate, $x \cup y$ is the sum of x and y, and $x \cap y$ is the set of elements common to x and y. In logic, $p \cup q$ is the statement "p and q"; $p \cap q$ means "p or q" (or both); with real numbers, $x \cup y$ is simply the greater and $x \cap y$ the lesser of x and y. In the example of the integers, $x \cup y$ is the least common multiple and $x \cap y$ the greatest common divisor of x and y.

The two lattice operations just defined are always *commutative* and *associative*, so that $x \cup y = y \cup x$, $x \cap y = y \cap x$, $x \cup (y \cup z) = (x \cup y) \cup z$, and $x \cap (y \cap z) = (x \cap y) \cap z$ for all x, y, z. They are also *idempotent*, so that $x \cup x = x \cap x = x$, and satisfy the law of *contraction*, $x \cap (x \cup y) = x \cup (x \cap y) = x$ for all x, y. Conversely, we may define a lattice as an algebraic system with two commutative, associative, idempotent and contractive operations. The inclusion relation may be defined in terms of either lattice operation, since $x \geqq y$ is equivalent to $x \cup y = x$ and to $x \cap y = y$.

Distributive Law.—In the four examples previously discussed, the *distributive* law also holds: $x \cap (y \cup z) = (x \cap y) \cup (x \cap z)$. Hence in these examples, if we call $x \cup y$ the *sum* of x and y, and $x \cap y$ the *product* of x and y, the five fundamental laws of arithmetic hold (*see* NUMBER); hence so do all their consequences.

However, neither cancellation law of arithmetic holds. If $x > y$, then $x \cup y = x \cup x$ and $x \cap y = y \cap y$. There is no operation of exponentiation either; hence the analogy is incomplete.

Moreover it should be emphasized that the distributive law does not hold in many important lattices. For example, it does not hold in the lattice consisting of the points, lines and planes of ordinary space, together with the empty set O and all space. In this lattice, $x \cap y$ is the intersection of x and y; $x \cup y$ is the line through x and y if x and y are points, the plane through x and y if x is a point and y a line, or if x and y are parallel or intersecting lines, and all space if x and y are skew lines.

An even more interesting example consists of the points, lines and planes of projective space (*see* PROJECTIVE GEOMETRY). In this example, though the distributive law is not valid in general, it holds when $x \geqq z$. That is, we have the *modular* law,

(1) if $x \geqq z$, then $x \cap (y \cup z) = (x \cap y) \cup z$.

Duality.—The concept of a lattice has an important "duality" property. If we define $y \leqq x$ to mean $x \geqq y$ (by "conversion," *q.v.*), it is evident that the relation $\leqq$ is reflexive, transitive and antisymmetric since $\geqq$ is. Furthermore, if we replace $\geqq$ by $\leqq$, we simply interchange $\cup$ and $\cap$ in the statement of the lattice condition, without altering as a whole the definition of lattices. Thus the concept of a lattice is *self-dual* under the duality between greater and less (container and contained).

This observation makes it evident why the two lattice operations satisfy the same laws. In fact, though it is not obvious, even the distributive law is equivalent to its dual, which is $x \cup (y \cap z) = (x \cup y) \cap (x \cup z)$. It is interesting that the arithmetic analogue $x + yz = (x + y)(x + z)$ of this law is false.

The modular law is also self-dual, as can easily be seen if one interchanges the variables z and x in (1).

Universal and Null Elements.—Many lattices have a *universal* element I and a dual *null* element O, defined by

(2) $\qquad I \geqq x \geqq O$ for all x.

Thus the empty set is O and the whole aggregate I in the lattice of subsets of any aggregate.

Similarly, zero is a common multiple and one a common divisor in the lattice of the integers under divisibility.

From (2), one easily proves $O \cap x = O$, $O \cup x = x$, $I \cap x = x$, and $I \cup x = I$, for all x. The first three laws are analogues of the laws $0x = 0$, $0 + x = x$, and $1x = x$ of arithmetic (*see* NUMBER); the arithmetic analogue $1 + x = 1$ of the fourth law being false.

Complements.—If we define the *complement* x' of a subset x of an aggregate I to consist of the elements *not* in x, then we easily verify

(3) $\qquad x \cap x' = O, \quad x \cup x' = I.$

In any lattice with O and I, we say that x and x' are *complementary* if they satisfy (3).

There are many lattices with O and I in which most elements do not have complements. However, any two skew lines of ordinary or projective space are complementary, and any proposition p is complementary to its denial, not-p; hence complements always exist in these examples.

One element may have many "complements" in ordinary or projective geometry; but a subset of an aggregate can have only one complement. This follows formally from the distributive law. By this law, if x' and x'' are both complements of x, then

$$x' = x' \cup O = x' \cup (x \cap x'') = (x' \cup x) \cap (x' \cup x'') = I \cap (x' \cup x'')$$
$$= (x \cup x'') \cap (x' \cup x'') = (x \cap x') \cup x'' = O \cup x'' = x''.$$

If the distributive law holds, we can also prove by direct calculations that

(4) $\qquad (x')' = x, \quad (x \cup y)' = x' \cap y', \quad (x \cap y)' = x' \cup y'.$

Applications.—Mathematical logic begins with the study of *Boolean algebra*, that is, of lattices with complements in which the distributive law and (1)–(4) hold. The same is true of point-set theory (*q.v.*); in fact, it may be shown that every finite Boolean algebra represents the subsets of some aggregate.

Again, projective geometry can be defined as the study of lattices satisfying (2) and (3), in which O and I are the only elements having unique complements, and every chain is finite.

The theory of the structure of groups (*q.v.*) can also be shown to follow from the remark that the invariant subgroups of any group form a lattice satisfying (3). A similar statement is valid as regards the structure of other algebraic systems.

There are many other applications; in general, lattice theory plays the same role in the study of structure and order, that group theory does in the study of operations and symmetry.

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LATVIA, a former European republic lying east and south of the Gulf of Riga, bounded N. by Estonia, E. by Russia, S. by Lithuania and (until 1939) Poland, and W. by the Baltic Sea. Area 25,390 sq.mi. Pop. (1935) 1,950,504, of whom about 77% were Letts, 11.9% Russians, 4.5% Jews, 2.9% Germans, and 2.2% Poles. The coast line extended for 338 mi. and had three important harbours, Riga, the capital, Liepaja and Ventspils. Transit trade with Russia went by rail from Riga to Stalingrad, from Ventspils to Moscow and from Liepaja to Romni, and also by waterways. The surface is low-lying, with a small patch of higher land lying west of the Mitau plain, and with a wide extension of the Russian plateau in the east, but no part is over 1,000 ft. above sea-level. The area lies in a morainic region, with boulder clays, marshes, numerous lakes and much evidence of glacial striation.

The climate is damp and foggy, and the Gulf of Riga is ice-bound from December to March, though Liepaja and Ventspils, lying on the open Baltic sea, are ice-free all the year round. Spring is cold and dry, and rain falls in July and August; this is a disadvantage for grain cultivation, and makes stock-raising and poultry-keeping more suitable to the country. The chief crops raised are rye, barley, oats and wheat. Horses, cattle, sheep and pigs are bred and there is considerable dairying. Before 1914, Riga was the greatest timber port of the world, fed by the Daugava (Dwina) and its waterways which drew on Russian supplies, a source subsequently much diminished.

Latvia possessed about 5,000,000 acres of forest suitable for exploitation, with one-third of its surface forest-covered. The trees are chiefly coniferous, though there is some oak, elder and birch. Latvia was devastated during World War I, and the demand for timber for farm buildings was thereafter heavy. The republic had no coal, and in the past much timber was consumed as fuel on the railways and in factories. The state forestry department endeavoured to prevent undue exploitation, since timber was a valuable export and asset of the country. Coal was imported, peat was increasingly used, and a project for an electric station utilizing the waterpower of the Daugava was considered. The former paper mills, cellulose and match factories, and wood distilleries were, in the majority of cases, ruined and dismantled during World War I, and timber was mainly exported in the raw, though manufactures revived somewhat. Timber and butter were the two chief exports of Latvia, and coal, fish, textiles and metal goods, the chief imports.

In order to encourage transit trade through Latvian ports, the lines converging on Riga and Ventspils from Russia were altered to the Russian gauge, while those for the Riga-Ostend-Paris line and for internal communications are normal gauge. The railway net is comparatively good, and there are several macadamized roads. Navigable inland waterways (2,776 mi.) carried more than 1,400,000 tons of goods in 1938. In the year 1939, 85 steamships, 4 sailing vessels and 4 motor vessels were sailing under the Latvian flag, and the nation owned 4 ice-breakers. The export trade of Latvia was mainly with the United Kingdom, Holland and Germany and the import trade with Germany, the United Kingdom, Soviet Russia and the U.S.A. The chief towns are Riga, Liepaja (Libau), Daugavpils (Dvinsk), Jelgava (Mitau), Ventspils (Windau), Rezekne (*qq.v.*) and Cesis (Wenden, *q.v.*).

Administration, Education, etc.—There were some 6,000 State officials under the republic. Teachers, judges, foresters, railwaymen, the agents and employees of government enterprises and monopolies were paid by the state.

The whole country was divided into 19 administrative districts and 3 prefectures: Riga, Libau, Daugavpils. Extensive autonomy was granted to the towns and parishes. The smallest units of rural self-government were the rural communes, of which there were about 510 in all. Markets were held in 80 towns and villages, 37 of these having town councils.

Justice.—The administration of justice was entrusted to the justices of the peace, four district courts, the Court of Appeals and the Senate. The judges could not be dismissed from office. The old local Baltic provincial law was in force; and in Latgale the Russian law in part, pending codification. As the constitution provided only for a single legislative Chamber, the *Saeima,* the functions of a second Chamber were to some extent fulfilled by various committees in the different departments, as, for example, the financial council attached to the Ministry of Finance, the Agricultural Council to the Ministry of Agriculture, and so forth. In May 1934 the *Saeima* was suspended, and a Government along totalitarian lines was set up.

Vital Statistics.—The bulk of the population of Latvia were engaged in agriculture, only 35% of the population being urban; 36,400 births and 26,700 deaths were registered in 1938.

Co-operation.—The co-operative system was widespread and both consumers' and agricultural societies were largely developed. The system of social clubs and unions was extensively adopted in rural districts, and was generously supported by the so-called "Culture Fund" created by levying a 3% tax on railway tickets. It was thus possible to establish public libraries, co-operative houses, etc., in the country.

Education was further promoted by an itinerant theatre, several provincial theatres, and an opera house in Libau ranking second to the national opera house in Riga.

Education and Culture.—The official language was Lettish, a branch of the Aestian or Baltic group of the Aryan language, closely related to Lithuanian and old Prussian. The name Livonia formerly given to part of the district was derived from the Russian name Live given to a people, calling themselves Lib, who were possibly a transition group between the Ugro-Finnish Estonians, and the Finnish Koreli. Their language became extinct and they were merged with the Letts. The Kurs, from whose folk name the place-name Courland was derived, are an admixture of Livs and Letts, whose language is Lettish. School attendance was compulsory under the republic. There were public elementary schools, secondary schools, commercial colleges, several language institutes, and other advanced and specialized educational institutions including the university at Riga, created in 1919. Illiterates formed only 8.5% of the population, and for every 100,000 of the population there were 300 university students. The study of German or English was compulsory in the middle schools, German holding the first place; French and Russian were optional. Due encouragement was also given to the elementary and middle schools of the national minorities in the form of state grants to German, Russian, Jewish and Polish schools. *See* also LITHUANIANS AND LETTS; LITHUANIAN AND LETTISH LITERATURE.

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Defence.—The Letts have had a strong sense of nationality, which as early as the 13th century (Battle of Durbe, 1260) brought them in conflict with the Germans, who were followed by others in securing dominance over the country. From 1795 the country was under Russian rule, and its military history until 1918, and again after 1939–40, belonged to that of Russia. The independent Latvian army dated from the creation of the new republic in November 1918, followed in September 1921 by admission to membership of the League of Nations.

Recruitment, Service and Organization.—Military service ranging between the ages of 20 and 50 was compulsory for all male citizens of Latvia. Nominally 18 months, but in practice 15 months were spent with the colours. The next 18 years were spent in the reserve, followed by service in the territorial army up to the age of 50 years. The Latvian army in 1939 numbered 22,350, including about 2,000 officers. The cost of the army increased from 34,500,000 lats in 1924–25 to 41,100,000 in 1927–28, the increase in expenditure being explained by increase in the cost of living, new military construction and increase of military stores. The largest military formation was the division, of which there were four, in addition to certain army troops. A division contained 3 infantry regiments and a field artillery regiment, which contained 6 four-gun batteries.

The army troops included 1 cavalry regiment of 4 squadrons, and 1 machine-gun squadron, 1 regiment of heavy artillery with 3 four-gun batteries, 1 regiment of two armoured trains, a battalion of sappers, electro-technical detachment, company of tanks (with 4 tanks and 3 armoured cars) and a small motor-transport company.

In 1939 the chief naval forces consisted of two submarines, one gunboat, and two minesweepers.

The president of the republic was chief of the armed forces of the State. He appointed a commander-in-chief of the army in time of war, which constitutionally could only be declared by Parliament (*Saeima*). There was a minister of war with the usual subordinates. There was a small military air force numbering 350, with 80 bombing, reconnaissance and fighting machines.

See also League of Nations *Armaments Yearbook* (Geneva, 1928). *Statesman's Yearbook; Europa.* (G. G. A.; X.)

FINANCIAL AND ECONOMIC CONDITIONS

Latvia lost nearly 40% of her population in the World War (1914–18), mainly by emigration after the German invasion. Hardly 300,000 returned out of the refugee population of 1915–7. The greater part of the missing, near 650,000, perished. Almost all the industries and the industrial population were evacuated to Russia; 10,000 farms were utterly destroyed. Machinery and equipment of industries employing over 100,000 factory hands were sent to Russia in 20,000 railway trucks. Of these the Bolsheviks restored barely 200 trucks under the Peace Treaty of Aug. 13, 1920. In Courland the population and cultivated areas at the time of the German occupation, 1915 to 1918, had diminisned to one-third. Over half of the farms were destroyed or stood empty.

Production—Cultivated Areas

	1909–13	1920	1938
	hectares	hectares	hectares
Rye	351,000	196,000	287,000
Wheat	33,000	16,000	141,000
Barley	191,000	124,000	178,000
Oats	306,000	216,000	348,000
Potatoes	80,000	49,000	137,000
Flax	70,000	30,000	66,000

The total cultivated area was thus in 1938, except for mixed grain and peas, 1,157,000 hectares, as against 1,031,000 in 1909–13.

The harvests were:—

	1909–13	1920	1939
	metric tons	metric tons	metric tons
Rye	325,000	119,000	429,700
Wheat	38,000	11,000	198,700
Barley	173,000	66,000	209,000
Oats	279,000	113,000	450,300
Potatoes	639,000	375,000	1,751,400*
Flax fibre	30,000	10,000	21,500*
Flax seed	25,000	10,000	20,400*

*1938 figures.

The grain harvest, apart from mixed grain and peas, was 815,000 metric tons in 1909–13, in 1920 only 309,000, in 1924 and 1927 only 695,000 and 638,000. Only the potato harvest reached its pre-war figure, the linseed crop was the same, the flax fibre one-sixth less. The grain harvest in 1939, not including mixed grain and peas, had risen to 1,287,700 metric tons. Most of the flax fibre harvest was exported.

Finances.—When the Latvian Republic was formed on Nov. 18, 1918, the country was greatly impoverished owing to the requisitioning of corn, cattle, horses, etc., by the German armies of occupation, though part of the supplies which could not be carried away were sold back to the peasants on the evacuation of the troops. In April 1919, a new paper currency, the Latvian rouble, was issued by the Government, which continued for a considerable period to finance its requirements by this means, with the result that the exchange in terms of sterling rose from 215·5 roubles on Jan. 1, 1920, to 2,000–2,400 roubles in May 1921. After the demobilization of the army in the autumn of 1920, the fresh issues of currency were mainly for production purposes, and flax, hides and linseed were purchased by this means from the peasants. The sale of the stocks thus acquired brought in 2,000,000,000 paper roubles to the State and enabled the finance minister in office in March 1921, Ringold Kalning, to raise the value of the rouble to 1,140 to the pound sterling, at which point it was stabilized. The currency was backed by gold to the value of 15,000,000 gold francs and by foreign balances amounting to 7,730,000 gold francs. The lat (=gold franc) was fixed at a value of 50 paper roubles, and the 2,270,000,000 paper roubles in circulation were thus covered to the extent of about 50% in gold. In 1923 the Bank of Latvia was founded and provided by the State with a capital of 10,000,000 lats.

The total foreign debt amounted to 39,360,000 lats in the middle of 1922, of which one-third had been paid off by the middle of 1925.

The public debt at the beginning of 1940 was approximately 145,000,000 lats; gold reserve, 71,000,000 lats. The finances of the republic in 1922–28 were very soundly handled; not only was the foreign debt then considerably reduced, but loans to the value of 30,000,000 lats were made from current revenue. The budgets of 1925–8 provided for further loans amounting to 35,000,000 lats from current revenue for agricultural purposes and for the construction of railways. The actual revenue for 1924–25 amounted to 215,680,000 lats and expenditures 214,000,000. The budget for 1938–39 showed revenue of 190,900,000 lats and expenditures of 190,500,000 lats. The budget for 1939–40 was estimated in balance at about 199,000,000 lats.

Trade.—For many years Latvia's trade balance was adverse, but later this situation tended to correct itself:

Calendar year	Imports (In millions of lats)	Exports (In millions of lats)
1920	97·0	62·3
1922	107·4	102·0
1925	280·5	179·6
1927	283·5	220·2
1937	231·2	260·7
1938	227·3	227·2

But an inquiry undertaken by the Latvian "Ekonomists" in 1925 No. 22 showed that the import figures were 10% too high. By reducing the import figure by 10%, and raising the export figure by 10%, the adverse balance was reduced from 70,000,000 to 41,000,000 lats. But unsold imported goods valued at 70,000,000 were said to be in Latvian warehouses. Meanwhile the adverse balance created such anxiety, that parliament decided in 1926 to increase the existing high customs duties of 20% to 100%.

Latvia's chief exports were timber, amounting to about 90,000,000 lats, much of which went to England; butter amounting to about 50,000,000 lats, and flax amounting to 15,000,000 lats. In the calendar year 1938 the plywood export was estimated to be worth 20,000,000 lats.

The chief imports were textiles, machinery, foodstuffs and cattle. Germany provided Latvia with most of its imports, followed by Great Britain and the U.S.A.

The imports of tea and coffee were small, also of fruits, on account of the high customs duties.

Agrarian Reform.—Under the agrarian laws, 499 private estates were appropriated in Courland with an area of 1,124,000 hectares; in Livonia 1,300,000 hectares; in Latgale about 750,000 hectares. But from this area must be deducted the old peasant properties, also forest and uncultivable land. In reality there remained for division among the newly established peasant properties in Livonia and Courland only an area of 832,000 hectares of agricultural land, *i.e.*, arable, meadow and grazing land; in Latgale rather more than 250,000 hectares. Up to June 15, 1925, 82,761 new farms were established, enclosing 100,000 hectares of forest land. The newly founded peasant properties consisted of 15 to 17 hectares, the largest to 22 hectares. But included in the abovementioned 82,761 new farms were about one-third garden and artisans' holdings with an area of about 2 to 3 hectares. A further 20,000 small holdings were to be established. The State retained about 1,500,000 hectares of forest and about 500,000 hectares of uncultivable land, chiefly peat moor; the former landowning nobility retained only 50 hectares of land each.

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HISTORY

Latvia had no political annals throughout the seven centuries which preceded the formation of the republic in Nov. 1918. Lettish tribes, racially akin to the Lithuanians, inhabited the territory from about the 10th century on, but they were neither the

sole nor the oldest inhabitants, and there was no cohesion between them. Hence they became a subject people who, from 1158 to 1918, suffered four distinct periods of foreign domination, which were as follows: (*a*) During the period of pure German rule (1158–1562) the conquerors were the knights of the Teutonic Order and the prince-bishops, now in alliance, now in feud, with the knights. What later was Latvia consisted of two States: Livonia and Courland. During this period the former became powerful and, though German-ruled, wholly independent during 1347–1494. It fought Poland and Moscovy (1411–94), but exhausted itself in the effort and eventually fell a prey to powerful neighbours. (*b*) The period of Polish rule lasted from 1562 to 1795 in Courland under the dynasties of Kettler and Biron; from 1562 to 1795 in Livonia under Polish governors. (*c*) The period of Swedish rule, 1629–1721, over Livonia only, which was administered by Swedish governors-general. (*d*) The period of Russian rule, which first comprised Livonia after the Peace of Nystadt, and included Courland after the partition of Poland (1795), lasted until 1918, and began again in 1940.

Throughout this time, the cultural superiority of the Germans remained unchallenged, the Teutonic knights and their descendants, the Hanseatic merchants and their successors being the privileged representatives of the public power and overlords on the land. The Letts, on the other hand, being serfs, obtained personal freedom only in Russian times, in Courland in 1817, in Livonia in 1819, in Latgalia in 1861. Even then, as cultivators, they remained small holders dependent upon the big landowners, mostly of German extraction. This inequality before the law survived even after the liberation, the landlords having power to impress labour for road construction and transport. They maintained their game rights intact and obtained exclusive licences for the sale of alcohol.

From about 1860 onwards, the Letts, through associations of their own which met with the support of an active and alert press, encouraged Lettish enterprise in parochial and municipal affairs; Lettish co-operatives and savings banks; Lettish gatherings for the propagation of folk-lore and song. By this means was attained a level of education and an economic standard which placed the Letts of Courland and Livonia far ahead of the Russian peasantry, and out of it arose, during the insurrectionary movement of 1905, the idea of autonomy.

Latvia Independent.—The opportunity came with the World War. Lettish national units were formed within the Russian army in 1915 and fought gallantly, but later turned against the independence of their country, largely because of the influence of Bolshevik propaganda. It was left to the Baltic *Landwehr* (a territorial force of pro-German leanings and under the command of Col. Alexander, a British officer) to restore order. Riga was liberated on May 22, 1918, and red rule came to an end after 4½ months' duration. The Lettish patriots, Chakste, Meierovics, and Ulmanis, as delegates of the National Council, approached the Entente Powers. The *de facto* recognition of the National Council by Great Britain on Nov. 11, and by other Powers, led to the proclamation of the Latvian Republic on Nov. 18, 1918.

By this time, the Russian and German imperial armies, the Bolshevik troops who followed in their wake and, lastly, the *soldateska* of the adventurer, Bermondt, had between them completed the ruin of this formerly prosperous agricultural country.

Nevertheless, the founders of Latvian independence were justified in believing that the political frontier which then separated their country from Soviet Russia would not wreck all the former economic advantages and that their people, under a free democratic institution, would make good the ravages of war. So great were the effects of intermittent lulls in commercial activity that even the port of Libau (so prosperous in Russia before 1914) became impoverished and its waterways became impaired.

A notable change set in after 1920 when the first commercial treaties between the Powers and the Baltic and other Succession States were signed.

Because agriculture continued to prosper in Latvia, the world depression of the '30s caused no serious maladjustment in the State's economy; and national finances were soundly managed.

In May 1934, nevertheless, the prime minister, Karlis Ulmanis, suspended the diet (*Saeima*). On April 11, 1936, he assumed the office of president in addition to that of prime minister. But in 1938 a return to constitutional democracy seemed imminent.

Loss of Independence, 1939–40.—Prior to the outbreak of war in 1939 Latvia made every effort to preserve a genuine neutrality. On June 7 of that year she signed a pact of non-aggression with Germany. A non-aggression pact with the Soviet union was already in existence, but Latvia feared the worst after the Russo-German rapprochement and the subsequent disappearance of Poland. Vilhelms Munters, the foreign minister, was summoned to Moscow, where, on October 5, a treaty was signed which granted the U.S.S.R. permission to establish naval and air bases at Liepaja (Libau) and Ventspils (Windau), and to fortify the coast along the Baltic. Latvia then co-operated with Germany in repatriating some 60,000 Germans before Soviet troops moved in.

In June 1940, Russia demanded unlimited military occupation of the three Baltic states. By June 17, all Latvia was in the hands of soviet troops. Under the eye of this army the three states on July 14 elected parliaments with communist majorities. On July 21, the three parliaments petitioned the U.S.S.R. for union with that country; and on Aug. 5 Latvia was annexed to Russia. In June 1941, the Germans, attacking Russia, conquered the Baltic states and promptly made them part of the German "Ostland." In 1944, the Russians reconquered the country and Latvia again became part of the soviet union. (*See* WORLD WAR II.)

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For the Latvian standpoint, *see* M. Walters, *Lettland und seine Entwicklung zum Staat und die baltischen Fragen* (1925); B. Siew, *Lattische Volks und Staatswirtschaft* (Riga, 1925). *See* also *L'Annuaire Statistique de la Latvie* (Riga, 1920, etc.); *Latvijas Saule* (Riga, 1923, etc.).

LAUBAN, a town of Germany in the Prussian province of Silesia, is situated at the junction of the lines of railway from Görlitz and Sorau, 16 mi. E. of the former. Pop. (1939) 17,383. It was founded in the 10th and fortified in the 13th century; it was devastated by the Hussites and by the Swedes. Lauban has a town hall, dating from 1541, and a conventual house of the order of St. Magdalene, dating from the 14th century. Its industries comprise machinery, yarn, thread, linen and woollen cloth manufactories, bleaching and dyeing works and flour mills.

LAUBE, HEINRICH (1806–1884), German dramatist, novelist and theatre-director, was born at Sprottau, Silesia, on Sept. 18, 1806. He studied theology at Halle and Breslau (1826–29), and settled in Leipzig in 1832. Some early writings and his share in the literary movement known as *Das junge Deutschland* brought him under police surveillance and his works were confiscated. On his return, in 1834, from a journey to Italy, undertaken in the company of Karl Gutzkow, Laube was expelled from Saxony and imprisoned for nine months in Berlin. In 1837 he was again imprisoned for his revolutionary sympathies. In 1839 he returned to Leipzig, and began to write plays. Chief among his earlier productions are the tragedies *Monaldeschi* (1845) and *Struensee* (1847); the comedies *Rokoko, oder die alten Herren* (1846); *Gottsched und Gellert* (1847); and *Die Karlsschüler* (1847), of which the youthful Schiller is the hero. In 1848 Laube was elected to the national assembly at Frankfurt-on-Main for the district of Elbogen, but resigned in the spring of 1849, when he was appointed artistic director of the Hofburg theatre in Vienna. This office he held until 1867, and in this period fall his finest dramatic productions, notably the tragedies *Graf Essex* (1856, still occasionally acted), and *Montrose* (1859), and his historical romance *Der deutsche Krieg* (1865–66, 9 vols.), which graphically pictures a period in the Thirty Years' War. In 1869 he became director of the Leipzig Stadttheater, but returned to Vienna in 1870, where in 1872 he was director of the new Stadttheater; with

the exception of a short interval he managed this theatre with brilliant success until his retirement from public life in 1880. Laube's work as theatre manager left its mark on the German stage, and he has given an invaluable record of his work in Vienna and Leipzig in *Das Burgtheater* (1868), *Das norddeutsche Theater* (1872) and *Das Wiener Stadttheater* (1875). He died at Vienna on Aug. 1, 1884. To his later years belong the novels *Die Böhminger* (1880), *Louison* (1881), *Der Schatten-Wilhelm* (1883), and his *Erinnerungen, 1841–1881* (1882).

His *Gesammelte Schriften* (excluding his dramas) were published in 16 vols. (1875–82); his *Dramatische Werke* in 13 vols. (1845–75); *see* also M. Moorman, *Die Bühnentechnik Heinrich Laubes.*

LAUD, WILLIAM (1573–1645), English archbishop, only son of William Laud, a clothier, was born at Reading on Oct. 7, 1573. He was educated at Reading free school, matriculated at St. John's college, Oxford, in 1589, gained a scholarship in 1590, a fellowship in 1593, and graduated B.A. in 1594, proceeding to D.D. in 1608. In 1601 he took orders, in 1603 becoming chaplain to Charles Blount, earl of Devonshire. Laud early took up a position of antagonism to the Calvinistic party in the church, and in 1604 was reproved by the authorities for maintaining in his thesis for the degree of B.D. "that there could be no true church without bishops," and again in 1606 for advocating "popish" opinions in a sermon at St. Mary's. Laud obtained rapid advancement. In 1607 he was made vicar of Stanford in Northamptonshire, and in 1608 he became chaplain to Bishop Neile, who in 1610 presented him to the living of Cuxton, when he resigned his fellowship. In 1611, in spite of the influence of Archbishop Abbot and Lord Chancellor Ellesmere, Laud was made president of St. John's, and in 1614 obtained in addition the prebend of Buckden, in 1615 the archdeaconry of Huntingdon, and in 1616 the deanery of Gloucester. Here he repaired the fabric and changed the position of the communion table from the centre of the choir to the east end. In 1617 he went with the king to Scotland, and aroused hostility by wearing the surplice. In 1621 he became bishop of St. David's, when he resigned the presidentship of St. John's.

In April 1622 Laud, by the king's orders, took part in a controversy with Percy, a Jesuit, known as Fisher, to prevent the conversion of the countess of Buckingham to Romanism. While refusing to acknowledge the Roman Church as *the* true church, he allowed it to be *a* true church and a branch of the Catholic body, at the same time emphasizing the perils of knowingly associating with error; and with regard to the English Church he denied that the acceptance of all its articles was necessary. The foundation of belief was the Bible, and when dispute on matters of faith arose, "a lawful and free council, determining according to Scripture, is the best judge on earth." A close intimacy between Laud and Buckingham now began, and proved the chief instrument of Laud's advancement. On the accession of Charles, Laud's activities were allowed free scope. A list of the clergy was prepared by him for the king, in which each name was labelled with an O or a P, distinguishing the Orthodox to be promoted from the Puritans to be suppressed. Laud defended Richard Montague, whose pamphlet against Calvinism had angered Parliament. He supported the king's prerogative throughout the conflict with the parliament, preached in favour of it before Charles's second parliament in 1626 and assisted in Buckingham's defence. In 1626 he was nominated bishop of Bath and Wells, and in July 1628 bishop of London. On April 12, 1629 he was made chancellor of Oxford University.

At Oxford Laud carried out many useful reforms, including the codification of the statutes, the statute by which public examinations were rendered obligatory for university degrees, and the ordinance for the election of proctors, the revival of the college system, of moral and religious discipline and order, and of academic dress. He founded or endowed various professorships, including those of Hebrew and Arabic, and the office of public orator, encouraged English and foreign scholars, such as Voss, Selden and Jeremy Taylor, founded the university printing press, procuring in 1633 the royal patent for Oxford, and obtained for the Bodleian library over 1,300 mss., adding a new wing to the building to contain his gifts. His rule at Oxford was marked by a great increase in the number of students. In his own college he erected the new buildings, and was its second founder. Of his chancellorship he himself wrote a history, and the Laudian tradition long remained the great standard of order and good government in the university. Elsewhere he showed his liberality and his zeal for reform. He was an active visitor of Eton and Winchester, and endowed the grammar school at Reading, where he was himself educated. In London he procured funds for the restoration of the dilapidated cathedral of St. Paul's.

As a judge he showed a tyrannical spirit both in the star chamber and high-commission court, threatening Felton, the assassin of Buckingham, with the rack, and showing special activity in procuring a cruel sentence in the former court against Alexander Leighton in June 1630 and against Henry Sherfield in 1634. His power was greatly increased after his return from Scotland, whither he had accompanied the king, by his promotion to the archbishopric of Canterbury in Aug. 1633. "As for the state indeed," he wrote to Wentworth on this occasion, "I am for *Thorough.*" In 1636 the privy council decided in his favour his claim of jurisdiction as visitor over both universities. Soon afterwards he was placed on the commission of the treasury and on the committee of the privy council for foreign affairs. He was all-powerful both in church and state. He proceeded to impose by authority the religious ceremonies and usages to which he attached so much importance. His vicar-general, Sir Nathaniel Brent, went through the dioceses of his province, noting every dilapidation and every irregularity. The pulpit was no longer to be the chief feature in the church, but the communion table. The Puritan lecturers were suppressed. He showed great hostility to the Puritan Sabbath, and supported the reissue of the *Book of Sports,* especially odious to that party. He insisted on the use of the prayer-book among the English soldiers in the service of Holland, and forced strict conformity on the church of the merchant adventurers at Delft, endeavouring even to reach the colonists in New England. He tried to compel the Dutch and French refugees in England to unite with the Church of England, advising double taxation and other forms of persecution. In 1634 the justices of the peace were ordered to enter houses to search for persons holding conventicles and bring them before the commissioners. In 1637 he took part in the sentence of the star chamber on Prynne, Bastwick and Burton, and in the same year in the prosecution of Bishop Williams. He urged Strafford in Ireland to carry out the same reforms and severities.

He was now to extend his ecclesiastical system to Scotland. The new prayer-book and canons were drawn up by the Scottish bishops with his assistance and enforced in the country. The attack not only on the national religion, but on the national independence of Scotland, proved to be the point at which the system, already strained, broke and collapsed. Laud continued to support Strafford's and the king's arbitrary measures to the last. Though at first opposed to the sitting of convocation, after the dissolution of parliament, as an independent body, on account of the opposition it would arouse, he yet caused to be passed in it the new canons which both enforced his ecclesiastical system and assisted the king's divine right, resistance to his power entailing "damnation." Laud's infatuated policy could go no further, and the *et cetera* oath, according to which whole classes of men were to be forced to swear perpetual allegiance to the "government of this church by archbishops, bishops, deans and archdeacons, etc.," was long remembered and derided. He was attacked and reviled as the chief author of the troubles on all sides. In October he was ordered by Charles to suspend the *et cetera* oath. The same month, when the high commission court was sacked by the mob, he was unable to persuade the star chamber to punish the offenders. On Dec. 18, he was impeached by the Long Parliament, and on March 1, imprisoned in the tower. On May 12, at Strafford's request, the archbishop appeared at the window of his cell to give him his blessing on his way to execution, and fainted as he passed by. On May 31, 1643 Prynne received orders from the parliament to search his papers, and published a mutilated edition of his diary. The articles of impeachment were sent up to the Lords in October, the trial beginning on March 12, 1644, but the attempt

to bring his conduct under a charge of high treason proving hopeless, an attainder was substituted and sent up to the Lords on Nov. 22. In these proceedings there was no semblance of respect for law or justice, the Lords yielding (Jan. 4, 1645) to the menaces of the Commons. Laud now tendered the king's pardon, which had been granted to him in April 1643. This was rejected, and it was with some difficulty that his petition to be executed with the axe, instead of undergoing the ordinary brutal punishment for high treason, was granted. He suffered death on Jan. 10, on Tower Hill, asserting his innocence of any offence known to the law, repudiating the charge of "popery," and declaring that he had always lived in the Protestant Church of England. He was buried in the chancel of All Hallows, Barking, whence his body was removed on July 24, 1663 to the chapel of St. John's, Oxford.

Laud never married. He is described by Fuller as "low of stature, little in bulk, cheerful in countenance (wherein gravity and quickness were all compounded), of a sharp and piercing eye, clear judgment and (abating the influence of age) firm memory." His personality, on account of the sharp religious antagonisms with which his name is inevitably associated, has rarely been judged with impartiality. His severities were the result of a narrow mind and not of a vindictive spirit, and their number has certainly been exaggerated. His career was distinguished by uprightness, by piety, by a devotion to duty, by courage and consistency. In particular it is clear that the charge of partiality for Rome is unfounded. Laud's complete neglect of the national sentiment, in his belief that the exercise of mere power was sufficient to suppress it, is a principal proof of his total lack of true statesmanship. The hostility to "innovations in religion" was probably a far stronger incentive to the rebellion against the arbitrary power of the crown, than even the violation of constitutional liberties; and to Laud, therefore, more than to Strafford, to Buckingham, or even perhaps to Charles himself, is especially due the responsibility for the catastrophe. He held fast to the great idea of the catholicity of the English Church, to that conception of it which regards it as a branch of the whole Christian church, and emphasizes its historical continuity and identity from the time of the apostles, but here again his policy was at fault; for his despotic administration not only excited and exaggerated the tendencies to separatism and independentism which finally prevailed, but excluded large bodies of faithful churchmen from communion with their church and from their country. The emigration to Massachusetts from 1629 onwards was not composed of Separatists but of Episcopalians. Thus what Laud grasped with one hand he destroyed with the other.

Spiritual influence, in Laud's opinion, was not enough for the church. The church as the guide of the nation in duty and godliness, even extending its activity into state affairs as a mediator and a moderator, was not sufficient. Its power must be material and visible, embodied in great places of secular administration and enthroned in high offices of state. Thus the church, descending into the political arena, became identified with the doctrines of one political party in the state—doctrines odious to the majority of the nation—and at the same time became associated with acts of violence and injustice. Equally disastrous to the state was the identification of the king's administration with one party in the church, and that with the party in an immense minority not only in the nation but even among the clergy themselves.

BIBLIOGRAPHY.—All Laud's works are to be found in the *Library of Anglo-Catholic Theology* (7 vols.), including his sermons (of no great merit), letters, history of the chancellorship, history of his troubles and trial, and his remarkable diary, the mss. of the last two works being the property of St. John's College. Various modern opinions of Laud's career can be studied in T. Longueville, *Life of Laud, by a Romish Recusant* (1894); *Congregational Union Jubilee Lectures*, vol. i. (1882); W. H. Hutton, *Wm. Laud* (1895); *Archbishop Laud Commemoration*, ed. by W. F. Collins (lectures, bibliography, catalogue of exhibits, 1895); Hook, *Lives of the Archbishops of Canterbury;* and H. Bell, *Archbishop Laud and Priestly Government* (1907); A. S. Duncan-Jones, *Archbishop Laud* (1927).

LAUD, a term meaning praise, now rarely found in this sense except in poetry or hymns. Lauds is the name for the second of the offices of the canonical hours in the Roman breviary, so called from the three *laudes* or psalms of praise, cxlviii.–cl., which form part of the service (*see* BREVIARY and HOURS, CANONICAL).

LAUDANUM, originally the name given by Paracelsus to a famous medical preparation of his own, composed of gold, pearls, etc. (*Opera,* 1658, i. 492–2), but containing opium as its chief ingredient. The term is now only used for the alcoholic tincture of opium (*q.v.*).

LAUDER, SIR HARRY MACLENNAN (1870–), Scottish variety actor, was born at Portobello on Aug. 4, 1870. After working as mill-boy and coal-miner, he took to the variety stage, where he became a great favourite on account of his Scottish songs, written and composed by himself on folk-song foundations, and sung in character. During the World War he worked hard to assist recruiting, and the death in action of his only son elicited widespread sympathy. He was knighted in 1919.

LAUDER, royal and small burgh, Berwickshire, Scotland, on the Leader, 29 mi. S.E. of Edinburgh. Pop. (est. 1938) 621. The burgh is said to date from William the Lion (1165–1214); its charter was granted in 1502. In 1482 James III with his court and army rested here on the way to raise the siege of Berwick. Robert Cochrane, earl of Mar, was hanged with other obnoxious favourites by Douglas, earl of Angus, and other nobles at Lauder Bridge, in sight of his royal master.

LAUDERDALE, JAMES MAITLAND, 8TH EARL OF (1759–1839), a member of parliament from 1780 until August 1789, when he succeeded his father in the earldom. In 1806 he was made a peer of the United Kingdom as Baron Lauderdale of Thirlestane and for a short time he was keeper of the great seal of Scotland. He was one of the founders of the Society of the Friends of the People in 1792; but he gradually changed his principles and actually voted against the Reform bill of 1832. He died on Sept. 13, 1839. He wrote an *Inquiry into the Nature and Origin of Public Wealth* (1804 and 1819); *The Depreciation of the Paper-currency of Great Britain Proved* (1812); and other writings of a similar nature.

LAUDERDALE, JOHN MAITLAND, DUKE OF (1616–1682), eldest surviving son of John Maitland, 2nd Lord Maitland of Thirlestane (d. 1645), who was created earl of Lauderdale in 1624, and of Lady Isabel Seton, daughter of Alexander, earl of Dunfermline, and great-grandson of Sir Richard Maitland (*q.v.*), the poet, was born on May 24, 1616, at Lethington. He began public life as a zealous adherent of the Presbyterian cause, took the covenant, sat as an elder in the assembly at St. Andrews in July 1643, and was sent to England as a commissioner for the covenant in August, and to attend the Westminster assembly in November. In Feb. 1644 he was a member of the committee of both kingdoms, and was one of the commissioners appointed to treat with the king at Uxbridge, when he tried to persuade Charles to agree to the establishment of Presbyterianism. In 1645 he advised Charles to reject the proposals of the Independents, and in 1647 approved of the king's surrender to the Scots.

At this period Lauderdale veered round completely to the king's cause, offering the aid of the Scots, on the condition of Charles's consent to the establishment of Presbyterianism, and on Dec. 26, he obtained from Charles at Carisbrooke "the engagement" with the Scots on these lines. Returning to Scotland, in the spring of 1648, Lauderdale joined the party of Hamilton in alliance with the English royalists. Their defeat at Preston postponed the arrival of the prince of Wales; but Lauderdale had an interview with the prince in the Downs in August, and he persuaded him later to accept the invitation to Scotland from the Argyll faction, accompanied him thither in 1650 and in the expedition into England. He was taken prisoner at Worcester in 1651, remaining in confinement till March 1660. He joined Charles in May 1660 at Breda. On his accession Charles made him secretary of State. He was lodged at Whitehall and was "never from the king's ear nor council." He abandoned Argyll to his fate, permitted, if he did not assist in, the restoration of episcopacy in Scotland, and after triumphing over all his opponents in Scotland drew into his own hands the whole administration of that kingdom; he imposed on Scotland the absolute supremacy of the Crown in Church and State, and took severe measures against the Covenanters.

Lauderdale was a member of the cabal ministry, but took little part in English affairs. In 1672 he was created duke of Lauderdale and earl of March, and knight of the garter. In 1673, on the resignation of James in consequence of the Test Act, he was appointed a commissioner for the admiralty. In October he visited Scotland to suppress the dissenters and obtain money for the Dutch war. In 1674 he was created earl of Guilford and Baron Petersham in the peerage of England. His ferocious measures having failed to suppress the conventicles in Scotland, he summoned to his aid in 1677 a band of Highlanders, who were sent into the western country. He held his place in spite of all efforts to dislodge him. On June 22, 1679 the last attempt of the unfortunate Covenanters was suppressed at Bothwell Brig. In 1680, however, failing health obliged Lauderdale to resign; in 1682 he was stripped of all his offices, and he died in August. Lauderdale left no male issue, consequently his dukedom and his English titles became extinct, but he was succeeded in the earldom by his brother Charles (d. 1691).

See *Lauderdale Papers Add. mss.* in Brit. Mus., 30 vols., a small selection of which, entitled *The Lauderdale Papers,* were edited by Osmond Airy for the Camden Society in 1884–85; *Hamilton Papers* published by the same society; "Lauderdale Correspondence with Archbishop Sharp," *Scottish Hist. Soc. Publications,* vol. 15 (1893); Burnet's *Lives of the Hamiltons* and *History of his Own Time;* R. Baillie's *Letters;* S. R. Gardiner's *Hist. of the Civil War and of the Commonwealth;* Clarendon's *Hist. of the Rebellion;* and the *Quarterly Review,* clvii. 407. Several speeches of Lauderdale are extant.

LAUE, MAX VON (1879–), German physicist, was born Oct. 9, 1879, at Pfaffendorf near Coblenz. He attended the universities of Strasbourg, Göttingen and Munich, and became an assistant in the University of Berlin, and later in Munich, being subsequently called to the University of Zürich as professor. From here he went to the newly formed University of Frankfurt (on the Main), finally proceeding to Berlin University as a director of the Institute for Theoretical Physics. He specialized in theoretical physics, and is a champion of the modern school of Einstein's theory of relativity. He also devoted his attention to the quantum theory, to the Compton-effect (alteration of the frequency of Röntgen rays), to Bohr's atomic model, to the "Einstein-Bohr equation" and the disintegration of atoms. In 1914 he was awarded the Nobel prize for physics. Besides his work for various scientific publications, he also writes for the daily Press.

He was the first to suggest the use of a crystal to act as a "grating" for the diffraction of X-rays. He showed that if a pencil of X-rays passed through a crystal diffraction would take place and a pattern formed on a photographic plate placed at right angles to the direction of the pencil. This was verified experimentally in 1912 by Friedrich and Knipping, who worked under the direction of von Laue, and was the starting point of much subsequent work on X-rays and crystal structure.

Since 1910 he has published the following books: *Ueber e. Versuch z. Optik d. bewegten Körper* (1911); *Die Beugungserscheinungen an vielen unregelmässig verteilten Teilchen* (1915); *Ueber d. Möglichkeit neuer Versuche an Glühelektroden* (1919); *Die Relativitätstheorie* (1919); *Ueber d. Auffindung d. Röntgen-strahlinterferenzen* (1920); *Das physikalische Weltbild* (1921); *Die Bedeutung d. Nullkegels in d. allgemeinen Relativitätstheorie* (1922); *Die Lösungen d. Feldgleichungen d. Schwere v. Schwarzschild* (1923); *Zur Theorie d. v. glühenden Metallen ausgesandten positiven Ionen und Elektronen* (1924); and with Dr. W. Gordon, *Ein Verfahren z. Bestimmung d. Wärmeleitfähigkeit bei Glühtemperaturen* (1922).

LAUENBURG, a former duchy of Germany, at one time also belonging with Holstein to Denmark, but from 1865 to Prussia, and now included in the province of Schleswig-Holstein in the *Land* of Prussia. It lies on the right bank of the Elbe and has an area of 453 sq.m. The surface is an undulating plain with fertile alluvial soils. (*See* PRUSSIA.)

The earliest inhabitants of the district were a Slav tribe, the Polabes, who were gradually replaced by colonists from Saxony. About the middle of the 12th century the country was subdued by the duke of Saxony, Henry the Lion, who founded a bishopric at Ratzeburg, and after Henry's fall in 1180 it formed part of the smaller duchy of Saxony, which was governed by Duke Bernhard. In 1203 it was conquered by Waldemar II., king of Denmark, but in 1227 it reverted to Albert, a son of its former duke. When Albert died in 1260 Saxony was divided. Lauenburg (Saxe-Lauenburg) became a separate duchy ruled by his son John, and had its own lines of dukes for over 400 years, one of them, Magnus I. (d. 1543), being associated with the Renaissance movement. The reigning family, however, became extinct when Duke Julius Francis died in September 1689, and there were at least eight claimants for his duchy, chief among them being John George III., elector of Saxony, and George William, duke of Brunswick-Lüneburg-Celle, the ancestors of both these princes having made treaties of mutual succession with former dukes of Saxe-Lauenburg. George William was ultimately recognized as duke. Lauenburg next passed to his nephew, George Louis, elector of Hanover, afterwards king of Great Britain as George I., whose rights were recognized by the emperor Charles VI. in 1728. In 1803 the duchy was occupied by the French, and in 1810 it was incorporated with France. It reverted to Hanover after the battle of Leipzig in 1813, and in 1816 was ceded to Prussia, the greater part of it being at once transferred by her to Denmark in exchange for Swedish Pomerania. In 1848, when Prussia made war on Denmark, Lauenburg was occupied at her own request by Hanoverian troops, and was administered for a time by the German confederation, being restored to Denmark in 1851. Definitely incorporated with this country in 1853, it experienced another change of fortune after the war of 1864 between Denmark on the one side and Prussia and Austria on the other, as by the peace of Vienna (30th of October 1864) it was ceded with Schleswig and Holstein to the two German powers. By the convention of Gastein (1865) Austria surrendered her claim to Prussia in return for payment and in 1865 King William I. took formal possession of the duchy. Lauenburg entered the North German confederation in 1866 and the German empire in 1870. It retained its constitution and its special privileges until 1876, when it was incorporated with the kingdom of Prussia. It ceased to be a duchy in 1918.

LAUFF, JOSEF (1855–1933), German poet and dramatist, born in Cologne on Nov. 16, 1855, served in the German army until 1898 when William II. summoned him to the royal theatre at Wiesbaden. He composed dramas in honour of the Hohenzollerns: *Der Burggraf* (1897) and *Der Eisenzahn* (1900). His novels are better than his plays. Among them are *Im Rosenhag* (1897); *Marie Verwahnen* (1903); *Sankt Anne* (1908); *Kevelaer* (1910). He also wrote peasant epics: *Jan van Calker* (1887); *Der Helfensteiner* (1887) and others.

See A. Schroeter, *Josef Lauff, ein literarisches Zeitbild* (1899); B. Sturm, *Josef Lauff* (1903), and Spielmann, *J. von Lauff, ein rheinischer Dichter* (1915).

LAUGHTER is commonly regarded as the expression of various feelings, such as sheer joy, lightness of heart, amusement, and feelings more grave than any of these. It is mainly *a human phenomenon.* Among lower animals laughter is a very rare occurrence if, indeed, it is met with at all. Man is the laughing animal *par excellence.* And man is also the principal butt of laughter, though not the only one. He is the most *laughed at* as well as the chief or sole *laughing animal.* From the point of view of the student of psychology laughter presents the following main problems: (1) What is it that provokes laughter? Intimately connected with this problem is the question whether or no there are different varieties of laughter. (2) The second main problem is: What is the function of laughter?

(1.) **The Causes of Laughter.**—One obvious cause of laughter barely deserves passing mention, namely, tickling. This sort of laughter is a purely physiological or reflex reaction, and not the spontaneous expression of a feeling. And here we are only concerned with laughter as an expression of feeling induced by the observation, memory, imagination, or contemplation of something or other. The problem before us is, what kind of things or situations make us laugh, or are felt to be ludicrous, when we observe or contemplate them? Some writers have attempted to reduce them all to one class, or to find in them all one common characteristic which makes them ludicrous or provokes us to laughter. But these writers do not agree among themselves; each identifies the common cause or essential character-

istic with some other feature of the ludicrous situation. Thus Hobbes, for instance, held that any awkwardness or other deformity or imperfection in others makes one laugh because it heightens his self-esteem and so pleases him. The same sort of "sudden glory" (as Hobbes calls it) may be produced more directly by the apprehension of some excellence in oneself. Such exultation may account for some cases of laughter, but certainly not for all cases. Schopenhauer, on the other hand, found the cause of laughter in the incongruity of what is apprehended. The sudden perception of incongruity certainly is a frequent source of laughter, and a common device for provoking it. Recently Bergson has attempted another general explanation. According to him, it is always the perception of the substitution of mere mechanism for adaptive pliancy that provokes laughter. Many cases of laughter caused by observed awkwardness, carelessness, thoughtless routine, etc., would certainly come under Bergson's description. But as an all-inclusive theory Bergson's view cannot be regarded as satisfactory. *Prima facie,* it seems unlikely that any uniform explanation will fit all the facts. Everyday language seems to bear witness to the existence of different kinds of laughter, provoked by different kinds of causes or situations. We commonly distinguish somehow between the ridiculous, the comic, the humorous, etc., on the one hand, and between laughter that is gay or grave, derisive or scornful, etc., on the other hand. In Heine's poem called "Woman," the four stanzas of which it is made up depict each a totally different situation, passing from gaiety to tragedy, but each ends "and she laughed." Needless to say, the laughter is very different in each case, as every good recitation of the poem makes the hearer realize.

(2.) **The Function of Laughter.**—For the merely physiological function of laughter a passing reference must suffice—laughter benefits the lungs and is an outlet for some forms of superfluous energy. But we are concerned with the mental function or functions of laughter. In a general sort of way it is commonly realized that laughter has a useful function in human life. Laughter enables man to beguile the present, just as forgetfulness shields him from the past, and hope helps him to face the future. But, leaving aside such vague popular philosophy, various theories have been put forward by psychologists and philosophers. The most interesting of them is the view of Bergson. Bergson begins by pointing out that laughter is mainly a *social* phenomenon. "Our laughter" (he says) "is always the laughter of a group. It may, perchance, have happened to you, when sitting in a railway carriage or at a *table d'hôte,* that you heard travellers relating to one another stories which must have appeared comic to them, for they laughed heartily. If you had been one of their company, you would have laughed with them; but, as you were not, you felt no desire whatever to do so. A man who was once asked why he did not weep at a certain sermon, when everybody else was shedding tears, replied: 'I don't belong to this parish.' What that man felt about tears is even more true of laughter. However spontaneous it seems, laughter always implies a kind of freemasonry, or even complicity, with other laughers, real or imaginary. It has often been remarked that the fuller the house, the more uncontrolled is the laughter of the audience. On the other hand, as has also often been remarked, many comic effects cannot be translated from one language into another, because they refer to the habits and thoughts of a particular social group." It seems, therefore, natural that Bergson should attribute to laughter a special *social* function. And so he does. Laughter, according to Bergson, is a kind of social "ragging," a method of "breaking in" people to the forms and conventions of society, a way of curing eccentricity and unsociability in their early stages. "What life and society require of each of us is a constantly alert attention, that discerns the outlines of the present situation, together with a certain elasticity of mind and body to enable us to adapt ourselves accordingly. *Tension* and *elasticity* are two mutually complementary forces which life brings into play. If these two forces are lacking in the body to any considerable extent, we have sickness and infirmity and accidents of every kind. If they are lacking in the mind, we find every degree of mental deficiency, every variety of insanity. Finally, if they are lacking in the character, we have cases of the gravest inadaptability to social life. . . . Society is therefore suspicious of all *inelasticity* of character, of mind, and even of body, because it is the possible sign of a slumbering activity as well as of an activity with separatist tendencies that inclines to swerve from the common centre round which society gravitates. . . . And yet society cannot intervene at this stage by material repression, since it is not affected in a material fashion. It is confronted with something that makes it uneasy, but only as a symptom—scarcely a threat; at the very most a gesture. A gesture, therefore, will be its reply. Laughter must be something of this kind, a sort of *social gesture.*"

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LAUMONT, FRANÇOIS PIERRE NICHOLAS GILLET DE (1747–1834), French mineralogist, was born in Paris on May 28, 1747. He was educated at a military school and served in the army from 1772–84, when he was appointed inspector of mines. His leisure was given to mineralogy, and he assisted in organizing the new École des Mines in Paris. The mineral laumontite was named after him by Haüy. He died in Paris on June 1, 1834.

He was author of numerous mineralogical papers in the *Journal* and *Annales des Mines.*

LAUNCESTON (laun'ston), a city in the northeast of Tasmania, Australia, where the confluence of two river systems (Macquarie and Esk) forms the Tamar, a "drowned valley" which leads out, as a fairly broad but tortuous estuary some 41 mi. long, upon the north coast. The town is picturesquely situated on low and originally marshy ground, which lies amid stream-cut hills of romantic charm. Launceston is the outlet of a productive agricultural and fruit-growing (mainly apple) area, its climate also being very favourable. (Av. ann. temps.: 64.5°–44° F.; av. ann. rainfall: 28 in. evenly distributed.) The city (founded *c.* 1805, was proclaimed a city in 1888; pop. with suburbs [1933] 32,833, second largest in Tasmania) is well laid out and substantially built, possesses numerous open spaces, an electricity supply, and other amenities which, in co-operation with its position, climate and surroundings make it a favourite tourist and holiday resort. The Mount Bischoff (tin) smelting works, as well as other industries (woollen mills, potteries, etc.) have been in existence here for more than 60 years, but the (1921–22) augmentation of the electric-power supply (Great Lake Supply scheme: *see* TASMANIA) encouraged numerous industries (saw-milling and furniture making; iron and railway engineering works; paint factories, etc.). Exports are mainly agricultural produce, wool and fruit (apples).

LAUNCH. (1) A verb meaning originally to hurl a missile or other object, or to shoot out suddenly. (Lat. *lanceare,* to hurl, from *lancea,* a spear.) It is particularly used of the setting afloat a vessel from the stocks on which she has been built. (2) The name of a type of boat, usually the largest size of ships' boats, or a large boat moved by electricity, steam or other power. The word is an adaptation of the Span. *lancho,* pinnace.

LAUNDRY INDUSTRY. Laundering is as old as mankind and became an organized business in the United States when the "Forty-niners" joined the gold rush to California. Not a woman was to be found within 500 miles and one disillusioned miner turned laundryman. By 1851, the Contra Costa laundry was operating in Oakland, Calif. A clean shirt became symbolic of the American way of life.

Up to 1917, laundry remained a shirt and collar business. With World War I came large-scale expansion, the beginning of wet wash, and services priced by the pound. Under the pressure of global war, the U.S. government in 1942 declared "laundry service essential to the health and welfare of the people and a vital contribution to the war effort," and became the biggest laundry owner in the world, operating more than 600 mammoth plants in the U.S. and overseas. Outside the U.S., the industry developed chiefly in England, Canada, Australia, New Zealand and South Africa. Laundries thrive in democratic countries where the status of women, position of labour and standard of living are relatively

high.

In 1945, the 7,000 professional laundries in the U.S. had an estimated sales volume of $634,000,000, and paid $350,000,000 in salaries and wages to 275,000 men and women. Measured by the number of employees, it was one of the nation's larger industries and the leader among service industries. The total investment exceeded $700,000,000, and the volume of sales increased consistently every year from 1933 to 1946.

The laundry industry is permanent, its service being always needed; repetitive, work done today being consumed tomorrow; on a cash, not credit, basis; stable, involving no rapid style changes, no fluctuating inventory, no speculative risk. Profit depends on management, not on size. The typical laundry in the U.S. in 1946 did a business of $2,000 per week, although there were large plants whose sales exceeded $1,000,000 annually. The average laundry showed $1.25 in annual sales for each dollar of total investment. Management return (executive salaries plus net operating profit before taxes) amounted to 8% on sales. The investment in fixed equipment is substantial, the unit of sales small (average bundle, $1.50), the trading area local, labour is the chief expense item, and net profits are small but continuous. The business is not entangled with patented processes. As technological advances are made, information is generally shared and publicized to all.

There are three general types of laundry: (1) family laundry, serving individual customers at retail; (2) wholesale, commercial and linen supply laundries, including diaper service and household linen rental; (3) institution laundries—in hotels, hospitals and government institutions.

The Process.—The customer usually telephones, and the bundle is picked up and delivered by route men. Work is first identified for ownership, then classified by fabric and soil in preparation for washing.

The washing process has been developed to a high state of efficiency. Monel metal washing machines combine automatic control of formula and feeding of supplies with mechanical unloading. Some machines have a capacity up to 1,000 lb. in a single load. By the use of automatic washroom controls, soft water, specialized detergents, pH and titration tests and multiple suds formulae, modern washing produces sterilized sparkling white work. Frequent laboratory tests show that after 20 laundry washings, white cotton fabrics lose only 5% of their tensile strength and retain 97% of their original whiteness. After washing, excess water is removed by extractors in which manual handling has been eliminated.

After it is washed, flat work is fed damp into a flat work ironer, in which the pieces pass between heavily padded rolls and steam chests, to emerge at the other end dry and ironed. The modern 12-roll flat work ironer can finish and automatically fold 15 sheets per minute. Wearing apparel is pressed on specially designed units which are steam heated and driven by compressed air, and are shaped to fit the need of various type garments. Little, if any, hand ironing is required. The most notable mechanization of laundry work has come in shirt pressing units. Men's shirts are pressed and beautifully finished on a series of specialized machines, so that, in 1946, production of 40 shirts per operator per hour was obtained in many plants. No hand iron is used at all. All machines are delicately adjusted to avoid excess wear or strain on the garments. When finished, the work is assembled, mended, inspected, sorted for ownership, and wrapped ready for delivery.

The miracle of high speed, automatic equipment, combined with controlled chemical engineering, has made possible sterilized work, rapid service, lengthened life to linens, and elimination of home drudgery, to bring public health protection to millions.

Services.—Services are offered under a bewildering variety of names, but only three are basic—damp, dry and finished. (1) Under the damp or wet wash service, everything is washed and returned damp, on a 24-hour delivery basis. (2) Under the rough dry service, flat work (bed and table linens, towels) is ironed ready for use, and wearing apparel is dried but not ironed. (3) Under the finished type of service, all pieces are ironed or pressed ready for use. Finished service is also offered on a piece-price basis. In all services, a minimum size bundle is required. Price is based on the amount of work done, and excludes retailers' mark-up. Costs were not accurately known in 1946, but tended to diminish as volume increased.

The power laundry may be termed a secondary utility, but its strongest competitor is its own customer, who can always go back to doing her own washing. The industry lags behind the business cycle, both in times of depression and prosperity. A wider mass market could be reached if prices could be lowered.

Traditionally, the wage scales were low; but beginning in 1936, wage rates advanced 100% in ten years. By 1946, many laundries paid women more than 60¢ an hour and men more than 75¢ an hour, minimum, with higher pay for skilled workers. 55% of total sales was being paid out in wages and salaries. In large cities, workers were organized in labour unions. After 1941, many wage incentive plans were introduced, under which each worker could increase his earnings in ratio to his ability and the quantity of work he produced, while the unit cost of production decreased.

Supplies and Equipment.—The supplies used in a laundry include water, soap, alkali, bleach, blue, sour, starch, wetting-out agents, water repellents, salt, nets, cover cloth, knitted padding, apron duck, canton flannel, paper, boxes and shirt boards; the average cost of supplies in 1946 was 9% of sales. Research has produced controlled supplies which are chemically pure, uniform and noninjurious to fabrics. Notable progress has been made in the use of synthetic detergents, fluoride sours and complex phosphates.

The power plant is the basic element in a laundry; hence the terms "steam laundries" or "power laundries." Every laundry needs ample hot water at 160° F., steam at 100 lb. pressure, electricity at 110 and 220 voltage, and compressed air at 70 lb. pressure. Approximately 15% of the total investment in a laundry consists of power plant equipment, whose operating costs average 6% of sales. To wash and sterilize one lb. of clothes, laundries use six gal. water, of which four gal. are heated to 160° F. Water is softened to zero (rain soft) by zeolite process.

Research.—The American Institute of Laundering (A.I.L.), the proving and improving ground of the industry, maintains at Joliet, Ill., completely equipped testing and research laboratories, renders consultative assistance to its 4,000 members (representing 85% of the industry's sales volume), operates a model professional laundry plant serving its home city of Joliet, and pre-tests launderable products for textile manufacturers. From 1930, the A.I.L. School of Laundry Management has offered full-time courses for specialized training in laundry production, merchandising and management. There is another laundry school at Ohio Mechanics institute, Cincinnati, Ohio.

Complaints and Claims.—The laundry is legally a bailee of goods entrusted to it and is responsible for loss or damage caused by its negligence. The loss of an entire bundle by fire or theft is generally insured. No matter how carefully work is done, error is present and some complaints are inevitable. Few of the millions of pieces laundered weekly are ever lost. Laundries are sometimes unjustly blamed for damage which is actually due to defective fabrics or abuse by the owner. Recognizing good will as its most valuable asset, the industry avoids litigation, and tries to adjust customers' claims promptly and fairly.

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LA UNIÓN, a port of the Republic of El Salvador, Central America, and the southern terminus of the International Railways of Central America, which traverse Salvador and Guatemala. With the completion in Nov. 1942 of the International bridge between Ayutla, Guatemala and Suchiate, Mexico, it is possible to travel by rail from any point in the United States to La Unión via the National Railways of Mexico. La Unión also has rail connections with Puerto Barrios, a Guatemalan port on the Caribbean sea. Pop. (1940) 5,756. La Unión lies 137 mi. E.S.E. of San Salvador, the national capital, with which it is connected by railway and highway. It is the best port of the republic, lying on the shores of the great Bay of Fonseca and has a concrete and steel pier belonging to the railway that enables steamers to load and unload without lighters, the only port of Salvador where this is possible. The region produces coffee, maize, rice and beans. Above the town rises one of the volcanoes which cross Salvador in an almost direct line from east to west, this cone being known variously as Conchagua, Pinos and Meanguera.

LA UNION, a town of eastern Spain in the province of Murcia, 5 mi. by rail E. of Cartagena and close to the Mediterranean sea. Pop. (1940) 7,207 (mun., 10,079).

Numerous metal works and mines of iron, manganese, calamine, sulphur and lead are included within the municipal boundaries. La Union sprang up in the second half of the 19th century.

LAUPEN, BATTLE OF: *see* SWISS WARS.

LAURACEAE, a family of dicotyledonous trees and shrubs, best-known members of which are the laurels (*q.v.*). There are 40 genera and 1,000 species, nearly all tropical and subtropical and especially numerous in southeastern Asia and in Brazil. The leaves are leathery and evergreen; the tissues contain oil-cavities; the flowers are without petals, the parts usually arranged in threes; the stamens are characteristic, opening by 2 to 4 uplifted valves; the fruit is a drupe. Besides the laurel (*Lau-*

rus), the family includes the cinnamon, cassia and camphor (*Cinnamomum*), the avocado-pear (*Persea*) and numerous valuable medicinal plants. In North America the family is represented by several trees and shrubs, found chiefly in the southern United States, like the sassafras, spice-bush and Oregon myrtle (*qq.v.*).

LAUREL, a city of southeastern Mississippi, U.S.A., 109 mi. N.W. of Mobile; one of the county seats of Jones county. It is located on federal highways 11 and 84, and is served by the Gulf, Mobile and Ohio, the Illinois Central and the Southern railways. The population was 18,017 in 1930 and 20,598 in 1940 (26% Negroes).

It is Mississippi's largest industrial city, the home of the Masonite corporation and the only sweet potato starch plant in the world, with more than 40 diversified industries located there. The factory output in 1940 was valued at $4,376,073. The city was founded in 1882 and incorporated in 1890.

LAUREL. At least four shrubs or small trees are called by this name in Great Britain, viz. the common or cherry laurel (*Prunus Laurocerasus*), the Portugal laurel (*P. lusitanica*), the bay or sweet laurel (*Laurus nobilis*) and the spurge laurel (*Daphne Laureola*). The first two belong to the rose family (Rosaceae), and to the section *Cerasus* (to which also belongs the cherry) of the genus *Prunus*.

The common laurel is a native of the woody and sub-alpine regions of the Caucasus, of the mountains of northern Persia, of north-western Asia Minor and of the Crimea. It was received into Europe in 1576, and flowered for the first time in 1583. Ray in 1688 relates that it was first brought from Trebizond to Constantinople, thence to Italy, France, Germany and England. Parkinson in his *Paradisus* records it as growing in a garden at Highgate in 1629; and in Johnson's edition of Gerard's *Herball* (1633) it is recorded that the plant "is now got into many of our choice English gardens, where it is well respected for the beauty of the leaues and their lasting or continuall greennesse" (*see* Loudon's *Arboretum,* ii. 717). The leaves of this plant are rather large, broadly lance-shaped and of a leathery consistence, the margin being somewhat serrated. They are remarkable for their poisonous properties, giving off the odour of bitter almonds when bruised; the vapour thus issuing is sufficient to kill small insects by the prussic acid which it contains. The leaves when cut up finely and distilled yield oil of bitter almonds and hydrocyanic (prussic) acid. Sweetmeats, custards, cream, etc., are often flavoured with laurel-leaf water, as it imparts the same flavour as bitter almonds; but it should be used sparingly, as it is a dangerous poison, having several times proved fatal.

FROM COOPER AND WESTELL, "TREES AND SHRUBS OF THE BRITISH ISLES"
FLOWERING BRANCH OF THE CHERRY LAUREL (PRUNUS LAUROCERASUS)
A. SMALL CLUSTER OF THE FRUIT (DRUPE)

The following varieties of the common laurel are in cultivation: the Caucasian (*Prunus Laurocerasus,* var. *caucasica*), which is hardier and bears very rich dark-green glossy foliage; the Versailles laurel (var. *latifolia*), which has larger leaves; the Colchican (var. *colchica*), which is a dwarf-spreading bush with narrow sharply serrated pale-green leaves. There is also the variety *rotundifolia* with short broad leaves, the Grecian with narrow leaves and the Alexandrian with very small leaves.

The Portugal laurel is a native of Portugal and Madeira. It was introduced into England about the year 1648, when it was cultivated in the Oxford Botanic Gardens.

The bay or sweet laurel (*Laurus nobilis*) belongs to the family Lauraceae, which contains sassafras, benzoin, camphor and other trees remarkable for their aromatic properties. It is a large evergreen shrub, sometimes reaching the height of 60 ft., but rarely assuming a truly tree-like character. The leaves are smaller than those of the preceding laurels, possessing an aromatic and slightly bitter flavour, and are quite devoid of the poisonous properties of the cherry laurel. The small yellowish-green flowers are produced in axillary clusters, are male or female, and consist of a simple 4-leaved perianth which encloses nine stamens in the male, the anthers of which dehisce by valves which lift upwards as in the common barberry, and carry glandular processes at the base of the filament. The fruit consists of a succulent berry surrounded by the persistent base of the perianth. The bay laurel is a native of Italy, Greece and North Africa, and is abundantly grown in the British Isles as an evergreen shrub, as it stands most winters. The date of its introduction is unknown, but must have been previous to 1562, as it is mentioned in Turner's *Herbal* published in that year. It was carried to North America by the early colonists.

This laurel is generally held to be the *Daphne* of the ancients, though Lindley, following Gerard (*Herball,* 1597, p. 761), asserted that the Greek *Daphne* was *Ruscus racemosus.* Among the Greeks the laurel was sacred to Apollo, especially in connection with Tempe, in whose laurel groves the god himself obtained purification from the blood of the Python. This legend was dramatically represented at the Pythian festival once in eight years, a boy fleeing from Delphi to Tempe, and after a time being led back with song, crowned and adorned with laurel. The victors in the Pythian games were crowned with the laurels of Apollo, and the laurel became the symbol of triumph in Greece and later in Rome also. As Apollo was known as the god of poets, the *Laurea Apollinaris* naturally belonged to poetic merit. The various prerogatives of the laurel among the ancients are collected by Pliny (*Hist. Nat.* xv. 30). It was a sign of truce, like the olive branch; letters announcing victory and the arms of the victorious soldiery were garnished with it; it was thought that lightning could not strike it, and the emperor Tiberius always wore a laurel wreath during thunderstorms. From its association with the divine power of purification and protection, it was often set before the doors of Greek houses, and among the Romans it was the guardian of the gates of the Caesars (Ovid, *Met.,* i. 562 *et seq.*).

The last of the plants mentioned above under the name of laurel is the so-called spurge laurel (*Daphne Laureola*). This and one other species (*D. Mezereum*), the mezereon, are the sole representatives of the family Thymelaeaceae in Great Britain. The spurge laurel is a small evergreen shrub, with alternate somewhat lanceolate leaves with entire margins. The green flowers are produced in early spring, and form drooping clusters at the base of the leaves. The calyx is four-cleft, and carries eight stamens in two circles of four each within the tube. The pistil forms a berry, green at first, but finally black.

For North American trees and shrubs known as laurels, *see* MAGNOLIA; MOUNTAIN LAUREL; RHODODENDRON.

LAURENS, HENRY (1724–1792), American statesman, was born in Charleston, S.C., on Feb. 24, 1724, of Huguenot ancestry. When 16 he became a clerk in a counting-house in London, and later engaged in trade and planting at Charleston until 1771, when he retired. He spent the next three years travelling in Europe and in superintending the education of his sons in England. In spite of his attachment to England, he united with 37 other Americans in a petition to parliament against the passing of the Boston Port bill. Convinced that a peaceful settlement was impracticable, he returned to Charleston at the close of 1774, and joined the conservative element of the Whig party.

He was made president of the South Carolina council of safety, and in 1776 vice-president of the State. He was sent as a delegate to the Continental Congress at Philadelphia, of which he was president from Nov. 1777 until Dec. 1778. In Aug. 1780 he started on a mission to negotiate on behalf of Congress a loan of $10,000,000 in Holland; but he was captured off Newfoundland and imprisoned in the Tower. His papers were found to contain a sketch of a treaty between the United States and Holland. This discovery led to war between Great Britain and the United Provinces. On Dec. 31, 1781, he was released on parole, and finally exchanged for Cornwallis. In June 1782 he was appointed one of

the American commissioners for negotiating peace with Great Britain, but he did not reach Paris until Nov. 28, 1782, only two days before the preliminaries of peace were signed by himself, John Adams, Franklin and Jay. On account of failing health he did not remain for the signing of the definitive treaty. He died at Mepkin plantation near Charleston Dec. 8, 1792.

His son, JOHN LAURENS (1754–1782), American revolutionary officer, was born at Charleston, S.C., on Oct. 28, 1754. He was educated in England, and on his return to America in 1777, joined Washington's staff, and was entrusted with the delicate duties of a confidential secretary, which he performed with much tact and skill. He was present in all Washington's battles, from Brandywine to Yorktown, and his gallantry on every occasion gained him the title of "the Bayard of the Revolution." He wounded Gen. Charles Lee in a duel, fought on account of that officer's disrespectful conduct towards Washington. Laurens distinguished himself further at Savannah, and at the siege of Charleston in 1780. After the capture of Charleston by the English, he was selected by Washington as a special envoy to appeal to the king of France for supplies for the relief of the American armies. The more active co-operation of the French fleets with the land forces in Virginia, which was one result of his mission, brought about the disaster of Cornwallis at Yorktown. Laurens rejoined the army, and at Yorktown was at the head of an American storming party which captured an advanced redoubt. He was designated with the vicomte de Noailles to arrange the terms of the surrender, which virtually ended the war. In a skirmish on Aug. 27, 1782, on the Combahee river, before peace was formally concluded, Laurens was killed. Washington lamented deeply his death, saying of him, "He had not a fault that I could discover, unless it were intrepidity bordering upon rashness."

The most valuable of Henry Laurens' works are in vol. i of *Collections of South Carolina Historical Society* (1857). (D. D. W.)

LAURENS, a city in the hills of western South Carolina, U.S.A; the county seat of Laurens county. It is served by the Charleston and Western Carolina and the Columbia, Newberry and Laurens railways. Pop. (1940) 6,894. It has cotton and cotton-seed oil, rayon and hosiery mills and glass factories. The city was founded about 1792 and incorporated in 1880.

LAURENT, AUGUSTE (1807–1853), French chemist, was born at La Folie, Haute Marne, on Nov. 14, 1807. He spent most of his life in poverty. He was first an *ingénieur des mines,* and then *préparateur* at the Central School of Arts and Manufactures in Paris. He occupied various industrial positions, and was appointed professor of chemistry at Bordeaux in 1838, a post which he held until 1846. He was appointed warder of the mint at Paris in 1848. He stayed there until his death of consumption on April 23, 1853. Although he made a number of important discoveries in organic chemistry, his greatest contribution to chemistry was his clarification of the obscure ideas concerning equivalent, atomic and molecular weights. In this way he assisted in bringing to light Avogadro's hypothesis (*see* CHEMISTRY: *Physical*), which played a great part in the accurate fixing of atomic weights (*q.v.*). In conjunction with C. F. Gerhardt (*q.v.*) he helped to develop the systematic classification of organic compounds (*see* CHEMISTRY: *Organic.*) His famous *Methode de chimie* appeared a year after his death. For biographical details *see* E. Grinaux, *Revue scientifique* (Rev. Rose) (1926); E. Riegel, *Journal of Chemical Education* (1926).

His son, PAUL MATHIEU HERMANN LAURENT, French mathematician, was born on Sept. 2, 1841, and died Feb. 19, 1908; he was *répétiteur* at the Polytechnic school of Paris, and published a number of papers on various aspects of mathematics.

LAURENT, FRANÇOIS (1810–1887), Belgian historian and jurisconsult, was born at Luxemburg on July 8, 1810. He served in the ministry of justice for some time before he became professor of civil law in the university of Ghent in 1836. His advocacy of liberal and anti-clerical principles both from his chair and in the press made him bitter enemies, but he retained his position until his death on Feb. 11, 1887. His chief historical work is *Études sur l'histoire de l'humanité* (18 vols., Ghent and Brussels, 1855–70). His fame as a lawyer rests on his authoritative exposition of the Code Napoléon in his *Principes de droit civil* (Brussels, 33 vols., 1869–78), and his *Droit civil international* (Brussels, 8 vols., 1880–81).

For a complete list of his works, *see* G Koninck, *Bibliographie nationale* (Brussels, vol. ii., 1892).

LAURENTINA, VIA, ancient southward road from Rome. The nomenclature of roads between the Via Ardeatina and the Via Ostiensis is difficult. Probably the Via Laurentina proper is that which led out of the postern generally called the Porta Ardeatina of the Aurelian wall and went direct to Lavinium, while the road branching from the Via Ostiensis at the third mile, and leading past Decimo to Lavinium, is that called Via Laurentina by Pliny (*see* LAVINIUM). On this latter road, beyond Decimo, two milestones, one of Tiberius, the other of Maxentius, each bearing the number 11, have been found.

LAURENTIUS JUSTINIANUS: *see* GIUSTINIANI.

LAURIA (LURIA or **LORIA) ROGER DE** (d. 1305), admiral of Aragon and Sicily, was the most prominent figure in the naval war which arose directly from the Sicilian Vespers. Brought up at the court of Aragon, after the submission of Sicily to Peter III., in 1283 he was made admiral and in the same year defeated a French naval force in the service of Charles of Anjou, off Malta. In 1284 Roger defeated the Angevine fleet in the Bay of Naples, taking prisoner the heir to the kingdom, Charles of Salerno. In 1285 he fought on the coast of Catalonia one of the most brilliant campaigns in all naval history. The French king Philippe le Hardi had invaded Catalonia with a large army, which relied almost wholly for its stores on the co-operation of its allies stationed in squadrons along the coast. Roger de Lauria, recalled from Palermo by Peter III. fell on the central squadron of the French fleet near the Hormigas: the Catalan and Sicilian squadrons gained a complete victory.

This campaign, which was followed up by destructive attacks on the French coast, saved Catalonia from the invaders and completely ruined the French naval power for the time being.

After the death of Peter III. (1286), Roger de Lauria adhered for a time to Fadrique, younger brother of the new king, James, who had accepted the Sicilian crown in defiance of both the Angevines and his senior. Fadrique's arrogant temper and his own large estates in Valencia (which were a strong reason for not offending the king of Aragon) led to Lauria's secession. His Sicilian estates were confiscated by Fadrique and one of his nephews was put to death as a traitor. Roger de Lauria died at Valencia on Jan. 2, 1305.

See M. Amari, *La guerra del Vespro Siciliano* (Paris, 1843, 2 vols.); Ramon de Muntaner, *Chronica,* ed. K. Lanz (Stuttgart, 1844); Ch. de la Roncière, *Histoire de la marine française,* i. 189–217

LAURIER, SIR WILFRID (1841–1919), Canadian statesman, was born on Nov. 20, 1841, at St. Lin, Quebec, of French Roman Catholic parents. He attended the elementary school of his native parish and for eight or nine months the Protestant elementary school at New Glasgow to learn English; his association with the Presbyterian family with whom he lived during this period had a permanent influence on his mind. At 12 years of age he entered L'Assomption college, which he left in 1860 to study law at McGill university. At graduation he delivered the valedictory address which, like so many of his later utterances, closed with an appeal for sympathy and union between the French and English races as the secret of the future of Canada. He practised law in Montreal, but owing to ill-health soon removed to Athabaska, where he opened a law office and edited *Le Défricheur.*

While at Montreal Laurier joined the *Institut Canadien,* a literary and scientific society which, owing to its liberal discussions and the fact that certain books upon its shelves were on the Index, was finally condemned by Roman Catholic authorities. *Le Défricheur* was an organ of extreme French sentiment, opposed to confederation, and also under ecclesiastical censure. One of its few surviving copies contains an article by Laurier opposing confederation as a scheme designed in the interest of the English colonies in North America, and certain to prove the tomb of the French and of Lower Canada.

Laurier was elected to the Quebec legislature in 1871, and his first speech aroused attention both by its literary qualities and the attractive manner and logical method of the speaker. He was equally successful in the Dominion House of Commons, to which he was elected by a small majority in 1874. During his first two years in the federal parliament his chief speeches were in defence of Riel and the French halfbreeds who were concerned in the Red river rebellion, and on fiscal questions. Sir John Macdonald, then in opposition, had committed his party to a protectionist policy, and Laurier, notwithstanding that the Liberals stood for a low tariff, avowed himself to be "a moderate protectionist," because he felt that a young country needed protection for the development of its manufactures. In the bye-election which followed Laurier's admission to the cabinet he was defeated—the only personal defeat he ever sustained; but a few weeks later he was returned for Quebec East, a constituency which he held thenceforth by enormous majorities. In 1878 his party went out of office and Sir John Macdonald entered upon a long term of power, with protection as the chief feature of his policy, to which was added afterwards the construction of the Canadian Pacific railway.

After the defeat of the Mackenzie government, Laurier sat in Parliament as the leader of the Quebec Liberals and first lieutenant to the Hon. Edward Blake, who succeeded Mackenzie in the leadership of the party. He was associated with Blake in his sustained opposition to high tariff, and to the Conservative plan for the construction of the Canadian Pacific railway, and was a conspicuous figure in the long struggle between Sir John Macdonald and the Liberal leaders to settle the territorial limits of Ontario and the legislative rights of the provinces under the constitution. He was also in conflict with the ultramontane element in Quebec, which was closely allied with Conservative politicians.

In 1887, upon the resignation of Blake, Laurier became Liberal leader. He was the first French Canadian to lead a federal party in Canada since confederation. Apart from the fear that he would arouse prejudice in the English-speaking provinces, the second Riel rebellion was then still fresh in the public mind, and the fierce nationalist agitation which Riel's execution had excited in Quebec had hardly subsided. Laurier could hardly have come to the leadership at a more inopportune moment, but from the first he won great popularity even in the English-speaking provinces, and showed unusual capacity for leadership. His party was beaten in the first general election held after he became leader (1891), but even with its policy of unrestricted reciprocity with the United States, and with Sir John Macdonald still at the head of the Conservative party, it was beaten by only a small majority. Five years later, with unrestricted reciprocity relegated to the background, and with a platform which demanded tariff revision so adjusted as not to endanger established interests, and which opposed the federal measure to restore in Manitoba the separate or Roman Catholic schools which the provincial government had abolished, Laurier carried the country, and in July 1896 was called by Lord Aberdeen, then governor-general, to form a government.

FIRST FRENCH-CANADIAN PREMIER

He was the first French-Canadian to become premier; and his personal supremacy was shown by his long continuance in power. From 1896–1910 he held a position within the British Empire which was in its way unique, and in this period he had seen Canadian prosperity advance progressively by leaps and bounds. The chief features of his administration were the fiscal preference of 33⅓% in favour of goods from Great Britain, the despatch of Canadian contingents to South Africa during the Boer War, the contract with the Grand Trunk railway for the construction of a second transcontinental road, the assumption by Canada of the imperial fortresses at Halifax and Esquimault, the appointment of a federal railway commission with power to regulate freight charges, express rates and telephone rates, and the relations between competing companies, the reduction of the postal rate to Great Britain from 5 to 2 cents and of the domestic rate from 3 to 2 cents, a substantial contribution to the Pacific cable, a practical policy of settlement and development in the Western territories, the division of the North-west territories into Alberta and Saskatchewan and the enactment of the legislation necessary to give them provincial status, and finally (1910) a tariff arrangement with the United States, which, if not all that Canada might claim in the way of reciprocity, showed how entirely the course of events had changed the balance of commercial interests in North America.

During his first visit to Great Britain on Queen Victoria's diamond jubilee (1897), he received the grand cross of the Bath, and secured the denunciation of the Belgian and German treaties, thus obtaining for the colonies the right to make preferential trade arrangements with the mother country. His personality made a powerful impression in Great Britain and also in France, which he visited before his return to Canada. Some of his speeches in Great Britain, coming as they did from a French-Canadian, and revealing delicate appreciation of British sentiment and of the genius of British institutions, excited great enthusiasm, while one or two impassioned speeches in the Canadian parliament during the Boer War profoundly influenced Canada and had a pronounced effect throughout the empire.

At the general election of 1911 the Liberals were defeated over the reciprocity agreement with the United States and the naval question, but Laurier remained leader until his death. At the outbreak of the World War in 1914 he eloquently defended Great Britain's cause and supported the urgent measures adopted for the maintenance of Canadian troops. However, he strongly opposed conscription on the ground that it was a departure from the enactments of the Military Service Act, and a still wider departure from the principles of constitutional government. When Sir Robert Borden was invited to attend continuous meetings of the war cabinet in London, Sir Wilfrid expressed his desire to facilitate public business in Canada in order to make the absence of the Premier possible. He declined, however, to enter the cabinet in the Coalition government. In 1918 Sir Wilfrid took part in the debate on hereditary titles and honours in Canada and opposed them. He died in Ottawa on Feb. 17, 1919.

A skilful party-leader, Laurier kept from the first the respect of his opponents; while enforcing the orderly conduct of public business, he was careful as first minister to maintain the dignity of parliament. In office he proved more of an opportunist than his career in opposition would have indicated, but his political courage and personal integrity remained beyond suspicion. His jealousy for the political autonomy of Canada was noticeable at the Colonial conference held at the time of King Edward's coronation, and marked his diplomatic dealings with the mother country. But he strove for sympathetic relations and general legislative and fiscal co-operation between the two countries. He strove also for good relations between the two races in Canada, and between Canada and the United States. Although he was classed in Canada as a Liberal, his tendencies in England would have been considered strongly conservative; an individualist, he opposed the intrusion of the State into private enterprise, and showed no sympathy with State operation of railways, telegraphs and telephones, or with kindred proposals for the extension of the obligations of the central government.

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LAURISTON, JACQUES ALEXANDRE BERNARD LAW, MARQUIS DE (1768–1828), French soldier and diplomatist, was born at Pondicherry on Feb. 1, 1768. He obtained his first commission about 1786, served in the earlier Revolutionary campaigns, and became brigadier of artillery in 1795. Resigning in 1796, he was brought back into the service in 1800 as aide-de-camp to Napoleon. Lauriston became director of the Le Fère artillery school and afterwards special envoy to Denmark, and he was selected to convey to England the ratification of the peace of Amiens (1802). In 1805, having risen to the rank of general of division, he took part in the war against Austria. He was made governor-general of Venice (1807), took part in the Erfurt nego-

tiations (1808), was made a count, served with the emperor in Spain (1808–1809) and held commands in the Italian campaign and the advance to Vienna in the same year. At the battle of Wagram he commanded the guard artillery in the famous "artillery preparation" which decided the battle. In 1811 he was made ambassador to Russia; in 1812 he held a command in the *Grande Armée*. He was captured in the retreat from Leipzig, held a prisoner of war until the fall of the empire, and then joined Louis XVIII, to whom he remained faithful in the Hundred Days. His reward was a seat in the house of peers and a command in the royal guard. In 1817 he was created marquis and in 1823 marshal of France. During the Spanish War he commanded the corps which besieged and took Pamplona. He died at Paris on June 12, 1828.

LAURIUM, a town in Attica, Greece, famous for the silver mines which were one of the chief sources of revenue of the Athenian state. After the battle of Marathon, Themistocles persuaded the Athenians to devote this revenue to shipbuilding, and thus made possible the victory of Salamis. The mines were state owned, and leased for a fixed sum with a percentage on the working; slave labour was employed. The ancient shafts and galleries for extracting the metal may still be seen. The mines are now worked mainly for lead, manganese and cadmium. Pop. (1928, last census before World War II) 8,430.

See E. Ardaillon, "Les Mines du Laurion dans l'antiquité," *Bibliothèque des écoles françaises d'Athènes et de Rome,* lxxvii.

LAURIUM, a village of Houghton county, Michigan, in the northern part of the upper peninsula, adjoining Calumet, on federal highway 41. The population was 6,696 in 1920 (25% foreign-born white) and was 4,916 in 1930 and 3,929 in 1940 by federal census. Laurium is in the heart of the Lake Superior copper district.

Immediately west of Laurium is the Calumet and Hecla mine. The village was incorporated as Calumet in 1889, but in 1895 the name was changed to Laurium, in allusion to the mineral wealth of Laurium in Greece.

LAURUSTINUS, the popular name of a common, evergreen garden shrub known botanically as *Viburnum Tinus,* with rather dark-green ovate leaves in pairs and flat-topped clusters (corymbs) of white flowers, which are rose-coloured before expansion and appear very early in the year. It is a native of the Mediterranean region, and was in cultivation in Britain at the end of the 16th century. In milder parts of the United States it is grown in gardens as an ornamental plant and for low hedges, especially in California, and in the north is often cultivated as a pot plant. The genus *Viburnum* belongs to the family Caprifoliaceae and includes the wayfaring tree (*V. Lantana*), the guelder rose (*V. Opulus sterilis*) and other attractive shrubs. (*See* VIBURNUM.)

LAURVIK, LARVIK or **LAURVIG,** a seaport of Norway, in Jarlsberg and Laurvik *amt* (county), at the head of a short fjord near the mouth of the Laagen river, 98 mi. S.S.W. of Oslo by the Skien railway. Pop. (1930) 10,473. It has various industries, including saw and planing mills, shipbuilding, glassworks and factories for wood pulp, barrels and potato flour; and an active trade in exporting timber, ice, wood pulp and granite, chiefly to Great Britain, and in importing from the same country coal and salt. The port was occupied by Germany in 1940.

LAUSANNE, the capital of the Swiss canton of Vaud. It is the junction of the railway lines from Geneva, from Brig and the Simplon, from Fribourg and Berne, and from Vallorbe (for Paris). A funicular railway connects the upper town with the central railway station and with Ouchy, the port of Lausanne on the lake of Geneva. Lausanne takes its name from the Flon stream flowing through it, which was formerly called Laus (water). The older or upper portion of the town is built on the crest and slopes of five hillocks which form part of the Jorat range.

The original town (mentioned in the Antonine Itinerary) was on the shore of the lake, southwest of the present city. It was burned in the 4th century by the Alamanni. Some of the inhabitants took refuge in the hills above and there founded a new town, which acquired more importance when Bishop Marius about 590 chose it as his see city. Across the Flon was a Burgundian settlement, later known as the Bourg, while to the west was a third colony around the church of St. Laurent. These three elements joined together to form the present city. The bishops obtained gradually great temporal powers, becoming in 1125 princes of the empire. But in 1368 the bishop was forced to recognize various liberties and customs that had been gradually won by the citizens, the *Plaid Général* of that year showing that there was already some kind of municipal government, save for the *cité,* which was not united with the *ville inférieure* or the other four *quartiers* (Bourg, St. Laurent, La Palud and Le Pont) in 1481. In 1536 the territory of the bishop (as well as the Savoyard barony of Vaud) was forcibly conquered by the Bernese, who at once introduced Protestantism. The Bernese occupation lasted till 1798, when Lausanne became a simple prefecture of the canton Léman of the Helvetic republic. But in 1803, on the creation of the canton of Vaud, it became its capital. The bishop of Lausanne resided after 1663 at Fribourg, while from 1821 onwards he added "and of Geneva" to his title.

The railways were built between 1856 and 1862, while the opening of the Simplon tunnel (1906) greatly increased the commercial importance of Lausanne, locating it on the great international highway from Paris to Milan. The town rapidly extended, especially toward the south and west. Since the days of Gibbon, Lausanne has become a favourite place of residence for foreigners and in 1930 they numbered 10,548 out of a total of 75,915. In 1709 it is said that the inhabitants numbered but 7,432 and 9,965 in 1803, while the numbers were 20,515 in 1860, 33,340 in 1888, and in 1941, 92,000. Of the population in 1930 the great majority was French-speaking (only 11,080 German-speaking and 3,243 Italian-speaking) and Protestant. There were 16,868 Roman Catholics and 818 Jews.

The principal building is the cathedral church (now Protestant) of Notre Dame, which stands 500 ft. above the lake. Earlier buildings were more or less completely destroyed by fire, but the present edifice was consecrated in 1275 by Pope Gregory X in the presence of the emperor Rudolf of Habsburg. It was sacked after the Bernese conquest (1536), but many ancient tapestries and other precious objects are still preserved in the Historical museum at Berne. The church was well restored from 1873 onwards. Close by is the castle, built in the early 15th century by the bishops, later the residence of the Bernese bailiffs and now the seat of the various branches of the administration of the canton of Vaud. Near both is the Palais de Rumine, opened in 1906 and now housing the university as well as the cantonal library, the cantonal picture gallery and collections of archaeology, natural history, etc. The university was raised to that rank in 1890, but, as an academy, dates from 1537. Among its former teachers may be mentioned Theodore Beza, Conrad Gesner, J. P. de Crousaz, Charles Monnard, Alexandre Vinet, Eugène Rambert, Juste Olivier and several members of the Secretan family.

To the southwest of the cathedral is the seat of the cantonal courts, a building which was from 1886 to 1927 the Federal Palace of Justice. The federal courts have now been moved to the new Palace of Justice in the *Parc Mon Repos*. The house, La Grotte, which Gibbon inhabited 1783–1793, and on the terrace of which he completed (1787) his famous history, was demolished in 1896 to make room for the new post office that stands on the Place St. François. The first book printed in Lausanne was the missal of the cathedral church (1493), while the *Gazette de Lausanne* (founded 1798) took that name in 1804. Lausanne has been the birthplace of many distinguished men, such as Benjamin Constant, the Secretans, Vinet and Rambert.

LAUSANNE, CONFERENCE OF. The Conference of Lausanne between the Turkish government established at Angora and the governments of the four principal Allied Powers (Great Britain, France, Italy, Japan), Greece, Bulgaria, and Yugoslavia, with the United States represented by an observer, lasted, with a break in the middle from Nov. 20, 1922, to July 24, 1923, and resulted in the signing of no fewer than 17 diplomatic instruments.

The most important of these were:—

1. The Treaty of Peace itself (July 24, 1923).

2. Convention respecting the régime of the Straits (July 24, 1923). (*See* STRAITS QUESTION, THE.)

3. Convention respecting the Thracian frontiers (July 24, 1923) under which neutralised and demilitarised zones were established.

4. Convention respecting conditions of residence and business and jurisdiction in Turkey (July 24, 1923) to replace the capitulations.

5. Commercial convention (July 24, 1923).

6. Convention respecting the exchange of Greek and Turkish populations and protocol (Jan. 30, 1923).

7. Graeco-Turkish agreement on the restitution of interned civilians and the exchange of prisoners of war (Jan. 30, 1923).

8. Declaration relating to the administration of justice (July 24, 1923) to replace the capitulations (No. 11).

9. A protocol relating to the evacuation of the Turkish territory occupied by the British, French, and Italian forces, and declaration (July 24, 1923) (No. 14).

10. Protocol relating to the Karagach territory, and to the islands Imbros and Tenedos (July 24, 1923) (No. 15).

11. Protocol relating to treaties regarding the protection of minorities in Greece, and regarding Thrace, which had been concluded on Aug. 10, 1920, between Greece and the principal Allied Powers (July 24, 1923) (No. 16). (*See* STRAITS QUESTION, THE; DÉDÉAGATCH; MOSUL; TURKEY.)

Conditions Before the Conference.—At the conference of San Remo (*q.v.*) a peace treaty between the Allies and Turkey had been drawn up, and after the representatives of the Ottoman Government of Constantinople had submitted their observations, and these observations had been rejected, they were compelled, at Sèvres, on Aug. 10, 1920, to sign the terms presented to them. When the Lausanne Conference assembled power in Turkey had passed to the National Government at Angora, and this Government was carrying on a war against the Greeks (who had landed at Smyrna on May 16, 1919, at the invitation of Great Britain, France, and the United States).

The Angora Government repudiated the Treaty of Sèvres and continued to fight for the terms laid down in the Turkish National Pact of Jan. 28, 1920. In Sept. 1922 the Graeco-Turkish war in Anatolia ended in the complete victory of the Turkish Nationalist forces, who drove the Greeks into the sea and came into direct contact with the British forces in the zone of the Straits. On Sept. 23, 1922, the principal Allied Powers invited the Angora Government to a peace conference on two bases: (1) the restoration of Turkish sovereignty over Constantinople and Thrace up to the line of the river Maritsa; (2) the exclusion, pending the final settlement, of Turkish military forces from Thrace and respect by the Turks for certain zones adjoining the Straits which the Allied authorities had declared neutral during the Graeco-Turkish conflict. On Sept. 23 the Angora Government accepted this invitation and proposed a preliminary armistice conference, which met at Mudania on Oct. 3 and resulted in the signature of an armistice convention on the 11th.

Results of the Conference.—Thus the Turkish delegates arrived at Lausanne as victors in their recent local war with the Greeks and on an equal footing with the principal Allied Powers. Indeed, throughout the conference, the Turks were less unwilling to resume hostilities than were the principal Allied Powers, who had demobilised the greater part of their forces in the East.

The Turkish Gains.—In brief, the Turks secured at Lausanne practically everything which they had demanded in their national pact. The former Arab provinces of Asiatic Turkey, which had been mandated to France and Britain, were not restored, but otherwise Turkey recovered everything which she had possessed in 1914, particularly Smyrna, Constantinople, and Eastern Thrace; and the Treaty confirmed the rectification of the northern frontier of Syria in Turkey's favour, which had been made by the so-called "Franklin-Bouillon" Agreement of Oct. 20, 1921, while the destiny of Mosul was referred, by agreement between Turkey and Great Britain, to the League of Nations.

The settlement made at Lausanne about the Dardanelles and the Bosporus is described elsewhere (*see* STRAITS QUESTION, THE). The special spheres of influence in Anatolia, which had been assigned to France and Italy by a tripartite agreement of Aug. 10, 1920, between those two Powers and Great Britain, were tacitly dropped, and there was no further question of giving autonomy to Northern Kurdistan or of ceding Turkish territory to the Armenian Republic of Erivan, which had since been included in the dominions of Turkey's ally, the Union of Socialist Soviet Republics. No restrictions were imposed on the Turkish naval and military forces, and no control was asserted by the Allies over Turkish finance. Meanwhile, on Jan. 30, 1923, the Greek and Turkish delegations had signed a separate convention providing for the compulsory interchange of minorities left on the wrong side of the new frontier, with a special exemption in favour of Christians domiciled in the city of Constantinople and of Muslims domiciled in Western Thrace.

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LAUTREC, HENRI DE TOULOUSE (1864–1901), French lithographer, was born on Nov. 24, 1864, at Albi, the son of a nobleman. He was a delicate boy and during his childhood broke his legs and became a cripple. He studied art under Cormon in Paris. His style, formed by his admiration for the works of Princeteau and Degas, and for Japanese woodcuts, developed on decorative lines and was very effective in the design of posters, of which he executed a great number. His lithographs, which at the time found little favour, have now an extraordinary value. He took for his subjects almost exclusively the night life of Paris, the types of Montmartre and circus scenes. He spent the last years of his life in an asylum and died in Paris on Sept. 9, 1901.

Some of his work is in the Luxembourg museum; the Bibliothèque Nationale has 300 of the lithographs. Among the books illustrated by his lithographs we may mention Jules Renard, *Les Histoires Naturelles*.

LAUTREC, ODET DE FOIX, VICOMTE DE (1485–1528), French soldier. Odet de Foix and his two brothers, the seigneur de Lescun and the seigneur de l'Esparre or Asparros, served Francis I. as captains; and the influence of their sister, Françoise de Châteaubriant, who became the king's mistress, gained them high offices. In 1515 Lautrec took part in the campaign of Marignano. In 1516 he received the government of the Milanese, and by his severity made the French domination insupportable. In 1521 he defended the duchy against the Spanish army, but in 1522 he was defeated at the Bicocca, and was forced to evacuate the Milanese. Created marshal of France, he received again, in 1527, the command of the army of Italy, occupied the Milanese, and was then sent to undertake the conquest of the kingdom of Naples. The defection of Andrea Doria and the plague which broke out in the French camp brought on a fresh disaster. Lautrec caught the infection, and died on Aug. 15, 1528.

There is abundant ms. correspondence in the Bibliothèque Nationale, Paris. *See* the Works of Brantôme (Coll. Société d'Histoire de France, vol. iii., 1867); *Memoirs* of Martin du Bellay (Coll. Michaud and Poujoulat, vol. v., 1838).

LAUZUN, ANTONIN NOMPAR DE CAUMONT, MARQUIS DE PUYGUILHEM, DUC DE (1632–1723), French courtier and soldier, was the son of Gabriel, comte de Lauzun, and his wife Charlotte, daughter of the duc de La Force. He was brought up with the children of his kinsman, the maréchal de Gramont, of whom the comte de Guiche became the lover of Henrietta of England, duchess of Orleans, while Catherine Charlotte, afterwards princess of Monaco, was the object of the one passion of Lauzun's life. He served under Turenne, also his kinsman, and in 1655 succeeded his father as commander of the *cent gentilshommes de la maison du roi*. Puyguilhem (or Péguilin, as contemporaries simplified his name) rapidly rose in Louis XIV.'s

favour, became colonel of the royal regiment of dragoons and was gazetted *maréchal de camp*. He and Mme. de Monaco belonged to the coterie of the young duchess of Orleans. He prevented a meeting between Louis XIV. and Mme. de Monaco, and it was jealousy in this matter, rather than hostility to Louise de la Vallière, which led him to promote Mme. de Montespan's intrigues with the king. He was disgraced for a time, but, after a short sojourn in the Bastille, he returned to his functions of court buffoon. Meanwhile, the duchess of Montpensier (La Grande Mademoiselle) had fallen in love with the little man. The wedding was fixed for Dec. 20, 1670, when on the 18th Louis sent for his cousin and forbade the marriage. Lauzun was arrested, and was imprisoned at Pignerol, where excessive precautions were taken to ensure his safety. A fellow-prisoner, from communication with whom he was supposed to be rigorously excluded, was Eustache Dauger. (*See* IRON MASK.)

Mademoiselle agreed to the immediate settlement of the principality of Dombes, the county of Eu and the duchy of Aumale—three properties assigned by her to Lauzun—on the little duc de Maine, eldest son of Louis XIV. and Mme. de Montespan, in the hope of securing Lauzun's release. But Lauzun, even after ten years of imprisonment, refused to sign the documents, when he was brought to Bourbon for the purpose. A short term of imprisonment at Chalon-sur-Saône made him change his mind, but when he was set free Louis XIV. was still set against the marriage, which is supposed to have taken place secretly. In 1685 Lauzun went to the court of James II. In 1688 he was again in England, and arranged the flight of Mary of Modena and the infant prince, whom he accompanied to Calais. In 1689 he commanded the expedition fitted out at Brest for service in Ireland, and he sailed in 1690. Lauzun was honest, but inexperienced in war. After the battle of the Boyne he fled with Tyrconnel to Limerick, and thence to the west, leaving Patrick Sarsfield to show a brave front. Mademoiselle died in 1693, and two years later Lauzun married Geneviève de Durfort, a child of fourteen, daughter of the maréchal de Lorges. Lauzun died on Nov. 19, 1723.

See the letters of Mme. de Sévigné, the memoirs of Saint-Simon, who was Lauzun's wife's brother-in-law; also J. Lair, *Nicolas Fouquet*, vol. ii. (1890); Martin Hailes, *Mary of Modena* (1905), and M. F. Sandars, *Lauzun, Courtier and Adventurer* (1908).

LAVA, an Italian word applied to the liquid products of volcanic activity (from Lat. *lavare,* to wash). Streams of rainwater, formed by condensation of exhaled steam often mingled with volcanic ashes so as to produce mud, are known as *lava d'acqua,* whilst the streams of molten matter are called *lava di fuoco.* The term lava is applied by geologists to all matter of volcanic origin, which is, or has been, in a molten state. (*See* VOLCANO and PETROLOGY.)

LAVABO, a vase or fountain for ablutions; also applied to the hall or shelter in which such a basin is placed.

LAVAGNA, a seaport of Liguria, Italy, province of Genoa, 25½ mi. S.E. from it by rail. Pop. (1936) 5,422, town; 8,615, commune. It has a small shipbuilding trade, and exports great quantities of slate (*lavagna,* taking its name from the town). It also has a large cotton-mill. It was the seat of the Fieschi family, independent counts, obliged at the end of the 12th century to recognize the supremacy of Genoa. Sinibaldo Fieschi became Pope Innocent IV. (1243–1254), and Hadrian V. (1276) was also a Fieschi.

LAVAL, ANDRÉ DE, SEIGNEUR DE LOHÉAC (*c.* 1408–1485), French soldier. In 1423 he served in the French army against England, and in 1428 was taken prisoner by John Talbot, 1st earl of Shrewsbury, after the capitulation of Laval, which he was defending. After paying his ransom he was present with Joan of Arc at the siege of Orleans, at the battle of Patay, and at the coronation of Charles VII. He was made admiral of France in 1437 and marshal in 1439. He served Charles VII. faithfully in all his wars, even against the dauphin (1456), and when the latter became king as Louis XI., Laval was dismissed from the marshal's office. After the War of the Public Weal he was restored to favour, and recovered the marshal's bâton, the king also granting him the offices of lieutenant-general to the government of Paris and governor of Picardy, and conferring upon him the collar of the order of St. Michael. In 1472 he was successful in resisting the attacks of Charles the Bold, duke of Burgundy, on Beauvais.

LAVAL, PIERRE (1883–1945), French statesman, was born June 28 at Châteldon, Puy-de-Dôme. He was elected to the chamber of deputies in 1914, became a senator in 1926, and was premier and foreign minister, 1931–32. During his second term as premier, 1935–36, he was co-author of the Laval-Hoare agreement, 1935. After the defeat of France, June 1940, Laval enjoyed cordial relations with the Germans and was named vice-premier; in April 1942, he became chief of government. He kept alive the ebbing anti-bolshevik crusade and gave active support to deportation of French workers to Germany. After the liberation of France, Laval was tried and sentenced to death for treason, and was executed in Paris on Oct. 15, 1945.

LAVAL, a town of north-western France, capital of the department of Mayenne, on the Mayenne river, 188 mi. W.S.W. of Paris by rail. Pop. (1936) 26,863. The old feudal city, with its ancient castle, is situated on the right bank while the new town is on the opposite bank. There is communication by steamer as far as Angers. The old castle with a donjon of the 12th century is now transformed into a museum. The "new castle," dating partly from the Renaissance, serves as courthouse. The transept and nave of the Trinity church, which serves as a cathedral, are of the 12th century while the choir is of the 16th; St. Vénérand (15th century) has good stained glass; Notre-Dame des Cordeliers, which dates from the end of the 14th century or the beginning of the 15th, has some marble altars. Half-a-mile below the Point Vieux is the 12th century church of Avenières with an ornamental spire of 1534. The finest remaining relic of the ancient fortifications is the Beucheresse gate near the cathedral. The narrow streets around the castle are bordered by many houses of the 15th and 16th centuries, chief among which is that named the "Maison du Grand Veneur." There are an art museum, a museum of natural history and archaeology and a library.

Seigneurs and Counts of Laval.—The castle of Laval was founded at the beginning of the 11th century by a lord of the name of Guy and remained in the possession of his male descendants until the 13th century. In 1218 the lordship passed to the house of Montmorency by the marriage of Emma, daughter of Guy VI of Laval, to Mathieu de Montmorency, the hero of the battle of Bouvines. Of this union was born Guy VII, seigneur of Laval, the ancestor of the second house of Laval. Anne of Laval (d. 1466), the heiress of the second family, married John de Montfort, who took the name of Guy (XIII) of Laval. At Charles VII's coronation (1429) Guy XIV, who was afterwards son-in-law of John V, duke of Brittany, and father-in-law of King René of Anjou, was created count of Laval, and the countship remained in the possession of Guy's male descendants until 1547. After the Montforts, the countship of Laval passed by inheritance to the families of Rieux and Sainte Maure, to the Colignys and finally to the La Trémoilles, who held it until the Revolution.

LA VALLIÈRE, LOUISE FRANÇOISE DE (1644–1710), mistress of Louis XIV., born at Tours on Aug. 6, 1644, the daughter of an officer, was brought up at the court of Gaston d'Orléans at Blois, with the younger princesses, the step-sisters of La Grande Mademoiselle. After Gaston's death his widow moved with her daughters to the palace of the Luxembourg in Paris, and with them went Louise, who was now a girl of sixteen. She was named maid of honour to Henrietta of England, who was about her own age and had just married Philip of Orleans, the king's brother. Henrietta joined the court at Fontainebleau, and was soon on the friendliest terms with her brother-in-law; to avoid scandal it was determined that Louis should pay marked attentions elsewhere. The person selected was Madame's maid of honour, Louise, who became the king's mistress. The affair, begun on Louis's part as a blind, developed into real passion on both sides. It was Louis's first serious attachment, and Louise was an innocent, religious-minded girl, who brought neither coquetry nor self-interest to their relation, which was sedulously concealed. In February 1662 there was a storm when Louise refused to tell her

lover the relations between Madame (Henrietta) and the comte de Guiche. She fled to an obscure convent at Chaillot, where Louis followed her. Her enemies secured her removal from the service of Madame, and she was established in a small building in the Palais Royal, where in December 1663 she gave birth to a son, Charles, who was entrusted to two faithful servants of Colbert.

Within a week of Anne of Austria's death in January 1666, La Vallière appeared at mass side by side with Maria Theresa. She had given birth to a second child in January 1665, but both children were dead before the autumn of 1666. A daughter born at Vincennes in October 1666, who received the name of Marie Anne and was known as Mlle. de Blois, was recognized by Louis as his daughter in letters-patent making the mother a duchess in May 1667 and conferring on her the estate of Vaujours. In October of that year she bore a son, but by this time her place in Louis's affections was definitely usurped by Athénaïs de Montespan (*q.v.*). She was compelled to remain at court as the king's official mistress, and even to share Mme. de Montespan's apartments at the Tuileries. She made an attempt at escape in 1671, when she fled to the convent of Ste. Marie de Chaillot, only to be compelled to return. In 1674 she was finally permitted to enter the Carmelite convent in the Rue d'Enfer.

La Vallière's *Réflexions sur la miséricorde de Dieu,* written after her retreat, were printed by Lequeux in 1767, and in 1860 *Réflexions, lettres et sermons,* by M. P. Clement (2 vols.). Some apocryphal *Mémoires* appeared in 1829, and the *Lettres de Mme la duchesse de la Vallière* (1767) are a corrupt version of her correspondence with the maréchal de Bellefonds. Of modern works on the subject *see* Arsène Houssaye, *Mlle de la Vallière et Mme de Montespan* (1860); Jules Lair, *Louise de la Vallière* (3rd ed., 1902, Eng. trans. 1908); and C. Bonnet, *Documents inédits sur Mme de la Vallière* (1904).

LAVATER, JOHANN KASPAR (1741–1801), poet, theologian, mystic, physiognomist, was born at Zürich on Nov. 15, 1741, and died there on Jan. 2, 1801. He was educated at the Zürich Gymnasium; J. J. Bodmer and J. J. Breitinger were among his teachers. Lavater took orders in 1769 and for the rest of his life he was deacon or pastor in one or other of the Protestant churches of Zürich. In 1767 he aroused great patriotic enthusiasm by his ardent *Schweizerlieder,* which quickly became popular. His oratorical fervour and genuine depth of conviction gave him an extraordinary personal influence; and he was consulted as a spiritual adviser by many thousands of Swiss and Germans, either in person or by correspondence. His mystical writings were also widely popular. Lavater's name, however, is now chiefly remembered by a by-product of his genius—his work on physiognomy, *Physiognomische Fragmente zur Beförderung der Menschenkenntnis und Menschenliebe* (1775–78). This book found many enthusiastic admirers in France and England, as well as in Germany. Goethe, who was long a warm friend of Lavater, contributed a chapter to it. It left, however, the science of physiognomy as desultory and unscientific as it found it. More characteristic of Lavater's genius and religious temperament are his somewhat mystical *Aussichten in die Ewigkeit* (1768–78), which went through several editions; *Geheimes Tagebuch von einem Beobachter seiner selbst* (1772–73); and *Pontius Pilatus, oder der Mensch in allen Gestalten* (1782–85). On the capture of Zürich by Masséna in 1799, Lavater was shot by a French grenadier. He lingered for more than a year and died on Jan. 2, 1801.

More or less complete collections of his works were published both in his lifetime and after, the last in 1841–44. Lives of him have been written by G. Gessner (1802–03), F. W. Bodemann (2nd edt., 1877), F. Muncker (1883), P. I. Heisch (1842, in English), and A. Vömel (1923). *See* also the studies by V. Hegner (1836), F. D. Pestalozzi (1915), F. Behrend (1916), and C. Janentzsky (1916); also *Goethe und Lavater* (1901), published by the Goethegesellschaft. The *Physiognomie* and the *Geheimes Tagebuch* have been translated into English (the former by H. Hunter and Thos. Holcroft).

LAVAUR, a town of France, on the Agout in the department of Tarn, 37 mi. S.E. of Montauban by rail. Pop. (1936) 4,331. From 1317 till the Revolution it was the seat of a bishopric, and there is a cathedral dating from the 13th, 14th and 15th centuries. Lavaur was taken in 1211 by Simon de Montfort during the wars of the Albigenses, and several times during the religious wars of the 16th century.

LAVEDAN, HENRI LÉON ÉMILE (1859–1940), French dramatist and man of letters, was born at Orleans, the son of Hubert Léon Lavedan, a well-known Catholic and liberal journalist. He contributed to various Parisian papers a series of witty tales and dialogues of Parisian life, many of which were collected in volume form. In 1891 he produced at the Théâtre Français *Une Famille,* followed at the Vaudeville in 1894 by *Le Prince d'Aurec,* a satire on the nobility, afterwards re-named *Les Descendants.* Later brilliant and witty pieces were *Les Deux noblesses* (1897), *Catherine* (1897), *Le Nouveau jeu* (1898), *Le Vieux marcheur* (1899), *Le Marquis de Priola* (1902), and *Varennes* (1904), written in collaboration with G. Lenôtre. Lavedan was admitted to the French Academy in 1898.

LAVELEYE, EMILE LOUIS VICTOR DE (1822–1892), Belgian economist, was born at Bruges on April 5, 1822, and educated at the Collège Stanislas in Paris and the Catholic university of Louvain. In 1864 he was elected to the chair of political economy at the State university of Liége, where were written his most important works. He died at Doyon, near Liége, on Jan. 3, 1892. Although Laveleye's name is chiefly associated with bimetallism and primitive property, he took a special interest in the revival and preservation of small nationalities, and his activity included the whole realm of political science. In early life he was attached to Socialism, acknowledging himself a "Socialist of the chair," but he grew to view its later developments with distrust. His most important works are: *La Russie et l'Autriche depuis Sadowa* (1870); *Essai sur les formes de gouvernement dans les sociétés modernes* (1872); *Des Causes actuelles de guerre en Europe et de l'arbitrage* (1874); *De la propriété et de ses formes primitives* (1874); *Le Parti clerical en Belgique.*

See article on Laveleye by A. Courtois, *fils,* in Palgrave's *Dict. of Pol. Econ.* (1925).

LAVENDER, botanically *Lavandula,* a genus of the family Labiatae distinguished by an ovate tubular calyx, a two-lipped corolla, of which the upper lip has two and the lower three lobes, and four stamens bent downwards.

The plant to which the name of lavender is commonly applied, *Lavandula spica,* is a native of the mountainous districts of the countries bordering on the western half of the Mediterranean, extending from the eastern coast of Spain to Calabria and northern Africa, growing in some places at a height of 4,500 ft. above the sea-level, and preferring stony declivities in open sunny situations. It is cultivated in the open air as far north as Norway and Livonia. Lavender forms an evergreen under-shrub about 2 ft. high, with greyish-green hoary linear leaves, rolled under at the edges when young; the branches are erect and give a bushy appearance to the plant. The flowers are borne on a terminal spike at the summit of a long naked stalk, the spike being composed of 6–10 dense clusters in the axils of small, brownish, rhomboidal, tapering, opposite bracts, the clusters being more widely separated towards the base of the spike. The calyx is tubular, contracted towards the mouth, marked with 13 ribs and 5-toothed, the posterior tooth being the largest. The corolla is of a pale violet colour, but darker on its inner surface, tubular, two-lipped, the upper lip with two and the lower with three lobes. Both corolla and calyx are covered with stellate hairs, amongst which are imbedded shining oil glands to which the fragrance of the plant is due. The dried flowers have long been used in England, the United States and other countries for perfuming linen, and the characteristic cry of "Lavender! sweet lavender!" could still be heard in London streets in the 20th century. In England lavender is cultivated chiefly for the distillation of its essential oil, of which it yields on an average of 1½% when freed from the stalks, but in the south of Europe the flowers form an object of trade.

In England lavender is grown in the parishes of Mitcham, Carshalton and Beddington in Surrey, and in Hertfordshire in the parish of Hitchin, where lavender is said to have been grown in 1568, but as a commercial speculation its cultivation dates back only to 1823. The plants at present in cultivation do not produce seed, and the propagation is always made by slips or by dividing the roots.

The flowers are collected in the beginning of August, and taken

direct to the still. The yield of oil depends in great measure upon the weather. From 12 to 30 lb. of oil per acre is the average amount obtained. Oil of lavender is distilled from the wild plants in Piedmont and the south of France.

Oil of lavender is a mobile liquid having a specific gravity from 0.875 to 0.888 at 25° C. Its chief constituents are linalyl acetate and linalool, $C_{10}H_{17}OH$, an alcohol derived by oxidation from myrcene, $C_{10}H_{16}$, which is one of the terpenes.

Lavender water consists of a solution of the volatile oil in spirit of wine with the addition of the essences of musk, rose, bergamot and ambergris, but is very rarely prepared by distillation of the flowers with spirit.

In the climate of New York lavender is scarcely hardy, but in the vicinity of Philadelphia considerable quantities are grown for the market. In American gardens sweet basil (*Ocimum basilicum*) is frequently called lavender.

A form of lavender, long, but incorrectly, known as *L. spica,* is also used for the distillation of an essential oil, which is known in England as oil of spike and in France under the name of *essence d'aspic.*

It is used in painting on porcelain and in veterinary medicine. It is said not to extend so far north, nor ascend the mountains beyond 2,000 ft.

FROM KOEHLER, "MEDIZINAL PFLANZEN"
LAVENDER (LAVANDULA SPICA)

It cannot be cultivated in Britain except in sheltered situations. A nearly allied species, *L. lanata,* a native of Spain, with broader leaves, is also very fragrant.

Lavandula stoechas, a species extending from the Canaries to Asia Minor, is distinguished from the above plants by its blackish purple flowers, and shortly stalked spikes crowned by conspicuous purplish sterile bracts. The Stoechades (now called the isles of Hyères near Toulon) owed their name to the abundance of the plant growing there.

Other species of lavender are known, some of which extend as far east as to India. A few which differ from the above in having divided leaves, as *L. dentata, L. abrotanoides, L. multifida, L. pinnata* and *L. viridis,* have been cultivated in greenhouses.

Sea lavender is a name applied to several species of *Limonium,* a genus of littoral plants belonging to the family Plumbaginaceae.

Lavender cotton is a species of the genus *Santolina.*

LAVERAN, CHARLES LOUIS ALPHONSE (1845–1922), French physician, was born in Paris on June 18, 1845, and was educated at the Strasbourg faculty of medicine. In 1874 he joined the staff of the Val-de-Grâce military school of medicine, and four years later was sent to Algeria. He remained there until 1883, and in 1884 was appointed professor of military hygiene and clinical medicine at Val-de-Grâce. In 1894 he relinquished these posts and took up work at Lille and Nantes. He was, in 1895, elected a member of the French Academy of Science. His chief contribution to medical science was his discovery (1880), while serving in Algeria, of the *hématozoaire,* a parasite that causes malarial fever. He was the author of important studies on sleeping sickness and on the rôle played by mosquitoes in epidemics. Laveran, who retired from active practice in 1897, and received the Nobel prize for medicine in 1907, died in Paris May 18, 1922.

His works include *Traité des maladies et des épidémies des armées* (1875); *Du Paludisme et son hématozoaire* (1891); *La prophylaxie du Paludisme* (1903); with Félix Mesnil, *Trypanosomes et trypanosomiases* (1912).

LAVERNA, an old Italian divinity, perhaps one of the spirits of the nether world. A cup found in an Etruscan tomb bears the inscription "Lauernai pocolom," and in a fragment of Septimius Serenus Laverna is expressly mentioned in connection with the *di inferi.* By an easy transition, she came to be regarded as the protectress of thieves, whose operations were associated with darkness.

Laverna had an altar on the Aventine hill, near the gate called after her Lavernalis, and a grove on the Via Salaria.

See Wissowa, *Rel. u. Kultus der Römer* (2nd ed.), 236.

LAVERY, SIR JOHN (1856–1941), British painter, was born in Belfast, and received his art training in Glasgow, London and Paris. He was elected R.A. in 1921, having won a considerable reputation as a painter of portraits and interiors. In 1918 he was created a knight. He is represented in the National Galleries at Brussels, Berlin and Edinburgh, in the Luxembourg and the Tate gallery, in the New South Wales gallery, in the Carnegie Institute at Pittsburgh, and in many other public galleries in Europe and America. He was president (1932–41) of the Royal Society of Portrait Painters.

LAVIGERIE, CHARLES MARTIAL ALLEMAND (1823–1892), French divine, cardinal archbishop of Carthage and Algiers and primate of Africa, was born at Bayonne on Oct. 31, 1825, and was educated at St. Sulpice, Paris. He was ordained priest in 1849, and was professor of ecclesiastical history at the Sorbonne from 1854 to 1856. In 1856 he accepted the direction of the schools of the East, and was thus for the first time brought into contact with the Mohammedan world. Shortly after his return to Europe, was appointed French auditor at Rome. Two years later he was raised to the see of Nancy, where he remained for four years. While bishop of Nancy he met Marshal MacMahon, then governor-general of Algeria, who in 1866 offered him the see of Algiers, just raised to an archbishopric. Lavigerie landed in Africa on May 11, 1868, when the great famine was already making itself felt, and he began in November to collect the orphans into villages. MacMahon feared that the Arabs would resent this action as an infraction of the religious peace, and thought that the Mohammedan church, being a state institution in Algeria, ought to be protected from proselytism; it was intimated to the prelate that his sole duty was to minister to the colonists. Lavigerie, however, continued his self-imposed task, refused the archbishopric of Lyons, which was offered to him by the emperor, and won his point. Lavigerie now offered to resign his archbishopric in order to devote himself entirely to the missions. Pius IX. refused this, but granted him a coadjutor, and placed the whole of equatorial Africa under his charge. In 1874 Lavigerie founded the Sahara and Sudan mission, and sent missionaries to Tunis, Tripoli, East Africa and the Congo.

The order of African missionaries thus founded, for which Lavigerie himself drew up the rule, has since become famous as the *Pères Blancs.* From 1881 to 1884 his activity in Tunisia so raised the prestige of France that it drew from Gambetta the celebrated declaration, *L'Anticléricalisme n'est pas un article d'exportation,* and led to the exemption of Algeria from the application of the decrees concerning the religious orders. On March 27, 1882, the dignity of cardinal was conferred upon Lavigerie, but the great object of his ambition was to restore the see of St. Cyprian; by a bull of Nov. 10, 1884, the metropolitan see of Carthage was re-erected, and Lavigerie received the pallium on Jan. 25, 1885. The later years of his life were spent in ardent anti-slavery propaganda. Lavigerie died at Algiers on Nov. 26, 1892.

LAVINIUM, ancient town of Latium (*see* LAURENTINA, VIA), 19 m. S. of Rome, the modern Pratica, situated 300 ft. above sea-level and 2½ m. N.E. from the sea-coast. It was the city of King Latinus and Aeneas ritually refounded it, naming it after his wife Lavinia, Latinus' daughter. Consuls and praetors or dictators sacrificed on the Alban Mount and at Lavinium to the Penates and to Vesta, before they entered upon office or departed for their province, and the cults of Lavinium were kept up largely by the imperial appointment of honorary non-resident citizens to hold the priesthoods. The citizens of Lavinium were known as

Laurentes and under the empire as Laurentes Lavinates, and the place itself at a late period as Laurolavinium. It was deserted or forgotten not long after the time of Theodosius.

A separate city of Laurentum never existed, though it has often been sought at Tor Paterno, close to the sea coast, 5 miles north by west. Even in ancient times its territory was famous for salubrious groves of bay-trees (*laurus*) to which both Vitellius and Commodus resorted. Under the empire a portion must have been imperial domain and forest in which elephants were kept, and the imperial villa may be identified with the extensive ruins at Tor Paterno. Remains of other villas lie along the ancient coast-line (half a mile inland of the modern, now marked by a row of sand-hills, and followed by the Via Severiana), both northwest and southeast of it, and indeed from the mouth of the Tiber to Antium, and then again to Astura. In one of these villas, excavated by the king of Italy in 1906, was found a fine replica of the famous discobolus of Myron. Some way to the northwest was the village of Vicus Augustanus Laurentium, taking its name probably from Augustus himself, and probably identical with the village mentioned by Pliny the younger as separated by only one villa from his own. This village was brought to light by excavation in 1874, and its forum and curia are still visible. The remains of the villa of Pliny, too, were excavated in 1713 and in 1802–10. It is impossible without further excavation to reconcile the remains—mainly of substructions—with the elaborate description of his villa given by Pliny, *Ep.* ii, 1 (*cf.* H. Winnefeld in *Jahrbuch des Instituts,* 1891, 200 *seq.*).

The site of the ancient Lavinium, 300 ft. above sea level and 2½ mi. inland, is healthy. It possesses considerable natural strength, and consists of a small hill, the original acropolis, occupied by the modern castle and the village surrounding it, and a larger one, now given over to cultivation, where the city stood. On the former there are now no traces of antiquity, but on the latter are scanty remains of the city walls. The necropolis, too, has been discovered, but not systematically excavated; but objects of the first Iron age, including a sword of Aegean type have been found.

See R. Lanciani in *Monumenti dei Lincei,* xiii (1903), 133 *seq.;* xvi (1906), 241 *seq.;* J. Carcopino, *Virgile et les origines d'Ostie* (Paris, 1919), 171–387. (T. A.)

LAVISSE, ERNEST (1842–1922), French historian, was born at Nouvion-en-Thiérache, Aisne, on Dec. 17, 1842, and died in Paris on Aug. 18, 1922. He was educated at the École Normale Supérieure, and after working as private secretary to Victor Duruy for a time, he returned there in 1876 as *maître de conférence,* succeeding Fustel de Coulanges. In 1883 he was appointed assistant professor of modern history at the Sorbonne, and in 1888 full professor. In this post, and as director of the École Normale (1904–19), after its incorporation in the University of Paris, he played an important part in the revival of higher studies in France after 1871, and showed himself to be not only a brilliant historian but also an extraordinarily able organizer and teacher. On his retirement in 1919 he was made honorary director of the École Normale.

His thesis for his doctor's degree in 1875, a study on the origin of the Prussian monarchy, was crowned by the Academy in 1879, in which year he published his *Études sur l'histoire de la Prusse.* Other works on German history were *Trois empereurs d'Allemagne* (1888), *La Jeunesse du grand Frédéric* (1891, Eng. trans. 1891) and *Frédéric II avant son avènement* (1893); but Lavisse is best known for the *Histoire générale du IVe siècle jusqu' à nos jours* (1893–1901, 12 vols.), which he edited with his friend Alfred Rambaud, and for the *Histoire de France depuis les origines jusqu'à la Révolution* (1908–11, 9 vols.). His greatest work was completed in the *Histoire de France contemporaine depuis la Révolution jusqu' à la paix de 1919* (1920–22, 10 vols.), of which he was also the editor. Lavisse was admitted to the Académie Française in 1892, and after the death of James Darmesteter, became editor of the *Revue de Paris* (1894).

LAVOISIER, ANTOINE LAURENT (1743–1794), French chemist, was born in Paris on Aug. 26, 1743. His father, an *avocat au parlement,* gave him an excellent education at the collège Mazarin, and he studied mathematics and astronomy with Nicolas de Lacaille, chemistry with the elder Rouelle and botany with Bernard de Jussieu. In 1766 he received a gold medal from the Academy of Science for an essay on the best means of lighting a large town. Among his early work were papers on the analysis of gypsum, on thunder, on the aurora, and on congelation and a refutation of the prevalent belief that water by repeated distillation is converted into earth. He also accompanied J. E. Guettard (1715–1786) on a long geological trip and assisted him in preparing his mineralogical atlas of France. In 1768 he was nominated *adjoint chimiste* to the Academy. He passed through all the grades in the Academy, was director in 1785, and was made treasurer in 1791. His father bought him a title of nobility in 1772. In 1768 he became *adjoint* to Baudon, one of the farmers-general of the revenue, subsequently becoming a full titular member of the *ferme générale.* Appointed *régisseur des poudres* in 1775, he abolished the vexatious search for saltpetre in the cellars of private houses, increased the production of the salt and improved the manufacture of gunpowder.

In 1778 he started a model farm at Fréchines, where he demonstrated the advantages of scientific agriculture. In 1785 he was nominated to the committee on agriculture, and as its secretary drew up reports and instructions on the cultivation of crops, and promulgated various agricultural schemes. Chosen a member of the provincial assembly of Orleans in 1787, he planned the improvement of the social and economic conditions of the community by means of savings banks, insurance societies, canals, workhouses, etc. He advanced money without interest to the towns of Blois and Romorantin, for the purchase of barley during the famine of 1788. Attached in this same year to the *caisse d'escompte,* he presented the report of its operations to the national assembly in 1789, and as commissary of the treasury in 1791 he established a system of accounts of unexampled punctuality. He was also asked to draw up a new scheme of taxation in connection with which he produced a report *De la richesse territoriale de la France.* He was associated with committees on hygiene, coinage, the casting of cannon, public education, etc. Lavoisier was a member of the nobility of the Blois district. In 1789 he drew up the code of instructions (*cahier*) for the guidance of the deputies to the States General to which he was elected alternate deputy. He was secretary and treasurer of the commission appointed in 1790 to secure uniformity of weights and measures throughout France. This led to the establishment of the metric system.

Lavoisier's membership of the *ferme générale* was alone sufficient to make him an object of suspicion. His administration at the *régie des poudres* was also attacked. Marat accused him of putting Paris in prison and of stopping the circulation of air in the city by the *mur d'octroi* erected at his suggestion in 1787. In Aug. 1792 he had to leave his house and laboratory at the Arsenal. In November the convention ordered the arrest of the ex-farmers-general, and in May 1794 they were sent to be tried by the Revolutionary tribunal. The trial lasted only part of a day and Lavoisier and 27 others were condemned to death. That same afternoon, May 8, he and his companions, including his father-in-law, were guillotined at the Place de la Revolution (now Concorde). His body was thrown into a common grave. The following day, Joseph Lagrange said, "It required only a moment to sever that head, and perhaps a century will not be sufficient to produce another like it." Lavoisier's wealthy widow married Benjamin Thompson (Count Rumford) in 1805, but because of incompatability they separated after a few years.

Lavoisier's name is indissolubly associated with the overthrow of the phlogistic doctrine that dominated the development of chemistry for more than a century (*see* CHEMISTRY: *History of*), and with the establishment of the foundations upon which modern science reposes. Much of Lavoisier's apparatus is preserved in the Conservatoire des Arts et Metier in Paris and at the Chateau de la Champfortiere (Sarthe). The famous painting of Lavoisier and his wife by Jacques David is now in the Rockefeller institute in New York city. The statue behind the Madeleine in Paris, erected in 1900 by international subscription, was destroyed by the Germans during the occupation in World War II.

On Nov. 1, 1772, Lavoisier deposited with the Academy a note which stated that sulphur and phosphorus when burnt increased in weight because they absorbed "air," while the metallic lead formed from litharge by reduction with charcoal weighed less than the original litharge because it had lost "air." The exact nature of the airs concerned in the processes he did not explain until after the preparation of "dephlogisticated air" (oxygen, *q.v.*) by Joseph Priestley in 1774. Then, perceiving that in combustion and the calcination of metals only a portion of a given volume of common air was used up, he concluded that Priestley's new "air" was what was absorbed by burning phosphorus, etc., "nonvital air," azote, or nitrogen remaining behind.

In a memoir presented to the Academy in 1777, but not published until 1782, he assigned to dephlogisticated air the name oxygen, or "acid producer," on the erroneous supposition that all acids were formed by its union with a simple, usually nonmetallic, body. Combustion was explained by Lavoisier not as the result of the liberation of hypothetical "phlogiston," but as the result of the combination of the burning substance with oxygen. On June 25, 1783, in conjunction with Pierre Laplace, he announced to the Academy that water was the product formed by the combination of hydrogen and oxygen; by that time, however, he had been anticipated by Henry Cavendish (*q.v.*). From his knowledge of the composition of water Lavoisier was led to the beginnings of quantitative organic analysis. He burnt alcohol, and other combustible organic compounds, in oxygen and from the weight of water and carbon dioxide produced calculated their composition.

Up to about this time Lavoisier's work, mainly quantitative in character, had appealed most strongly to physicists, but it now began to win conviction from chemists also. Claude L. Berthollet (*q.v.*), Louis B. Guyton de Morveau and Antoine F. Fourcroy, his collaborators in the reformed system of chemical terminology set forth in 1787 in the *Méthode de nomenclature chimique,* were among the earliest French converts to the new theory of combustion; they were followed by Martin H. Klaproth and the German academy, and by most English chemists except Cavendish, who rather suspended his judgment, and Priestley, who clung to the old ideas. The spread of Lavoisier's doctrines was greatly facilitated by the defined and logical form in which he presented them in his *Traité élémentaire de chimie (présenté dans un ordre nouveau et d'après les découvertes modernes)* (1789), and eventually they were adopted universally. The list of simple substances (elements), which could not be further decomposed by any known process of analysis, contained in the first volume of this work, includes "light" and "caloric" with oxygen, azote and hydrogen. Under the head of "oxidable or acidifiable" substances, the combination of which with oxygen yielded acids, were placed sulphur, phosphorus, carbon, and the muriatic, fluoric and boracic radicles. The metals, which by combination with oxygen became oxides, were antimony, silver, arsenic, bismuth, cobalt, copper, tin, iron manganese, mercury, molybdenum, nickel, gold, platinum, lead, tungsten and zinc; and the "simple earthy salifiable substances" were lime, baryta, magnesia, alumina and silica. The simple nature of the alkalies he considered so doubtful that he did not class them as elements. It is to Lavoisier that we owe to a great extent the modern concept of an element as against the old Greek idea.

In addition to his purely chemical work, Lavoisier, mostly in conjunction with Laplace, devoted considerable attention to physical problems, especially those connected with heat. The two carried out some of the earliest thermochemical investigations, devised apparatus for measuring linear and cubical expansions, and employed a modification of Joseph Black's ice-calorimeter in a series of determinations of specific heats (*see* CALORIMETRY). Regarding heat as a peculiar kind of imponderable matter, Lavoisier held that the three states of aggregation—solid, liquid and gas—were modes of matter, each depending on the amount of *matière de feu* with which the substances concerned were associated. He also worked at fermentation, respiration and animal heat, looking upon the processes concerned as essentially chemical in nature. A paper discovered many years after his death showed that he had anticipated later thinkers in explaining the cyclical process of animal and vegetable life.

A complete edition of the writings of Lavoisier, *Oeuvres de Lavoisier, publiées par les soins du ministre de l'instruction publique,* was issued at Paris (6 vols. 1864–93), comprising his *Opuscules physiques et chimiques* (1774), many memoirs from the Academy volumes, and numerous letters, notes and reports. At the time of his death he was preparing an edition of his collected works, and the portions ready for the press were published in two volumes as *Mémoires de chimie* in 1805. *See* also E. Grimaux, *Lavoisier 1743–1794, d'après sa correspondance, ses manuscripts,* etc. (1888), which gives a list of his works; M. Berthelot, *La Révolution chimique: Lavoisier* (1890), which contains an analysis of and extracts from his laboratory notebooks; Tilden's *Famous Chemists* (1921); T. E. Thorpe, *Essays in Historical Chemistry* (1902); J. A. Cochrane, *Lavoisier* (1931); D. McKie, *Antoine Lavoisier* (1935); S. French, *Torch and Crucibles* (1941); A. N. Meldrum, *The 18th Century Revolution in Science* (1930); and M. Speter, *Lavoisier und seine Vorläufer* (1910).

LA VOISIN. CATHERINE MONVOISIN, known as "La Voisin" (d. 1680), French sorceress, whose maiden name was Catherine Deshayes, was one of the chief personages in the famous *affaire des poisons,* which disgraced the reign of Louis XIV. Her husband, Monvoisin was a jeweller, and she practised chiromancy and face-reading. She gradually added the practice of witchcraft, in which she had the help of a renegade priest, Étienne Guibourg, whose part was the celebration of the "black mass." She practised medicine, especially midwifery, procured abortions, and provided love powders and poisons. Her chief accomplice was one of her lovers, the magician Lesage, whose real name was Adam Coeuret. The great ladies of Paris flocked to La Voisin, who accumulated enormous wealth. Among her clients were Olympe Mancini, comtesse de Soissons, who sought the death of the king's mistress, Louise de la Vallière; Mme. de Montespan, Mme. de Gramont (*la belle* Hamilton) and others.

In April 1679 a commission appointed to inquire into the subject and to prosecute the offenders met for the first time. Its proceedings, including some suppressed in the official records, are preserved in the notes of one of the official *rapporteurs,* Gabriel Nicolas de la Reynie. The revelation of the treacherous intention of Mme. de Montespan to poison Louis XIV and of other crimes, planned by personages who could not be attacked without scandal which touched the throne, caused Louis XIV to close the *chambre ardente,* as the court was called, on Oct. 1, 1680. It was reopened on May 19, 1681 and sat until July 21, 1682. Many of the culprits, Marie Anne Mancini, duchess of Bourbon, and Madame de Montespan among others, escaped through private influence. Some hundred prisoners, among them the infamous Guibourg and Lesage, escaped the scaffold through the suppression of evidence insisted on by Louis XIV and Louvois. Some innocent persons were imprisoned for life because they had knowledge of the facts. La Voisin herself was executed at an early stage of the proceedings, on Feb. 20, 1680.

See F. Ravaisson, *Archives de la Bastille,* vols. iv.–vii. (1870–74); the notes of La Reynie, preserved in the Bibliothèque Nationale; F. Funck-Brentano, *Le Drame des poisons* (1899); A. Masson, *La Sorcellerie et la science des poisons au XVIIe siècle* (1904). Sardou made the affair a background for his *Affaire des poisons* (1907). There is a portrait of La Voisin by Antoine Coypel, which has been often reproduced.

LAW, ANDREW BONAR (1858–1923), British statesman, was born in New Brunswick, Canada, on Sept. 16, 1858. He came to Scotland when still a boy and finished his education at Glasgow High school. After acquiring a sufficient competence in business, he went into parliament in 1900 as Conservative member for the Blackfriars division of Glasgow.

His commercial experience had led him to the conclusion that free trade, in the Cobdenite sense, was no longer beneficial for Great Britain. A speech made on April 22, 1902, in favour of Hicks-Beach's corn duty, led to his appointment as parliamentary secretary to the board of trade in the Conservative government. When Chamberlain started his tariff reform movement in 1903, he found a supporter in Bonar Law.

Bonar Law shared in the general conservative rout in Jan. 1906, and had another electoral mishap in Dec. 1910; but in each case came back to the house shortly at a by-election, and took his full share in the opposition attack on Lloyd George's 1909 budget and on the Parliament bill. He kept aloof from the "Die-hard" movement, and warmly defended his leader, Balfour, from the re-

proaches cast upon him. This loyal attitude, no doubt, was one of the reasons, and his strong tariff reform programme was another, which recommended him to his party as Balfour's successor in the leadership when the claims of Austen Chamberlain and Walter Long appeared to divide the Conservatives pretty evenly. Both the rivals stood aside, and on Nov. 13, 1911, Bonar Law was unanimously elected leader in the commons, Lord Lansdowne continuing to lead the party in the lords.

As opposition leader, Bonar Law was very trenchant in his criticism of the government, and put up a strong fight against the Home Rule bill on Ulster's behalf, when civil war was ahead or threatened. Meanwhile, he had to deal with differences inside his own party as to the extent to which the tariff reform policy should be carried. A considerable section, especially strong in Lancashire, was definitely against any duties on food; and the assurances which Bonar Law gave in a speech at Ashton-under-Lyne on Dec. 16, 1912, did not convince them that there was no possibility of food taxes being imposed without reference to the people. As the party dreaded a split, Bonar Law and Lord Lansdowne, in response to a general appeal, gave on Jan. 14, 1913, a formal promise that food duties should not be imposed without the approval of the electors at a subsequent general election. The imminent danger of the Ulster problem, on which Bonar Law had insisted for two years, brought ministers in 1914 to express a readiness for compromise; but no settlement, satisfactory to the opposition, had been formed when World War I supervened.

Directly the crisis became acute Bonar Law wrote, on Aug. 2, on behalf of Lord Lansdowne and their colleagues, tendering to Asquith the unhesitating support of the opposition in any measures necessary to support France and Russia. Even when criticism of the management of the war began legitimately to spring up in the early months of 1915 he used his influence to repress or moderate its expression in parliament. He promptly accepted Asquith's proposal in 1915 to assist in forming a Coalition government and brought seven of his colleagues into the cabinet, himself accepting the colonial secretaryship. He took charge in the house of commons of the first military service bill in Jan. 1916 and got it through all its stages with little difficulty. He promoted the economic conference in Paris in June 1916 and, as principal representative of his country, was largely influential in carrying through the co-operative and protective resolutions then adopted. He was a member of the war committee of the cabinet, but, like Lloyd George, he was far from satisfied with its organization and powers. It was natural therefore that he should be one of the four persons, besides Lloyd George, to whom that statesman, forcing the issue on Dec. 1, 1916, asked Asquith to confide the absolute conduct of the war. In the confused crisis which followed, the premiership was offered to Bonar Law; but he recognized that Lloyd George was the prime minister whom the nation demanded, and to a ministry formed under him, the Conservative leader brought the full co-operation of his party.

In this second coalition, Bonar Law, whose followers supplied the main body of the ministerial supporters, was partner rather than second-in-command of his chief. He was chancellor of the exchequer and member of the war cabinet, and also undertook the leadership of the house of commons, so as to enable the prime minister to devote the whole of his energies to the prosecution of the war. It was his duty, as chancellor of the exchequer, to find the money to meet the gigantic cost of the war, and this was done principally by means of two great loans and by numerous increases of taxation. Consequently, it must have been with peculiar gratification that Bonar Law announced in April 1917 that the imperial war cabinet had accepted the principle of imperial preference. Throughout the war he opposed a firm front both to pacifists and to pessimists, and never doubted that there could be no peace "until the Germans are beaten and know that they are beaten."

As the general election of 1918 approached he responded heartily to Lloyd George's proposal that the Coalition should be continued to forward postwar reconstruction. The Coalition obtained an immense majority, and among the Coalitionists Bonar Law's special followers, the Unionists, predominated. When the ministry was reconstituted in Jan. 1919 the arrangement by which Bonar Law led the house was continued, as the prime minister would be much away at the Peace conference; but he was relieved of the exchequer, and took the sinecure office of privy seal. He was one of the British peace plenipotentiaries, though his duties at Westminster seldom permitted him to go to Paris; and he appended his signature to the Treaty of Versailles. During 1919 and 1920 he handled postwar disorders and projects, and the passing of the Home Rule act of 1920, constituting two subordinate governments and parliaments in Ireland.

Bonar Law's incessant labours during and after the war undermined his health, which suddenly broke down in March 1921; on the advice of his medical advisers, he resigned office at once, and went away to rest in the south of France. He returned in the autumn greatly restored, and took part in recommending the Irish treaty to the house of commons. During the first half, and more, of 1922 he only spoke occasionally, but he watched carefully the increasing reluctance of the Conservative party to support Lloyd George and the Coalition; a reluctance which had indeed resulted in the formation of a large group of independent "Die-hards" under Lord Salisbury's leadership. When the question was brought to an issue at the Carlton club meeting on Oct. 19, the decisive factor was Bonar Law's declaration that the only method of preserving the unity of the party was to come out of the Coalition and to appeal to the country as an independent body. Lloyd George at once resigned, and Bonar Law, after being unanimously elected to his old post of party leader, formed a purely Conservative government, which did not include the most prominent Conservative Coalitionists. His action was endorsed by the country at the general election in November, when the Conservatives returned 344 strong, a majority of 74 over all other parties put together. He at once reduced the cabinet secretariat, and restored the foreign office to its former position in the official hierarchy; and he carried through parliament the bill to establish the Irish Free State constitution.

Though he proclaimed the policy of his government to be one of tranquillity and stability, he found himself, in the winter, deeply involved in political troubles. Unemployment was rampant, with labour unrest and housing problems threatening; a European conference at Lausanne proved impotent in face of the obstinacy of nationalist Turkey; and M. Poincaré, the French premier, insisted, in spite of Bonar Law's personal intervention at Paris, on despatching a French military expedition to the Ruhr to exact reparations from Germany. Baldwin, his chancellor of the Exchequer, did indeed succeed in concluding in Jan. 1923 at Washington an arrangement to fund the British war debt to the United States; but the terms were so severe that the prime minister was at first reluctant to accept them. After such an anxious winter it is not surprising that in the spring of 1923 his health once more gave way, and he resigned office on Whitsunday, May 20, after a ministry which only lasted 209 days. He died five months later, on Oct. 30, 1923, and was buried in Westminster Abbey. He married in 1891 Annie Pitcairn, daughter of Harrington Robley, of Glasgow, by whom he had a family; but he was left a widower in 1909. Two sons perished in World War I. (G. E. B.)

LAW, JOHN (1671–1729), Scottish economist, the originator of the "Mississippi scheme," was born at Edinburgh in April 1671. He studied mathematics, commerce and political economy in London, and banking operations at Amsterdam, whither he fled (1694) after killing Edward Wilson in a duel. On his return to Scotland in 1705, he submitted a scheme for a national bank to the Scottish parliament, but owing to Paterson's influence it was rejected, and similar proposals made to other European governments met with a like fate. On May 20, 1716, however, Law obtained letters patent to establish a *Banque générale* in France. The capital of six million livres was divided into 1,200 shares of 5,000 livres each, payable in four instalments, one-fourth in cash, three-fourths in *billets d'état*. The bank was empowered to issue notes payable at sight in the weight and value of the money mentioned at the day of issue, and on April 10, 1717, it was decreed that Law's notes should be received in payment of taxes. So successful was the undertaking that not only did the rate of interest fall to

4½%, but the note issue rose to 60 million livres. Law, having gained the full confidence of the Regent, now proceeded with his Mississippi scheme.

In Aug. 1717, he founded the *Compagnie de la Louisiane ou d'Occident*, which absorbed both the company founded by Antoine Crozat in 1712, and the *Compagnie du Canada*. Extensive powers over the area drained by the Mississippi, the Ohio and the Missouri were granted, and in 1718 they were extended by the company's purchase of the tobacco monopoly. The success of this scheme was sufficient to arouse hostility in Paris, resulting in the formation of a rival company, and a consequent drop in the shares of Law's undertaking. He proceeded with his plans, however, and in Dec. 1718, when the *Banque générale* was converted into the *Banque royale*, whose notes were guaranteed by the king, he became director of the new institution. A further step was made towards consolidation in the following year, when the *Compagnie d'Occident* absorbed the *Compagnies des Indes Orientales et de la Chine*, taking the name of the *Compagnie des Indes*. Shortly after, the company was granted the management of the mint and the coin issue for nine years, and the farming of the national revenues, on undertaking the payment of the national debt. Speculation reached an unparalleled height, and when the climax came in 1720, with the amalgamation of the *Compagnie des Indes* and the *Banque royale*, reaction had already set in. The public becoming alarmed, drastic measures were taken to check the drain of coin, but the decree of May 21, 1720, by which the value of the bank notes was to be gradually reduced to one half, precipitated the panic, and a week later the bank suspended payment. Law was removed from his office, and the whole system was demolished by his enemies. In Dec. 1720 Law left France secretly, resumed his wandering life, and died at Venice on March 21, 1729.

Of Law's writings the most important is *Money and Trade Considered* (1720). Though subject to the errors of his time, he was undoubtedly a financial genius.

The fullest account of the Mississippi scheme is that of Thiers, *Law et son système des finances* (1826, American trans. 1859). *See* also Heymann, *Law und sein System* (1853); Pierre Bonnassieux, *Les Grandes Compagnies de commerce* (1892); S. Alexi, *John Law und sein System* (1885); E. Levasseur, *Recherches historiques sur le système de Law* (1854); and Jobez, *Une Préface au socialisme, ou le système de Law et la chasse aux capitalistes* (1848). Full biographical details are given in Wood's *Life of Law* (1824). All Law's later writings are to be found in Daire, *Collection des principaux économistes*, vol. i. (1843). Other works on Law are: A. W. Wiston-Glynn, *John Law of Lauriston* (1908); P. A. Cachut, *The Financier Law, his Scheme and Times* (1856); A. Macf. Davis, *An Historical Study of Law's System* (Boston, 1887); A. Beljame, *La Prononciation du nom de Jean Law le financier* (1891); A. Martineau, *Mém. sur quelques affaires de L'Empire mogol, 1756–61* (1913); G. Oudard, *La très curieuse Vie de Law* (1927). *See* also article on Law by W. A. S. Hewins in Palgrave's *Dictionary of Political Economy* (1925).

LAW, WILLIAM (1686–1761), English divine, was born at King's Cliffe, Northamptonshire. In 1705 he entered as a sizar at Emmanuel college, Cambridge; in 1711 he was elected fellow of his college and was ordained. He resided at Cambridge, teaching and taking occasional duty until the accession of George I., when his conscience forbade him to take the oaths of allegiance to the new government and of abjuration of the Stuarts. His Jacobitism had already been betrayed in a tripos speech (1713) which led to his being suspended from his degrees; and he was now deprived of his fellowship and became a non-juror. For the next few years he is said to have been a curate in London. By 1727 he was domiciled with Edward Gibbon (1666–1736) at Putney as tutor to his son Edward, father of the historian, who says that Law became "the much honoured friend and spiritual director of the whole family." In the same year he accompanied his pupil to Cambridge, and resided with him for the next four years. His pupil then went abroad, but Law was left at Putney, where he remained in Gibbon's house for more than ten years, acting as a religious guide not only to the family but to a number of earnest-minded folk. The most eminent of these were the two brothers John and Charles Wesley, John Byrom the poet, George Cheyne the physician and Archibald Hutcheson, M.P. for Hastings. The household was dispersed in 1737. Law was parted from his friends, and in 1740 retired to King's Cliffe, where he had inherited from his father a small property.

Law's writings fall under three heads:—1. *Controversy.*—In this field he had no contemporary peer save perhaps Richard Bentley. The first of his controversial works was *Three Letters to the Bishop of Bangor* (1717), a most powerful contribution to the Bangorian controversy (*see* HOADLY, BENJAMIN) on the high church side. In his *Remarks on Mandeville's Fable of the Bees* (1723), Law vindicates morality on the highest grounds; for pure style, caustic wit and lucid argument this work is remarkable; it was enthusiastically praised by John Sterling, and republished by F. D. Maurice. Law's *Case of Reason* (1732), in answer to Tindal's *Christianity as old as the Creation* is to a great extent an anticipation of Bishop Butler's famous argument in the *Analogy*. In this work Law shows himself at least the equal of the ablest champion of Deism.

2. *Practical Divinity.*—The *Serious Call to a Devout and Holy Life* (1728), together with its predecessor, *A Treatise of Christian Perfection* (1726), deeply influenced the chief actors in the great Evangelical revival. The Wesleys, George Whitefield, Henry Venn, Thomas Scott and Thomas Adam all express their obligation to the author. Samuel Johnson, Gibbon, Lord Lyttelton and Bishop Horne all spoke enthusiastically of its merits; and it is still the only work by which its author is popularly known. It has high merits of style, being lucid and pointed to a degree. His tract *The Absolute Unlawfulness of Stage Entertainments* (1726) provoked some effective criticism from John Dennis in *The Stage Defended.*

3. *Mysticism.*—Though the least popular, by far the most interesting and original of Law's works are those which he wrote in his later years, after he had become an enthusiastic admirer (not a disciple) of Jakob Boehme (*q.v.*). These mystical works include *A Demonstration of the Gross and Fundamental Errors of a late Book called a "Plain Account, Etc., of the Lord's Supper"* (1737); *The Spirit of Prayer* (1749, 1752); *The Way to Divine Knowledge* (1752); *The Spirit of Love* (1752,1754); a *Dialogue between a Methodist and a Churchman* (1760); and *An Humble, Earnest and Affectionate Address to the Clergy* (1761).

See the edition of his *Works* by G. H. Morgan (1892–93). *See* C. Walton, *Notes and Materials for a Complete Biography of W. Law* (1848); Sir Leslie Stephen, *English Thought in the 18th century* (1876); W. H. Lecky, *History of England in the 18th Century* (1878 foll.); C. J. Abbey, *The English Church in the 18th Century*; J. H. Overton, *William Law, Nonjuror and Mystic* (1881); A. Whyte, *Character and Characteristics of William Law, Nonjuror and Mystic* (1893; a selection with introd. by Whyte).

LAW, a word used in English in two main senses—(1) as a rule prescribed by authority for human action, and (2) in scientific and philosophic phraseology, as a uniform order of sequence (*e.g.*, "laws" of motion). In this work the laws of uniformities of the physical universe are dealt with in the articles on the various sciences. The general principles of law in the legal sense are discussed under JURISPRUDENCE. What may be described as "national systems" of law are dealt with historically and generally under ENGLISH LAW; AMERICAN LAW; ROMAN LAW; GREEK LAW; ISLAMIC LAW; INDIAN LAW; etc. Certain broad divisions of law are treated under CONSTITUTION AND CONSTITUTIONAL LAW; CANON LAW; CIVIL LAW; COMMON LAW; CRIMINAL LAW; ECCLESIASTICAL LAW; EQUITY; INTERNATIONAL LAW, PRIVATE; INTERNATIONAL LAW, PUBLIC; MILITARY LAW; MARTIAL LAW; etc. And the particular laws of different countries on special subjects are stated under the headings for those subjects (BANKRUPTCY, etc.). For courts of law and procedure, *see* JURISPRUDENCE, KING'S BENCH, COURT OF, PRACTICE AND PROCEDURE, etc.

In science and philosophy, law has several meanings, all of which are different from the sense it has when used with reference to legislation. (1) In most sciences a law is simply the formulation of some uniform character, mode of behaviour, or uniform correlation of certain natural phenomena or events. The uniformity is in the nature of things themselves, and there is no law outside them to obey or disobey. If there is no such objective uniformity, then the law is a blunder on the part of those men of science who have formulated or accepted it. In science, then, the term law has nothing whatever to do with an imperative or a command, backed by sanctions or not. To speak of natural

phenomena as "obeying" certain laws is just loose thought or loose language influenced by legal analogy. (2) In the more complex biological and human sciences (including psychology, sociology and economics) the term law must be understood to denote the formulation of a certain general tendency rather than a rigid uniformity, in the sense of (1) above. It may be that such uniformities are actually operative under certain conditions, but the conditions may be partly variable, and in any case, owing to the extreme complexity of the phenomena and the impossibility of studying them under sufficiently controlled and varied conditions, the laws actually formulated cannot be regarded as expressing uniformities, less still as expressing ideals or norms, in sense (3) below, but just certain general tendencies which are subject to modification with changing conditions. When people speak of "iron laws of economics" they confound economic laws with the laws of mechanics; and when they exploit them with a good conscience, they confound economic with moral laws. (3) In the so-called philosophical sciences, or normative sciences, logic, ethics and aesthetics, the term law is used rather in the sense of a regulative ideal or norm.

See J. S. MacKenzie, *Manual of Ethics* (1924). (A. Wo.)

LAW (PRIMITIVE). For the purposes of comparative jurisprudence, law may be defined as the authoritative regulation of social relations. Thus, in any account of its development, three main points have to be considered: the nature of the authority or "sanction" involved; the mode of regulation or "procedure"; and the social function or "scope."

The Legal Sanction.—Whereas analytic jurists dispute whether constraint or consent is in the last resort the principle from which law derives its validity, the student of history inclines rather to regard the spirit of legality as the joint outcome of both these influences acting simultaneously. Walter Bagehot has in mind this correspondence between an outer and an inner necessity when, in *Physics and Politics,* he recognizes a "persecuting tendency" and an "imitative tendency" as together constituting the legal fibre of a primitive society. The sanction, in a word, is custom; and custom is social habit, resting partly on a general inclination to conform, and partly on a no less general disinclination to suffer as a nonconformist. Now a certain amount of customary law survives in the modern State by the side of the positive enactments of the legislature, and in such a case the maxim "what the sovereign permits, he commands" may be justifiably held to cover the anomaly. But in a savage community it is often hard to distinguish any sovereign, any determinate person or body of persons vested with the power either of making or of maintaining the laws. Nevertheless, the result is not anarchy. On the contrary, such a society is normally so law-abiding, in the sense of responsive to the social routine, that it might seem almost superfluous to provide a legal machinery that must actually but rust in disuse. A closer scrutiny, however, would disclose a considerable degree of coercive power, diffused through the body politic if not yet centralized in official hands, such as reinforces the strong natural propensity of the unreflective to keep in the fashion. Any youth, for instance, who has gone through the rites of initiation has acquired the sense of discipline at the price of no little pain; the tribal elders being quite ready to mete out death to the hopelessly recalcitrant. Again, all custom is more or less sacred; and, since the violation of a taboo is held to pollute not only the sinner but all who come into contact with him, the threat of excommunication is ever present to curb unruliness. Finally, every crowd has its leader, so that even the least coherent of human societies looks for guidance to certain headmen. These, so to speak, control the collective luck, having in virtue of their age, outstanding courage or skill, impressiveness, personality, prestige—in a word, their *mana*—the gift of making the rest come to heel. Such a government may hardly be aware of its own directive functions, since its conscious efforts are mostly concerned with the consecration of custom. Reform, however, creeps in under the guise of re-interpretation. For the rest, there are very various degrees of consolidation under a clan-system, as that type of organization may be termed in which co-ordinate groups severally retain a more or less considerable measure of autonomy. As compared, for instance, with the Arunta of central Australia, the Iroquois of North America, with their elaborate scheme of graded councils, family, gentile, tribal and even federal, were far more closely knit together; yet never so completely that the separatist tendencies arising from the co-existence of so many semi-independent jurisdictions were altogether overcome. On the other hand, as soon as a class-system has come into being, as usually happens through the imposition of a higher culture on another through immigration or conquest, a governing aristocracy with a monarch at its head is on the way to be formed. Thereupon, however much he continues to defer to custom, the sovereign's will becomes in theory absolute.

Legal Procedure. (a) Public Versus Private Justice.—From the standpoint of the modern lawyer, the strangest feature of the social conventions of the primitive world is their habit of allowing private parties to fight out their quarrels according to certain set rules, which to a corresponding extent control what would otherwise amount to downright war. Such private justice, as it is termed, has a validity somewhat analogous to that of international law in Europe, seeing that no machinery exists for its enforcement, though even the strongest cannot afford in the long run to disregard the accepted decencies of the common life. For private justice is justice of a kind, seeing that social expediency and moral reason alike must approve the substitution of retaliation for unlimited self-redress. "Tit for tat" at least implies that it is unfair to exact more than the equivalent of the wrong done—a principle roughly construed by primitive society to mean that the vendetta should end when, a life having been taken for a life, equilibrium as regards numbers and consequent strength is restored between the groups at variance.

Such a view, however, deals with responsibility as wholly collective, and, even at the primitive level of thought, this is apt to seem hardly fair. Hence some attempt is made to bring home his culpability to the actual offender, as typically in the regulated combat. Yet the duel can hardly be regarded as a satisfactory method of justice, offering, as it does, to the stalwart villain, the opportunity of adding a second crime to the first; were it not that the issue of the fight, as in the mediaeval "judgment of God," might be taken as the verdict of a higher court, a mystic pronouncement in favour of the innocent. Even so, in Australia it was deemed more seemly that the defendant should play a passive part and merely ward off the blows directed against him by his victim's kinsmen. Should he escape, as he often managed to do, the self-exposure was accounted as expiation; no doubt in large part because a symbolic amounts to a real retribution at the mental stage at which purposive energy is chiefly occupied with the discharge of repressed emotion. It remains to add that as soon as property has sufficiently developed, to suffer in one's goods instead of in one's person becomes a recognized means of compensating for injury inflicted; and, though an aggressor caught red-handed is ever likely to have short shrift, it becomes the normal procedure under a clan-system of the more advanced type to admit the principle of composition. Even if negotiations about blood-fines lead to endless wrangling, this is at least more conducive to public order than mutual waylaying. That settlement is rendered easier by the aid of some impartial arbitrator comes to be apparent even at this stage, just as turbulent Corsica had recourse to *paci* or pacifiers. A class-system, however, greatly assists the substitution of public for private justice, since the lower orders at least, and gradually the members of the aristocracy, are obliged to observe "the king's peace," and to submit all causes of dispute to the decision of him and his representatives, with the burden of providing court fees as a salutary check to litigiousness. In proportion as the supreme ruler is powerful he will not merely arbitrate, that is, deliver a sentence which may or may not be carried out, but will see that his judgment is duly executed by the agency of those accustomed to obey him.

(b) Law of Evidence.—Little of course can be found in primitive jurisprudence that corresponds at all to the modern insistence on relevancy, on the competence of witnesses, on the disregard of hearsay statement, and so forth. Indeed, at the level of rudimentary law the distinction between trial and punishment is imperfectly drawn. A judicial process is normally conceived as a mode of bringing a conditional curse into operation, so that a man

is automatically declared guilty by the very fact that he suffers. As was already noted in the case of the duel, to win is to be innocent, to lose is to be convicted of wrong-doing on a supernatural showing. So too, then, the ordeal involves the principle that contact with something spiritually potent, such as fire, water, or a brew of magic herbs, will reveal alike the pure nature that is akin to it and the impure nature that it rejects. The sinner, in other words, is held to lack the *mana*, the strong heart, whereby he could stand up to the test; and, if for *mana* the word "confidence" be substituted, it will be seen that there is some psychological justification for such a method of criminal investigation. Sometimes both plaintiff and defendant are subjected to the ordeal, but more commonly the latter only. In the second case, primitive justice, acting on a presumption of guilt, is apt to make the chances of escape nearly impossible; a European parallel is the notorious ducking of the witch. It is only fair to add that the tortures which likewise disgraced these witch-trials, and indeed were a usual feature of mediaeval procedure, are almost unknown among so-called savages. As for the oath, which to-day retains its use as a legal precaution against false witness, the principle involved is similar; the only difference being that an oral replaces a material symbol as the vehicle of the conditional curse. When the Chinese in a London court is made to blow out a candle, or break a plate, he is supposed to be calling down upon himself a like fate such as must inevitably overtake him if he is lying. Given sufficient faith in the mystic power of the act, or at any rate in the power of agencies set in motion by the act, it is psychologically possible that a guilty conscience will have the result contemplated. Many instances of what Dr. Roth has termed *thanatomania* may be cited from the primitive world, a conviction of being doomed whether by an enemy or by one's own fault being enough to depress the will to live to the point of actual extinction. An interesting form of the oath is that in which the king's *mana*—or as the Romans phrased it his *majestas*—is invoked, as when the Zulu swore by the name of his dread king, Chaka. Here the sacred and the secular sides of the royal authority combine so as to re-inforce each other. Since to break the king's law and to disturb his peace is likewise to diminish the mystic power whereby he maintains the luck of the whole community, no penalty can be too severe for a disloyalty thus amounting to sacrilege. Indeed, the noticeable increase in the harshness of the discipline that marks the appearance of monarchical rule is to be ascribed not only to better organization, but at least as much to the fact that a human and a divine authority, like the two swords of the Holy Roman empire, are wielded by the same hands. As regards primitive legal procedure in general, it only remains to add that it is characterized by an extreme formalism, due largely to close association with magico-religious beliefs.

Scope of Primitive Law. (a) Civil Department.—Passing on to substantive law as contrasted with the adjective law which deals with procedure, a twofold function of any legal code as it bears on social relations can be distinguished according as it either establishes just conditions in respect to personal status and the use of possessions, or maintains public order by repressing violence and fraud. The former purpose delimits the province of civil law, the latter that of criminal law. Being, then, in its main essence a law of persons and of property, civil law under the former head defines the civic rights of the individual, which in the modern democratic State tend to be treated as equal for all concerned; so that contract, or the power of each to give in proportion as he receives from the rest, is assumed as the logical basis of their mutual relations. But, as Sir Henry Maine has observed, whereas contract is the principle underlying the modern State, the primitive community rests on quite another principle, that of status, in the sense of unequal privilege depending on unequal station in life. Superficially, indeed, an extreme form of democracy might seem to prevail at the tribal level of society, but on a closer view it will be found that the individual has little or no freedom of choice in determining what his place in society is to be, but must conform strictly to what is expected from one occupying once for all a given position. In particular, the ties of kinship and affinity, which vary according to the marriage system in vogue, bind each man and woman fast in a network of obligations, to which religion conspires with law to impart a most solemn sanction. The field-observer has only to ask, "Who are your relations, and what must you do for them, and they for you?" and he has a key to the whole system of rights and duties which renders that society organic. Incidentally he can by so doing acquaint himself at the same time with their methods of holding and distributing property. Thus in the primitive community the individual by no means enjoys, as would occur under a regime of contract, a free use of what he earns, and still less of what he inherits. Under conditions of mother-right, for instance, the father is usually debarred from enriching his own offspring at the expense of his sister's children; and, even when custom concedes him a limited power of sharing his acquired property with his wife and the children she bears him, his own family possessions, being more or less collectively owned by those of his own name and kin, can under no circumstances be alienated. Or, again, under the kind of father-right that involves so-called wife purchase—though it is really the right to own the woman's children that is bought—the change of status that she undergoes is so complete that henceforth she has no claim on her own family; but on the contrary is so identified with the group that she has joined that, if her husband dies, she is passed on to a kinsman as if a burden on the estate.

(b) Criminal Department.—So long as private justice prevails, it remains hard for the primitive community to realize that one and all have a common interest in suppressing any sort of outrage prejudicial to the social order. Nevertheless certain offences are perceived so directly to affect tribal welfare as a whole that even the most loosely organized societies take steps to punish them. Thus, on the one hand, treason or cowardice in the face of the enemy is bound to provoke an outburst of universal indignation. On the other hand—and this is the more typical occasion of one of those "wild spasms of wild justice" of which Bagehot speaks—certain types of immoral conduct awake deep-seated feelings of disgust and horror in humanity at large. Incest, for example, and sundry other breaches of sexual decency, are felt to be so generally polluting that to extirpate the cause of pollution seems the natural cure. The fear of witchcraft, again, impels men at all stages of culture to purify their spiritual surroundings by wiping out the witch. Proceeding, then, on these lines, one might draw up a considerable list of what Hobhouse describes as "public and sacral offences," which have a socially dangerous character so obvious that collective action tends to be taken against them even in the more undeveloped societies. Apart from these crimes that manifestly have a bearing on the common weal, there are other crimes which, though they primarily affect private welfare, yet do so in a way so fraught with evil consequences for all that eventually it becomes public policy to take the initiative in suppressing them. Homicide provides a case in point. So long as it is merely punishable according to the law of blood-revenge, it counts as a tort rather than as a crime. Sooner or later, however, the central authority hunts down the murderer on its own account, partly, it may be, in order to avoid the general disturbance caused by blood-feuds, but chiefly, it would seem, because on the principle that "blood defileth the land," bloodshed has been confined to the class of sacral offences. Indeed, seeing how the sacred predominates over the secular aspect of all authority and government of the rudimentary type, the crime is almost invariably envisaged as a sin. In short, what early law prescribes and enforces is essentially a ritual—a system of observances, positive and negative, which in intention assimilates the human to the divine order.

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LAWES, HENRY (1596–1662), English musician, was born at Dinton in Wiltshire in Dec. 1595, and received his musical education from John Cooper, better known under his Italian pseudonym Giovanni Coperario (d. 1627), a famous composer of the

day. In 1626 he was received as one of the gentlemen of the chapel royal, a place he held until the Commonwealth put a stop to church music. Lawes wrote the music for Thomas Carew's masque *boelum Britannicum,* produced at court on Feb. 18, 1634, and for the more famous production of Milton's *Comus* at Ludlow Castle (1634), the music to George Sandys version (1637) of the Psalms; and in 1648 the *Choice Psalmes put into music,* composed by Henry and William Lawes. This latter contained elegies on William, Henry's half-brother, killed at Chester in 1645, and among the commendatory verses printed with it is Milton's sonnet: "Harry, whose tuneful and well-measured song." The famous collection of his vocal pieces, *Ayres and Dialogues for One, Two and Three Voyces,* was published in 1653, and was followed by two other books under the same title in 1655 and 1658 respectively. In 1656 he was one of those who provided the music for Davenant's first entertainment at Rutland House. When in 1660 the king returned, Lawes once more entered the royal chapel, and composed the anthem *Zadok the Priest,* for the coronation. He died on Oct. 21, 1662, and was buried in Westminster Abbey. In the famous sonnet already referred to Milton exactly indicates the great merit of Lawes.

His brother, WILLIAM LAWES, (d. 1645), was also a pupil of Coperario. He was in the choir of Chichester cathedral until 1602, and afterwards became a gentleman of the Chapel Royal. The music to Shirley's masque *The Triumph of Peace* (performed in 1634) he composed with Simon Ives. The music to D'Avenant's masque *The Triumph of the Prince d'Amour* (performed in 1635 in the Middle Temple) was also of his composition. He lost his life fighting for the Royalist cause in the Civil War, Sept. 1645. None of his music was published until after his death, the first to appear being his brother Henry's edition of "Choice Psalmes" (1648). Many of his songs, among which the best known is *Gather ye Rosebuds while ye May,* are contained in books published by Playford: *Court Airs* (1656), *Courtly Masquing Ayres* (1662), etc. His most important works are short pieces for viols, lutes, etc., but his *Royal Consort,* containing a collection of 66 of these, exists only in manuscript.

LAWES, SIR JOHN BENNET, BART. (1814–1900), English agriculturist, was born at Rothamsted Dec. 28, 1814. Before leaving Oxford he became interested in growing medicinal plants on the Rothamsted estates, which he inherited on his father's death in 1822. About 1837 he began to experiment on the effects of manures on plants growing in pots, and a year or two later the experiments were extended to field crops. In 1842 he patented a manure, generally known as "superphosphate," formed by treating phosphates with sulphuric acid, and thus initiated the artificial manure industry. In the succeeding year he enlisted the services of Sir J. H. Gilbert, with whom he carried on for more than half a century those experiments in raising crops and feeding animals which have made Rothamsted famous (*see* AGRICULTURAL RESEARCH; AGRICULTURE: A GENERAL SURVEY). In 1854 he was elected a Fellow of the Royal Society, which in 1867 bestowed a Royal medal on Lawes and Gilbert jointly, and in 1882 he was created a baronet. Lawes died Aug. 31, 1900, but in 1899 he took measures to ensure the continuation of the Rothamsted experimental farm by setting aside £100,000 for that purpose and constituting the Lawes Agricultural Trust; his work has been expanded with the aid of the Government.

LAWLESS, EMILY (1845–1913), Irish novelist and poet, was born at Lyons, Co. Kildare, on June 17, 1845, the daughter of the 3rd Baron Cloncurry. She wrote a number of novels and verses dealing with Irish life. *Hurrish* (1886), *With Essex in Ireland* (1890) and *Grania* (1902) are her most important novels, and *With the Wild Geese* (1902) the best-known volume of her verses. She died at Gomshall, Surrey, on Oct. 19, 1913.

LAW MERCHANT or **LEX MERCATORIA,** originally customary rules and principles relating to merchants and mercantile transactions, adopted by merchants themselves for the purpose of regulating their dealings. The law merchant owed its origin to the fact that trade in pre-mediaeval times was practically in the hands of those who might be termed cosmopolitan merchants, who wanted a prompt and effective jurisdiction. It was administered for the most part in special courts, such as those of the gilds in Italy, or the fair courts of Germany and France or, as in England, in courts of the staple or piepowder. (*See* also SEA LAWS.) The history of the law merchant in England is divided into three stages: the first prior to the time of Coke, when it was a special kind of law—as distinct from the common law—administered in special courts for a special class of the community (*i.e.,* the mercantile); the second stage was one of transition, the law merchant being administered in the common law courts, but as a body of customs, to be proved as a fact in each individual case of doubt; the third stage, which has continued to the present day, dates from the presidency over the king's bench of Lord Mansfield (*q.v.*), under whom it was moulded into the mercantile law of to-day.

See G. Malynes, *Consuetudo vel lex mercatoria* (1622); W. Mitchell, *The Early History of the Law Merchant* (1904); J. W. Smith, *Mercantile Law* (ed. Hart and Simey, 1905); and particularly *The Romance of the Law Merchant,* by Wyndham A. Bewes (1923).

LAWN, a very thin fabric made from level linen or cotton yarns. It is used for light dresses and trimmings, also for handkerchiefs. The terms lawn and cambric (*q.v.*) are often intended to indicate the same fabric. In this sense of the term the derivation is from the name of the French town, Laon. In the older sense of a glade or clearing in a forest (in which form it still survives in the New Forest in England, where it is used of the feeding-commons of cattle), the word lawn is cognate with land (Celtic *lann,* waste or enclosure), now used of a closely mown grass expanse for ornamental or playing use. (*See* GREENS.)

LAWN TENNIS and **TENNIS.** These two games are closely connected by origins—lawn tennis may be regarded as the descendant of tennis—but they are widely different. Lawn tennis, the more popular, will be considered first.

As an independent member of the family of ball games of which the parent root was probably buried in Egypt or Persia, 500 years before the Christian era, lawn tennis is relatively modern and it had its beginning in England. It is played by men and women, at night as well as day, indoors as well as outdoors, on various surfaces—dirt, grass, clay, concrete, wood and on courts made of a composition. The name lawn tennis, especially in the United States, has been contracted to the word tennis.

The inventor of lawn tennis was an Englishman, Major Walter Wingfield. In 1874 he devised and patented a "new and improved portable court for playing the ancient game of tennis." It was an hour-glass shaped court, introduced as Sphairistike, or as its enemies liked to call it, "Sticky." About this time the All England Croquet club, located in Wimbledon, a suburb of London, discovered that its exchequer was empty, or almost so, and added the term "Lawn Tennis" to its title and several grass courts to its facilities. The first of all championships was held on these courts in June 1877, on a surface measuring 26 yd. long and 9 yd. wide, with a net 3 ft. 3 in. high at the centre. There were 22 competitors, of whom the majority were either tennis or rackets players. The winner, Spencer W. Gore, was a former rackets star and a native of London.

It is interesting to note that the dimensions of the lawn tennis court remained unchanged after that time. In 1878 the height of the net was reduced to 4 ft. 9 in. at the posts, and 3 ft. at the centre. In 1880 the net was lowered to 4 ft. at the posts, and in 1884 to 3 ft. 6 in.

From the start until 1907, the championships at Wimbledon were won by natives of the British Isles. The early Wimbledon, however, with its bleacherless courts and general air of calm, bore little resemblance to its successors. Yet from the start the All England club had a decisive influence on the game. The Lawn Tennis association (English) was founded in 1886, the International Tennis federation not until 1912. In the interim, the game had spread to other continents.

Lawn tennis was said to have been introduced into the United States by Miss Mary E. Outerbridge, who spent the winter of 1874 in Bermuda and there saw the game played by British officers of the garrison. She returned with a lawn tennis net, some rackets and balls, obtained from the regimental stores through

the courtesy of the colonel. One of her brothers, A. Emilius Outerbridge, helped her lay out a court on the grounds of the Staten Island Cricket and Baseball club. Dr. James Dwight of Boston, Mass., obtained a set from England and laid out a court at Nahant, a seaside resort in Boston harbour, a little later. The first tournament in the United States, a handicap event, was played at Nahant in Aug. 1876. The first official championships of the United States, playing under English rules and with English balls, was held at the Casino, Newport, R.I., on Aug. 31, 1881. There were 25 competitors entered in the singles and 13 pairs in the doubles. The singles was won by Richard D. Sears of Boston, who held the title every year until 1888. In 1881, the United States Lawn Tennis association, with Gen. R. S. Oliver of the Albany Tennis club as president, was formed.

This period might be called the age of innocence of lawn tennis. In both England and the United States, the players were amateurs and sportsmen, the tournaments few in number, and watched by small galleries. In the United States, from the time of Sears until 1900, most U.S. champions were volleyers, Oliver S. Campbell and Robert D. Wrenn, who held between them seven singles titles in the '80s and '90s, especially so. During this period the game was played chiefly along the eastern seaboard. In 1900 a cup was donated by Dwight F. Davis, then an undergraduate at Harvard, for international competition. (From the start, all Davis cup ties consisted of four singles and one doubles match.) The first contest was played in Longwood, near Boston, on Aug. 8, 9 and 10, 1900, and was won by the United States, three matches to none. (One was not played, and one left unfinished.)

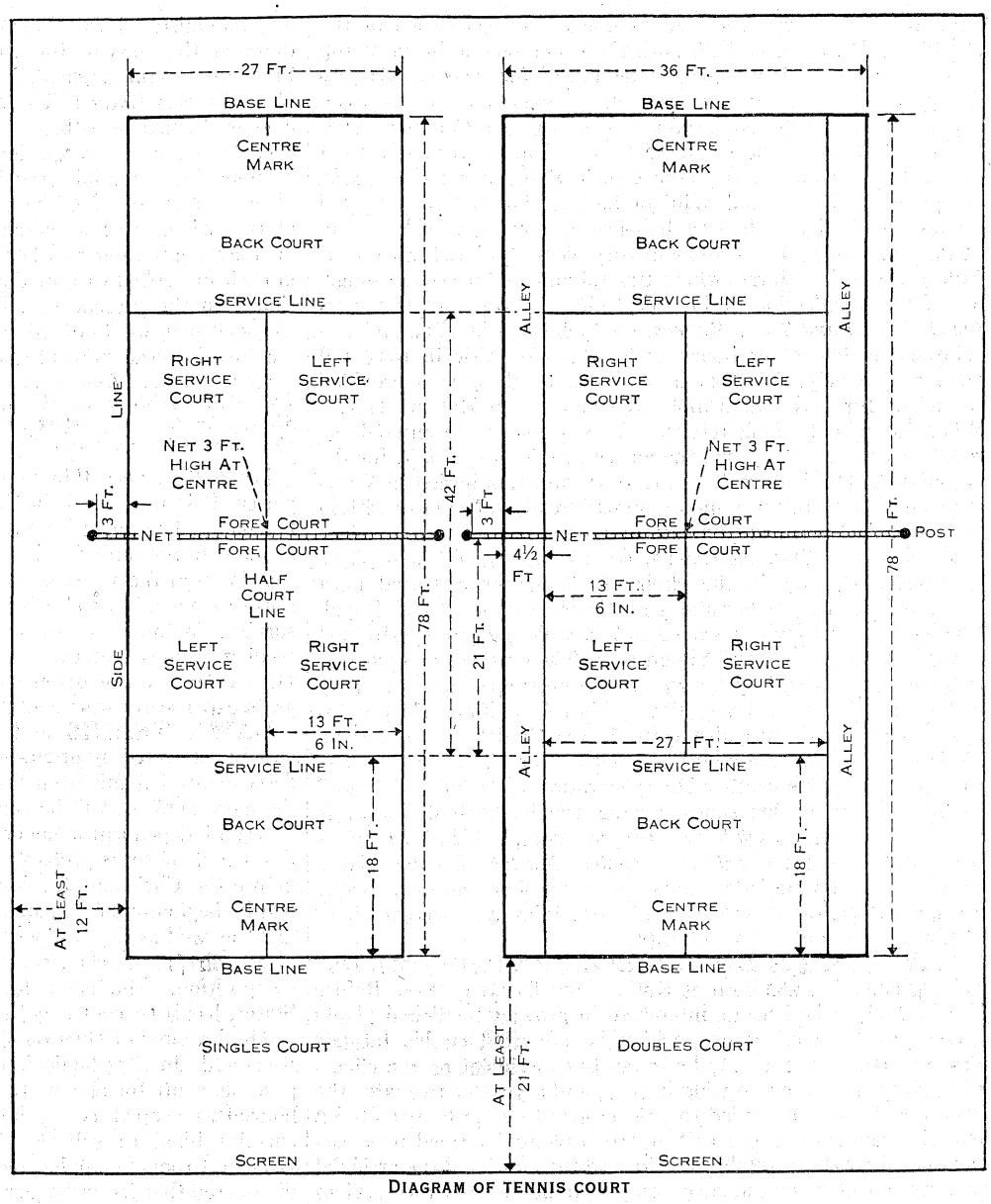

DIAGRAM OF TENNIS COURT

In 1907, Norman E. Brookes of Australia became the first overseas player to win the Wimbledon title. (From 1907 to 1940, only two home players, A. W. Gore and F. J. Perry, were to hold it.) Meanwhile in the United States there was a swing away from the net game. Both William A. Larned, who held the U.S. title from 1907 to 1912, and William T. Tilden, who dominated world tennis from 1920 to 1925, were able to play the net and play it well. Yet both won the majority of their titles from the base line. In 1914 a new influence was felt in the game. For the first time in U.S. tennis the champion did not come from the eastern seaboard. That year the title was won by Maurice E. McLoughlin, a Californian trained on courts of asphalt. He introduced the cannon ball service, a weapon used by every U.S. star since then.

By this time tennis may be said to have come of age. In 1915 the national championships of the United States were removed from the tranquillity of the Casino at Newport, R.I., to the urban setting of the West Side Tennis club at Forest Hills, Long Island. Attracted by the spectacular playing of McLoughlin, crowds turned out for the matches. At the same period, interest grew in the Davis cup matches. In 1903, when it had been captured by the Doherty brothers for Great Britain at the Longwood Cricket club, in Brookline, Mass., only two nations were represented, and hardly 2,000 spectators saw the contests each afternoon. In 1914, seven nations from three continents competed, and the challenge round played at Forest Hills just as World War I broke out, was witnessed by 10,000 people. Australia with the left-handed veteran Brookes, and Capt. Anthony Wilding (killed in action in Flanders in 1915) met McLoughlin and R. Norris Williams, an undergraduate at Harvard. There have perhaps been greater matches in tennis history; but few so dramatic, so grim or so spectacular. The speed of shot on both sides was tremendous. The rallies were few. It was a different game from the poised, accurate, garden-party tennis of the Dohertys. Tennis had changed as the world was changing.

The ten years from the end of World War I might be termed the Dollar Decade in world tennis. Tilden won the title at Wimbledon in 1920, the first but not the last male American to do so. He repeated the next year, and in 1923 the first Californian, W. M. Johnston, won the men's singles. In 1920 Tilden and Johnston beat the Australians at Auckland, New Zealand, taking the Davis cup back to the United States. With R. Norris Williams and Vincent Richards they formed the best balanced team ever to appear on a court in an international match, and through their efforts Australian, Japanese and French challengers for the trophy were regularly defeated until 1927. The American influence on sport at this period was visible in many ways. Money

was now an important factor in competitive tennis. Huge crowds attended national championships and Davis cup matches in every land. As an example, the old grounds seating several thousand spectators under wooden roofs at the Worple road, Wimbledon, were abandoned in 1921 for a new, modern, concrete tennis stadium, a few miles away, seating 15,000. This stadium which was opened by King George V on June 22, 1922, attracted players from Spain, France, the United States, Italy, Ireland, Scotland, Sweden, Holland, South Africa, Belgium, Rumania, Denmark, Greece, New Zealand, Australia and England that summer. It cost £140,000, and was probably paid for in a few years.

The money received by various national tennis associations was used for different purposes. It was found necessary to spend considerable sums to train, equip and transport teams of four, five or six players to cross oceans for the purpose of competing in these international events. In 1903, two nations had battled for the Davis cup; in 1914 there had been seven; in 1927, when it was won by the French, there were 25. Save Russia and Turkey, no nation was impervious to the prestige accruing to a country from a victory in the Davis cup. In 1927, teams competed from the northern part of Europe, Denmark, Poland and Sweden; from the antipodes; from below the Tropic of Capricorn; from India and Japan; from Italy and Greece on the shores of the Mediterranean; from Mexico and Cuba; from the Balkan states; from Canada and the United States.

By this time France had come to the front. Young Frenchmen were advancing in the technique of the game, and a French team composed of J. R. Lacoste, J. Borotra, H. Cochet and J. Brugnon reached the challenge round of the Davis cup for the first time in 1926. The next year they were the survivors of 25 nations, and crossing the ocean found themselves challenging the holders, the United States, at Philadelphia. This time they discovered that age had stemmed the power of the two great U.S. stars, Tilden and Johnston. They carried the cup back to France. For the first time a Latin nation had beaten an Anglo-Saxon country in its own specialty—on the fields of sport. This was the first of six years of French successes in tennis.

By 1930, tennis had become Big Business. Crowds of 30,000-40,000 at the challenge round of the Davis cup were far from uncommon, while that number was nearly reached in one day's play during the championships at Wimbledon each June. Early in February every year balloting took place for seats for the matches to be held the following June, and usually some £50,000 was returned to unsuccessful applicants. Often as many as 300,000 spectators stormed the gates of Wimbledon to stand beside the centre court or, if lucky, sit and watch important matches during the fortnight of play. Nor was this interest confined only to the English-speaking nations. In France, which held the Davis cup from 1927 to 1933, sidewalk cafes in large cities had loudspeakers with accounts of the matches going full blast. "La Coupe" was a familiar word in the vocabulary of every sportsman. Interest in the challenge round was such that single seats sold for 400 francs, or $16 apiece. At the Stade Roland Garros in Paris, where the matches were held, a special section of the stands was consecrated to the press, reporters attending from every capital of Europe, and special writers, columnists and sports authorities present from a dozen nations. High above the stands a platform was jammed with cameramen and radio commentators gathered from every country in Europe, from England and the United States. They were there to dispense up-to-the-minute information about the contest to a waiting world.

In 1933, 32 different countries entered teams for the Davis cup. The trophy was finally won by Great Britain, who defeated the French in the challenge round at Paris. For the first time in 20 years this international sporting cup was returning to the land which gave the game birth. To accomplish this feat, the team of Great Britain travelled from mid-April to mid-July, starting out in Barcelona and ending in Paris. The United States that season sent a squad of youngsters from New York to play in Washington, then on to Mexico City, thence back to New York, across to London and finally four months later to Paris, where they were defeated by Great Britain. Sometimes in these journeys made with half a dozen players, a captain and a trainer, gate receipts from important matches paid the way. Sometimes not. In any event, money was becoming less important as governments all over the world realized the importance of victory in this international sporting contest, for purposes of propaganda. The game had become so important that where a tennis association was penniless, the government would subsidize a team. Everywhere officialdom gave the Davis cup their blessing. President Lebrun of France, Foreign Secretary Sir Samuel Hoare of Great Britain and Secretary of State Cordell Hull all presided during these years at the drawing for the Davis cup, and set an official stamp of approval upon it. The contest became a sort of informal curtain-raiser to war, a prelude to a grimmer struggle, a test of national superiority. Of the government chiefs who realized its importance, none did so more than the dictators.

By 1937, the state had begun openly to intervene. That year it was the Germans—conquerors of the Czech team—who stepped upon the centre court at Wimbledon to meet the Americans in the Inter-Zone final round in the decisive match for the cup. They were led by their blond champion, Gottfried von Cramm, while the star of the American team was a young red-headed Californian trained in the McLoughlin tradition, J. Donald Budge. Instead of the one racket which Larned and Doherty each carried on court in 1903, Budge and Cramm appeared with seven or eight. So great is the speed of the modern game, so tensely strung are the bats, that as many as three or four may snap in the course of a match. The balls with which they played were taken from a refrigerator beside the umpire's chair where they had been kept all night at a fixed temperature. Originally they were just tennis balls. Later all balls were standardized, conforming to mechanized tests which limited the minimum bounce to 53 in. when dropped on concrete from a height of 100 in., the weight to 2-2½ oz. and the compression to between .265 and .290 in.

With both sides level at two matches each, the contest and the cup hinged on the last and deciding match between Budge and Cramm. Probably never had the standard of play on both sides of the net been so high in the history of the game. It was super-tennis played by super-players. Tilden, watching from the stands, declared afterward that it was the finest match he had ever seen. Cramm, playing magnificent tennis, won the first two sets. Budge crawled even and took the next two. The fifth set began at seven in the evening. Cramm quickly went to 4–1. Budge kept his head and his courage, fought back and slowly evened the score. In the 14th game he had five matchpoints before he finally won. Both players were completely exhausted. So was every spectator.

Budge's tennis that day was a step forward in the technique of the game. Yet Cramm never played so well before, nor afterward. Possibly this was because he was playing for something more important to him than his country. It was common knowledge that he had never been a member of the nazi party, and not in the good graces of the Fuehrer. Had he returned to Berlin as the artisan of the first German victory in this international sport, a victory which the propaganda ministries in Germany would have been careful to exploit to the full, anything would have been forgiven him. But he failed. By those few inches which separated the ball from the side lines in the critical rallies in those critical games of the fifth set, he failed. The result was that before the next Davis cup matches he was spending his time as a government guest in the Moabit prison in Berlin. Tennis had been taken over by the state.

Women Players.—Tennis was played by the fair sex from the start; but their entry into competitive tournaments was delayed, and it was not until 1884, seven years after the championships began, that Miss M. Watson became the first lady champion at Wimbledon by winning from an entry of 13 players. In the United States an informal meeting for women was held at the Philadelphia Cricket club, and was won by Miss Ellen Hansell in 1887. The first official championships for women were held on the same courts in 1889 and were won by Miss Bertha Townsend. Miss Elisabeth Moore, later singles champion, describes the costumes of the period in this way: "The girls were wearing lawn dresses with leg of mutton sleeves, sailor hats, and ornamental

tennis shoes. My dresses, which were of white lawn, swept just clear of the grass on ordinary shots; but brushed it when I stooped. These dresses were much more feminine than the highly coloured flannels, big blouses and felt hats previously in vogue, and were also much cooler."

In those days the game was played chiefly from the base line. In England the standard of play was and remained for some time much higher than in the United States, yet women still served underhand. In 1904 a new star appeared, Miss May Sutton, a girl of 17 and the first of a long line of Californian champions who revolutionized U.S. and world tennis. She was gifted with a strong constitution and a heavily topped forehand drive which enabled her to win the American title that year, and also to defeat Miss D. K. Douglas (afterward Mrs. Lambert Chambers) at Wimbledon in 1905, thus becoming the first American ever to capture an English title. She again defeated her rival to win the championships in 1907. Not the least remarkable feat was her return to Wimbledon in 1929, 22 years later, when she reached the quarter-finals of the singles in a strong field.

An important influence on the game for women was Mlle. Suzanne Lenglen, a French girl who first appeared at Wimbledon in 1919. Born at Compiègne, France, in 1899, she won her first championship at St. Cloud in 1914, as a child with pigtails down her back. Between 1919 and 1926 she dominated the game as Tilden dominated play for men, winning at Wimbledon six times. In 1925, her last year there, she played five matches, losing only five games in the entire tournament. Seven sets were won to love. Incidentally, she defeated the holder, Miss Katherine McKane, in the semi-finals without the loss of a game.

Up to this time women's play had been chiefly from the base line, but Mlle. Lenglen was equally at home in forecourt, and showed the path which later was developed until most women champions played an all-court game. She was a genius with an amazing instinct for the right shot, and during the period she played was supreme among her sex. Indeed she often played doubles with three good men, and was always able to hold her end up. A. Wallis Myers of the London *Field* described her in these words. "Mistress of every orthodox shot, executed with faultless ease and unfailing judgment, she gave women's tennis and indeed the game itself, a wide and progressive publicity."

The next player who pointed the path for women was Miss Helen Wills, later Mrs. F. S. Moody. She played Mlle. Lenglen only once, at Cannes in 1926, when she was a young girl far from her peak. Like her rival she had every stroke, supported by a more powerful forehand drive, the weapon of every champion. She had a matchless record in competitive tennis. She won the American title in 1923, 1924, 1925, 1927, 1928, 1929, 1931. The title at Wimbledon she won in 1927, 1928, 1929, 1930, 1932 and 1933. In that year she suffered a severe back injury, and was incapacitated, but recovered and returned to win at Wimbledon in 1935 and again in 1938.

Another great woman player, also an American and a Californian, was Miss Alice Marble. Despite illnesses which would have discouraged most players, she persevered and ended as Wimbledon and American titleholder in 1939. She was the first feminine champion to develop a really hard service like that of a man, and possessed an all-round game to which she added unusual severity at the net and overhead. The strength of her service and volleying attack made her a player to be ranked with Miss Sutton, Mlle. Lenglen, Mrs. Moody and the other stars of her sex in lawn tennis.

Wightman Cup.—In 1923 a cup was donated by Mrs. George Wightman, the former Miss Hazel Hotchkiss of California and herself national singles champion of the United States in 1909, 1910 and 1911, for competition between teams of women players from the United States and England. The Wightman cup was first contested at Forest Hills, Long Island, on Aug. 13 and 14, 1923. It was held alternately in the two countries, with five singles and two doubles matches. The first contest was won by England. Up to the beginning of World War II it had been held 17 times and was won 4 times by England, having been taken every year from 1930 to 1940 by the United States.

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BRITISH CHAMPIONS (Men's Singles)

The asterisk (*) indicates winners of the All-Comers' who defeated the champions in the challenge round. The dagger (†) indicates winners of the All-Comers' who became champions when the holders failed to defend their titles. The double dagger (‡) denotes the years in which the challenge round was abolished.

	Champion and A-C Winner	*Runner-up*
1877	S. W. Gore	W. Marshall
1878	P. F. Hadow	W. Erskine
1879	†J. T. Hartley	V. "St. Leger."
1880	J. T. Hartley	
	H. F. Lawford	O. E. Woodhouse
1881	*W. Renshaw	R. T. Richardson
1882	W. Renshaw, E. Renshaw	R. T. Richardson
1883	W. Renshaw, E. Renshaw	D. Stewart
1884	W. Renshaw, H. F. Lawford	C. W. Grinstead
1885	W. Renshaw, H. F. Lawford	E. Renshaw
1886	W. Renshaw, H. F. Lawford	E. W. Lewis
1887	†H. F. Lawford	E. Renshaw
1888	*E. Renshaw	E. W. Lewis
1889	*W. Renshaw	H. S. Barlow
1890	*W. J. Hamilton	H. S. Barlow
1891	†W. Baddeley	J. Pim
1892	W. Baddeley, J. Pim	E. W. Lewis
1893	*J. Pim	H. S. Mahony
1894	J. Pim, W. Baddeley	E. W. Lewis
1895	†W. Baddeley	W. V. Eaves
1896	*H. S. Mahony	W. V. Eaves
1897	*R. F. Doherty	W. V. Eaves
1898	R. F. Doherty, H. L. Doherty	H. S. Mahony
1899	R. F. Doherty, A. W. Gore	S. H. Smith
1900	R. F. Doherty, S. H. Smith	A. W. Gore
1901	*A. W. Gore	C. P. Dixon
1902	*H. L. Doherty	M. J. G. Ritchie
1903	H. L. Doherty, F. L. Riseley	M. J. G. Ritchie
1904	H. L. Doherty, F. L. Riseley	M. J. G. Ritchie
1905	H. L. Doherty, N. E. Brookes	S. H. Smith
1906	H. L. Doherty, F. L. Riseley	A. W. Gore
1907	†N. E. Brookes	A. W. Gore
1908	†A. W. Gore	H. Roper Barrett
1909	A. W. Gore, M. J. G. Ritchie	H. Roper Barrett
1910	*A. F. Wilding	Beals C. Wright
1911	A. F. Wilding, H. Roper Barrett	C. P. Dixon
1912	A. F. Wilding, A. W. Gore	A. H. Gobert
1913	A. F. Wilding, M. E. McLoughlin	S. N. Doust
1914	*N. E. Brookes	O. Froitzheim
1915–18	—No competition during World War I	
1919	*G. L. Patterson	A. R. F. Kingscote
1920	*W. T. Tilden	Z. Shimizu
1921	W. T. Tilden, B. I. C. Norton	M. Alonso
1922	‡G. L. Patterson	R. Lycett
1923	W. M. Johnston	F. T. Hunter
1924	J. Borotra	R. Lacoste
1925	R. Lacoste	J. Borotra
1926	J. Borotra	H. Kinsey
1927	H. Cochet	J. Borotra
1928	R. Lacoste	H. Cochet
1929	H. Cochet	J. Borotra
1930	W. T. Tilden	W. L. Allison
1931	S. B. Wood	F. X. Shields
1932	H. E. Vines	H. W. Austin
1933	J. H. Crawford	H. E. Vines
1934	F. J. Perry	J. H. Crawford
1935	F. J. Perry	G. Von Cramm
1936	F. J. Perry	G. Von Cramm
1937	J. D. Budge	G. Von Cramm
1938	J. D. Budge	H. W. Austin
1939	R. L. Riggs	E. T. Cooke
1940	No tournaments during World War II.	

BRITISH WOMEN SINGLES CHAMPIONS

1884	Miss M. Watson	Miss Watson
1885	Miss M. Watson	Miss Bingley
1886	Miss Bingley	Miss Tabor
1887	Miss L. Dod	Miss C. J. Cole
1888	Miss L. Dod, Mrs. Hillyard	Miss Howes
1889	†Mrs. Hillyard	Miss L. Rice
1890	†Miss L. Rice	Miss Jacks
1891	†Miss L. Dod	Mrs. Hillyard
1892	Miss L. Dod, Mrs. Hillyard	Miss Shackle
1893	Miss L. Dod, Mrs. Hillyard	Miss Shackle
1894	†Mrs. Hillyard	Miss Austin
1895	†Miss C. Cooper	Miss Jackson
1896	Miss C. Cooper, Mrs. Pickering	Miss Austin
1897	*Mrs. Hillyard	Mrs. Pickering
1898	†Miss C. Cooper	Miss Martin
1899	*Mrs. Hillyard	Mrs. Durlacher
1900	Mrs. Hillyard, Miss C. Cooper	Miss Martin
1901	*Mrs. Sterry	Miss Martin
1902	*Miss M. E. Robb	Miss A. M. Morton
1903	†Miss D. K. Douglas	Miss E. W. Thompson
1904	Miss D. K. Douglas, Mrs. Sterry	Miss A. M. Morton
1905	*Miss M. Sutton	Miss C. M. Wilson
1906	*Miss D. K. Douglas	Mrs. Sterry
1907	*Miss M. Sutton	Miss C. M. Wilson
1908	†Mrs. Sterry	Miss A. M. Morton
1909	†Miss D. Boothby	Miss A. M. Morton
1910	*Mrs. L. Chambers	Miss E. G. Johnson
1911	Mrs. Lambert Chambers, Miss D. Boothby	Mrs. Hannam
1912	†Mrs. Larcombe	Mrs. Sterry
1913	†Mrs. L. Chambers	Mrs. McNair
1914	Mrs. Lambert Chambers, Mrs. Larcombe	Miss Ryan
1915–18	—No competition during World War I	
1919	*Mlle. Lenglen	Mrs. Satterthwaite

	Champion and A-C Winner	*Runner-up*
1920	Mlle. Lenglen, Mrs. L. Chambers	Miss Ryan
1921	Mlle. Lenglen, Miss Ryan	Mrs. Satterthwaite
1922	‡Mlle. Lenglen	Mrs. Mallory
1923	Mlle. Lenglen	Miss McKane
1924	Miss K. McKane	Miss H. Wills
1925	Mlle. Lenglen	Miss J. Fry
1926	Mrs. L. A. Godfree	Srta. De Alvarez
1927	Miss H. Wills	Srta. De Alvarez
1928	Miss H. Wills	Srta. De Alvarez
1929	Miss H. Wills	Miss H. Jacobs
1930	Mrs. F. S. Moody	Miss Ryan
1931	Frl. C. Aussen	Frl. H. Krahwinkel
1932	Mrs. F. S. Moody	Miss H. Jacobs
1933	Mrs. F. S. Moody	Miss D. E. Round
1934	Miss D. E. Round	Miss H. Jacobs
1935	Mrs. F. S. Moody	Miss H. Jacobs
1936	Miss H. H. Jacobs	Fru. Sperling
1937	Miss D. E. Round	Panna Jedrzejowska
1938	Mrs. F. S. Moody	Miss H. Jacobs
1939	Miss A. Marble	Miss K. E. Stammers
1940	No tournaments during World War II.	

NATIONAL MEN'S CHAMPIONS OF THE UNITED STATES

Note—In the following tables the winner and the runner-up of the All-Comers' tournament follow behind the champion.

	Champion—Winner of All-Comers'	*Runner-up*
1881	Richard D. Sears	W. E. Glyn
1882	Richard D. Sears	Clarence M. Clark
1883	Richard D. Sears	James Dwight
1884	Richard D. Sears, Howard A. Taylor	W. V. S. Thorne
1885	Richard D. Sears, Godfrey M. Brinley	W. Percy Knapp
1886	Richard D. Sears, R. Livingston Beeckman	Howard A. Taylor
1887	Richard D. Sears, Henry W. Slocum, Jr	Howard A. Taylor
1888	†Henry W. Slocum, Jr.	Howard A. Taylor
1889	Henry W. Slocum, Jr., Quincy Adams Shaw, Jr.	Oliver S. Campbell
1890	*Oliver S. Campbell	W. Percy Knapp
1891	Oliver S. Campbell, Clarence Hobart	Fred H. Hovey
1892	Oliver S. Campbell, Fred H. Hovey	William A. Larned
1893	†Robert D. Wrenn	Fred H. Hovey
1894	Robert D. Wrenn, Manlove F. Goodbody	William A. Larned
1895	*Fred H. Hovey	William A. Larned
1896	*Robert D. Wrenn	William A. Larned
1897	Robert D. Wrenn, Dr. W. V. Eaves	Harold A. Nesbit
1898	†Malcolm D. Whitman	Dwight F. Davis
1899	Malcolm D. Whitman, J. Parmly Paret	Dwight F. Davis
1900	Malcolm D. Whitman, William A. Larned	George L. Wrenn, Jr.
1901	†William A. Larned	Beals C. Wright
1902	William A. Larned, Reginald F. Doherty	Malcolm D. Whitman
1903	*Hugh L. Doherty	William J. Clothier
1904	†Holcombe Ward	William J. Clothier
1905	*Beals C. Wright	Clarence Hobart
1906	*William J. Clothier	Karl H. Behr
1907	†William A. Larned	Robert Le Roy
1908	William A. Larned, Beals C. Wright	Fred B. Alexander
1909	William A. Larned, William J. Clothier	Maurice E. McLoughlin
1910	William A. Larned, Thomas C. Bundy	Beals C. Wright
1911	William A. Larned, Maurice E. McLoughlin	Beals C. Wright

Champions and Runners-Up After the Challenge Round Was Abandoned

	Champion	*Runner-up*
1912	Maurice E. McLoughlin	Wallace F. Johnson
1913	Maurice E. McLoughlin	R. N. Williams, 2d
1914	R. N. Williams, 2d	Maurice E. McLoughlin
1915	William Johnston	Maurice E. McLoughlin
1916	R. N. Williams, 2d	William Johnston
1917	‡R. Lindley Murray	Nathaniel W. Niles
1918	R. Lindley Murray	William T. Tilden, 2d
1919	William Johnston	William T. Tilden, 2d
1920	William T. Tilden, 2d	William Johnston
1921	William T. Tilden, 2d	Wallace F. Johnson
1922	William T. Tilden, 2d	William Johnston
1923	William T. Tilden, 2d	William Johnston
1924	William T. Tilden, 2d	William Johnston
1925	William T. Tilden, 2d	William Johnston
1926	Jean Rene Lacoste	Jean Borotra
1927	Jean Rene Lacoste	William T. Tilden, 2d
1928	Henri Cochet	Francis T. Hunter
1929	William T. Tilden, 2d	Francis T. Hunter
1930	John H. Doeg	Francis X. Shields
1931	H. Ellsworth Vines, Jr.	George M. Lott, Jr.
1932	H. Ellsworth Vines, Jr.	Henri Cochet
1933	Fred J. Perry	Jack Crawford
1934	Fred J. Perry	Wilmer L. Allison
1935	Wilmer L. Allison	Sidney B. Wood, Jr.
1936	Fred J. Perry	J. Donald Budge
1937	J. Donald Budge	Baron G. von Cramm
1938	J. Donald Budge	C. Gene Mako
1939	Robert L. Riggs	S. Welby Van Horn
1940	Donald McNeill	Robert L. Riggs
1941	Robert L. Riggs	Francis L. Kovacs, 2d
1942	Frederick R. Schroeder	Frank Parker

*Winner of All-Comers'; defeated the stand-out champion.
†Winner of All-Comers'; champion did not defend his title.
‡Patriotic tournament.

NATIONAL WOMEN CHAMPIONS

	Champion—Winner of All-Comers'	*Runner-up*
1887	Miss Ellen F. Hansell	
1888	Miss Bertha L. Townsend	
1889	Miss Bertha L. Townsend	
1890	*Miss Ellen C. Roosevelt	Miss Louise D. Voorhees
1891	*Miss Mabel E. Cahill	Miss Grace W. Roosevelt
1892	Miss Mabel E. Cahill, Miss Elisabeth H. Moore	Mrs. A. H. Harris
1893	†Miss Aline M. Terry	Mrs. Augusta Schultz
1894	*Miss Helen R. Helwig	Mrs. Bertha T. Toulmin
1895	*Miss Juliette P. Atkinson	Miss Elisabeth H. Moore
1896	*Miss Elisabeth H. Moore	Miss A. C. Wistar
1897	*Miss Juliette P. Atkinson	Miss Edith Kenderdine
1898	Miss Juliette P. Atkinson, Miss Marion Jones	Miss Helen Crump
1899	†Miss Marion Jones	Miss Maud Banks
1900	†Miss Myrtle McAteer	Miss Edith Parker
1901	*Miss Elisabeth H. Moore	Miss Marion Jones
1902	*Miss Marion Jones	Miss Carrie B. Neely
1903	*Miss Elisabeth H. Moore	Miss Carrie B. Neely
1904	*Miss May G. Sutton	Miss Helen Homans
1905	†Miss Elisabeth H. Moore	Miss Helen Homans
1906	†Miss Helen Homans	Mrs. Maud Barger-Wallach
1907	†Miss Evelyn Sears	Miss Carrie B. Neely
1908	*Mrs. Maud Barger-Wallach	Miss Marie Wagner

Champions and Runners-Up After the Challenge Round Was Abandoned

	Champion	*Runner-up*
1909	*Miss Hazel V. Hotchkiss	Miss Louise Hammond
1910	Miss Hazel V. Hotchkiss, Miss Louise Hammond	Miss Adelaide Browning
1911	Miss Hazel V. Hotchkiss, Miss Florence Sutton	Miss Eleonora Sears
1912	†Miss Mary K. Browne	Miss Eleonora Sears
1913	Miss Mary K. Browne, Miss Dorothy Green	Miss Edna Wildey
1914	Miss Mary K. Browne, Miss Marie Wagner	Miss Clare Cassel
1915	Miss Molla Bjurstedt	‖Mrs. George W. Wightman
1916	Miss Molla Bjurstedt, §Mrs. Edward Raymond	Miss Eleonora Sears
1917	‡Miss Molla Bjurstedt	Miss Marion Vanderhoef
1918	Miss Molla Bjurstedt, Miss Eleanor Goss	Miss Helene Pollak
1919	Mrs. George W. Wightman	Miss Marion Zinderstein
1920	¶Mrs. Franklin I. Mallory	Miss Marion Zinderstein
1921	Mrs. Franklin I. Mallory	Miss Mary K. Browne
1922	Mrs. Franklin I. Mallory	Miss Helen N. Wills
1923	Miss Helen N. Wills	Mrs. Franklin I. Mallory
1924	Miss Helen N. Wills	Mrs. Franklin I. Mallory
1925	Miss Helen N. Wills	Miss Kathleen McKane
1926	Mrs. Franklin I. Mallory	Miss Elizabeth Ryan
1927	Miss Helen N. Wills	Miss Betty Nuthall
1928	Miss Helen N. Wills	Miss Helen Jacobs
1929	Miss Helen N. Wills	Mrs. Phoebe Watson
1930	Miss Betty Nuthall	Mrs. Lawrence A. Harper
1931	Mrs. Helen W. Moody	Mrs. Eileen Bennett Whittingstall
1932	Miss Helen Jacobs	Miss Caroline Babcock
1933	Miss Helen Jacobs	Mrs. Helen W. Moody
1934	Miss Helen Jacobs	Miss Sarah Palfrey
1935	Miss Helen Jacobs	Mrs. Sarah Palfrey Fabyan
1936	Miss Alice Marble	Miss Helen Jacobs
1937	Miss Anita Lizana	Miss Jadwiga Jedrzejowska
1938	Miss Alice Marble	Miss Nancy Wynne
1939	Miss Alice Marble	Miss Helen Jacobs
1940	Miss Alice Marble	Miss Helen Jacobs
1941	Mrs. Sarah P. Cooke	Miss Pauline M. Betz
1942	Miss Pauline M. Betz	Miss Louise Brough

*Winner of All-Comers'; defeated the standing-out champion.
†Winner of All-Comers'; champion did not defend her title.
‡Patriotic tournament. §Louise Hammond; ‖Hazel V. Hotchkiss; ¶Miss Molla Bjurstedt.

DAVIS CUP CHALLENGE ROUNDS

Date	*Place*	*Results*	
1900	Boston, U.S.A.	United States beat British Isles	†3–0
1902	New York	United States beat British Isles	3–2
1903	*Boston, U.S.A.	British Isles beat United States	‡4–1
1904	Wimbledon	British Isles beat Belgium	5–0
1905	Wimbledon	British Isles beat United States	5–0
1906	Wimbledon	British Isles beat United States	5–0
1907	*Wimbledon	Australasia beat British Isles	3–2
1908	Melbourne	Australasia beat United States	3–2
1909	Sydney	Australasia beat United States	5–0
1911	Christchurch, N.Z.	Australasia beat United States	‡5–0
1912	*Melbourne	British Isles beat Australasia	3–2
1913	*Wimbledon	United States beat British Isles	3–2
1914	*New York	Australasia beat United States	3–2
1919	Sydney	Australasia beat British Isles	4–1
1920	*Auckland, N.Z.	United States beat Australasia	5–0
1921	New York	United States beat Japan	5–0
1922	New York	United States beat Australasia	4–1
1923	New York	United States beat Australia	4–1
1924	Philadelphia	United States beat Australia	5–0
1925	Philadelphia	United States beat France	5–0
1926	Philadelphia	United States beat France	4–1
1927	*Philadelphia	France beat United States	3–2
1928	Paris	France beat United States	4–1
1929	Paris	France beat United States	3–2
1930	Paris	France beat United States	4–1
1931	Paris	France beat Great Britain	3–2
1932	Paris	France beat United States	3–2
1933	*Paris	Great Britain beat France	3–2
1934	Wimbledon	Great Britain beat United States	4–1
1935	Wimbledon	Great Britain beat United States	5–0
1936	Wimbledon	Great Britain beat Australasia	3–2
1937	*Wimbledon	United States beat Great Britain	4–1
1938	Philadelphia	United States beat Australia	3–2
1939	*Philadelphia	Australia beat United States	3–2
1940	No matches played during World War II.		

*Holders defeated †One match drawn ‡One match won by default.

WIGHTMAN CUP MATCHES

1923	United States won at Forest Hills	7–0
1924	England won at Wimbledon	6–1
1925	England won at Forest Hills	4–3
1926	United States won at Wimbledon	4–3
1927	United States won at Forest Hills	5–2
1928	England won at Wimbledon	4–3
1929	United States won at Forest Hills	4–3
1930	England won at Wimbledon	4–3
1931	United States won at Forest Hills	5–2
1932	United States won at Wimbledon	4–3
1933	United States won at Forest Hills	4–3
1934	United States won at Wimbledon	5–2
1935	United States won at Forest Hills	4–3
1936	United States won at Wimbledon	4–3
1937	United States won at Forest Hills	6–1
1938	United States won at Wimbledon	5–2
1939	United States won at Forest Hills	5–2
1940	No matches played during World War II.	

THE STANDARD GRIPS AND STROKES EXPLAINED BY WILLIAM T. TILDEN, 2d*

Forehand Groundstroke Grip.—Hold the racket as if it were standing on the edge of the frame, the handle pointing toward you, the short strings perpendicular to the ground, the long strings parallel to it. Then "shake hands" with it—literally. The handle settles comfortably into your palm. Close your fingers tightly around the handle. The racket is then, or should be, part of the straight line of your arm. There should be no angle at your wrist. The hand rests along the outside, or right side, of the handle, the thumb and fingers wrapped around the handle, naturally and comfortably. The racket thus becomes an extension of the arm that can be moved as easily as if it belonged there.

The Backhand Groundstroke Grip.—Obviously, the forehand grip, as described in the foregoing paragraph, is impossible for a backhand shot, since it would be swung against the back of the hand itself. Therefore, a change is necessary. Move the hand one-quarter of a circle on the handle, backward, so that the hand rests directly on top of the handle, the knuckles of the hand pointing to the sky. Grip the handle tightly. If it is more comfortable to run the thumb up the handle, do so. If not, wrap it around as in the forehand grip. The shot off the backhand travels directly across the wrist with this grip. Swing freely from the shoulder with both these grips and keep the wrist stiff and locked on all drives. The grip is about the same for a volley.

Service Grip.—The grip for service is just midway between the forehand and the backhand grip. Take your forehand grip and then turn the hand half way back to the backhand position.

On all grips, hold the racket tight at the moment of impact with the ball. Loosen your grip between shots so as not to cramp the hand from too great a strain.

Forehand Drive.—The forehand drive is one continuous swing, which is considered in three sections:

The *speed* of the shot is decided by the length of the swing behind the body. The farther back you start your swing the faster the racket will move forward, and the speedier your shot will be.

The *direction* of your stroke, whether it is hit straight or cross-court, is determined by that portion of the swing in front; that is, alongside your body. In other words, as you face offcourt, it is the space within the lines from your hips. If you meet the ball back near your right hip, the shot goes toward the right; if you meet it directly in front of the belt buckle, it goes on a straight line; and if you meet it up in front of your left hip, the shot goes cross-court to your left.

When awaiting the ball, face your opponent across the net. As soon as you see the ball coming toward you, decide which side, fore or backhand, you will play it. Then change your body position accordingly so that you face off the sideline, while your shoulders are along the line of the shot you are going to make. As the ball reaches you, drop your weight to your back foot and commence your swing well behind your body, meeting the ball with the racket in its forward flight just in front of your body and follow through to the end of your swing.

This brings us to the third portion of the swing, the portion beyond or nearer the net than the body, which is called the follow-through. This determines the spin or twist on the shot and is the factor that holds the ball in court. For the drive the racket meets the ball flat and passes up and over the top of the ball, thus spinning the ball away from you and downward. It is the same spin as a pitcher's drop in baseball. The racket passing under the ball, making it float or drag, is the "chop" or "slice" stroke (*see* below).

The swing, as described, is in three parts, but is made in one free movement that carries the whole body along with it. It is as essential in tennis to follow through from the beginning of your swing to the extreme end of your reach as it is in golf or baseball. It gives direction and control of length.

There is a certain height at which to hit a tennis ball correctly. There are other heights at which one should never hit it unless caught out of position. The drive should be hit at a height never lower than your knees or higher than your shoulders. If the ball must be met at either of these heights, do not drive. Merely defend it and put it back and wait for another chance to drive. The height at which a tennis ball may be driven hardest is about waist high and at a distance about three feet from your body.

In making the drive, first be certain your form is correct. See to it that your feet are correctly placed so that you are sideways to the net. Next make sure your racket face meets the ball flat and that your racket passes up, over and slightly outside the ball, thus pulling it toward you. Do not try to hit hard until you have learned to hit correctly. Speed will come later, but correct form can be learned only before you have formed bad habits in stroking that are almost impossible to break.

Backhand Drive.—The laws of footwork are exactly the reverse of those applying to the forehand drive. The back foot is now the left, while the front foot is the right. The swing is from well behind the body, as in the forehand shot. The grip, as previously explained, is changed one-fourth on the handle, so that the hand is on top of the handle, while the shot travels across the wrist, which is locked and stiff. The racket head should be slightly in advance of the hand when it meets the ball, and the face of the racket is flat. The ball travels across the short strings. There is less topspin to this stroke than the forehand, because the follow-through is less. Use your left hand as a balance, well behind your body, and be sure to keep your body well away from the ball, so as not to cramp your swing. Bend to meet the ball with the racket head slightly on the side away from you and pull it toward you cross-court.

Service.—Service is the opening gun in tennis. It is putting the ball in play, and every man should learn a service that will be a distinct advantage. Service has made many players famous. Maurice E. McLoughlin, the "California Comet," was world renowned for his service. Robert Lindley Murray, Elia Fottrell, Harold Throckmorton, S. Howard Voshell and many other players were noted for their services. All these men hit their deliveries hard, but they never sacrificed accuracy to mere speed. They were always careful to put the ball in court. They served very few double faults.

Foot faults should be avoided. The easiest way to serve legally is to remember that one foot must be on the ground and both behind the line until your racket has struck the ball. Stand at least six inches behind the base line and you will not foot fault.

Slice Service.—This is the most common form of service. It requires the least effort and has the greatest chance of going in court.

To hit this service, stand behind the baseline with your feet at an angle of about 45 degrees to the line. Drop your weight back on your right foot. Toss the ball well above your head and slightly to the right in advance of it. Swing your racket up and forward with one rhythmic movement, at the same time shifting the weight forward toward the left foot. Meet the ball as high above your head as you can comfortably reach. The racket face is outside, or on the right side of the ball, and slightly over it. It travels from right to left. Swing directly through this, imparting a twist to the ball to spin it from left to right. This tends to hold the ball in court.

American Twist Service.—The stand and grip for this service are the same as for the slice. The ball is thrown slightly to the left of the head and almost directly above it. If anything, it may be slightly behind. The body is bent backward and the ball hit at a point more to the left than in the slice. The racket travels up and over the ball which is below and inside the strings. The ball is really between your face, turned upward to watch it, and the face of your racket, which is travelling from left to right away from your body. This service carries extreme twist and a high bound, but with not so much speed as a slice or flat service. There is more wrist turn to this service than in the slice. The body movement causes a distinct pull on the stomach muscles and those along the right side. The slice service is hit with the shoulder and arm muscles.

Reverse Twist.—This delivery is a totally different style of service and is not one for regular use. The server, to deliver this service, should stand facing the net with both toes on a line with the base line. The ball is thrown about shoulder high. The ball is caught and carried on the strings for a short space. The racket passes up and over the ball, which is outside the racket face from the server. This service carries extreme twist but little speed or control. The hitting plane is about shoulder high instead of over the head. The weight control is faulty. In fact, it is not a service for a beginner to learn.

Volley—Forehand and Backhand.—The volley is the shot made by taking the ball in the air before it has struck the ground. It is "hitting it on the fly," as the common expression goes. The laws of footwork and body position are the same for volleys as for groundstrokes, the body always sideways to the net and weight moving forward.

The groundstroke or drive is made from the back of the court. The volley is made from the front of the court or net position. Volleys should not be made from behind the service line if it is possible to drive.

The drive has a distinct follow-through and a long swing. The volley has little or no follow-through and a very short swing. All volleys should be blocked or undercut and not stroked or topped.

The shot is made with a short swing from behind the body. The racket face meets the ball flat or, if the shot must be made from below the top of the net and lifted, slightly under the ball. The wrist is stiff and locked. The angle of the shot is determined by the angle made by the flight of the ball coming to you and the racket face. The racket moves forward, meets the ball and stops dead. It does not follow through. It blocks the ball, which rebounds by its own speed plus the body weight behind the racket.

Smash.—The overhead smash is the stroke killing the ball in the air when it is lobbed over your head. This shot should be modelled as nearly after your service as you can do it, except that it is hit with less twist and more speed. (W. T. T.)

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RULES OF LAWN TENNIS AND CASES AND DECISIONS

The following code of rules revised as of 1941, is the official code of the International Lawn Tennis federation, of which the United

States Lawn Tennis association is a member.

The cases and decisions, the glossary of terms and the tournament regulations are addenda adopted by the United States Lawn Tennis association and are official in the United States only, although they in no way conflict with the code or international practice.

The explanations while not official utterances may be considered a correct guide for interpreting the rules. They were prepared by the Tennis Umpires association to amplify and explain the formal code.

THE SINGLES GAME

Rule 1.—The court shall be a rectangle 78 ft. long and 27 ft. wide. It shall be divided across the middle by a net, suspended from a cord or metal cable of a maximum diameter of one-third of an inch, the ends of which shall be attached to, or pass over, the tops of two posts, 3 ft. 6 in. high, which shall stand 3 ft. outside the court on each side. The height of the net shall be 3 ft. at the centre, where it shall be held down taut by a strap not more than 2 in. wide. There shall be a band covering the cord or metal cable and the top of the net for not less than 2 in. nor more than 2½ in. in depth on each side. The lines bounding the ends and sides of the court shall respectively be called the base lines and the side lines. On each side of the net, at a distance of 21 ft. from it and parallel with it, shall be drawn the service lines. The space on each side of the net between the service line and the side lines shall be divided into two equal parts called the service courts by the centre service line, which must be 2 in. in width, drawn half-way between, and parallel with, the side lines. Each base line shall be bisected by an imaginary continuation of the centre service line to a line 4 in. in length and 2 in. in width called the centre mark, drawn inside the court and at right angles to and in contact with such base line. All other lines shall be not less than 1 in. nor more than 2 in. in width, except the base lines, which may be 4 in. in width, and all measurements shall be made to the outside of the lines.

NOTE—In the case of the International Lawn Tennis championship (Davis cup) or other official championships of the International federation, there shall be a space behind each base line of not less than 21 ft., and at the sides of not less than 12 ft.

Explanation of Case I.—The posts in singles should be 3 ft. outside the singles court, and in doubles 3 ft. outside the doubles court.

The net should be 33 ft. wide for a singles court, and 42 ft. wide for a doubles court. It should touch the ground along its entire length and come flush to the posts at all points.

It is well to have a stick 3 ft. 6 in. long, with a notch cut in at the 3-ft. mark, for the purpose of measuring the height of the net at the posts and in the centre. These measurements, as well as the measurements of the court itself, always should be made before starting to play an important match.

Rule 2.—The permanent fixtures of the court shall include not only the nets, posts, cord or metal cable, strap and band, but also, where there are any such, the back and side stops, the stands, fixed or movable seats and chairs round the court, and their occupants, all other fixtures around and above the court, and the umpire, foot fault judge and linesmen when in their respective places.

Rule 3.—The ball shall have a smooth outer surface, seams in the cover shall be stitchless. The ball shall be more than 2½ in. and less than 2⅝ in. in diameter, and more than 2 oz. and less than 2 1/16 oz. in weight. The ball shall have a bound of more than 53 in. and less than 58 in. when dropped 100 in. upon a concrete base, and a deformation of more than .265 in. and less than .290 in. when subjected to a pressure of 18 lb. applied to each end of any diameter. All tests shall be made in accordance with the regulations in the appendix hereto.

CASE I.—Should a ball become broken through hitting, shall a let be called?

Decision.—Yes.

Explanation of Case I.—"How often may the players have new balls?" is a question that is frequently asked.

According to Tournament Regulation 14 (g) the umpire, subject to the approval of the referee, may decide when new balls are required to insure fairness of playing conditions. In matches where there is no umpire, the players should agree beforehand on this matter.

Rule 4.—The players shall stand on opposite sides of the net; the player who first delivers the ball shall be called the server, and the other the receiver.

CASE II.—A player returns the ball, and finding that he cannot stop himself before reaching the net, jumps over it. Is it a good return?

Decision.—No. Rule 4 requires that the players shall be on opposite sides of the net, and therefore the player invading his opponent's court loses the stroke.

CASE III.—The server claims that the receiver must stand in the court. Is this necessary?

Decision.—No. The receiver may stand wherever he pleases on his own side of the net.

CASE IV.—A cuts the ball just over the net and it returns to A's side. B, unable to reach the ball, throws his racket and hits the ball. Both racket and ball fall over the net on A's court. A returns the ball outside of B's court. Who wins the point?

Decision.—When B threw his racket across the net he invaded his opponent's territory and such an invasion was in a measure responsible for A's returning the ball out of court; in other words, B would lose the point.

CASE V.—A player in returning the ball, which has been played just over the net with a heavy cut so that it bounces sharply to one side and backward, runs outside the court, and, while the ball is still in play, passes the imaginary line which would be made by the extension of the net. Technically, he is not on his side of the net, and Rule 4 states that players shall be on opposite sides of the net. Does he lose the point?

(a) If he strikes the ball before stepping across the imaginary line which would be made by the extension of the net?

(b) If he strikes the ball after stepping across the imaginary line?

Decision.—He does not lose the point in either case, unless he actually gets in his opponent's way and hinders his return.

Rule 5.—The choice of sides and the right to be server or receiver in the first game shall be decided by toss.

The player winning the toss may choose, or request his opponent to choose: (a) the right to be server or receiver, in which case the other player shall choose the side; or (b) the side in which case the other player shall choose the right to be server or receiver.

Explanation of Rule 5.—The toss is usually made by one player twirling a racket in the air, the other calling "Rough" or "Smooth"; which means that the fine stringing (the trimming) at the head of the racket will have the rough or the smooth side up when the racket falls to the ground.

Rule 6.—The service shall be delivered in the following manner. Immediately before commencing to serve the server shall stand with both feet at rest behind (*i.e.*, farther from the net than) the baseline, and within imaginary continuations of the centre-mark and side line. The server shall then project the ball by hand into the air in any direction and before it hits the ground strike it with his racket, and the delivery shall be deemed to have been completed at the moment of the impact of the racket and the ball. A player with the use of only one arm may utilize his racket for the projection.

CASE VI.—Is it allowable in singles for the server to stand behind the base line back of the alley?

Decision.—No.

CASE VII.—May a player serve underhand?

Decision.—Yes. There is no restriction regarding the kind of service which may be used; that is, the player may use an underhand or an overhand service at his discretion.

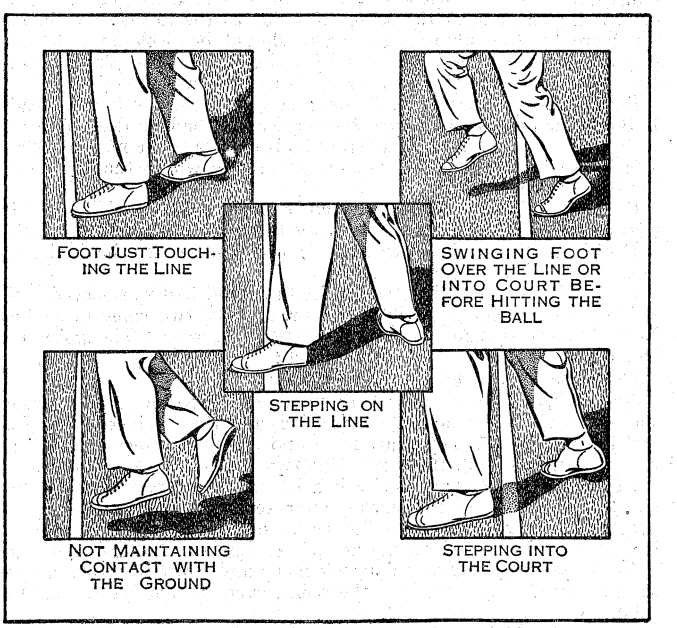
Rule 7.—The server shall throughout the delivery of the service:

(a) Not change his position by walking or running.

(b) Maintain contact with the ground.

(c) Keep both feet behind (*i.e.*, farther from the net than) the base line.

Official Interpretation of Rule 7.—The following interpretation of Rule 7 which was approved by the International federation on March 5, 1929, is the official interpretation of Rule 7 (a), (b) and (c) and should be read very carefully in order to properly enforce the whole rule:



EXAMPLES OF FOOT FAULTS

(a) The server shall not by the following movements of his feet be deemed "to change his position by walking or running," viz.:

(1) Slight movements of the feet which do not materially affect the location originally taken up by him.

(2) An unrestricted movement of one foot so long as the other foot maintains continuously its original contact with the ground.

(b) At no time during the delivery of the service (*i.e.*, from the taking up of the stance to the moment of impact of the racket and the ball—see Rule 6) may both feet be off the ground simultaneously.

(c) The word "feet" means the extremities of the legs below the ankles and at all times during the delivery of the service (as before described) every part of such extremities must be behind (*i.e.*, farther from the net than) the base line.

Rule 8.—In delivering the service, the server shall stand alternately behind the right and left courts, beginning from the right in every game. The ball served shall pass over the net and hit the ground within the service court which is diagonally opposite, or upon any line bounding such court, before the receiver returns it.

Explanation of Rule 8.—In the absence of a Linesman and umpire, it is customary for the receiver to determine whether the service is good or not.

It should be remembered, in handicap matches, that the server starts to serve from the right-hand court no matter whether odds be given or owed.

Rule 9.—The service is a fault (a) if the server commit any breach of Rules 6, 7 or 8, (b) if he miss the ball in attempting to strike it, (c) if the ball served touch a permanent fixture (other than the net, strap or band) before it hits the ground.

CASE VIII.—After throwing the ball up preparatory to serving, the server decides not to strike at it and catches it instead. Is it a fault?

Decision.—No. He has not touched the ball "in attempting to strike it." The fact that he catches the ball shows that he has no longer any intention of delivering a service.

Rule 10.—After a fault (if it be the first fault) the server shall serve again from behind the same half of the court from which he served that fault, unless it was a fault because he served from behind the wrong half, when he shall be entitled to deliver one service from behind the other half. A fault may not be claimed after the next service has been delivered.

CASE IX.—A player serves from the wrong court; he loses the point, and then claims it was a fault.

Decision.—The point stands as played.

CASE X.—The point score being 15-all, the server by mistake serves from the left court; he wins the point and serves again, delivering a fault; the mistake is then discovered. Is he entitled to the previous point? From which court should he serve next?

Decision.—The previous point stands. The next service should be from the left court, the score being 30-15 and the server has served one fault.

Explanation of Rule 10.—A service from the wrong court is a fault if discovered before the point is completed. If play on that point has been completed, the stroke stands as played whether the server has won or lost. In either case, as soon as the mistake is discovered the server must deliver his next serve from the proper court. All previous points before such discovery shall be scored as played. However, if the mistake of the server was due to the incorrect calling of the score by the umpire, the stroke should be declared a let and played over unless the point has been completed. The player should not suffer from the umpire's error. (Case XXIV.)

Rule 11.—The server shall not serve until the receiver is ready. If the latter attempt to return the service, he shall be deemed ready. If, however, the receiver signify that he is not ready, he may not claim a fault because the ball does not hit the ground within the limits fixed for the service.

CASE XI.—The service is delivered before the receiver is ready. He tries to return it and fails. Is he entitled to have it played over again?

Decision.—No. If he attempts to return the service, he is deemed ready.

CASE XII.—In receiving the service, a second ball was served while the first one (a let) was still in the air, and the two came in contact. No attempt was made to return the second service. The point was scored for the server. Was this correct?

Decision.—No. A let should be called.

CASE XIII.—The receiver calls "not ready" for a second service. The ball strikes beyond the service line, and the receiver claims that the fact that he was not ready makes no difference, since a fault cannot be returned, and, therefore, that two faults have been served.

Decision.—The second service is a let. A player may not call "not ready" and then have the service count, or not, as suits his interest.

Explanation of Rule 11.—The server must wait until the receiver is ready for the second service as well as the first, and if the receiver claims to be not ready and does not make any effort to return a service, the server may not claim the point, even though the service was good.

Rule 12.—The service is a let (a) if the ball served touch the net, strap or band, provided the same be otherwise good, (b) if a service or fault be delivered when the receiver is not ready (see Rule 11). In case of a let, the service counts for nothing, and the server shall serve again, but a let does not annul a previous fault.

Explanation of Rule 12.—During the service, a ball that touches the net in going into the proper court is termed a let and counts for nothing, another service being delivered. If the ball touches the net when going into the proper court during a rally, it is good.

There is no limit to the number of let balls that may be made on the service, and the server continues serving in the same court until a good service is delivered or two faults are made.

Rule 13.—At the end of the first game the receiver shall become server, and the server, receiver; and so on alternately in all the subsequent games of a match. If a player serve out of turn, the player who ought to have served shall serve as soon as the mistake is discovered. All points scored before such discovery shall be reckoned, but a single fault served before such discovery shall not be reckoned. If a game shall have been completed before such discovery, the order of service shall remain as altered.

Rule 14.—A ball is in play from the moment at which it is delivered in service (unless a fault or a let), and remains in play until the point is decided.

CASE XIV.—A ball is played into the net; the player on the other side, thinking that the ball is coming over, strikes at it and hits the net. Who loses the point?

Decision.—If the player touched the net while the ball was still in play, he loses the point. A ball touching the net ceases to be in play as soon as it is clear that the ball unimpeded will not cross the net.

Rule 15.—The server wins the point (a) if the ball served touch the receiver or anything which he wears or carries before it hits the ground, (b) if the receiver otherwise lose the point as provided by Rule 17.

Rule 16.—The receiver wins the point (a) if the server serve two consecutive faults, (b) if the server otherwise lose the point as provided by Rule 17.

Rule 17.—A player loses the point if: (a) He fail, before the ball in play has hit the ground twice consecutively, to return it directly over the net (except as provided in Rule 20 a or 20 c. (b) He return the ball in play so that it hits the ground, a permanent fixture, or other object, outside any of the lines which bound his opponent's court (except as provided in Rule 20 a and 20 c); or (c) He volley the ball and fail to make a good return even when standing outside the court; or (d) He touch or strike the ball in play with his racket more than once in making a stroke; or (e) He or his racket (in his hand or otherwise) or anything which he wears or carries, touch the net, posts, cord or metal cable, strap or band, or the ground within his opponent's court at any time while the ball is in play; or (f) He volley the ball before it has passed the net; or (g) The ball in play touch him or anything that he wears or carries, except his racket in his hand or hands; or (h) He throw his racket at and hit the ball.

CASE XV.—A player standing outside the court volleys the ball or catches it in his hand, and claims the stroke because the ball was certainly going out of court.

Decision.—He loses the point. It makes no difference where he was standing. The return is presumed good until it strikes the ground outside of the court or a permanent fixture other than the net or posts.

CASE XVI.—A player is struck by the ball served before it has touched the ground, he being outside of service court. How does it count?

Decision.—The player struck loses the point. The service is presumably good until it strikes in the wrong court or out of court. A player may not take the decision upon himself by stopping the ball.

CASE XVII.—In delivering a first service which falls outside the proper court, a player's racket slips out of his hand and flies into the net. Does he lose the point for hitting the net?

Decision.—No; it counts merely as one fault whether the racket strikes the net before or after the ball falls outside.

Rule 18.—A ball falling on a line is regarded as falling in the court bounded by that line.

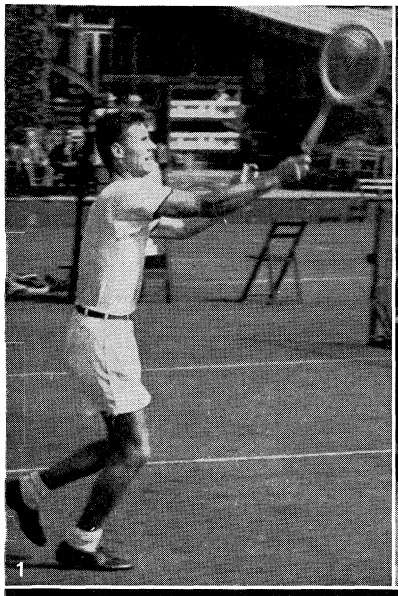
Rule 19.—If the ball in play touch a permanent fixture (other than the net, posts, cord or metal cable, strap or band) after it has hit the ground, the player who struck it wins the point; if before it hits the ground, his opponent wins the point.

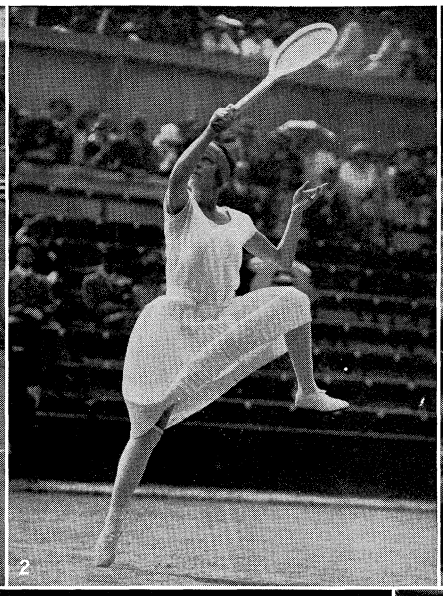
Case XVIII.—A return hits the umpire, or his chair or stand. The player claims that the ball was going into the court.

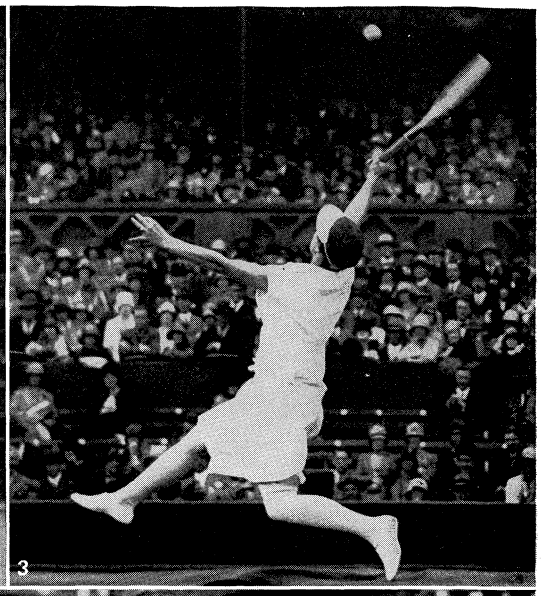
Decision.—He loses the point.

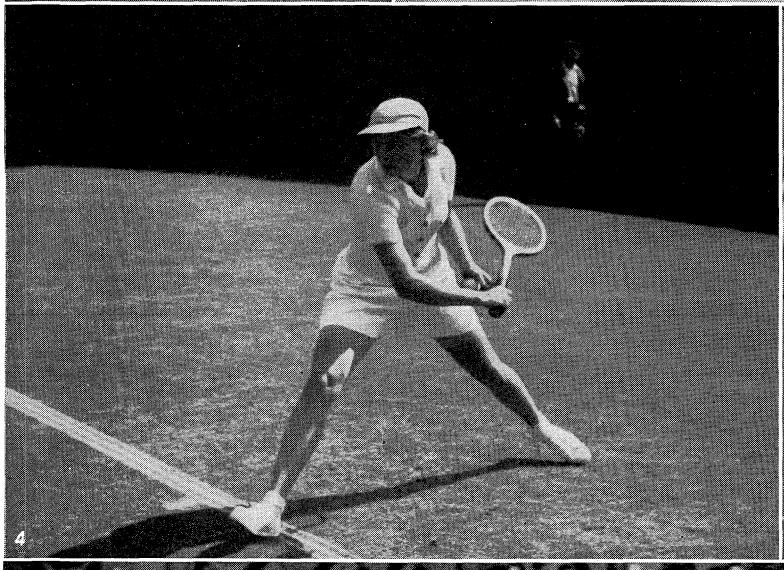
Explanation of Rule 19.—If a ball before touching the ground strikes the backstop, any of the officials or their chairs, the point is lost by the player who hit the ball. If, however, the ball strikes in the proper court and on the first bound hits any fixture (see Rule 2), the point is lost by the player receiving the ball.

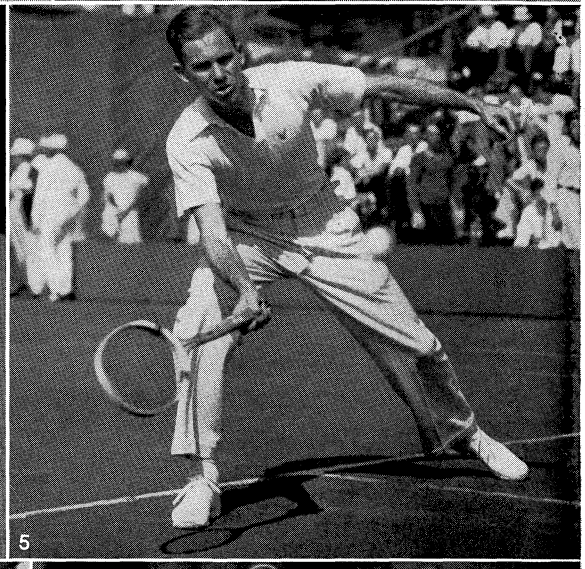
Rule 20.—It is a good return: (a) If the ball touch the net, posts, cord or metal cable, strap or band, provided that it passes over any of them and hits the ground within the court; (b) If the ball, served or returned, hit the ground within the proper court and rebound or be blown back over the net, and the player whose turn it is to strike reach over the net and play the ball, provided that neither he nor any part of his clothes or racket touch the net, posts, cord or metal cable, strap or band or the ground within his opponent's court, and that the stroke be otherwise good; (c) If the ball be returned outside the post, either above or below the level of the top of the net, even though it touch the post, provided that it hits the ground within the proper court; (d) If a player's racket pass over the net after he

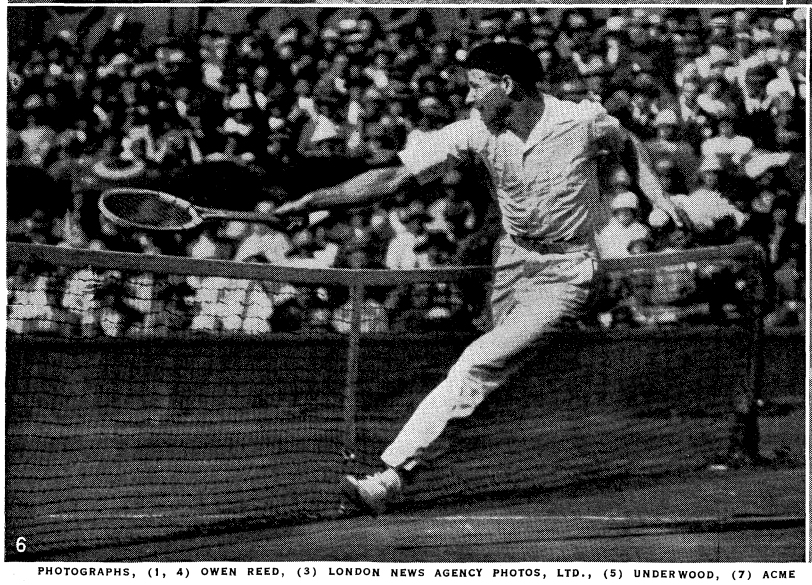


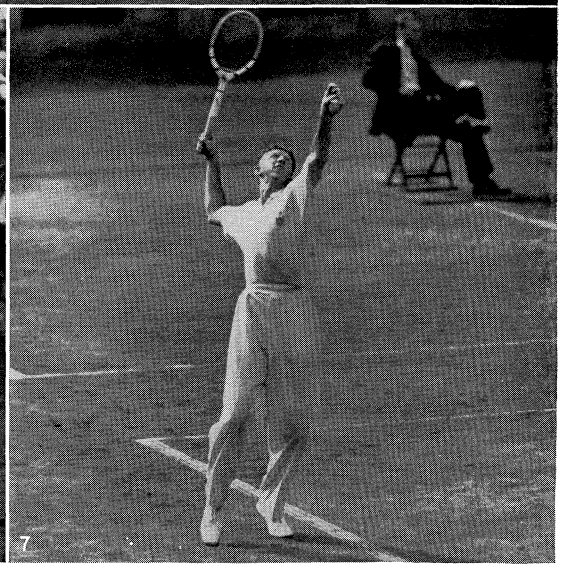










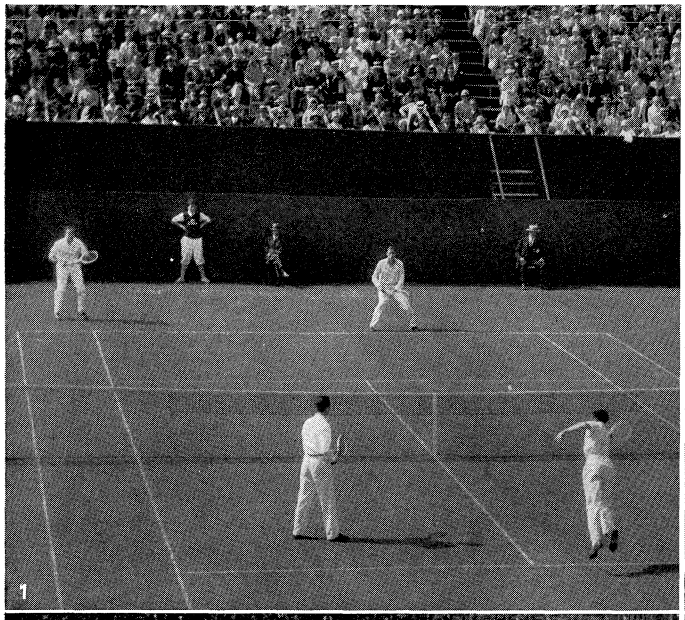


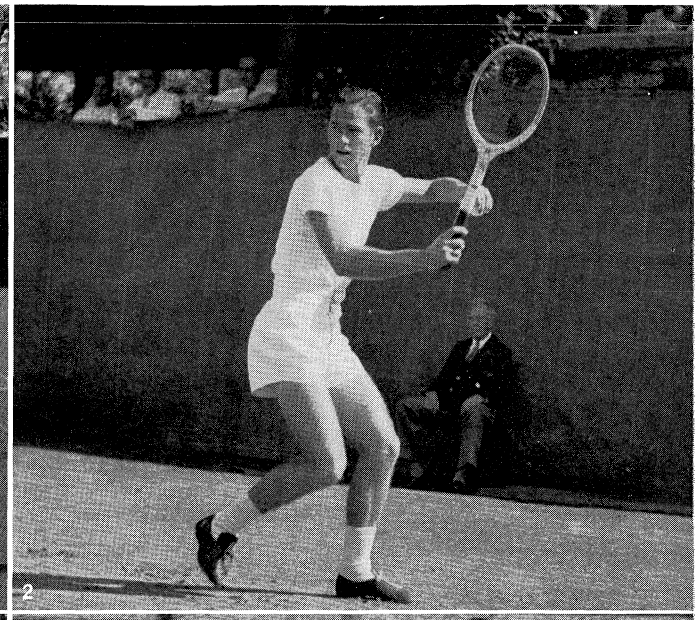
PHOTOGRAPHS, (1, 4) OWEN REED, (3) LONDON NEWS AGENCY PHOTOS, LTD., (5) UNDERWOOD, (7) ACME

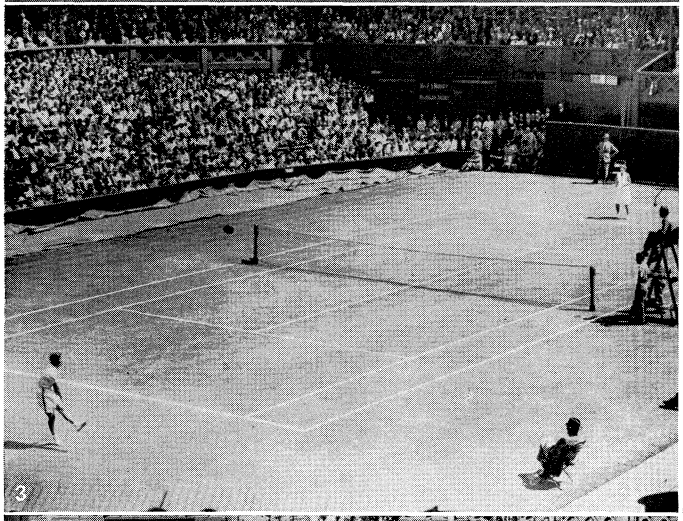
TENNIS STROKES

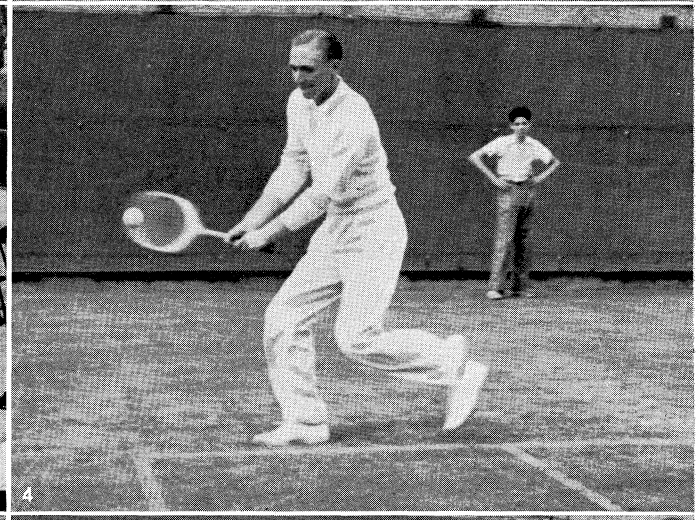
1. Forehand volley. Frederick R. Schroeder, Jr., American
2. Backhand smash. Suzanne Lenglen, French
3. Overhead smash. Helen Wills Moody, American
4. Start of backhand drive. Alice Marble, American
5. Low volley. Ellsworth Vines, American
6. Finishing volley. J. Borotra, French
7. Serve. J. Donald Budge, American

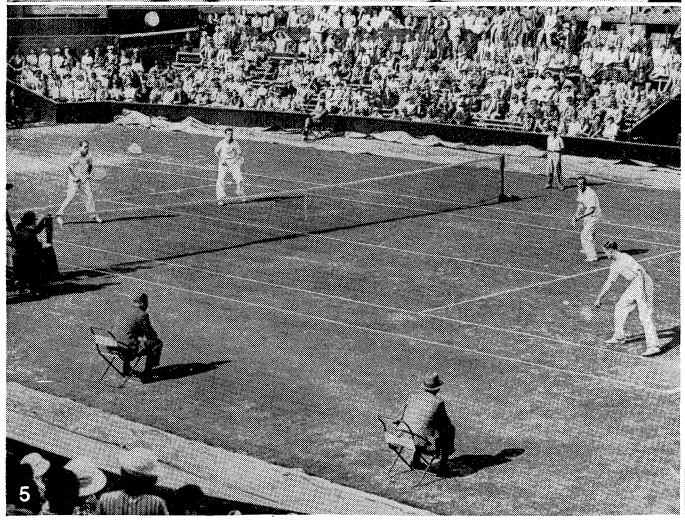
LAWN TENNIS AND TENNIS

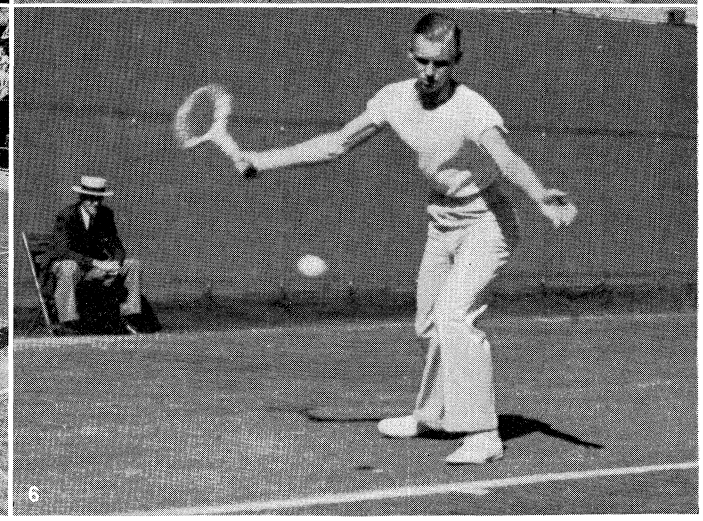












PHOTOGRAPHS, (1) PACIFIC AND ATLANTIC, (2, 4, 6) OWEN REED, (3, 5) WIDE WORLD

TOURNAMENT MATCHES AND FAMOUS STARS

1. View of the match in which William T. Tilden, 2nd, and Francis T. Hunter defeated J. Brugnon and J. Borotra. Davis Cup matches, Germantown, Pa., 1927
2. Robert L. Riggs, American, starting backhand drive
3. General view of the All-England Club (1935) at Wimbledon when Helen Wills Moody (background) defeated Helen Jacobs
4. John Bromwich, Australian, in two-handed forehand drive
5. Doubles match between G. R. D. Tuckey and G. P. Hughes of Great Britain (right) and Wilmer Allison and John Van Ryn (United States) in which the English netmen won the Davis Cup, Wimbledon, 1935
6. Joseph Hunt, American, at start of forehand drive

has returned the ball, provided the ball pass the net before being played and be properly returned; (e) If a player succeed in returning the ball, served or in play, which strikes a ball lying in the court.

NOTE—If for the sake of convenience a doubles court be equipped with singles posts for the purposes of a singles game, then the doubles posts and those portions of the net, cord or metal cable and band outside such singles posts shall at all times be permanent fixtures.

CASE XIX.—Is it a good return if a player return the ball holding the racket in both hands?

Decision.—Yes.

CASE XX.—The service or the ball in play strikes a ball lying in the court. May it be returned?

Decision.—Yes, if it is clear to the umpire that the right ball is returned.

CASE XXI.—A ball going out of court hits a net post and bounds into the opposite court. Is it a good return?

Decision.—Yes.

Explanation of Rule 20.—Should the ball touch a player while it is in play, no matter if the player is standing in or out of the court, he loses the point, and it should be remembered that a ball is good until it strikes the ground outside of the court. Should the player's racket touch the net, the posts or any part of them or if he steps into his opponent's court, or drops his racket into his opponent's court while the ball is still in play, he loses the point. If his racket strikes the ball before it comes over the net into his court, he loses the point. He may, however, strike the ball while it is in his court and permit his racket to follow the ball across the net without losing the point.

A ball hit with a sharp cut that bounds back over the net after having struck in the proper court is good. The player may reach over the net to return such a ball, but loses the point if he touches the net in doing so.

A return that passes between the net post and the net but below the top cord of the net is not a good return, because the net should fit flush to the net posts. The purpose of the net is to serve as a barrier, from post to post, between the players.

Rule 21.—In case a player is hindered in making a stroke by anything not within his control, except a permanent fixture of the court, the point shall be replayed.

CASE XXII.—A spectator gets into the way of a player who fails to return the ball. May the player then claim a let?

Decision.—Yes; if in the umpire's opinion he was obstructed by a circumstance beyond his control. For instance, if the ropes or the seats are allowed to be so near to the court that a player is interfered with by them, the point should not be played again, because the ropes and seats form part of the arrangements of the ground. If, however, a spectator passes in front of those seats, or places a chair nearer than the original line, and so interferes with a player, the point should be played again.

CASE XXIII.—A player is interfered with as above, and the umpire directs the stroke to be played again. The server had previously served a fault. Has he the right to two services?

Decision.—No. The fault stands. A let does not annul a previous fault.

CASE XXIV.—The umpire or linesman calls "Out," and then instantly changes and says "Play." The player fails to return the ball, and claims he was prevented by the umpire.

Decision.—The umpire shall call a let, unless it is clear to him that the mistaken call was not in any way the cause of the player's failure to return the ball, in which case the point stands. In the case of a clear service ace, pass or placement, the point should not be replayed. Of course, where the final decision of the linesman is "Out," a let should not be called in any case, but the player who struck the ball loses the point.

CASE XXV.—During play a ball is thrown or comes into court and interferes with the play. What shall be done?

Decision.—A let shall be called. But this shall apply only when the ball comes into court during play. It is the duty of the receiver to remove loose balls from his court or to have them removed. If he fails to do so he must take the consequences.

CASE XXVI.—The first ball served—a fault—strikes the backstop and returns, interfering with the receiver at the time of the second service. May he claim a let?

Decision.—Yes; but if he had an opportunity to remove the ball from the court, and negligently failed to do so, he may not claim a let.

CASE XXVII.—During the play the umpire calls "Let"; one of the players continues the point, wins it, and appeals to the referee, who decides that the umpire was in error as a matter of law in declaring a let. The player claims the point.

Decision.—It is a let, unless the umpire's erroneous call had no effect on the play.

Explanation of Rule 21.—If a player, while the ball is in play, is interfered with by the gallery, by a ball coming into the court or by any disturbance not within his control, a let shall be called.

The umpire is the judge of outside interference with the play, but in the case of a match played without officials, it is both courteous and customary to allow the player who is interfered with to decide.

Rule 22.—If a player wins his first point, the score is called 15 for that player; on winning his second point, the score is called 30 for that player; on winning his third point, the score is called 40 for that player; and the fourth point won by a player is scored Game for that player, except as follows:

If both players have won three points, the score is called Deuce; and the next point won by a player is scored Advantage for that player. If the same player wins the next point, he wins the game; if the other player wins the next point, the score is again called Deuce; and so on, until a player wins the two points immediately following the score at deuce, when the game is scored for that player.

Explanation of Rule 22.—This method of scoring is the one used in all matches except when a handicap match is played under Tournament Regulation 23.

Rule 23.—The player who first wins six games wins a set, except as follows: If both players have won five games, the score is called Games-All, and the next game won by a player is scored Advantage Game for that player. If the same player wins the next game, he wins the Set; if the other player wins the next game, the score is again called Games-All; and so on until a player wins two games more than his opponent, when the set is scored for that player.

Rule 24.—The players shall change sides at the end of the first, third and every subsequent alternate game of each set, and at the end of each set, unless the total number of games in such set be even, in which case the change is not made until the end of the first game of the next set.

Explanation of Rule 24.—The change of courts is made after every odd game of each set. If the total number of games played in a set is even, play the first game of the next set in the same court in which the preceding set was finished; then change, play two games and change again, and so on. If the number of games in a set is odd, change sides at the end of the set, play one game and change again.

Each set is considered as a separate unit. It is the umpire's duty to direct the competitors to change sides, in accordance with this law (Regulation 14 e of Tournament Regulations).

Rule 25.—The maximum number of sets in a match shall be five, or, where women take part, three.

Rule 26.—Except where otherwise stated, every reference in these rules to the masculine includes the feminine gender.

Rule 27.—In matches where an umpire is appointed, his decision shall be final; but where a referee is appointed, an appeal shall lie to him from the decision of an umpire on a question of law, and in all such cases the decision of the referee shall be final.

The referee, in his discretion, may at any time postpone a match on account of darkness or the condition of the ground or the weather. In any case of postponement the previous score and the previous occupancy of courts shall hold good, unless the referee and the players unanimously agree otherwise.

Explanation of Rule 27.—The referee postpones the match or approves of such action on the part of the umpire. (Tournament Regulations 10 and 14 g.) In case of a postponement the match is resumed from the point, game and set score existing when the match was stopped, unless the referee and both players unanimously agree to play the entire match, or any part of it, over.

Rule 28.—Play shall be continuous from the first service till the match be concluded; provided that after the third set, or when women take part, the second set, either player is entitled to a rest, which shall not exceed ten minutes, except that in the countries situated between latitude 15° N. and latitude 15° S. such rest shall not exceed 45 minutes,* and provided further that when necessitated by circumstances not within the control of the players, the umpire may suspend play for such a period as he may consider necessary. If play be suspended and be not resumed until a later day the rest may be taken only after the third set (or when women take part, the second set) of play on such later day, completion of an unfinished set being counted one set. These provisions shall be strictly construed, and play shall never be suspended, delayed or interfered with for the purpose of enabling a player to recover his strength or his wind or to receive instruction or advice. The umpire shall be the sole judge of such suspension, delay or interference, and after giving due warning he may disqualify the offender.

Explanation of Rule 28.—In men's events there is no rest in a two out of three set match, but in a three out of five set match, a ten-minute rest may be taken only after the third set. It may not be taken before the third set or at any time after the fourth set has been started. It must be taken after the third set or not at all.

In women's matches a rest of ten minutes may be taken after the second set or not at all.

All matches for juniors shall be the best two out of three sets with no rest. In the case of Tennis Centre championships or interscholastic, state and sectional tournaments, equivalent to Tennis Centres, and in National Junior championships the final round shall be the best three out of five sets. If such final requires more than three sets to decide, there must be a rest of ten minutes after the third set.

Matches for boys and girls shall be the best two out of three sets and there must be a ten-minute rest after the second set.

The players must be back on the court ten minutes after play has

*Any nation is at liberty to modify the first provision in Rule 28, or omit it from its regulations governing tournaments, matches or competitions held in its own country, other than the International Lawn Tennis championship (Davis cup).

ceased.

Should a player, on account of physical unfitness or an unavoidable accident, not within his control, be unable to continue play, he must be defaulted.

"Stalling" is one of the hardest things to deal with. The rules say that "play shall be continuous." An umpire should determine whether the "stalling" is deliberate and for the purpose of gaining time. If he decides that it is, he should warn the player to stop his unfair practice; if this does not end it, he should then default him.

The umpire has the power to suspend a match for such period as he may think necessary, if, in his judgment, the play is interfered with by circumstances beyond the players' control. Such circumstances might be the passing of an aeroplane, moving of spectators in the stands, etc.

THE DOUBLES GAME

Rule 29.—The foregoing rules shall apply to the doubles game except as follows:

Rule 30.—For the doubles game, the court shall be 36 ft. in width, *i.e.*, 4½ ft. wider on each side than the court for the singles game, and those portions of the singles side lines which lie between the two service lines shall be called the service side lines. In other respects the court shall be similar to that described in Rule 1, but the portions of the singles side lines between the base line and the service line on each side of the net may be omitted if desired.

CASE XXVIII.—In doubles the server claims the right to stand at the corner of the court as marked by the doubles side line. Is the foregoing correct or is it necessary that the server stand within the limits of the centre mark and the singles side line?

Decision.—The server has the right to stand anywhere between the centre mark and the doubles side lines.

Rule 31.—The pair who have to serve in the first game of each set shall decide which partner shall do so, and the opposing pair shall decide similarly for the second game. The partner of the player who served in the first game shall serve in the third; the partner of the player who served in the second game shall serve in the fourth, and so on in the same order in all the subsequent games of a set. The order of service having been decided shall not be altered during the set, but it may be changed at the beginning of a new set.

CASE XXIX.—In doubles, one player does not appear in time to play, and his partner claims to be allowed to play single-handed against the opposing pair. May he do so?

Decision.—No.

Explanation of Rule 31.—At the start of any new set a pair may change the order of service from that followed in the preceding set. This order may not be changed during a set.

It is optional with them which shall serve first, but they must serve alternately throughout each set.

Rule 32.—The pair who have to receive the service in the first game of each set shall decide which partner shall receive the first service and the opposing pair shall decide similarly in the second game of each set. Partners shall receive the service alternately throughout each game and the order of receiving the service having been decided shall not be altered during the set, but it may be changed at the beginning of a new set.

CASE XXX.—Is it allowable, in doubles, for a partner of the server to stand in the centre of the service court, and thereby obstruct the view of the receiver?

Decision.—Yes. The partner may take any position in the court that he wishes.

Explanation of Rule 32.—The receiving formation of a doubles team may not be changed during a set; only at the start of a new set. Partners must receive throughout each set on the same sides of the court which they originally select when the set begins. The first server is not required to receive in the right court; he may select either side, but must hold this to the end of the set.

Rule 33.—If a partner serve out of his turn, the partner who ought to have served shall serve as soon as the mistake is discovered, but all points scored, and any fault served before such discovery, shall be reckoned. If a game shall have been completed before such discovery, the order of service remains as altered.

Explanation of Rule 33.—A point or game that has been played out and finished stands, even though the wrong partner has served. The match goes on as though no error had been committed, the partner who did not serve out of turn serving next.

Rule 34.—If during a game the order of receiving the service is changed by the receivers it shall remain as altered until the end of the game in which the mistake is discovered, but the partners shall resume their original order of receiving in the next game of that set in which they are receivers of the service.

Rule 35.—The service is a fault as provided for by Rule 9, or if the ball served touch the server's partner or anything which he wears or carries; but if the ball served touch the partner of the receiver or anything which he wears or carries, before it hits the ground, the server wins the point.

Rule 36.—The ball shall be struck alternately by one or other player of the opposing pairs, and if a player touch the ball in play with his racket in contravention of this rule, his opponents win the point.

CASE XXXI.—In doubles a ball is struck at by a player at the net, and also by his partner, both players missing the ball, which drops outside the court. Neither player called "Out." Who wins the point?

Decision.—The point goes to the players who struck at the ball and missed it. An unsuccessful attempt to hit the ball, or calling "Out," has no bearing on the case.

TENNIS

Tennis, sometimes called royal tennis, and in the U.S., court tennis, is one of the oldest of ball games. It is played in a walled and roofed court, 110 ft. by 38 ft. 8 in., the floor, however, measuring but 96 ft. by 31 ft. 8 in., the difference being the width of a roofed corridor, the "penthouse" which runs along the two end walls and one of the side walls. Across the middle of the court a net is stretched, and the first object of the game is to strike the ball over this with a racket. The net is 5 ft. high at the ends, 3 ft. at the middle, and divides the floor into two equal parts, the "service" side and the "hazard" side. The floor and walls are made of cement and should be smooth, but not polished.

There is no standard size for a tennis court, and courts vary considerably in dimensions, though the more modern ones have all been built on the same plan. The dimensions given here are those of the most suitable existing courts.

The court is lighted from the roof and sides. The height of the court to the tie-beam is 30 ft., the height of the play-line, above which the ball must not go, 18 ft. at the sides and 23 ft. at the ends. The roof of the penthouse, which is made of wood, slopes downward toward the court, the lower edge being 7 ft. 1½ in. from the floor, the upper 10 ft. 7 in., the width 7 ft. The *dedans* consist of an opening in the end wall on the service side, under the penthouse, where provision is made for spectators, who are protected by a net. It is 21 ft. 8 in. in width; the upper edge is 6 ft. 10 in. from the floor, the lower edge 3 ft. 3 in. The opening of the dedans is 4 ft. 6 in. from the main wall, 5 ft. 6 in. from the other side wall. Looking from the dedans (*i.e.*, from the service side), the right-hand or main wall has one peculiarity, the "tambour," a sloping buttress, to form which the wall is built inward, reducing the breadth of that part of the court to 30 ft. 2 in. In the right-hand corner of the hazard side-end wall (as viewed from the dedans) is the *grille*, an opening lined with wood, 3 ft. 1 in. square; and on this wall is painted a continuation of the *pass-line*. The left-hand wall, along which runs the penthouse, is not continuous, being broken by a long opening between the floor and the penthouse similar to the dedans, and at the same height from the ground. The low walls under this opening and the dedans are called the batteries. There is no wall in front of the marker's box, through which the court is entered on either side of the net-post. This long opening in the left-hand wall is divided into galleries and doors, the latter situated where the entrances to the court used to be in early times. The measurements in order from the dedans are as follows, the numbers of the galleries being counted from the net: Service side: last gallery 9 ft. 6 in., second gallery 9 ft. 6 in.; door 3 ft. 6 in.; first gallery 5 ft. 8 in.; marker's box or line-opening 7 ft. 10 in.; hazard side: first gallery 5 ft. 8 in.; door 3 ft. 6 in.; second gallery 9 ft. 6 in.; last gallery (also called winning gallery) 9 ft. 6 in. The last galleries are 15 ft. 11 in. each from their respective end walls. The galleries are marked by posts, which also serve to support the penthouse. The galleries, dedans and grille are known as the openings; three of these—the grille, dedans and winning gallery—are *winning-in* openings; for if a ball in play is struck into one of these, the striker scores a point. In the earlier French courts were other winning openings, *l'ais* (the board), an upright board 9 ft. by 1 ft. in the left-hand corner of the dedans-wall, *le petit trou* or *le trou*, a hole 16 in. square at the bottom of the other side of the wall, and *la lune*, a round opening high up by the play-line, one at each end of the court. The regulation court has certain lines painted on the floor, which are also continued perpendicularly on the walls. On the hazard side is the half-court line, the pass-line, and the service-line. The first is only required when one player gives the other the odds of "half the court" (*see* below, *Scoring and Handicapping*). The pass-line is drawn 7 ft. 8 in. from the main wall,

the service-line 21 ft. 1 in. from the grille-wall. The rectangle contained by the pass and service lines forms the service court. The other lines, both on the hazard side and service side, mark the chases, which will be explained below.

Implements.—The balls vary in the three countries where the game is chiefly played, England, United States and France. In England balls weigh approximately 2½ oz. and are 2¼ in. in diameter. They are made of strips of cloth wound tightly together and tied with twine, in a special way, to keep them together. Over this "tie" in modern days is placed a little more twine wound round the ball and the outside cover is of white Milton cloth. Black balls are used in two courts (neither full sized) where the floor of the court is white. The French ball is harder and faster than the English, and the American ball, which is machine made, lies somewhere between the two. The racket is usually about 27 in. long and weighs about 16 oz. The head is about 9 in. long and 6 in. broad, but there are no restrictions as to size or weight. The head is somewhat pear-shaped, but its centre line does not correspond with the centre line of the handle, since it is curved upward. Some of the early rackets were strung diagonally, *i.e.*, in diamonds; later, vertical-horizontal stringing was universally adopted; then followed knotting at the points of intersection, which later disappeared.

Scoring and Handicapping.—A match consists ordinarily in England and the U.S. of the best of three or the best of five sets, a set being scored by the player who gets six games first. Sets of "eight games," *i.e.*, the set won by the player who gets eight games first, are generally played in France and sometimes in England.

Often vantage sets are played, *i.e.*, when each player has scored five games or seven games as the case may be; the set continues until one player gets an advantage of two games. In these conditions sets sometimes continue for a very long time, and sets where over 60 games have been played are recorded. In matches for the world's championship the best of 13 sets of six games are generally played on three different days with an interval between them. A game consists ordinarily of four winning strokes, called by the marker as "15," "30," "40," "game"; if the score is "40-all" the marker calls "deuce" and two strokes have to be won in succession by one of the players. When one has won a stroke his score is called "vantage"; if he wins the next, he wins the game; if he loses it, the score reverts to deuce. The score of the player who won the last stroke or made the last chase is called first.

The Game and Hints on Play.—The players decide who shall serve by spinning a racket on its head. One spins and the other calls "rough" or "smooth," the rough side of the head of the racket showing the knots of some of the lower strings. The winner takes the service side, service being an advantage. In four-handed games the winners of the spin often take the hazard side, since by doing so they can decide which of their opponent's service each one will elect to take. He serves from any part of the court and in any way he thinks best, and the ball must go over the net, strike the side penthouse, and fall into the service court. His opponent ("striker-out") tries to return the ball over the net before it has touched the ground a second time; he may volley or half-volley it. For a stroke to be good, it must be made before the second bound of the ball, and the ball must go over the net (even if it touches it), and must not strike the wall above the play-line, nor touch the roof or rafters. The first point to be attained is to be sure of getting the ball over the net, the next to do so in such a way as to defeat the opposing player's attempt to make a good return.

It often happens that a player, either intentionally or from inability, does not take or touch a ball returned to him over the net. In this event, chiefly on the service side a chase (in Italian *caccia*, in French *chasse*) is made, the goodness or the badness of which depends upon the spot on the floor which the ball touches next after its first bound. The nearer this spot is to the end wall the better the chase. The chase lines are numbered, being one yard apart, the shorter lines representing the half-distance. The chases are noted and called by the marker. Thus if a ball fell on the line marked 4, he would call "chase 4"; if between 4 and 3, he would call "better than 4," if it fell nearer to 4 than the short line; "worse than 3" if it fell on the short line or between the short line and 3, for if the ball falls on a line the striker is credited with the better stroke. Strokes into the galleries and doors, with the exception of the winning gallery (last gallery, hazard side), count as chases. The making or, in technical language, the "laying down" of a chase does not immediately affect the score; it has to be won first, *i.e.*, the other player tries to make a better chase; if he fails, the original maker wins. For this purpose after two chases have been laid down (or one, if either player's score is at 40) the players change sides, *e.g.*, if X has been serving and Y has laid down two chases, Y becomes the server and tries to defend them, X to win them by making the ball fall nearer to the back wall after its first bound than Y did. Either player wins the chase if he finds (*i.e.*, hits the ball into) one of the winning openings, or if his opponent fails to make a good return. The winner of the chase scores a point. The chases are played off in the order in which they are made. Should X in trying to win a chase make the same chase as Y originally laid down, the chase is off and neither side scores. In France the chase is played again. The rest goes on till one of the players fails to make a good return, or deliberately leaves the ball alone in order that his opponent may lay down a chase (a procedure to be followed at the discretion of a player in whose judgment the chase will be a bad one), or lose a chase already laid down and in the course of being played off. Either player can score, there being no "hand-in" or "hand-out" as at rackets. A point is scored by that player whose opponent fails to make a good return stroke in a rest, or who strikes the ball into a winning opening, or wins a chase, or to whom two faults are served in succession. A player loses a stroke who strikes the ball twice, or allows it to touch himself or his clothes.

"He who would excel as a tennis-player must learn to serve," is the dictum of an amateur champion, but the necessary variations, the difference between the "railroad," the "giraffe," the "side wall," the "drop" can only be explained by an experienced player and on the court. It is most important to know what sort of service is most valuable in defending a particular chase. Most forms of service require cut, or twist, or combinations of the two. For the winning of hazard-side chases, indeed for all purposes, the nick service is useful, the endeavour being to make the service drop at the nick of the grille-wall and the floor. It is wise to cultivate one sort of service to perfection, if possible, with a reserve of others to suit the occasion. Again, the tennis stroke, differing essentially as it does from the racket stroke, can only be learned in the court from a good teacher; but it is an axiom that tennis is not a game in which hard hitting necessarily tells, though force may be usefully employed in trying to find the winning openings. This, however, is an important point of etiquette—it is not correct to force for the dedans when the striker is close to the net, unless the force is boasted or there is no danger of hitting the opponent.

History.—Tennis may well be called a royal game, having been popular with various kings of England and France. In the ball-games of the Greeks and Romans we may see the rudiments of the French *jeu de paume*, which is in all probability the ancestor of modern tennis in a direct line. The origin of the name is quite obscure. The most probable derivation is from the word *Tenez!* (Take it! Play!), especially when we remember the large number of French terms that adhere to the game, *e.g.*, *grille*, *tambour* (drum, from the sound on the board that formed the face of that buttress), and *dedans*. Further, a poem dealing with the game, written in Latin elegiacs by R. Frissart, makes the striker cry "Excipe!" (Take it!) after each stroke; this seems to correspond with the custom which enjoins the racket-marker to call "play" whenever a legitimate stroke has been made. In the *Alexiad* of Anna Comnena (about A.D. 1120) is a reference to a game played on horseback in which a staff, curved at the end and strung with strings of plaited gut was used. This game was played in a court called "a court for goff" (*sic*) (according to the Lexicon of *Alexandrine Greek*) and some similar game, corrupted through *tchangan* into *chicane*, was played in France. Good authorities also find a more ancient derivation of the game in Egypt, in Persia and among the Arabs before Charlemagne. In A.D. 1300 the game was also known as *La boude*. Throughout the century indeed it was played in France and by the highest in the land. Thus Louis X

died from a chill contracted after playing and Charles V was devoted to the game. In England the game, or some form of it, was known, Chaucer alluding to it in the words "But canstow playen racket to and fro."

Tennis was at this epoch frequently played in some crude form in the moats of castles where Charles VIII used to watch the game. Henri II is described as the best player in France, and worthy of the silver ball given to the finest players. Later, Henri IV and Louis XIV (who kept a regular staff to look after his court) were patrons and players of tennis; indeed, in Henri VI's reign so popular was the sport that it was said that there were "more tennis-players in Paris than drunkards in England." The 16th and 17th centuries were the heyday of the game both in France and England. The word "tennis"—the game having hitherto been described as *lusus pilae*—is first found in Gower's "Balade unto the worthy and noble kynge Henry the fourth" (1400), but Shakespeare's allusion to tennis as known to Henry V must not be omitted. Henry VII played the game and revoked the edicts that forbade it; there was a court at Windsor castle in his time, which still existed in 1607. It was in that reign that the king of Castile played a match with the marquis of Dorset, the king, who used a racket, conceding 15 to the marquis, who played with his hand. The king won the set. Henry VIII built the court at Hampton Court palace, 1529–30. This court is still in use today. In 1615 there were a number of courts in London of various sizes, and a picture of James II as a boy represents him standing in a tennis-court holding a short-handled racket strung diagonally. Pepys frequently alludes to tennis at a time when there were two courts at Oxford and five at Cambridge. In the 19th century the game lost some of its popularity, mainly through the demolition of courts as building operations increased; moreover, courts complete in every detail alone were built, the play being consequently confined to the members of the clubs that could afford the expense.

Tennis was introduced to America in the 1870s. No tournaments, either for amateurs or open, were held in England after 1939, nor in the United States after 1940.

LAW OF HIGHWAY, THE, defines the rights of the public on a highway, which may be described as a public road over which all persons have full right of way—walking, riding or driving. Such roads in England for the most part either are of immemorial antiquity or have been created under the authority of an act of parliament. But a private owner may create a highway at common law by dedicating the soil to the use of the public for that purpose; and the using of a road for a number of years, without interruption, will support the presumption that the soil has been so dedicated. At common law the parish is required to maintain all highways within its bounds; but by special custom the obligation may attach to a particular township or district, and in certain cases the owner of land is bound by the conditions of his holding to keep a highway in repair. Breach of the obligation is treated as a criminal offence, and is prosecuted by indictment. Bridges, on the other hand, and so much of the highway as is immediately connected with them, are as a general rule a charge on the county; and by 22 Henry VIII. c. 5 the obligation of the county is extended to 300 yd. of the highway on either side of the bridge. A bridge, like a highway, may be a burden on neighbouring land *ratione tenurae*. Private owners so burdened may sometimes claim a special toll from passengers, called a "toll traverse."

Extensive changes in the English law of highways have been made by the Highway Act 1835, and amending acts of 1862, 1864, 1878 and 1891. The Highway Act 1835 places the highways under the direction of parish surveyors, and provides for the necessary expenses by a rate levied on the occupiers of land. It is the duty of the surveyor under summary penalty to keep the highways in repair. The amending acts, while not interfering with the operation of the principal act, authorize the creation of highway districts on a larger scale. By the Local Government Act 1888 the entire maintenance of main roads was thrown upon county councils. The Public Health Act 1875 vested the powers and duties of surveyors of highways and vestries in urban authorities, while the Local Government Act 1894 transferred to the district councils of every rural district all the powers of rural sanitary authorities and highway authorities. (*See* LOCAL GOVERNMENT.)

The Highway Act of 1835 specified as offences for which the driver of a carriage on the public highway might be punished by a fine, in addition to any civil action that might be brought against him—riding upon the cart, or upon any horse drawing it, and not having some other person to guide it, unless there be some person driving it; negligence causing damage to person or goods being conveyed on the highway; quitting his cart, or leaving control of the horses, or leaving the cart so as to be an obstruction on the highway; not having the owner's name painted up; refusing to give the owner's name; and not keeping on the left or near side of the road, when meeting any other carriage or horse.

The "rule of the road" given above is peculiar to the United Kingdom. The general rule on the continent of Europe and in America is that when vehicles approach and are about to pass each shall keep to the right of the centre of the highway.

By the Road Transport Lighting Act, 1927, every vehicle on any road must during the hours of darkness (in summer from one hour after sunset to one hour before sunrise and in winter from half-an-hour after sunset to half-an-hour before sunrise) carry two lamps showing to the front a white light and one lamp showing to the rear a red light. No red light may be shown to the front or any light other than a red light to the rear. Bicycles not having a side-car, tricycles not propelled by mechanical power and invalid carriages need carry only one white light and tricycles and bicycles not propelled by mechanical power may carry a red reflector instead of a red lamp. Special provisions apply to vehicles towing and being towed or with overhanging or projecting loads. The provisions are modified for horse-drawn vehicles especially those used for agriculture. The minister of transport is given power, moreover, by regulation to add to or vary the requirements of the act.

The Ministry of Transport was created in 1919 with wide powers which have from time to time been extended. Some of its most important powers arise under the London Traffic Act, 1924, passed in an attempt by more systematic regulation to deal with the growing congestion in London and the country surrounding it. The public have a right to pass along a highway freely, safely and conveniently, and any wrongful act or omission which prevents them doing so is a nuisance, for the prevention and abatement of which the highways and other acts contain provisions. Generally, nuisance to highway may be caused by encroachment, by interfering with the soil of the highway, by attracting crowds, by creating danger or inconvenience on or near the highway, by placing obstacles on the highway, by unreasonable use, by offences against decency and good order, etc. At common law a highway once created could not be diverted or stopped up. By compliance with strict conditions laid down in the Highway Act, 1835, under which public rights are carefully safeguarded, a highway may, however, now be diverted or stopped.

Formerly under the Turnpike Acts many of the more important highways were placed under the management of boards of commissioners or trustees. By the Highways and Locomotives Act of 1878 disturnpiked roads became "main roads." Ordinary highways might be declared to be "main roads," and "main roads" be reduced to the status of ordinary highways. Of recent years a number of main arterial roads have been built, a large part of the expense being borne by the "road fund," a national fund formed by the proceeds of taxation of motor vehicles.

In Scotland the highway system is regulated by the Roads and Bridges Act, 1878, and amending acts. The management and maintenance of the highways and bridges is vested in county road trustees, viz., the commissioners of supply, certain elected trustees representing ratepayers in parishes and others. One of the consequences of the act was the abolition of tolls, statute-labour, causeway mail and other exactions for the maintenance of bridges and highways, and all turnpike roads became highways, and all highways became open to the public free of tolls and other exactions. The county is divided into districts under district committees, and county and district officers are appointed. The expenses of highway management in each district (or parish), together with

a proportion of the general expenses of the act, are levied by the trustees by an assessment on the lands and heritages within the district (or parish).

See Glen, *Law Relating to Highways;* Pratt, *Law of Highways, Main Roads and Bridges.* (X.)

United States.—Until 1900 there was little regulation of the use of highways. The rule of the road that vehicles must keep to the right and pass each other on the left when going in the same direction, was early recognized by legislation in the various States. The first comprehensive regulation of street traffic was adopted by the City of New York in 1903, which with minor changes is still in force. Since then traffic regulations have been widely adopted. Such regulation falls into two categories: "general highway traffic regulations" or those regarded as applicable to large and small cities and towns alike, and "special highway traffic regulations" or those additional regulations deemed necessary for facilitating the movement of traffic in specially congested districts. The lack of uniformity in general highway regulations among the several States has led to efforts to secure a uniform code for adoption by the several States, for the exercise of powers by the national Government in this field would be strenuously contested. In 1924 a general code was prepared by the Eno Foundation for Highway Traffic Regulation. In 1926 and 1927 a Uniform Motor Vehicle Act governing the use of highways by motor vehicles, their registration, size and equipment, rules of the road, violations and highway traffic signs, was drafted and approved by the National Conference of Commissioners on Uniform State Laws. It awaits adoption by the various States.

See Jenks, *Road Legislation* (1895); Brindley, *History of Road Legislation* (1912); Elliott, *Law of Roads and Streets* (2nd. ed., 1926). (J. M. La.)

LAW OF SUCCESSION. Succession, in law, is the transmission or passing of rights from one to another.

Succession, or the partition or redistribution of the property of a former owner is the subject of many rules, which may be based on the will of a deceased person and are detailed in such articles as ADMINISTRATION; EXECUTORS AND ADMINISTRATORS; INHERITANCE; INTESTACY; LEGACY; WILL; etc. There are cases, however, in which a will cannot be expressed; this eventuality is discussed in the present article, and there can be no doubt that it is the most characteristic one from the point of view of social conditions. It represents the view of society at large as to what *ought to be* the *normal* course of succession in the readjustment of property after the death of a citizen. We shall dwell chiefly on the customs of succession among the nations of Aryan stock. Other customs are noticed in the articles on VILLAGE COMMUNITIES; INDIAN LAW; etc.

In Primitive Conditions.—We have to start from a distinction between personal goods and the property forming the economic basis of existence for the family which is strongly expressed in early law. War booty, proceeds of hunting, clothes and ornaments, implements fashioned by personal skill, are taken to belong to a man in a more personal way than the land on which he dwells or his herds. It is characteristic that even in the strict law of paternal power formulated by the Romans an unemancipated son was protected in his rights in regard to things acquired in the camp (*peculium castrense*) and later on this protection spread to other chattels (*peculium quasi-castrense*). The personal character of this kind of property has a decisive influence on the modes of succession to it. This part of the inheritance is widely considered in early law as still in the power of the dead even after demise. We find that many savage tribes simply destroy the personal belongings of the dead (Post, *Grundriss der ethnologischen Jurisprudenz*, pp. 174–5), and sometimes the goods of deceased persons have to be taken away by strangers which leads to curious customs of looting the house of the dead. Such customs were prevalent, *e.g.*, among the Indians of the Delaware and Iroquois tribes; the nearer relations dared not take over such things on account of *tabu*, while strangers might appropriate them, as it were, by right of conquest.

The continuance of the relation of the deceased to his former belongings gives rise in most cases to provisions made for the dead out of his personal succession. The habit of putting arms, victuals, clothes and ornaments in the grave seems almost universal, and there can be no doubt that the idea underlying such usages consists in the wish to provide the deceased with all matters necessary to his existence after death. A very characteristic illustration of this conception may be given from the customs of the ancient Russians, as described about 921 by the Arabian traveller Ibn Fadhlan. The whole of the personal property was divided into three parts: one-third went to the family, the second was used for making clothes and other ornaments for the dead, while the third was spent in carousing on the day when the corpse was cremated. The corpse was gorgeously dressed and put into a boat in which were placed intoxicants, fruit, bread, meat and a dog cut into two parts. Then, all the weapons of the dead man were brought in, as well as the flesh of two horses, a cock and a chicken; the concubine of the deceased was also sacrificed, and ultimately all were burned in a huge pile, and a mound thrown up over the ashes. This description is the more interesting because it starts from a division of the goods of the deceased, one part of them being affected, as it were, to his personal usage; the rule continues to be observed in Germanic law in later times and became the starting point of the doctrine of succession to personal property in English law. According to Glanville (vii. 5, 4) the chattels of the deceased have to be divided into three equal parts, of which one goes to his heir, one to his wife and one is reserved to the deceased himself. The last named reservation is observed in Magna Charta (*c.* 26) and in Bracton's statement of Common Law (fol. 60), but in Christian surroundings the reservation of "the dead man's part" was taken to apply to the property which had to be spent for his soul and of which, accordingly, the Church had to take care. This lies at the root of the common law doctrine observed until the passing of the Court of Probate Act 1857. On the strength of this doctrine the bishop was the natural administrator of this part of the personalty.

The succession to real property, if we may use the English legal expression, is not governed by such considerations or the needs of the dead. Roughly speaking, three different views may be taken as to the proper readjustment in such cases. Taking the principal types in a logical sequence, which differs from the historical one, we may say that the aggregate of things and claims relinquished by a deceased person may—(1) pass to relatives or other persons who stood near him in a way determined by law; should several persons of the kind stand equally near in the eye of the law the consequence would be a division of the inheritance. The personal aspect of succession rules in such systems. (2) The deceased may be considered as a subordinate member of a higher organism—a kindred, village, state, etc. In such a case there can be no succession proper as there has been no individual property to begin with; there will be only a relapse of certain goods used by the member of a community to that community, and a consequent rearrangement of rights of usage. The law of succession will again be constructed on a personal basis, but this basis will be supplied not only by the single individual whose death has had to be recorded but by some community or union to which this individual belonged. (3) The aggregate of goods and claims constituting what is commonly called an inheritance may be considered as a unit having an existence and an object of its own. The circumstance of the death of an individual owner will, as in case 2, be treated as an accidental fact. The unity of the inheritance and the social part played by it will constitute the ruling considerations in the arrangement of succession. The personal factor will be subordinated to the real one.

In practice pure forms corresponding to these main conceptions occur seldom, and the actual systems of succession mostly appear as combinations of these various views. We shall try to give briefly an account of the following arrangements: (1) the *joint family* in so far as it bears on succession; (2) *voluntary associations* among co-heirs; (3) *division* of inheritance; (4) united succession in the shape of *primogeniture* and of *junior right*.

In the East, Greece and Rome.—The large mass of Hindu juridical texts representing customs and doctrines ranging over nearly 5,000 years contains many indications as to the existence

of a *joint family* which was considered as the corporate owner of property and therefore did not admit in principle of the opening of succession through the death of any of its members. In practice it was otherwise. For conflicting theories, *see* the article INDIAN LAW. In Greek law the most drastic expression of the joint family system is to be found in the arrangements of Spartan households, where brothers clustered round the eldest or "keeper of the hearth" (ἑστιοπάμων, a term illustrating the intimate connection between inheritance and household religion in ancient Aryan custom), and not only the management of family property but even marriages were dependent on the unity of the shares and on the necessity of keeping down the offspring of the younger brothers. With the Romans there are hardly any traces of a primitive family community excluding succession, but the Celtic tribal system was to a great extent based on this fundamental conception. During three generations the offspring of father, grandfather and great-grandfather held together in regard to land. The consequence was that, although separate plots and houses were commonly reserved for the uses of the smaller families included within the larger unit, the death of the principal brought about an equalization of shares first *per stirpes* and ultimately *per capita* until the final break-up of the community when it reached the stage of the great-grandsons of the original founder.

But the most elaborate system of family ownership is to be observed in the history of the latest comers among the Aryan races—the Slavs. In the mountain regions of the Balkan Peninsula and the forests and moors of Eastern Europe they developed many characteristic tribal institutions and, among these, the joint family, the *Zadruga, inokoshtina,* a huge community of which there can be no doubt that their roots go back to a distant past (*see* VILLAGE COMMUNITIES). There was no room in them for succession proper: what had to be provided for was the continuity of business management by elders and the repartition of rights of usage and maintenance, a repartition largely dependent on varying customs and on the policy of the above-mentioned elders. In Russia the so-called *large family* appeared as a much less extensive application of the same idea.

Early European Systems.—In Germanic law we catch a glimpse of a state of things in which side relations were not admitted to succession at all. The Frankish Edict of Chilperic (A.D. 571) tells us that if somebody died without leaving sons or daughters, his brother was to succeed him and not his neighbours (*non vicini*), which must be construed as a modification of an older rule of succession by neighbours. Under "neighbours" we cannot understand merely people connected with a person by proximity of settlement, but rather his kinsmen, and the fact that kinsmen forming a settlement have precedence of brothers is characteristic enough, especially as even sons and daughters are mentioned in a way which shows that there was still some doubt whether neighbouring kinsmen should not take inheritance instead of them. These are systems of a very archaic arrangement based on a close tribal community between the members of a kindred; such a community is not apparent in later legal custom, but there are many signs of a close union between members of the same family. The law of Scania, a province of southern Sweden, shows us a group settled around a grandfather; his sons even when married hold part of the property under him and it is with some difficulty that they and their wives succeed in separating from the rest of the household property goods acquired by personal work or by marriage (Scanian Law, Dan. text i. 5); the same arrangement appears in Lombard law as regards brothers who remain settled in a common house (Edict of Rothari c. 167) Of course, in all such cases there could be no real inheritance and succession, but merely the stepping in of the next generation into the rights and duties of the representative of an older generation on the latter's demise. In legal terminology this is accretion, not succession.

The next stage in the development of succession is presented by an arrangement which was common in Germany, viz., by the management of property under the rule of so-called *Ganerbschaft. Ganerben* is the same as the Latin *coheredes, comparticipes, consortes.* A capitulary of 818 mentions such communities of heirs holding in common (*cf.* Boretius Capitularia, i. 282). While the community lasted none of the shareholders could dispose of any part of the property by his single will. Legally and economically all transactions had to proceed from common consent and common resolve. This did not preclude the possibility of any one among the shareholders claiming his own portion, in which case part of the property had to be meted out to him according to fair computation (*swascara*). There was no legal constraint over the shareholders to remain in common; division could be brought about either by common consent or by claims of individuals, and yet the constant occurrence of these settlements of co-heirs shows that it was more profitable to keep together and not to break up the unit of property by division. The customary union of co-heirs appears in this way as a corrective of the strict legal principle of equal rights between heirs of the same degree. In English practice the joint management of co-heirs is not so fully described, but there can be no doubt that under the older Saxon rule admitting heirs of the same degree to equal rights in succession the interests of economic efficiency were commonly preserved by the carrying on of common husbandry without any realization of the concurrent claims which would have broken up the object of succession. This accounts for the fact that notwithstanding the prevalence among the early English of the rule admitting all the sons or heirs in the same position to equal shares in the inheritance, the organic units of hides, yardlands, etc., are kept up in the course of centuries. In the management of the so-called *gavelkind* succession in Kent partition was legally possible and was sometimes effected, but there was the customary reaction against it in the shape of keeping up the "yokes" and "sulungs." A trace of the same kind of union between co-heirs appears in the so-called *parage* communities so often mentioned in Domesday Book.

In all these cases the principle of union and joint management is kept up by purely economic means and considerations. The legal possibility of partition is admitted by the side of it. It is interesting to watch two divergent lines of further development springing from this common source; on the one side we see the full realization of individual right resulting in frequent divisions; on the other side we watch the rise of legal restraints on subdivision resulting in the establishment, in respect of certain categories of property, of rules excluding the plurality of heirs for the sake of preserving the unity of the household. The first system is, of course, most easily carried out in countries where individualistic types of husbandry prevail. In Europe it is especially prevalent in the south with its intense cultivation of the arable and its habits of wine and olive growing. We shall not wonder, therefore, that the unrestricted subdivision among heirs is represented most completely by Roman law. Not to speak of the fact that already in the XII. Tables the principal mode of inheritance was considered to be inheritance by will while intestate succession came in as a subsidiary expedient, we have to notice that there is no check on the dispersion of property among heirs of the same degree. The only survival of a régime of family community may be found in the distinction between *heredes sui* (heirs of their own) and *heredes extranei* (outside heirs of the deceased). The first entered by their own right and took possession of property which had belonged to them potentially even during their ancestor's life; the latter drew their claims from their relationship to the deceased, which did not give them a direct hold on the property in question. Apart from that, the civil law of ancient Rome favoured complete division and the same principle is represented in all European legislation derived from Roman law or strongly influenced by it. Sometimes, as in the French *Code Civil,* even the wish of the owner cannot alter the course of such succession as no person can make a will depriving any of his children of their legal share.

Odal.—In contrast with this mode of succession in romanized countries we find the nations proceeding from Germanic stock and strongly influenced by feudalism developing two different kinds of restraints on subdivision. In Scandinavian law this point of view is expressed by the Norwegian customs as to Odal. The principal estates of the country, which, according to the law of

the Gulathing have descended through five generations in the same family, cannot be dispersed and alienated at pleasure. They are considered as rightly belonging to the kindred with which a historical connection has been established. In order to keep these estates within the kindred they descended chiefly to men; women could inherit only in exceptional cases, such as the daughter of a man who has left no sons or the sister of one who has left no children and no brothers. Nieces and first-cousins were admitted in the sense that they had to pass the property to their nearest male heir, and they might, in certain eventualities, be bought out by the nearest male relative. A second peculiarity of Odal consists in the right of relations descending from one of the common ancestors to prevent strangers from acquiring Odal estate. Among the peasants however it is felt that a farm ought not to be parcelled up into smaller holdings, and in the common case of several heirs succeeding to the farm, they generally decide among themselves who is to remain in charge of the ancestral household; the rest are compensated.

Mediaeval Europe.—In mediaeval England, France and Germany the same considerations of economic efficiency are felt as regards the keeping up of united holdings, and it may be said that the lower we get in the scale of property the stronger these considerations become, till it is almost impossible to break up the smaller holdings. By such process land loses in value, and it is impossible to divide one ox or one horse *in specie* without selling it. No wonder that we find practices and customs of united succession arising in direct contradiction with the ancient rule that all heirs of the same degree should be admitted to equal shares. Glanville mentions expressly that the socagers of his time held partly by undivided succession and partly by divided inheritance. The relations of feudalism and serfdom contributed strongly towards creating such individual tenancies. It was certainly in the interest of the lord that his men, whether holding a military fief or an agricultural farm, should not weaken the value of their tenancies by dispersing the one or the other among heirs. The question whether the successor should be the eldest son or the youngest son is a secondary one. The latter practice was very prevalent all through Europe and was known in England as the rule of Borough English (*q.v.*). The succession of the youngest appears very characteristic in so far as it illustrates the break up into small tenancies, as the youngest in the family is certainly not a fit representative of hierarchy and authority and could not have been meant to rule anything but his own restricted household.

Woman and Succession.—One more feature of the ancient law of succession has to be noticed, viz., the exclusion of women from inheritance in land. There can be no doubt that as regards movable goods women held property and transmitted it on a par with males from the earliest time; but their exclusion from inheritance in land seems as ancient as the patriarchal system itself, whatever we may think about the position of affairs in prehistoric times when rules of matriarchy were prevalent. A common-sense explanation of one side of this doctrine is tendered by the law of the Thuringians (*Lex Anglorum et Werinorum*, c. 6), where it is stated that inheritance in land goes with the duty of taking revenge for the homicide of relatives and with the power of bearing arms. One of the most potent adversaries of this system of exclusion proved to be the Church. It favoured all through the view that land should be transmitted in the same way as money or chattels. A Frankish formula (Marculf) shows us a father who takes care to endow his daughter with a piece of land according to natural affection in spite of the strict law of his tribe. Such instruments were strongly backed by the Church, and the view that women should be admitted to hold land on certain occasions had made its way in England as early as Anglo-Saxon times.

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LAWRENCE (LAURENTIUS, LORENZO), **ST.,** Christian martyr, whose name appears in the canon of the mass, and whose festival is on Aug. 10. The basilica reared over his tomb at Rome is still visited by pilgrims. Deacon of the pope (St.) Sixtus (Xystus) II., he was called upon by the judge to bring forth the treasures of the church which had been committed to his keeping. He thereupon produced the church's poor people. Seeing his bishop, Sixtus, being led to punishment, he cried: "Father! whither goest thou without thy son? Holy priest! whither goest thou without thy deacon?" Sixtus prophesied that Lawrence would follow him in three days. The prophecy was fulfilled, and Lawrence was sentenced to be burnt alive on a gridiron. In the midst of his torments he addressed the judge ironically with the words: *Assum est, versa et manduca* ("I am roasted enough on this side; turn me round, and eat"). All these details of the well-known legend are already related by St. Ambrose (*De Offic.* i. 41, ii. 28). The date of the martyrdom is usually put at the persecution of Valerian in 258. The punishment of the gridiron and the speech of the martyr are probably a reminiscence of the story of the Phrygian martyrs as related by Socrates (iii., 15) and Sozomen (v., 11).

The Escorial was built in honour of St. Lawrence by Philip II. of Spain, in memory of the battle of St. Quentin, which was won in 1557 on the day of the martyr's festival. The meteorites which appear annually on or about the 10th of August are popularly known as "the tears of St. Lawrence."

See *Acta sanctorum*, Augusti ii. 485–532; P. Franchi de' Cavalieri, *S. Lorenzo e il supplicio della graticola* (*Röm. Quartalschr.*, 1900, 159–76); *Analecta Bollandiana*, xix, 452–53, li. 49–58; Fr. Arnold-Forster, *Studies in Church Dedications or England's Patron Saints*, i. 508–515, iii. 18, 389–390 (1899).

LAWRENCE, AMOS (1786–1852), American merchant and philanthropist, was born in Groton (Mass.) on April 22, 1786, a descendant of one of the first settlers of Groton. Leaving Groton academy (founded by his father, Samuel Lawrence, and others) in 1799, he went to Boston and there set up in business for himself in Dec. 1807. In the next year he took into his employ his brother, Abbott (*see* below), whom he made his partner in 1814, the firm name being at first A. and A. Lawrence and afterwards A. and A. Lawrence and Co. In 1831 Amos retired from active business, and Abbott was thereafter the head of the firm. The firm became the greatest American mercantile house of the day, and did much for the establishment of the cotton textile industry in New England; in 1830 by coming to the aid of the financially distressed mills of Lowell, Massachusetts, where Luther Lawrence, the eldest brother, represented the firm's interests; and in 1845–47 by establishing and building up Lawrence, Massachusetts, named in honour of Abbott Lawrence, who was a director in the Essex Company which controlled the water power of Lawrence, and afterwards was president of the Atlantic Cotton Mills and Pacific Mills there. In 1842 Amos Lawrence decided not to allow his property to increase any further. He gave freely to Williams college, to Bowdoin college, to the Bangor theological seminary, to Wabash college, to Kenyon college and to Groton academy, which was re-named Lawrence academy in honour of the family, and especially in recognition of the gifts of William Lawrence, Amos's brother; to the Boston children's infirmary, which he established, and to the Bunker Hill monument fund. He died in Boston on Dec. 31, 1852.

See Extracts from the *Diary and Correspondence of the late Amos Lawrence, with a Brief Account of Some Incidents in his Life* (1856).

His brother, ABBOTT LAWRENCE (1792–1855), was born in Groton (Mass.) on Dec. 16, 1792. Besides being a partner in the firm established by his brother, and long its head, he promoted various New England railways, notably the Boston and Albany. The town of Lawrence (Mass.) was named after him. He was a representative in Congress (1835–37, 1839–40); in 1842 he was

one of the commissioners for Massachusetts who settled with Lord Ashburton, the British plenipotentiary, the question of the north-eastern boundary. In 1842 he was presiding officer of the Massachusetts Whig Convention; he broke with President Tyler, rebuked Daniel Webster for remaining in Tyler's cabinet after his colleagues had resigned, and recommended Henry Clay as the nominee of the Whig party in 1844—an action that roused Webster to make his famous Faneuil Hall address. He refused the portfolios of the navy and of the interior in President Taylor's cabinet, but from 1849 to 1852 he served as United States minister to Great Britain. He died in Boston on Aug. 18, 1855, leaving as his greatest memorial the Lawrence scientific school of Harvard, which he had established in 1847.

See Hamilton A. Hill, *Memoir of Abbott Lawrence* (Boston, 1884).

LAWRENCE, AMOS ADAMS (1814–1886), American philanthropist, son of Amos Lawrence, was born in Groton (Mass.) on July 31, 1814. He graduated from Harvard in 1835, went into business in Lowell, and in 1837 established in Boston his own counting-house. Lawrence established a hosiery and knitting mill at Ipswich—the first of importance in the country. In 1849 he founded at Appleton (Wis.) a school named in his honour Lawrence university (now Lawrence college). He also contributed to funds for the colonization of free negroes in Liberia. In 1854 he became treasurer of the Massachusetts Emigrant Aid Company (reorganized in 1855 as the New England Emigrant Aid Company), which sent 1,300 settlers to Kansas, where the city of Lawrence was named in his honour. He contributed personally for the famous Sharp rifles, which, packed as "books" and "primers," were shipped to Kansas and afterwards came into the hands of John Brown, who had been a *protégé* of Lawrence. Though he deplored John Brown's fanaticism, when Brown was arrested he appealed to the governor of Virginia to secure for him a lawful trial. He repeatedly urged the necessity of offering no armed resistance to the Federal Government. Till the very outbreak of the Civil War he was a "law and order" man, and he did his best to secure the adoption of the Crittenden compromise. In 1862 he raised a regiment of cavalry which became the 2nd Massachusetts Regiment of Cavalry. Lawrence built (1873–80) Lawrence hall, Cambridge, for the Episcopal theological school, of which he was treasurer. From 1857 to 1862 he was treasurer of Harvard college, and from 1879 to 1885 was an overseer. He died in Nahant (Mass.) on Aug. 22, 1886.

See William Lawrence, *Life of Amos A. Lawrence with Extracts from his Diary and Correspondence* (Boston, 1888).

LAWRENCE, DAVID HERBERT (1885–1930), British novelist, was born at Eastwood, Nottinghamshire, on Sept. 11, 1885, and educated at Nottingham high school and University college, Nottingham. With his first books, *The White Peacock* (1911), *The Trespasser* (1912) and *Sons and Lovers* (1913), it became evident that a writer of great force and originality was rising in the younger generation. A police prosecution of *The Rainbow* (1915) seemed for a time to check Lawrence's fertility, but he issued *Amores,* poems, and travel impressions, *Twilight in Italy,* in 1916, further poems, *Look! We have Come Through!* in 1917, and another novel, *The Lost Girl,* 1920. Hereafter Lawrence's outlook and style were being deeply influenced by a study of psychoanalytical doctrine and by travel in Italy, Sardinia, New Mexico and Australia. A new note is evident in *Women in Love* (1921), *Aaron's Rod* (1922), *Kangaroo* (1923), *The Ladybird* (1923), *England, My England!* (1924), *St. Mawr* (1925) and *The Plumed Serpent* (1926). Miscellaneous writings include *Sea and Sardinia* (1921), *Psychoanalysis and the Unconscious* (1921), *Fantasia of the Unconscious* (1922), *Studies in Classic American Literature* (1923); three plays, *The Widowing of Mrs. Holroyd* (1914), *Touch and Go* (1920) and *David* (1926); and a volume of essays, *Mornings in Mexico* (1927); *Pansies* (1929). He wrote also *Movements in European History,* issued as by "Lawrence H. Davison" in 1921, and under his real name in 1925. Lawrence, who died of consumption at Vence, near Nice, France, March 2, 1930, was one of the most powerful of modern English novelists. He was increasingly obsessed by the problems of sex, especially in his later works. His powerful analysis of the sex motive was possibly the most characteristic feature of his work; but he had a great gift in the interpretation of natural scenery, and many of his descriptive passages show spiritual insight and artistic power.

See H. J. Seligmann, *D. H. Lawrence* (1924); *The Collected Poems of D. H. Lawrence* (1928); Stephen Potter, *D. H. Lawrence: A First Study* (1930).

LAWRENCE, GEORGE ALFRED (1827–1876), English novelist, was born at Braxted, Essex, on March 25, 1827, and was educated at Rugby and at Balliol college, Oxford. In 1857 he published, anonymously, his first novel, *Guy Livingstone, or Thorough.* The book achieved a very large sale, and had nine or ten successors of a similar type, the best perhaps being *Sword and Gown* (1859). He died at Edinburgh on Sept. 23, 1876.

LAWRENCE, SIR HENRY MONTGOMERY (1806–1857), British soldier and statesman in India, brother of the 1st Lord Lawrence (*q.v.*), was born at Matara, Ceylon, on June 28, 1806. Early in 1823 he joined the Bengal Artillery at the Calcutta suburb of Dum Dum, where Henry Havelock was stationed. Henry Lawrence served in the first Burmese campaign, where he contracted a fever which never really left him. After a short period at home he was appointed revenue surveyor by Lord William Bentinck. At Gorakhpur he made many fast friends. He was recalled to a brigade by the outbreak of the first Afghan War towards the close of 1838. As assistant to Sir George Clerk, he administered the district of Ferozepore; and when disaster came he was sent to Peshawar in order to push up supports for the relief of Sale and the garrison of Jalalabad. The war had been begun under the tripartite treaty signed at Lahore on June 20, 1838. But the Sikhs were slow to play their part after the calamities in Afghanistan. No one but Henry Lawrence could manage the disorderly contingent which they reluctantly supplied to Pollock's avenging army in 1842. He helped to force the Khyber Pass on April 5, playing his guns from the heights, for 8 and 20 m. He then became assistant to the envoy at Lahore, at Umballa, where he reduced to order the lapsed territory of Kaithal. Soon he received the office of resident at the protected court of Nepal, where, assisted by his wife, née Honoria Marshall, he began a series of contributions to the *Calcutta Review,* a selected volume of which forms an Anglo-Indian classic. There, too, he elaborated his plans which resulted in the erection and endowment of the Lawrence military asylums at Sanawar (on the road to Simla), at Murree in the Punjab, at Mount Abu in Rajputana, and at Lovedale on the Madras Nilgiris.

Lawrence had published the results of his experience of Sikh rule and soldiering in a vivid work, the *Adventures of an Officer in the Service of Ranjit Singh* (1845). After the doubtful triumphs of Moodkee and Ferozshah, Lawrence was summoned from Nepal to take the place of Major George Broadfoot, who had fallen. Aliwal came; then the guns of Sobraon chased the demoralized Sikhs across the Sutlej. Throughout, Lawrence was at the side of the new governor-general, Lord Hardinge. He gave his voice, not for annexation, but for the reconstruction of the Sikh government, and was himself appointed resident at Lahore, and president of the council of regency till the maharaja Dhuleep Singh should come of age. Soon disgusted by the "venal and selfish durbar" who formed his Sikh colleagues, he summoned to his side assistants like Nicholson, James Abbott and Edwardes, till they all did too much for the people, as he regretfully confessed. But "my chief confidence was in my brother John, . . . who gave me always such help as only a brother could." Wearied out he went home with Lord Hardinge, when he was made K.C.B. The second Sikh War summoned him back at the end of 1848, to see the whole edifice of Sikh "reconstruction" collapse. Lord Dalhousie proclaimed the Punjab up to the Khyber British territory on March 29, 1849. But still another compromise was tried. Henry Lawrence was made president of the new board of administration with charge of the political duties, and his brother John was entrusted with the finances. John could not find the revenue necessary for the rapid civilization of the new province so long as Henry would, for political reasons, insist on granting life pensions and alienating large estates to the needy remnants of Ranjit Singh's court. Lord Dalhousie therefore removed Sir Henry Lawrence to the charge of the great nobles of Rajputana, and installed John as chief commissioner.

In the comparative rest of Rajputana he wrote two important articles (March–Sept., 1856) on army reform, the outcome of conversations with Lord Dalhousie at Calcutta. Henry Lawrence pointed out the latent causes of mutiny, and uttered warnings to be too soon justified. In March 1857 he took the helm at Lucknow, but it was too late. In ten days his magic rule put down administrative difficulties indeed, as he had done at Lahore. But what could even he effect with only 700 European soldiers, when the epidemic spread after the Meerut outbreak of mutiny on the 10th of May? In one week he had completed the preparations for the defence of the Lucknow residency, and he was appointed provisional governor-general. On May 30, mutiny burst forth in Oudh, and he was ready. On June 29, he led 336 British soldiers with 11 guns and 220 natives out of Chinhat to reconnoitre the insurgents, when the natives joined the enemy and the residency was besieged. On July 2, a shell struck him, and he died two days later. A baronetcy was conferred on his son. A marble statue was placed in St. Paul's as the national memorial of one who has been declared to be the noblest man that has lived and died for the good of India.

His biography was begun by Sir Herbert Edwardes, and completed (2 vols. 1872) by Herman Merivale. *See* also J. J. McLeod Innes, *Sir Henry Lawrence* ("Rulers of India" series), 1898.

LAWRENCE, JAMES (1781–1813), naval officer, was born in Burlington, N.J., Oct. 1, 1781. He entered the navy as midshipman in 1793, and was promoted lieutenant in 1802. He took part in the war with Tripoli as first lieutenant of the schooner "Enterprise" and spent altogether five years on the Barbary coast. Selected by Decatur (*q.v.*) as his first lieutenant, Lawrence took a conspicuous part in the destruction of the frigate "Philadelphia" when she had run aground in the harbour at Tripoli, and had been captured by the enemy. The declaration of war against Great Britain in 1812 found Lawrence in command of the frigate "Hornet," and in 1813 he distinguished himself in a sharp engagement in which he captured the British ship "Peacock." As a result he was commissioned captain and put in command of the frigate "Chesapeake." Shortly afterwards he engaged in a battle with the British ship "Shannon" off Boston harbour. Lawrence's ship was defeated and he was mortally wounded, and as he lay dying, he enjoined his men "Don't give up the ship." He died June 5, 1813.

See A. Gleaves, *J. Lawrence, Captain U.S. Navy* (1904).

LAWRENCE, JOHN LAIRD MAIR LAWRENCE, 1ST BARON (1811–1879), viceroy and governor-general of India, was born at Richmond, Yorkshire, on March 24, 1811, son of Sir Alexander Lawrence and his wife, *née* Letitia Knox. Three of the young Lawrences became famous in India, Sir George St. Patrick, Sir Henry (*q.v.*) and Lord Lawrence. Irish Protestants, the boys were trained at Foyle college, Derry, and at Clifton, and received Indian appointments. John Lawrence landed at Calcutta in 1829; and became assistant-collector at Delhi. The titular court of the pensioner who represented the Great Mogul was the centre of that disaffection and sensuality which found their opportunity in 1857. A Mussulman rabble filled the city. The district around, stretching from the desert of Rajputana to the Jumna, was slowly recovering from the anarchy to which Lord Lake had given the first blow. When not administering justice in the city courts or under the village tree, John Lawrence was scouring the country after the marauding Meos and Mohammedan freebooters. He detected the murderer of his official superior, William Fraser, in 1855, in the person of Shams-uddin Khan, the nawab of Lahore, whose father had been raised to the principality by Lake, and the assassin was executed. The first twenty years, from 1829 to 1849, during which John Lawrence acted as magistrate and land collector of the most turbulent part of India at that time coincided with the period of Lord William Bentinck's reforms. A permanent settlement of the land-tax, similar to that carried out in Bengal, was promised in the North-West.

In 1833 Merttins Bird and James Thomason introduced into the north-western provinces, as they then were, the system of thirty years' land leases based on a careful survey of every estate by trained civilians, and on the mapping of every village holding by native subordinates. These two revenue officers created a school of enthusiastic economists who rapidly registered and assessed an area as large as that of Great Britain, with a rural population of twenty-three millions. Of that school John Lawrence proved the most ardent and the most renowned. Intermitting his work at Delhi, he became land revenue settlement officer in the district of Etawah, and there began, by buying out or getting rid of the talukdars, to realize the ideal which he did much to create throughout the rest of his career—a country "thickly cultivated by a fat contented yeomanry, each man riding his own horse, sitting under his own fig-tree, and enjoying his rude family comforts." This and a quiet persistent hostility to the oppression of the people by their chiefs formed the two features of his administrative policy.

When the first Sikh War broke out, John Lawrence was still collector of Delhi. The critical engagements at Ferozeshah, following Moodkee, and hardly redeemed by Aliwal, left the British army somewhat exhausted at the gate of the Punjab, in front of the Sikh entrenchments on the Sutlej. During the early months of 1846 Lawrence found men, munitions and supplies. The victory of Sobraon was the result, and at thirty-five Lawrence became commissioner of the Jullundur Doab, the fertile belt of hill and dale stretching from the Sutlej north to the Indus. He accomplished for the newly annexed territory what he had long before accomplished in and around Delhi. He restored it to order, without one regular soldier. By his personal influence he organized levies of the defeated Sikhs, led them now against a chief in the upper hills and now to storm the fort of a raja in the lower, till he so welded the people into a loyal mass that he was ready to repeat the service of 1846 when, three years after, the second Sikh War ended in the conversion of the Punjab up to Peshawar into a British province.

Lord Dalhousie made John Lawrence chief commissioner of the new province. It was mapped out into districts, now numbering thirty-two, in addition to thirty-six tributary states, small and great. To each the thirty years' leases of the north-west settlement were applied, after a patient survey and assessment by skilled officials. The revenue was raised on principles so fair to the peasantry that Ranjit Singh's exactions were reduced by a fourth, while agricultural improvements were encouraged. A police force was organized; roads were cut through every district, and canals were constructed. Commerce followed on increasing cultivation and communications, the courts brought justice to every man's door, and crime hid its head. The adventurous and warlike spirits, Sikh and Mohammedan, found a career in the new force of irregulars directed by the chief commissioner himself, while the Afghan, Dost Mohammed, kept within his own fastnesses, and the long extent of frontier was patrolled.

Seven years of this work prepared the lately hostile and always anarchic Punjab under John Lawrence not only to weather the storm of the mutiny of 1857 but to lead the older provinces into port. On May 12, the news of the revolts at Meerut and Delhi reached him at Rawalpindi. The position was critical, for of 50,000 native soldiers 38,000 were Hindustanis of the very class that had mutinied elsewhere, and the British troops were few and scattered. For five days the fate of the Punjab hung upon a thread, for the question was, "Could the 12,000 Punjabis be trusted and the 38,000 Hindustanis be disarmed?" Not an hour was lost in beginning the disarming at Lahore; and, as one by one the Hindustani corps succumbed to the epidemic of mutiny, the sepoys were deported or disappeared, or swelled the military rabble in and around the city of Delhi. The remembrance of the ten years' war which had closed only in 1849, a bountiful harvest, the old love of battle, the offer of good pay, but, above all, the personality of Lawrence and his officers, raised the Punjabi force into a new army of 59,000 men, and induced the non-combatant classes to subscribe to a 6% loan. Delhi was invested, but for three months the rebel city did not fall. Under John Nicholson, Lawrence sent on still more men to the siege, till every available European and faithful native soldier was there, while a movable column swept the country, and the border was held by militia.

At length, when even in the Punjab confidence became doubt, and doubt distrust, and that was passing into disaffection, John

Lawrence was ready to consider whether we should not give up the Peshawar valley to the Afghans as a last resource, and send its garrison to recruit the force around Delhi. Another week and that alternative must have been faced. But on Sept. 20, the city and palace of Delhi were again in British hands. Lawrence received a baronetcy, the G.C.B., the thanks of parliament and a life pension of £2,000 a year in addition to his ordinary pension of £1,000. He spent the years 1859 to 1864 at home, as a member of the secretary of state's council; he was sent out again in 1864 as viceroy and governor-general on the death of Lord Elgin. His five years' administration of the whole Indian empire was worthy of the ruler of the Punjab. Lawrence's name is associated with the "close border" as opposed to the "forward" policy. His internal administration was remarkable for financial prudence, a jealous regard for the interests of the masses of the people, and a keen interest in education.

In 1854 Lawrence had, in obedience to Lord Dalhousie, but against his judgment, signed a treaty of peace and friendship with Dost Mohammed. When in 1863 Dost Mohammed's death let loose the factions of Afghanistan he recognized both the sons, Afzul Khan and Shere Ali, at different times, and the latter fully only when he had made himself master of all his father's kingdom. The steady advance of Russia from the north, notwithstanding the Gorchakov circular of 1864, led to severe criticism of this cautious "buffer" policy. It fell to Lord Mayo, his successor, to hold the Umballa conference in 1869. When, nine years after, the second Afghan War unexpectedly broke out, the retired viceroy gave the last days of his life to an unsparing exposure, in the House of Lords and in the press, of a policy which he had striven to prevent in its inception, and which he did not cease to denounce in its course and consequences.

On his final return to England early in 1869, after forty years' service in and for India, he was created Baron Lawrence of the Punjab, and of Grately, Hants. He sat on the London school board, of which he was the first chairman. Lawrence died on June 27, 1879, and he was buried in the nave of Westminster Abbey. He had married the daughter of the Rev. Richard Hamilton, Harriette-Katherine, who survived him, and he was succeeded as 2nd baron by his eldest son, John Hamilton Lawrence.

See Bosworth Smith, *Life of Lord Lawrence* (1885); Sir Charles Aitchison, *Lord Lawrence* ("Rulers of India" series, 1892); L. J. Trotter, *Lord Lawrence* (1880); and F. M. Holmes, *Four Heroes of India.*

LAWRENCE, STRINGER (1697–1775), English soldier, was born at Hereford on March 6, 1697. He seems to have entered the army in 1727, and served in Gibraltar and Flanders, and at Culloden. In 1748, he went out to India to command the East India Company's troops. Lawrence foiled an attempted French surprise at Cuddalore, but was captured by a French cavalry patrol at Ariancopang near Pondicherry and kept prisoner till the peace of Aix-la-Chapelle. In 1749 he was in command at the capture of Devicota. On this occasion Clive served under him and a life-long friendship began. In 1750 Lawrence returned to England, but in 1752 he was back in India. Here he found Clive in command of a force intended for the relief of Trichinopoly. As senior officer Lawrence took over the command, but allowed Clive every credit for his share in the operations, which included the relief of Trichinopoly and the surrender of the entire French besieging force. In 1752 with an inferior force he defeated the French at Bahur (Behoor) and in 1753 again relieved Trichinopoly. For the next seventeen months he fought a series of actions in defence of this place, finally arranging a three months' armistice, which was afterwards converted into a conditional treaty. He had commanded in chief up to the arrival of the first detachment of regular forces of the crown. In 1757 he served in the operations against Wandiwash, and in 1758–1759 was in command of Fort St. George during the siege by the French under Lally. After two years at home he resumed his command in 1761 as major-general and commander-in-chief. He retired in 1766, and died in London on Jan. 10, 1775. The East India Company erected a monument to his memory in Westminster Abbey.

See Biddulph, *Stringer Lawrence* (1901).

LAWRENCE, SIR THOMAS (1769–1830), English painter, was born at Bristol on May 4, 1769. His father was an innkeeper, first at Bristol and afterwards at Devizes, and at the age of six Thomas was already shown off to the guests of the Black Boar as an infant prodigy who could sketch their likenesses and declaim speeches from Milton. In 1779 the elder Lawrence had to leave Devizes, having failed in business and the precocious talent of the son, who had gained a sort of reputation along the Bath road, became the support of the family. His debut as a crayon portrait-painter was made at Oxford, and in 1782 the family settled in Bath, where the young artist found many patrons. In 1785 he began to paint in oil. He came to London in 1787, was kindly received by Reynolds and entered as a student at the Royal Academy. He began to exhibit almost immediately, and his reputation increased so rapidly that he became an associate of the Academy in 1791. The death of Sir Joshua in 1792 opened the way to further successes. He was at once appointed painter to the Dilettanti society, and principal painter to the king in succession to Reynolds. In 1794 he was a Royal Academician, and he became the fashionable portrait painter of the age, having as his sitters all the rank, fashion and talent of England, and ultimately most of the crowned heads of Europe. In 1815 he was knighted; in 1818 he went to Aix-la-Chapelle to paint the sovereigns and diplomatists gathered there, and visited Vienna and Rome. After 18 months he returned to England, and on the very day of his arrival was chosen president of the Academy in place of West, who had died a few days before. This office he held from 1820 to his death on Jan. 7, 1830.

Among his famous portraits are "Mrs. Siddons" and "Princess Lieven" in the National Gallery and "Cardinal Gonsalir" at Windsor Castle. Interest in his work was stimulated by the sensational sale in London (1925) of "Pinkie," a fancy portrait of Miss Mary Moulton Barrett.

The best display of Lawrence's work is in the Waterloo gallery of Windsor. The Tate gallery, the National gallery and the National Portrait gallery contain a number of his works.

See D. E. Williams, *The Life and Correspondence of Sir T. Lawrence* (1831).

LAWRENCE, THOMAS EDWARD (1888–1935), British explorer and scholar, was born in Wales on Aug. 15, 1888, of a Leicestershire family, one branch of which had moved to the neighbourhood of Dublin and thence to Oxford. The second of five brothers, he was educated at the Oxford high school and at Jesus college, Oxford, where, in 1910, he took a first class in modern history. In order to study Crusading architecture he made in that year a tour through Syria on foot; and the colloquial Arabic, which he then picked up, and his interest in and knowledge of archaeology, commended him to D. G. Hogarth, who was about to lead an expedition to Jerablus on the Euphrates and excavate the site of Carchemish for the British Museum. Thither Lawrence went in 1911, with the assistance of a post-graduate endowment at Magdalen college; and at Carchemish he worked on and off till 1914, taking several opportunities to explore Syria and Mesopotamia in native company and accepting for a few weeks an appointment under the Palestine Exploration Fund, which attached him to the Survey of North Sinai carried out by Col. Newcombe, R.E., for the War Office in the winter of 1913–14. Though naturally inclined to scholarship and letters, he showed singular practical ability and capacity for leadership, and a remarkable power of inspiring confidence in Arabs.

On the outbreak of the World War, Lawrence, being below standard height, obtained at first no more active service than a post in the geographical section of the War Office. But soon after Turkey had joined the Central Powers he was sent by Lord Kitchener to Egypt and attached to a rudimentary Military Intelligence Section. He was a moving spirit in the negotiations leading to an Arab revolt and in organizing the Arab Bureau which, as finally constituted early in 1916, acted as staff and intelligence office for the Arab campaigns. In the autumn Lawrence, feeling that stalemate would ensue if closer liaison between the British and the Arabs were not effected, asked leave to go down to Jidda, and once there, was transferred to the Arab Bureau,

which was under the Foreign Office. Hearing good accounts of the Emir Faisal, he persuaded Sharif Hussain to let him go inland and visit the force which had been driven back from Medina. He soon won the confidence of Faisal, and induced him to reorganize his army and move north so as to threaten the communications of Medina by attacking the Hejaz Railway. With his chief established at Wejh, and the army of another brother, 'Abdulla, brought to Wadi Ais to co-operate, Lawrence rode off into the interior to raise the northern tribes, and so extend the area to be held and defended against the Turks. He pushed right up to and beyond Ba'albek, *i.e.*, behind the enemy lines in Syria, and on his return, having picked up a Huweitat force under the famous raider, Auda Abu Tayyi, he routed a Turkish battalion near Ma'an, and forced a passage to 'Aqaba which was occupied for Faisal in Aug. 1917. For this exploit he was promoted to field rank and given decorations, British and French, which, however, he would not accept.

Lawrence, now cordially helped by General Allenby, prompted the successive forward moves made by Faisal's force, after 'Aqaba had become its base, and himself organized and led a battle in Wadi el-Hesa, near Esh Shobek, in which the enemy suffered his worst defeat in the open. He turned his attention in particular to train-wrecking and had such success that Medina became virtually isolated, and a large reward was advertised for the capture of "El-Orens, destroyer of engines." Early in 1918 he made a desperate attempt to cut the Turkish Palestine army's railway communication with Damascus, and failed only by a hair's breadth. In that summer, in concert with Allenby, he induced Faisal to move up to Qasr Azraq and organize a new force to advance on Damascus. This duly moved up in the autumn side by side with Allenby and after breaking up the enemy's trans-Jordan army, entered Damascus some hours ahead of the British. Lawrence took charge of the city till Allenby could reach it, and suppressed attempts at reaction.

Called to the Peace Conference, Lawrence became one of its outstanding figures during the spring of 1919. His legendary fame as organizer and inspirer of guerrilla tactics was enhanced by the forcible part that he played when Faisal, whom he had accompanied on a British tour, came to Paris. But fight as Lawrence might against French plans for Syria, he could not prevail in that milieu, and at last, retiring to his tent, he sat down to write the narrative of his adventures. The first ms. was subsequently lost; but he began again, and after many recensions, it was announced that the book, under the title *The Seven Pillars of Wisdom*, would be issued in 1926. He was elected a Research Fellow of All Souls, Oxford, in 1919, and resided there for a year, but without entering much into the college life. In 1921 Winston Churchill called him to the Colonial Office as adviser on Arab affairs, in which capacity he had a large share in making Faisal king of 'Iraq. But, disgusted with the failure of the Allies to fulfil adequately what he considered their moral obligations to the Arabs, and remorseful for his own part in leading them on, Lawrence abruptly left Government service in 1922 and enlisted as a mechanic in the Royal Air Force. In 1923 he sought refuge from publicity in the Tank Corps, but was re-transferred to the R.A.F. in 1925, and served on the north-west frontier in India. In 1927 he changed his name by deed poll to Shaw. He was recalled to England in April 1928, and left the R.A.F. in March 1935. On May 13, 1935, he met with a motorcycling accident in Moreton, Dorsetshire, and died on May 19. (D. G. H.; X.)

The *Seven Pillars of Wisdom* was published in 1926 in a limited edition and fetched fantastic prices. A much abridged edition was published for the public under the title *Revolt in the Desert* in 1927. A larger trade edition of the *Seven Pillars of Wisdom* appeared in Sept. 1935. His translation of the *Odyssey* was published in 1932. *See* also R. Graves, *Lawrence and the Arabs* (1927).

LAWRENCE, WILLIAM (1850–1941), U.S. Episcopalian bishop, was born in Boston, Mass., on May 30, 1850. He graduated at Harvard in 1871 and received his theological training at Andover Theological seminary and the Episcopal Theological school at Cambridge. He served as rector of Grace church, Lawrence, Mass., from 1876 to 1884 and then became professor of homiletics, 1884–93, and dean, 1888–93, of Episcopal Theological school. He was also preacher at Harvard university, 1888–91. On Oct. 5, 1893 he was consecrated bishop of Massachusetts, resigning in 1926. He wrote *Life of Amos A. Lawrence* (1889), his father (*q.v.*); *Visions and Service* (1896); *Life of Roger Wolcott* (1902); *The American Cathedral* (1921); *Henry Cabot Lodge* (1925); *Memories of a Happy Life* (1926); and *Life of Phillips Brooks* (1930). He died Nov. 6, 1941.

LAWRENCE, a city of eastern Kansas, U.S.A., on the Kansas (Kaw) river, 40 mi. W. of Kansas City; county seat of Douglas county and the seat of the state university. It is on federal highways 40 and 59, and is served by the Santa Fe and the Union Pacific railways. The population in 1940 (federal census) was 14,390.

From the plateau bordering the river the city slopes up to heights which command a fine view. In the southwestern part of the city, on the ridge called Mt. Oread, is the University of Kansas, which has an enrolment of 5,000. Haskell institute (est. 1884), a boarding school for Indians conducted by the federal government, with an attendance of about 1,000, is in the southern part of the city. Lawrence is the commercial centre of a rich farming country, and has manufactures of importance.

Lawrence was founded in 1854 by the New England Emigrant Aid society, and was named after Amos A. Lawrence of Boston, a prominent member of the society. The first colonists were ardent abolitionists, and during the territorial period Lawrence was the political centre of the free-state cause and the object of several attacks from the pro-slavery forces. After the Free-State party got control of the legislature in 1857, it was practically the capital of the territory (until 1861), as the legislature regularly, after convening in Lecompton, the legal capital, 13 mi. up the river, would adjourn to Lawrence for the rest of the session. It was a noted station on the "underground railway" by which slaves escaped from Missouri and other slave states into free territory. On Aug. 21, 1863, it was the scene of a most distressing episode in the border warfare, when William C. Quantrell, with 400 mounted Missouri bushrangers, raided the town by night and killed 150 defenceless citizens. The city adopted a charter of its own in 1857, as its application to the free-state legislature at Topeka had been denied and it refused to recognize the authority of the pro-slavery legislature which had twice granted one. This action was declared by Gov. Walker to constitute rebellion against the United States, and he placed the town under martial law; but as perfect order prevailed the troops were withdrawn after a few weeks, by order of President Buchanan, and in Feb. 1858, the legislature legalized the city's charter.

See F. W. Blackmer, "The Annals of an Historic Town," in the *Annual Report* of the American Historical Association for 1893.

LAWRENCE, a city of Massachusetts, U.S.A., on the Merrimack river, 30 mi. from its mouth, and 25 mi. N.N.W. of Boston; one of the county seats of Essex county; served by the Boston and Maine railroad. The population was 94,270 in 1920 (41% foreign-born white) but fell to 84,323 in 1940 by the federal census. It is the worsted cloth manufacturing centre of America, giving employment to 27,000 workers in that industry. The value of worsted products in 1940 was $73,000,000. Other industries include hard rubber products, textile manufacturing accessories, men's clothing and machinery. Lawrence was created by Boston industrialists as a manufacturing city by reason of the water power of the Merrimack river. Twenty-four parks, eight playgrounds, four municipal swimming pools, two city libraries and a modern athletic stadium are provided for public pleasure. The city has an airport consisting of 320 ac. Lawrence is an important retail centre for nearly 200,000 people. Total retail sales, 1939, federal census, were $35,826,000. Assessed valuation, 1940, was $85,322,150. The city-owned property was valued, 1940, at $7,805,425. Lawrence is governed by an elected commission of five, including a mayor and four aldermen. Each member of the government is in direct control respectively of city finances, health and charities, public property, streets and sewers and police and fire departments. Lawrence was incorporated as a city in 1853, having a population at that time of 14,181; in 1844 it was a part of Methuen and of Andover. In 1940 it ranked

fourth among the cities of Massachusetts for pay rolls and value of products.

LAWRENCEBURG, a city of southeastern Indiana, U.S.A., on the Ohio river, 22 mi. W. of Cincinnati; the county seat of Dearborn county. It is on federal highway 50, and is served by the Baltimore and Ohio and the New York Central railways. Pop. (1940) 4,413. It is one of the oldest towns in the state. It was founded in 1802 and incorporated as a city in 1846. From about 1820 it had a thriving river trade with New Orleans, which increased after the building of the Whitewater canal (begun in 1836).

LAWRENCEVILLE, a city of southeastern Illinois, U.S.A., on the Embarrass river, near the Wabash; the county seat of Lawrence county. It is on federal highway 50, and is served by the Baltimore and Ohio and the Big Four railways. Pop. (1940) 6,213. Lawrenceville is the trading and shipping point for an agricultural region and a neighbouring oil field. It has oil refineries with a daily capacity of 23,000 bbls., machine shops and other manufacturing industries.

LAWS OF WAR. The institution of war has developed with the history of man. War is a contest between the organized armed forces of two or more states. It is neither lawful nor unlawful, but is like a disease into which, in spite of the efforts made to control or eradicate war, the passions of men and the collisions of their interests occasionally drive nations. Nationalism cannot be said to be responsible for war, since war existed long before the age of nationalism, around the 16th century. On the contrary, nationalism may have ameliorated its more violent manifestations by subjecting it to discipline. Its conduct in the 20th century has become so devastating and threatening, not because of the absence of ameliorating rules—themselves the reflection of a growing humanity—but because the weapons of military science, especially the aeroplane, have made it possible to inflict injuries and losses to an extent heretofore unknown. Civil wars are also common within a state, indicating man's occasional impatience with legal processes. A state of war may exist without violence or declaration; an act of war or reprisals may occur in the absence of a state of war.

History.—It is customary to divide historical periods by Hugo Grotius (1625), whose literary work shortly followed the origin of nationalism. He had predecessors, largely theologians who devoted their efforts to bringing warfare within the framework of a humanitarian code. It would be a mistake, however, to assume that the Greeks and Romans were without rules. While treachery was practised and captives were made slaves, tortured or mutilated, this was not necessarily so. Grotius drew upon Greek and Roman practice for evidences of improvements in the conduct of war. Possibly the middle ages might be deemed even harsher and more cruel, since they tolerated private war among feudal lords, permitted reprisals on a large scale, practised pillage, exterminated garrisons taken by assault and shot hostages. Baronial castles were the defenses against these calamities, in which their overlords, however, occasionally participated. Nevertheless, by 1625, during the Thirty Years' War, ameliorating practices began to be advocated and by 1650 had made their appearance, in that, as in Rome, a declaration of war came to be regarded as obligatory, prisoners were no longer enslaved but were ransomed, the church had brought its restraining influence to bear, and atrocities became less frequent. Especially was greater solicitude obtained for the noncombatant population, perhaps traceable to the code of the Saracens (about 700–1000). In civil war, or where war was not solemnly declared, prisoners were not made slaves. After the death of Charlemagne without a successor and the break-up of Europe into petty feudatories, western wars were regarded as civil wars, which led Grotius to infer that perhaps prisoners were then more frequently killed than taken prisoner.

Grotius, stirred by the atrocities perpetrated during the Thirty Years' War, was one of the first to appeal to the law of nature as a moderating influence on the conduct of war. A great school of literature began in this period, some theological, some philosophical and legal, designed to improve and regularize the practice of war and the accompanying law. With this period are identified the names of Legnano (1360, appeared 1477), Pierre Belli (1549), Vittoria (about 1520), Albericus Gentilis (1588), and, after Hugo Grotius, Samuel Pufendorf, Wolff, Emeric Vattel and many others. None appears to have exerted the contemporary influence of Grotius, who impressed Gustavus Adolphus with the practicality of some though not all of his suggestions. He advocated the amelioration of the effects of war, both as to combatants and noncombatants, placed limits on ravaging and urged moderation in conquest, including the protection of private property. The law of military occupation reflected these growing modifications. ("The Early Literature of the Law of War," by Thomas E. Holland, *Studies in International Law,* p. 40 [1898].)

Shortly after Grotius there began with nationhood the practice of stipulating in bilateral treaties concerning the treatment of persons and property including the capture of ships in time of war. The growth of commerce also made it necessary to regularize the practice of capture at sea so as to permit merchants to know precisely the risks to which they were exposed. The United States, coming into existence at the close of the 18th century, became, for historical, economic and moral reasons, the protagonist of neutrality, nonintervention, the immunity of private property at sea from capture, the limitation of contraband lists, the doctrine that free ships make free goods, a reduction in the prerogatives of a belligerent and a promotion of those of the trader.

"Just" War.—This conception, of varying content, has appeared in the literature since Greek days. Among the Greeks just war was one against barbarians or a successful war; among the early Romans, a war which was approved by the *collegium fetialium,* a corporation of special priests, *fetialis.* Among early Christian doctrines, such as those of St. Augustine and the earlier church fathers, just war became the compromise resulting from the conflict between Christianity and war. But what was just was greatly disputed. It concerned mostly the causes of war, the requital for injuries sustained or a war to produce "peace." It became a favourite subject for theological discussion, to which Thomas Aquinas (1225–74) made contributions. Some considered the motives of war as distinct from the causes a vital criterion. Some considered "just" an authorized, disciplined or national war as against a local, unauthorized and guerrilla war. The concept may have served to limit irresponsible war, endeavouring to justify it by ethical objectives. According to Grotius, wars declared by public authority conferred permission to harm the enemy, which would make war "just" on both sides. Those who were devoted to the law of nature as a guide to the law of nations in the 17th and 18th centuries identified just war with moral, religious or ethical considerations. The Positivists, however, beginning with Vattel, insisted that any limitation to be found in the word "just" was of no legal significance whatever, that disputes on this moral conception might be endless, and that the law could not apply so ambiguous and loose a conception. The effort in recent days by Hans Kelsen and others to revive the conception of the just war is an incident of the post-1919 effort to distinguish League of Nations wars from others—lawful wars from unlawful wars—"aggressors" from peaceful nations—and to reach moral judgments on who is right and wrong in a particular war in contrast to the traditional legal conception that the law of neutrality requires that both parties be treated alike. This League effort has brought confusion to the law. (*See* Nussbaum, "Just War—A Legal Concept?" *Mich. L. Rev.,* 42: 453 [1943]; von Elbe, "The Evolution of the Concept of Just War in International Law," *A.J.I.L.,* 33: 665 [1939].)

Modern Times.—The growth of international intercourse produced in due time movements for the codification of the fundamental principles of land and maritime warfare. Custom had already established the rule that, on land, war was to be conducted by disciplined national armies and not by undisciplined private combatants, that injuries to the enemy were to be limited to the necessity of putting him out of action and otherwise treating him humanely, that private property was not to be confiscated, that noncombatants were to be left untouched so far as possible, that war was an inter-governmental operation, limited by rules, and not an anarchistic popular destruction. Neutrals won for them-

selves ever greater rights to trade in nonmilitary goods. Even though modern times have enlarged the scope of war by exposing noncombatants to aerial destruction, noncombatants are not permitted to kill or to carry arms, and workers in factories are not regarded as combatants. The distinction between combatants and noncombatants is strict—a distinction which even the loose conception of "total" war has not eradicated.

Codification.—The declaration of Paris of 1856, coming shortly after the mild Crimean War, closed a long controversy as to the liability to capture of neutral property found at sea in combination with enemy's property. The seven convening powers adopted the United States' contention that such property, noncontraband, was to be exempt from capture in enemy ships, and that enemy's property, noncontraband, was to be free if on neutral ships. Legal blockade was given precision and privateering was abolished. The United States did not ratify the declaration because it was said not to have gone far enough in giving immunity to private property at sea. But in 1898, in the war with Spain, the United States adhered. So have other powers. But the fact that no limitation was placed on national contraband lists, though attempted in the unratified declaration of London (1909), has enabled the immunity granted to neutral and enemy property to be largely evaded, as in World War I. The definition of enemy character was also left to national decision, which has not been uniform. The principles of the declaration of Paris, however, narrowed in World War I practice, became international law and were applied by prize courts in 1914.

As a result of a literary campaign of protest against the fearful conditions of the wounded, the Swiss government in 1864 was prevailed on to invite delegates to be sent to Geneva to conclude what became the first Red Cross convention, providing immunities and regulations for the sick and wounded, for the sanitary corps, doctors, nurses and other persons, for hospitals, ambulances and similar instrumentalities to serve the wounded. In 1899 this convention was extended to maritime warfare. In 1906 the Geneva convention of 1864 was revised and improved. It was further improved by a Geneva convention of 1929, which was in 1944 in force for practically all countries. The convention was honoured in the breach during the Chino-Japanese War of 1894–95, leading to fearful reprisals. By and large, Japan observed the convention, to which she was a party; China, not a party, did not.

Declaration of St. Petersburg, 1868.—The introduction into the Russian army of an explosive bullet which could cause needless suffering to man led to the Russian move for the calling of a conference in 1868 to outlaw such a weapon. It is unfortunate that in the outlawry of weapons progress has been so slow, since an effective weapon tends to acquire validity no matter how harsh. Attempts to outlaw particular weapons, such as explosives, submarines, and even air bombardment have not been successful.

The parties to the declaration of St. Petersburg, 1868, not only renounced the use of any projectile which is either explosive or charged with fulminating or inflammable matter and less than 4,000 grams in weight; but also laid down as a general principle that "the only legitimate object which states ought to propose to themselves in a war is a weakening of the military forces of the enemy; that for this purpose it is sufficient to put *hors de combat* the greatest possible number of men; that this object would be exceeded by the employment of weapons which should uselessly aggravate the sufferings of men who have been placed *hors de combat*, or shall render their death inevitable; that the employment of such arms would therefore be contrary to the laws of humanity."

Brussels Declaration, 1874.—The reports of the mistreatment of prisoners of war during the American Civil War and the Franco-Prussian War of 1870–71 led to the formation of a society in Paris in 1872 for the amelioration of the lot of prisoners of war. The society issued a circular inviting the governments to send delegates to discuss the subject in Paris, but the movement was taken over by a Russian government proposal that the conference meet at Brussels in July 1874, to consider not merely the position of prisoners of war but also the general question of the conduct of warfare. The Russian invitation was accompanied by a draft *projet*. The British government seemed rather skeptical and conditioned its participation on the promise that the conference would confine its efforts to a codification of the existing customary rules of land warfare. The instruction to Major General Alfred Hastings Horsford, the British delegate, barred his agreeing to any novelties in international law. Since the British considered that innovations had been introduced, they refused to ratify the convention. Because of this, the convention never came into force. Since it exercised, however, so strong an influence on the conduct of belligerents and on the Hague convention of 1899, it cannot be disregarded.

The declaration, consisting of 56 articles, provides *inter alia* that "the laws of war do not concede to belligerents an unlimited power with reference to the choice of means of injuring the enemy," not a very precise injunction; the St. Petersburg declaration is adopted by reference; the articles on sieges provide for notice before a bombardment, that "open towns shall not be bombarded at all," and prohibit pillage. Some 14 articles are devoted to the powers and duties of an invading army in the enemy's country. These provisions, somewhat improved, found their way into art. 42–56 of the Regulations on Land Warfare following Hague Convention IV of 1907. In principle they made that distinction between private and public property and the immunity of the local population which is still the basis of the law of military occupation.

Some 19 articles deal with the position of persons who fall into the power of the enemy, that is, prisoners of war, including wounded and newspaper men, contractors, etc. These are subject to government, not private control, and the nature of their work and treatment is defined, provisions which ultimately found their way into the prisoners of war convention of 1929. The peaceful inhabitants and those under the protection of the Red Cross convention are treated better than prisoners of war, whereas those to be treated worse include spies—carefully defined—marauders and assassins, whom it is more difficult to distinguish from honourable combatants. Guerrilla warfare or *franc tireurs* is outlawed, as the Duke of Wellington had threatened. The declaration provided for the regular organization of combatants under a responsible head, and bearing distinctive military signs recognizable at a distance.

Much argument was exchanged among the peoples of Europe, whether or not these articles would alter for the worse the defensive power of countries in which universal military service is not compulsory. Experience has probably not justified any such fear, since the articles place a limitation upon the unlimited power of the military occupant. British authorities thought the time not yet ripe for the codification of the laws and customs of war. The continent is more addicted to its preference for codes. Abstractions are less resented than in England. (*See* Thomas E. Holland, *supra,* "The Brussels Conference of 1874," etc., *op. cit.* p. 59.)

National Codes.—Beginning with Lieber's code of 1863, known as *Instructions for the Government of the Armies of the United States in the Field,* prepared under President Lincoln's direction, practically all the principal nations have issued for the guidance of their own military establishment rules of war as understood by the issuing nation. They usually adopt the international codes, including, after 1899, the Hague code. The German code of 1902 gave rise to much comment because it indicated that the "laws of necessity" might outweigh the conventional and customary rules for the conduct of war. Whether this exception went further than the laws of self-preservation was disputed, though it is possible to assert that they did, and the criterion of necessity became the varying judgment of the military commanders on the spot. In the United States, the *Rules of Land Warfare,* 1914, supersede the *Instructions* of 1863. The latest expression of these rules seems to be FM-27-10, *Basic Field Manual, Rules of Land Warfare,* and FM-27-5, *Basic Field Manual, Military Government,* including both internal administration and external conduct of the military land establishment.

These booklets, dated 1940, were prepared under the direction of the judge advocate general. A similar publication governing naval warfare was issued by the navy department in 1900 under the title *Instructions for the Navy of the United States Governing Maritime Warfare*. It was withdrawn in 1904 but reissued in revision in 1917. Other countries entitled such a code "prize code" or "naval regulations." The British government seems to have issued no such manual.

Hague Conferences.—In 1898 the tsar of Russia through his minister of foreign affairs, Count Michel Mouraviev, moved by the burden of armaments on all national budgets, by a desire to promote the peaceful adjudication of disputes, and by a strong public opinion, invited the nations through their representatives at St. Petersburg to meet to discuss a limitation of armaments and peaceful adjudication. The conference, after a revised invitation, met at The Hague in 1899. They could agree only on the desirability, in the interests of humanity, of a limitation of arms and a recommendation to the governments to study the question. They did, however, conclude, *ad referendum* necessarily, three conventions and three declarations. Aside from the convention on the peaceful adjustment of international differences, a notable achievement which was greatly improved in 1907, the conventions and declarations dealt with war—applying to maritime war the principles of the Red Cross convention of 1864, prohibiting the launching of projectiles and explosives from balloons or similar methods, prohibiting projectiles diffusing asphyxiating gases and using dumdum bullets. But the most important declaration concerned the laws and customs of war on land, including the qualifications of armed forces as lawful combatants, the treatment of prisoners of war, lawful means for injuring an enemy, forbidden weapons and agencies, the powers of military commanders in occupied territory, the status of spies and similar military matters.

In 1899 came the South African War and in 1904 the Russo-Japanese War. Japan annexed Korea and France, Morocco. The peaceful means suggested at the Hague conference of 1899 seemed to have failed. Resolutions in the United States congress for the calling of a second conference and memorials by private societies persuaded President Theodore Roosevelt in 1904 to address a circular note to the powers signatory to the 1899 conventions, reminding them of the important subjects bequeathed by the conference to a successor, including the rights and duties of neutrals, the inviolability of private property in naval warfare, the bombardment of coastal towns and the adoption of a procedure for the adhesion of nonsignatory states. The responses were favourable and a second note was issued in Dec. 1904, suggesting a comparison of views among the participants as to the scope and nature of the subjects to be considered. The intermediary was to be the Permanent Administrative council at The Hague and the government of the Netherlands was to issue the call. Invitations to the Latin American countries, of which only Mexico had been represented at the first conference, were included. The Russian government assumed the initiative, however. On April 12, 1906, it submitted an outline of subjects to be discussed, and on April 4, 1907, submitted a note summarizing the judgment of the powers as to topics and reservations. On June 15, 1907, the conference convened at The Hague.

Three of the four commissions dealt with various aspects of the rules of land and maritime warfare, including the rights and duties of neutrals on land and at sea. The expansion of neutral rights represented a great advance, since these also placed limitations on the power of belligerents. Sir Thomas Barclay in 1911 considered the regularization of neutrality as the highest achievement of international law. Besides revising the 1899 convention on the conduct of war (now convention IV with its appended regulations), the second conference adopted eight new conventions and declarations dealing with topics not agreed upon at the first conference. They improved greatly the convention for the pacific settlement of international disputes. Including the great conventions codifying the rules of land warfare (No. IV), and the rights and duties of neutrals (V and XIII), three conventions relate to land warfare, eight regulate naval warfare, and a signed declaration concerns aerial warfare. Certain recommendations concern land and naval warfare.

One convention provides, in the interests of clarity and certainty, a consideration overlooked in the post-1933 confusion between war and peace, that war shall be begun in the form either of a reasoned declaration of war or an ultimatum with conditional declaration, and that neutral states must be notified. This does not mean that war may not be authentic if begun without prior notice, as is often the case. Here it may be said that although some belligerents of the so-called first and second world wars were not parties to the conventions of the second Hague conference, they were deemed bound by the first Hague conventions or by the customary rules of law which both conventions largely embodied.

The regulations annexed to convention IV dealt with the qualifications of belligerents, with the treatment of prisoners of war, with the means of injuring the enemy, sieges and bombardments, with spies, flags of truce, capitulations, armistices and the law of military occupation. Convention VI provides that enemy merchant ships at the outbreak of hostilities shall be given a certain number of days to depart, but if unable to do so shall be detained, but not confiscated, subject to the obligation of restoration at the end of the war or requisition on payment of compensation. It was under this provision that the owners of 95 German merchant ships seeking refuge in United States ports in 1914 were in 1931 awarded compensation by the war claims arbiter, Judge James Waldron Remick, on their requisition by the United States in 1917. Convention VII relates to the conversion of merchant ships into warships and the conditions for the admission of the legality of such conversion. Convention VIII relates to the laying of automatic submarine contact mines and prohibits unanchored mines except as they become harmless one hour after they become detached, anchored mines to become immediately harmless on such conditions. Other provisions concern the limited use of mines and torpedoes.

Another convention (IX) prohibits the bombardment by naval forces of undefended ports, towns, villages, dwellings or buildings. The Geneva convention of 1906 (revised in 1929) is adapted to naval warfare, including provision for hospital ships and personnel. A convention (XI) relates to certain restrictions with regard to the exercise of the right of capture in maritime war, including the exemption of postal correspondence and certain fishing vessels, regulations concerning the crews of captured enemy merchant ships, etc. Here it may be said that the right of an alien property custodian to sequestrate private property is not an exercise of the right of *capture,* as assumed by some courts, since it is not a hostile seizure with a view to confiscation.

Conventions V and XIII on the rights and duties of neutrals have been commented on at length in a commentary published in 1939 under the auspices of the Harvard law school, *American Journal of International Law,* Supplement, vol. 33, pp. 169–817.

Principles and Rules.—The object of war is to bring about the complete submission of the enemy as speedily as possible with the least possible loss of life and damage to personal property.

Military necessity justifies measures which are indispensable for securing this object if they are not inconsistent with the modern rules of war. These rules prohibit needless cruelty and needless destruction of life and property. Martial law consists of rules adopted by a commander-in-chief in the field, supplementing or superseding the laws ordinarily in force in a given district. Art. 42–56 of the Supplement to Hague Convention IV govern.

War ought not to commence without a declaration or ultimatum. It should be notified to neutrals without delay. Instructions to land armies shall conform to the Hague convention. A belligerent violating the regulations shall make compensation. Until a complete code is published belligerents and populations are bound by the general principles of the law of nations. The laws of war apply not only to the army but to the militia and a volunteer corps under the command of officers bearing distinctive insignia and arms openly. Populations in occupied territory rising against the occupant shall be regarded as belligerents if they carry arms.

Prisoners of War.—Armed forces, combatant and noncombatant, have the right in case of capture to be treated as prisoners of war. These are governmental captives who must be humanely treated. Personal belongings, except arms and munitions, remain their private property. They may be interned and restrained, but confined only under absolute need. The state may utilize the labour of prisoners of war other than officers. It shall have no relation to operations of war and must not be excessive. Work done for the state shall receive the same pay as national soldiers receive for similar work. Other work is to be compensated by agreement with the military authorities. Earnings of prisoners shall go toward improving their lot and the balance paid them on release, deducting cost of maintenance. The captor government is bound to maintain them. Except for special agreement they must be treated as are the national troops. They are subject to the laws of the captor. Insubordination evokes punishment.

Escaped prisoners if captured are liable to disciplinary punishment. If they succeed in escaping and are later taken prisoners, they are not to be punished for their earlier flight. Prisoners may be paroled and are bound to observe their engagements. Their own government is bound by the parole. A prisoner cannot be forced to accept liberty on parole, nor is the hostile government bound to assent if the prisoner requests it. Followers of an army, like newspaper correspondents and contractors, if captured and detained, have a right to treatment as prisoners of war.

Bureaus of information for prisoners shall be set up in each belligerent state, and even in neutral states. Their purpose is to answer inquiries concerning the prisoner's fate and his career. This entry shall be forwarded to his own government after the conclusion of peace. The information bureau shall collect the prisoner's belongings found on battlefields or of those who have died in hospitals and elsewhere, and forward them to interested successors. Relief societies for prisoners shall receive every facility for accomplishing their humane task. Information bureaus have free postage, as do parcels intended for prisoners. Gifts and relief for prisoners shall be admitted duty free.

Officers taken prisoner shall receive the pay of officers of the same rank in the captor country, the amount to be later repaid by their government. They shall enjoy freedom of religious worship including church attendance. Soldiers and attachés of armies who become sick or wounded shall be respected and taken care of by the belligerent which captures them without national distinction. The wounded and sick are also prisoners of war, to be treated as such. But belligerents are invited reciprocally to agree on more favourable treatment for the sick and wounded with respect to restoration, repatriation and neutral internment. The captor commander, after battle, must take measures to search for the dead and wounded, and protect them against pillage and mistreatment. The capturing belligerent must, as soon as possible, send the authorities of the country of the captured the military identification and tokens found on the dead and a list of the names of the wounded or sick. Internments must be reciprocally notified, as well as admissions into hospitals and deaths among the wounded and sick. Medical units and personnel receive special protection, even if armed, provided they do not engage in hostilities other than self-defense. A hospital may be protected by soldiers.

Weapons and Objectives.—The right of belligerents to adopt weapons is not unlimited. Their only object is to weaken the military force and disable the greatest possible number of men. This object, it is said, would be exceeded by the employment of arms uselessly aggravating the sufferings of disabled men or insuring their death. Explosive bullets below a certain weight are renounced. Also renounced are projectiles for the diffusion of asphyxiating or harmful gases and dumdum bullets. The convention also agrees not to employ poison or poisoned arms, to kill or wound treacherously, to wound or kill an enemy who has surrendered, to declare no quarter, to employ arms causing superfluous injury, to destroy or seize the enemy's property, to compel an individual to take arms against his own country. Strategems and ruses are considered lawful, but it is prohibited to make improper use of a flag of truce or of the national flag or distinguishing military marks or uniforms. The attack or bombardment of undefended towns and villages or buildings is prohibited. All necessary steps should be taken to spare buildings devoted to religion, art, science and charity, historical monuments and hospitals, which should be indicated by distinctive signs, notified to the attackers. Pillage is prohibited.

Spies.—An individual can only be considered a spy if, when acting secretly or on false pretenses, he obtains or attempts to obtain information of belligerent operations with the intention of communicating the information to the hostile party. Thus, soldiers not in disguise who have infiltrated a hostile army to obtain information are not considered spies. Similarly, the following are not spies: soldiers or civilians carrying out their mission openly or charged with the delivery of dispatches. A spy cannot claim treatment as a prisoner of war. A spy cannot be punished without prior trial. When a spy rejoins his own army and is subsequently recaptured by the enemy, he must be treated as a prisoner of war.

Truce.—Nonhostile relations between belligerents must be conducted in good faith, usually by means of a flag of truce. The bearer of such a flag is entitled to inviolability, as are those who accompany him. The bearer of such flag must not, under penalty, commit an act of treachery. An armistice suspends military operations by mutual agreement. An armistice may be general or local. It must be officially notified to the proper authorities and to the troops. The terms of the armistice must settle the relations between the contracting powers and with the local population. Any violation gives the other party a right to denounce, that is, renounce it and recommence hostilities. A violation by individuals confers only a right to demand punishment of the offenders and compensation. The rules of military occupation have been referred to elsewhere in this article.

Neutrals.—The territory of neutral powers is inviolable. Belligerents are forbidden to send across them either troops or convoys, to set up a radio telegraph station or any apparatus for communication with belligerent forces. Recruiting offices cannot be opened in a neutral state. The neutral power is not obliged to punish violations of its neutrality unless committed on its own territory. Single individuals leaving the territory to enlist abroad do not evoke national responsibility of the neutral state. A neutral power is not obliged to prevent the exportation or transit of arms and ammunition, though it is privileged to do so. Nor is it bound to forbid the employment of cables or wireless for communications purposes, although it is privileged to do so. A neutral must apply these restrictions or permits to both belligerents impartially, and must compel observance from private companies operating cables and wireless. The defense of neutrality, even by force, is not considered a hostile act. Members of belligerent armies must be interned by the neutral. The neutral power shall supply the interned with food, clothing, etc. On restoration of peace the neutral must be reimbursed. A neutral power receiving escaping prisoners of war shall leave them at liberty, but it may determine where they shall reside. A neutral power may authorize the passage of wounded or sick belonging to belligerent armies, provided the trains carrying them carry neither combatants nor war material. Even wounded or sick must be interned and must be detained so as to insure their not again taking part in war operations. A neutral cannot take advantage of neutrality if he commits acts of hostility against a belligerent or if he acts in favour of one belligerent against the other. But if a neutral joins the armed forces of a belligerent he may not be given harsher treatment than a national of that belligerent. The following acts are not considered as favouring a belligerent: if a private person furnishes goods or makes a loan to one of the belligerents, provided his country is not militarily occupied; rendering police services or services in civil administration.

Maritime War.—When the Hague peace conference closed, and in 1914, the rules of maritime war were approximately the following:

1. "Paper" blockades are illegal. A blockade to be binding must be effectively maintained by an "adequate" naval force.
2. Even enemy goods are safe on a neutral ship, *if* they are not

contraband and *if* they are not destined for a blockaded port: "Free ships make free goods."

3. Neutral goods are safe even on an enemy ship, *if* they are not contraband and *if* they are not destined for a blockaded port.

4. *A fortiori,* neutral goods are safe on a neutral ship *but* only if they are not contraband and if they are not destined for a blockaded port.

5. Contraband goods are divided into two categories: absolute and conditional.

6. Absolute contraband consists of goods exclusively used for war and destined for an enemy country, even if passing through a neutral country en route; the rule of "continuous voyage" applies.

7. Conditional contraband consists of goods which may have a peaceful use but which are also susceptible of use in war and which are destined for the armed forces or a government department of a belligerent state; the rule of "continuous voyage" does not apply.

Aside from the declaration of Paris of 1856 and Hague convention XIII, the codified law on maritime war was slender. The first Hague conference had neglected the subject and the second Hague conference had dealt as substantive law only with the rights and duties of neutrals. The second conference had, however, adopted a detailed convention (XII) designed to establish an international prize court which could sit in review of national prize courts and, in the absence of treaty, apply the "rules of international law." But there were divergences of opinion among the British, Americans, French, Germans, Russians and others as to what was the rule of international law concerning, for example, the subjects of contraband, blockade, continuous voyage, unneutral service and the transfer of ships from private belligerents to neutrals in neutral ports or on the high seas. It seemed then indispensable to the utility of an international prize court to endeavour to reach an agreement on the rules of maritime law. A conference for this purpose was called in London in Dec. 1908, which framed what is known as the declaration of London (1909). It undertook to specify the rules concerning blockade, to specify the articles which could be made contraband of war and determine the penalties for contraband carriage, to prescribe rules concerning unneutral service, the destruction of neutral prizes, transfer to a neutral flag, the determination of enemy character, rules concerning convoy, resistance to search, compensation for released vessel or goods and related topics. This was an excellent code. While ratified by the house of commons, a professional literature arose in England in 1910, which seems to have become convinced that it was too favourable to the rights of neutrals, with the result that the house of lords declined to ratify. The United States senate had recommended ratification. The upshot was that although the declaration represented to a considerable extent customary law and the United States as a neutral sought to hold Great Britain to its observance in 1914, such exceptions to it were advanced by Great Britain that the United States agreed to disregard it and hold Britain to the obligations of customary law or the Hague conventions still in force. Nevertheless, in the case of the "Dacia," a German ship lying in Galveston when purchased by an American citizen in 1915, the French court of prizes stipulated with the U.S. to apply art. 55 of the declaration, but gave it a questionable interpretation reconcilable only with prior French law prohibiting all transfers.

The controversies between neutrals and belligerents arising during World War I turned largely upon the disregard of the restrictions concerning blockade, converting blockade into a prohibition to trade, a widespread protest against the use of submarines against belligerent and neutral vessels, a U.S. protest against the promiscuous extension by belligerents of contraband lists, against the demarcation by Germany of war zones on the high seas, against the Allied use of armed merchantmen and similar matters. "Reprisal" orders in council were issued on both sides, indicating that the measures adopted could be justified in no other way. National regulations became binding on prize courts, which were thus frustrated in applying the traditional rules of international law to captured vessels and cargoes. The distinction between absolute and conditional contraband was abandoned by legislation. Neutral vessels on continental voyages were enjoined under penalty of confiscation to stop at British ports, search and seizure at sea was replaced by search in port and even inter-neutral trade in Europe was practically prohibited except by permission. Neutrals were held bound to bear the burden of reprisal measures, if thought by the prize courts not "unreasonable"—a control over neutrals by way of reprisal which Professor James Leslie Brierly, a leading English authority on international law, considers as possibly marking "the vanishing point of law as a means of regulating the conduct of war." ("International Law in England," *Law Quarterly Rev.*, 51:24, 26 [1935].)

The issues involved were not settled by any convention, although Germany was held liable before the Reparation commission in Europe and the Mixed Claims commission in Washington, D.C., for injuries inflicted by the war upon citizens of the Allied countries and the United States, respectively. The U.S. claims against Great Britain were largely abandoned in 1927 by executive agreement, each country insisting upon adhering to its own prior view of the law.

After 1919 there seemed to be an indisposition to deal by international convention with the laws of war, land or maritime, except for the limited topics of the Washington treaties of 1922 and the London treaties of 1930 and 1936, the exceedingly important but unratified convention governing the use of radio and aircraft in time of war drafted at The Hague in 1923, an inter-American convention at Havana, Cuba, in 1928 on maritime neutrality, and a convention at Rio de Janeiro, Brazil, in 1933 called the Argentine Anti-War treaty, undertaking to preserve neutrality in foreign wars. A resolution of Senator William Edgar Borah in 1928 calling for an international conference to deal with the rules of maritime law did not even come to a vote. The reason for this reluctance to consider the rules of war may be found in a popular belief that war had been either outlawed or made unlikely by the covenant of the League of Nations and that discussion of the subject was therefore out of order. This was a mistaken view.

One article of the Washington treaty of 1922 dealing with the limitation of naval armaments condemned the destruction of merchant vessels by submarine, except when crews and passengers had been taken off and placed in safety. Submarine commanders disobeying this rule were to be treated as "pirates." Since France did not ratify the treaty, it never came into force, but the anti-submarine article was renewed at London in 1930 (art. 22)—without mention of "pirates"—and again in 1936, when it was signed by most of the powers. But the submarine during World War II was being freely used against Japan, without apparent limitation, thus illustrating the fact that an effective weapon is hard to outlaw. The Washington conference condemned as a violation of international law the belligerent use of asphyxiating or poisonous gases, etc., a prohibition renewed in the Geneva Gas protocol of 1925. This protocol the senate refused to approve.

In Dec. 1922, as the outgrowth of the Washington conference, delegates convened at The Hague under the chairmanship of John Bassett Moore for the establishment of rules of law governing the use of radio and aircraft in time of war. Although attended by distinguished authorities in the field, the convention was not ratified by any power, only Italy and Japan showing any interest in obtaining ratification. It was not even submitted to the United States senate. (*See* John Bassett Moore, "Rules of Warfare: Aircraft and Radio," followed by the "General Report" of the conference, in *International Law and Some Current Illusions,* pp. 182 *et seq.*) Had the convention been adopted perhaps promiscuous bombing would have been specifically outlawed.

The Geneva convention on prisoners of war of 1929 is a comprehensive treaty codifying and amplifying previous agreements on the subject. The convention, consisting of 97 articles, sets high standards for the just and humane treatment of prisoners. Although Japan is not a signatory of the convention, the United States obtained from Japan a commitment to apply the provisions of that convention to U.S. prisoners of war, and so far as adaptable, to civilian internees held by Japan. The *Bulletin of the Department of State,* Feb. 5, 1944, p. 145, lists a long series of protests by Secretary Cordell Hull on Japanese atrocities and failure to observe the Prisoners' and the Red Cross conventions. The secretary also threatened to hold Japanese officers guilty of these atrocities personally responsible at the end of the war.

War Crimes.—The code of land warfare undertakes to authorize the country of the violators of the rules of war to hold criminally responsible the perpetrators of the offense. International law and the convention entitled the country of the victim to hold responsible in damages the country of the offender. For the former country to hold violators criminally triable or liable, treaty is required. The treaty of Versailles contained such a provision, and 16 trials were actually held in Germany at Allied instigation. They resulted in minor sentences in a few cases and acquittals in others, so that the effort was hardly successful. A voluminous literature grew up during World War II, directed mainly toward establishing the procedure for trying nazi politicos and military offenders guilty of atrocities. The advisability of such trials is a political rather than a legal question; it is discussed pro and con in the Dec. 1943 *American Political Science Review.*

Military Occupation.—As already observed, art. 42–56 of The Hague Regulations following Convention IV of 1907 deal with this subject. They have advanced but little beyond the general prescriptions of the unratified Brussels declaration, authorizing the military occupant to seize only publicly owned movables, to use publicly owned real property, but to respect, with minor exceptions as to military material, private property. Cultural public works are assimilated to private property. The gap in the regulations is that the privilege of requisitioning private property gives no assurance of compensation, that the privilege of levying money contributions from the inhabi-

tants, over and above taxes, together with the power to devalue or inflate the currency, render the prohibitions of the convention of doubtful value to the local inhabitants. A revision of the convention was badly needed. The subject is discussed in a valuable commentary by Ernst Feilchenfeld, *The International Economic Law of Belligerent Occupation* (1942).

Aerial Warfare.—Governmental neglect of the 1923 Draft Convention on the Use of Radio and Aircraft in time of War has left the use of aircraft almost unregulated in spite of the fact that it is becoming one of the most devastating instrumentalities of war. But for the limited declaration of 1899 prohibiting the launching of explosives from balloons for a limited time and art. 25 of the Hague convention of 1907 prohibiting bombardment of undefended towns, etc., there is no regulation on the subject. The air convention of 1919 deals only with aerial navigation in time of peace. The Warsaw convention of 1929, ratified by the United States, deals only with the liabilities arising out of aerial transport. The Poison Gas protocol of 1925 has only limited application. In view of the potency of the aeroplane in the destruction of cities and civil installations on land, as well as ships at sea, regulation of aircraft in time of war is urgently needed.

Economic Warfare.—The development of commerce and industry has brought about new and refined national devices for crippling the financial and economic interests of the enemy and even of those who sympathize with him. It was because the injury to trade would weaken the enemy politically that Great Britain, but for a temporary yielding by Lord Henry John Palmerston in 1860, has declined to give support to the U.S. demand for the immunity of private property at sea, and has insisted on the prize rule of confiscating such maritime property. Ships and cargoes have been deemed economic assets of exceptional value in war. During World War I, Great Britain, amplifying the traditional view that trade with the enemy was prohibited, issued blacklists of firms in neutral countries with whom it was illegal for British subjects to deal. Countries possessing control of the seas and overeas trade thus have an additional advantage over those that do not. The practice of issuing blacklists was greatly extended in World War II. Adopting the British blacklists in 1917, the United States greatly expanded the blacklist practice from 1942 on. It established not only numerous committees designed to carry out the blacklist boycott, but through the Inter-American Financial and Economic Advisory committee exerted its influence to persuade Latin American countries to sequestrate and liquidate enemy property and the property of those deemed sympathetic to the axis powers.

In the department of state *Bulletin* of Feb. 5, 1944, page 152, there is a list of the wartime development of organizations to deal with international economic operations and problems. Municipal statutes such as the Trading with the Enemy act as amended, the "Freezing" executive orders, and the First War Powers act enlarged the powers of domestic wartime administrators to inflict economic injury upon nonresident enemies, the term "enemy" being given a definition broader than that of citizen of the enemy country, to include all foreigners deemed to have sympathetic affiliation with the enemy country. Since the effects of this economic warfare cannot be terminated with the close of military hostilities, as various experts have urged that they should be, the consequences of these methods of warfare on the economic future are precarious.

World War II.—The mechanization of warfare has reached proportions unknown in past history. While the conception of combatants has not been enlarged, namely, those persons authorized by the state to kill, the victims of war, noncombatants, have become ever greater. The state or *étatisme* has assumed ever greater control of economic activities, so that the private nonmilitary trade whose maintenance was the objective of a considerable segment of the law of war and neutrality has receded in importance. Enemy ships are to a considerable degree sunk rather than captured and subjected to prize adjudication. Neutral ships carrying contraband are also sunk. If private property should again be confiscated after World War II, as art. 297 of the treaty of Versailles authorized—although practised only by some countries—the institution of foreign investment is necessarily seriously impaired. Economic warfare has been developed by the great powers into a highly injurious instrument, entering upon fields heretofore immune from the devastating effects of war. If neutrality is a thing of the past, as Woodrow Wilson once said, and as the covenant of the League of Nations may have presupposed, wars must be either eradicated, as the League and its propaganda assumed they would be, or world wars will become common. If the theory is correct, Sweden, Switzerland, Spain, Portugal, Turkey and other neutrals are theoretically without a legal status. To add to the confusion, such ambiguous and uncertain terms as "aggressor" and "nonbelligerency"—unneutrality, but escaping war—have become part of the jargon of the new theory, intended to produce permanent peace, but thus far, according to its critics, helping to produce global war.

The Future.—There are two great lines of cleavage in the opinions concerning the future of both war and law. Those who would improve the law of war by rendering it less devastating to the noncombatant believe that the post-1919 efforts to eradicate war have been misconceived, because peace among nations cannot be "enforced." Since, in spite of all efforts, wars do and may occur, say the members of this school, they should be limited by law and the doctrines of neutrality. They would devote every effort to producing useful economic and political co-operation among nations, in order that war may be minimized. The task of this school of thought, which is in the tradition of past history, is made more difficult, they assert, both by fact and theory.

In fact, state control of industry or *étatisme,* with a consequent depreciation of the individual, is growing apace in all countries. The noncombatant, in whose interests many of the rules of law were created, is in fact and theory receiving less respect. Private property and uncontrolled trade in war is being steadily reduced in importance.

In theory, a new school of thought devoted to what its opponents call an abstraction named "international organization" and the alleged outlawry of war would eliminate neutrality and squelch an "aggressor" by the force of the united peaceful nations. The difficulties of making this theory work have weakened the law and, its opponents allege, have merely resulted in global war without producing peace. While observing the desirability of peaceful change, as contemplated in art. 19 of the covenant, no practical method of accomplishing it has been devised. The underlying philosophy of this school is therefore designed to preserve the *status quo* by making war upon any revolter, called an "aggressor," first by economic sanctions, then by military force. Its opponents maintain that this theory overlooks the practical aspects of political life, since the alleged "aggressor" is sure to be a disfavoured nation which always finds friends, and the world is thus kept in a constant state of turmoil.

Advocates of the theory invoke the covenant of the League, the Kellogg pact, the Budapest resolution, the "just war" theory, a so-called Harvard draft on "aggression," and recent resolutions of congress and of the Moscow, Cairo and Tehran conferences. Opponents maintain that the covenant of the League broke down not because of its nonpolitical features but because it professed to become the guardian of the *status quo* and thus became the instrumentality of war. They maintain that the Kellogg pact was accompanied by national interpretations of the obligations undertaken, and that these expressly excluded defensive wars, each nation to be the exclusive judge of whether it was fighting in self-defense, with the result that the Kellogg pact eliminated no war that nations ever fought, but on the contrary authorized wars never heretofore legally approved. The Budapest resolution was the private draft of a small academic group of the International Law association meeting at Budapest, 1934, and has no authority whatever in international law. Senator John Anthony Danaher exposed the vacuity of this resolution on Feb. 24, 1941, *Congressional Record* (perm. ed.) vol. 87, pp. 1308 *et seq.* The draft on "Aggression" at Harvard is specifically stated not to constitute the existing law and was a slender supplement to a voluminous commentary on the existing law of neutrality. (Supplement to *A.J.I.L.*, 33:175–817 [1939].)

It is conceivable that in place of the uniform law which was assumed to prevail among all nations, great and small, the future will find one set of rules when all the great powers go to war, and none remains neutral so as to vindicate neutral rights and the law for all states at peace. The traditional rules of international law as heretofore developed may prevail when only small states, perhaps reduced to a position of semisovereignty and dependence, engage in hostilities; or when a large state goes to war with one or more small states, in both of which cases large powers will remain neutral to vindicate their neutral rights. The nature of the treaty or treaties which will close World War II may help chart the possible outlines of the future.

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(E. BD.)

LAWSON, CECIL GORDON (1851–1882), English landscape painter, was born near Shrewsbury on Dec. 3, 1851. Lawson's first works were studies of fruit and flowers in the manner of W. Hunt. These were followed by riverside Chelsea subjects. His first exhibit at the Royal academy (1870) was "Cheyne Walk." His "Hop Gardens of England," exhibited at the Academy of 1876, and "The Minister's Garden," shown in 1878 at the Grosvenor gallery and now in the Manchester art gallery, are his finest works. He died at Haslemere on June 10, 1882.

See E. W. Gosse, *Cecil Lawson, a Memoir* (1883); Heseltine Owen, "In Memoriam: Cecil Gordon Lawson," *Magazine of Art* (1894).

LAWSON, SIR JOHN (d. 1665), British sailor, born at Scarborough, joined the parliamentary navy in 1642. In 1654–1655 he commanded in the North sea and the channel. Appointed in Jan. 1656 as Blake's second-in-command, Lawson was a few weeks later summarily dismissed from his command, probably for political reasons. He was a Republican and Anabaptist, and therefore an enemy to Cromwell. In 1657, along with Harrison and others, he was arrested and, for a short time, imprisoned for conspiring against Cromwell. During the troubled months following the fall of Richard Cromwell, Lawson, flying his flag as admiral of the Channel fleet, played a marked political role. His ships escorted Charles to England, and he was soon afterwards

knighted. In 1661 he began a series of campaigns against the piratical states of the Algerian coast. Thence summoned to a command in the Dutch War, he was mortally wounded at Lowestoft. He died on June 29, 1665.

See Charnock, *Biographia navalis,* i. 20; Campbell, *Lives of the Admirals,* ii. 251; Penn, *Life of Sir William Penn;* Pepys, *Diary.*

LAWSON, VICTOR FREMONT (1850–1925), American editor and philanthropist, was born in Chicago (Ill.), Sept. 9, 1850, the son of Iver H. Lawson, a Norwegian immigrant, and was educated at Phillips academy, Andover (Mass.). He took charge of his father's interest in the daily *Skandinaven,* and in July 1876, bought an interest in the Chicago *Daily News,* which had been organized six months before by Melville E. Stone as the first one-cent newspaper in the West. In 1881 Lawson and Stone started a morning edition called the Chicago *Record,* since discontinued. In 1888 Lawson bought Stone's interest, and he remained sole proprietor until his death, Aug. 19, 1925. His principal achievement was the development of the Chicago *Daily News.* His advocacy of a postal savings bank caused him to be called the father of the law establishing such a bank. Lawson supported Stone in his development of the Associated Press, and was its president from 1894 to 1900, and a director until his death. In 1923 the University of Michigan, and in 1924 Columbia university, gave him the degree of doctor of laws. (H. Ha.)

LAWSON, SIR WILFRID, 2ND BART. (1829–1906), English politician and temperance leader, son of the 1st baronet (d. 1867), was born on Sept. 4, 1829. In 1864 Lawson, who had entered parliament in 1859, first introduced his Permissive bill, giving to a two-thirds majority in any district a veto upon the granting of licences for the sale of intoxicating liquors; and though this principle failed to be embodied in any act, a resolution on its lines was accepted by a majority in the House of Commons in 1880, 1881 and 1883. He was the champion of the United Kingdom Alliance (founded 1853), of which he became president. An extreme Radical, he also supported disestablishment, abolition of the House of Lords, and disarmament. Lawson was popular for his own sake both in and out of the House of Commons; he was a famous wit. Examples of his witty verses may be found in *Customs in Line and Rhyme* (1905) in which he collaborated with F. C. Gould. He died on July 1, 1906.

LAWS RELATING TO REAL PROPERTY AND CONVEYANCING. Real property is distinguished from personal property by the fact that the conception of tenure is applicable only to the former. This conception, and the distinction founded upon it, can only be understood by an outline of the history of English land law.

History.—Such terms as "fee" or "homage" carry us back into feudal times. But the law of feudal times was itself based upon those primitive institutions, of which the modern rights of common and distress are the direct descendants. In its final form the common law in relation to land was the result of the evolution of the previously existing course of Teutonic custom under the stress of those feudal notions, which at and after the Conquest were introduced into England from the Continent, and which may themselves be traced to the partial assimilation of Roman notions of citizenship by the Gallic land-owner.

The characteristic features of the Teutonic system were enjoyment in common and the absence of private ownership except to a limited extent. The principal features of the old English land law before the Conquest were (1) liberty of alienation, either by will or *inter vivos,* of such land as could be alienated (chiefly, if not entirely, bocland), subject always to the limits fixed by the boc; (2) publicity of transfer by enrolment in the shire-book or church-book; (3) equal partition of the estate of a deceased among the sons, and failing sons among the daughters; (4) cultivation to a great extent by persons in various degrees of serfdom, owing money or labour rents; (5) variety of custom, tending to become uniform through the application of the same principles in the local courts; and (6) subjection of land to the *trinoda necessitas* (*i.e.,* the obligations of military service, repair of bridges and maintenance of fortifications). From the earliest times the ownership of land was the basis of political privilege and conferred some territorial jurisdiction upon the land-owner. In relation to folkland this jurisdiction, as well as the administration of the criminal law, became vested in the king as ultimate arbiter, and he in many cases delegated his powers to the great land-owners. Rudiments of the conception of tenure can thus be found in Anglo-Saxon times.

The effect of the Norman Conquest was not all at once to change allodial into feudal tenure, but to complete the association of territorial with personal dependence in a state of society already prepared for it. "Nulle terre sans seigneur" was one of the fundamental axioms of feudalism. The land forfeited to the Conqueror was regranted by him to be held by military service due to the king, not to the mesne lord as in Continental feudalism. In 1086 at the council of Salisbury all the landholders swore fealty to the Crown. There might be any number of infeudations and subinfeudations to mesne lords, but the chain of seigniory was complete, depending in the last resort upon the king as lord paramount. Land was not owned by free owners owing only necessary militia duties to the State, but was held of the king by military service of a more onerous nature. The folkland became the king's land; free owners tended to become tenants of the lord, the township to be lost in the manor; the common land became in law the waste of the manor, its enjoyment resting upon a presumed grant by the lord. On the other hand, the whole of England did not become manorial; the conflict between the township and the manor resulted in a compromise.

In the full vigour of feudalism the inhabitants of England were either free or not free. The free inhabitants held their lands either by free tenure (*liberum tenementum,* franktenement) or by a tenure which although originally that of a non-free inhabitant, remained attached to the land. Franktenement was either (1) military tenure, called also tenure in knight service or chivalry (including barony, the highest tenure known to the law, grand serjeanty and the special forms of escuage, castle-guard, cornage and others), or (2) socage (including burgage and petit serjeanty), or (3) frankalmoign (*libera eleemosyna,* divine service), by which ecclesiastical corporations generally held their land[1]. The non-free inhabitants were in Domesday Book *servi, cotarii* or *bordarii,* later *nativi* or *villani,* the last name being applied to both free men and serfs. All these were in a more or less dependent condition. The free tenures all existed until 1926, though, as will appear later, the military tenures had shrunk into the unimportant and exceptional tenure of grand serjeanty. The non-free tenures were until 1926 represented by copyhold (*q.v.*). The most important difference between the military and socage tenures was the mode of descent. Land held by military service descended as to the capital fief to the eldest son; but socage lands and lands other than the capital fief for some time followed the old pre-Conquest rule of descent, and if anciently partible (*antiquitus divisum*) were divided among all the sons equally. But by the time of Bracton (Henry III.) the course of descent of lands held by military service had so far prevailed, that although it was a question of fact whether the land was partible or not, if there was no evidence either way descent to the eldest son was presumed. Relics of the old rule remained until 1926 in the custom of gavelkind. The military tenant was subject to the feudal incidents, from which the tenant in socage was exempt; and these incidents, especially wardship and marriage, were often oppressive. Alienation of lands by will, except in a few favoured districts, became impossible; alienation *inter vivos* was restrained in one direction in the interests of the heir, in another in the interests of the lord. At the time of Glanvill a tenant had a greater power of alienation over land which he had purchased (*terra acquietata*) than over land which he had inherited. But by the time of Bracton the heir had ceased to have any interest in either kind of land. It was enacted by Magna Carta that a free man should not give or sell so much of his land as to leave an amount insufficient to perform his services to his lord. In spite of this provision, the rights of the lords were continually

[1]Frankalmoign was not always regarded as a distinct tenure. Thus Littleton (s. 118) says that all that is not tenure in chivalry is tenure in socage.

diminished by sub-infeudation until the passing of the Statute of *Quia Emptores*. Alienation by a tenant in chief of the Crown without licence was a ground of forfeiture until 1. Edw. III. st. 2. c. 12, by which a fine was substituted. The modes of conveyance at this time were only two, feoffment with livery of seisin for corporeal hereditaments, grant for incorporeal hereditaments. Livery of seisin, though public, was not officially recorded like the old English transfer of property. The influence of local custom upon the land law must have become weakened after the circuits of the judges of the king's court were established by Henry II. Jurisdiction over litigation touching the freehold was taken away from the lord's courts by 15 Ric. II. c. 12.

The common law, so far as it dealt with real estate, had in the main assumed its present aspect by the reign of Henry III. The changes which have been made since that date have been chiefly due to the action of equity and legislation, the latter sometimes interpreted by the courts in a manner very different from the intention of parliament.

The most important influence of equity has been exercised in mortgages and trusts, in the doctrine of specific performance of contracts concerning real estate, and in relief from forfeiture for breach of covenant.

History of Real Estate Legislation.—The reign of Edward I. is notable for three leading statutes, all passed in the interests of the superior lords. The Statute of Mortmain (7 Edw. I. st. 2. c. 13) is the first of a long series directed against the acquisition of land by religious and charitable corporations. The statute *De Donis Conditionalibus* (13 Edw. I. c. 1) forbade the alienation of estates granted to a man and the heirs of his body, which before the statute became on the birth of an heir at once alienable (except in the case of gifts in frankmarriage), the lord thereby losing his escheat. The statute *Quia Emptores* (18 Edw. I. c. 1) preserved those rights of the lords which were up to that time subject to be defeated by subinfeudation, by enacting that in any alienation of lands the alienee should hold them of the same lord of the fee as the alienor[1]: the statute, however, does not bind the Crown. The practical effect of this statute was to make the transfer of land more of a commercial and less of a feudal transaction. The writ of *elegit* was introduced by the Statute of Westminster II. in 1285 as a creditor's remedy over real estate. It has, however, been considerably modified by subsequent legislation.

The reign of Henry VIII., like the reign of Edward I., is signalized by three important Acts. The one which had the most lasting influence in law was the Statute of Uses, 27 Hen. VIII. c. 10 (*see* TRUST AND TRUSTEES), the object of which was to destroy altogether the system of uses and equitable estates. It enacted, in substance, that whoever should have a use or trust in any hereditaments should be deemed to have the legal seisin, estate and possession for the same interest that he had in the use; in other words, that he should become in effect the feudal tenant without actual delivery of possession to him by the actual feoffee to uses or trustee. In its result the statute was a fiasco. After a decent interval it was solemnly decided that the Act transferred the legal possession to the use once only, and that in the case of a conveyance to A to the use of B to the use of or upon trust for C, it gave the legal estate to B and left C with an interest in the position of the use before the statute. The statute thus formed the foundation of that complicated system of trusts fastened upon legal estates and protected by courts of equity, to simplify which was one of the objects of the Acts of 1922–25. The Statute of Uses was intended to provide against secrecy of sales of land, and as a necessary sequel to it the Statute of Enrolments (27 Henry VIII. c. 16) enacted that all bargains and sales of land should be publicly enrolled. Bargain and sale was a form of equitable transfer which had for some purposes superseded the common law feoffment. But the Statute of Enrolments was in terms limited to estates of freehold, and its unforeseen effect was to establish as the ordinary form of conveyance until 1845 the conveyance by lease and release[1]. It was allowed that a bargain and sale for a term, say, of one year, must transfer the seisin to the bargainee without enrolment. And since what remained in the bargainor was merely a reversion which "lay in grant," it was an easy matter to release this by deed the day after. By this ingenious device was the publicity of feoffment or enrolment avoided, and the lease and release, as the process was called, remained the usual mode of conveying a freehold in possession down to the 19th century. The third Act, 32 Hen. VIII. c. 1 (explained by 34 and 35 Hen. VIII. c. 5), was passed to remedy the inconvenience caused by the fact that uses having become legal estate by the Statute of Uses were no longer devisable (*see* WILL).

In the reign of Elizabeth the Acts of 13 Eliz. c. 5 and 27 Eliz. c. 4 avoided fraudulent conveyances as against all parties and voluntary conveyances as against subsequent purchasers for valuable consideration. Early in the reign of Charles II. the Act of 1661 (12 Car. II. c. 24) turned all the feudal tenures (with the exception of frankalmoign and grand serjeanty) into tenure by free and common socage and abolished the feudal incidents. The Statute of Frauds (29 Car. II. c. 3) contained provisions that certain leases and assignments, and that all agreements and trusts relating to land, should be in writing (*see* FRAUD). The land registries of Middlesex and Yorkshire date from the reign of Anne (*see* LAND TITLES). Devises of land for charitable purposes were forbidden by the Mortmain Act (9 Geo. II. c. 36). In the next reign the first general Inclosure Act was passed, 41 Geo. III. c. 109 (*see* COMMONS). In the reign of William IV. were passed the Prescription, Limitation and Tithe Commutation Acts; fines and recoveries were abolished and simpler modes of conveyance substituted, and the laws of inheritance and dower were amended. Since the commencement of the reign of Victoria there has been a vast mass of legislation dealing with real estate in almost every conceivable aspect. At the immediate beginning of the reign stands the Wills Act. The transfer of real estate was simplified by the Real Property Act 1845 and by the Conveyancing Acts 1881 to 1911 (now the Law of Property Act 1925). The Act of 1845 finally established the modern system of transfer by a single deed by enacting that all corporeal hereditaments should, as regards the immediate freehold be deemed to lie in grant, as well as in livery. By the Acts of 1925 the ancient modes of conveyance, in practice already obsolete, were abolished. Additional powers of dealing with settled estates were given by the Settled Estates Act 1856, later by the Settled Estates Act 1877, and the Settled Land Acts 1882–90 (now the Settled Land Act 1925). Succession duty was levied for the first time on freeholds in 1853. The strictness of the Mortmain Act has been relaxed in favour of gifts and sales to public institutions of various kinds, such as schools, parks and museums. The period of limitation was shortened for most purposes from 20 to 12 years by the Real Property Limitation Act 1874. Several Acts were passed facilitating the enfranchisement and commutation of copyholds, until these were finally abolished by the Law of Property Act 1922. The Naturalization Act 1870 enabled aliens to hold and transfer land in England. The Felony Act 1870 abolished forfeiture of real estate on conviction for felony. The Agricultural Holdings Acts and other Acts gave the tenant of a tenancy within the Acts a general right to compensation for improvements, substituted a year's notice to quit for the six months' notice previously necessary, enlarged the tenant's right to fixtures, and limited the amount of distress. Somewhat similar provisions for the benefit of lessees are contained in the Landlord and Tenant Act 1927 (*see* LANDLORD AND TENANT). Among other subjects which have been dealt with by recent legislation may be mentioned land transfer, registration, mortgage, partition, excambion, fixtures, taking of land in execution, declaration of title and apportionment.

The Present Law.—The tendency of legislation since the abolition of fines and recoveries in 1833 has been to facilitate

[1]Tenants in chief of the Crown were liable to a fine on alienation until 12 Car. II. c. 24.

[1]From the reign of Edward IV. at latest up to the Fines and Recoveries Act of 1833 fines and recoveries were also recognized as a means of conveyance. They are so regarded in the Statute of Uses.

the sale of real estate. But until 1926 on the one hand land-purchase was discouraged by the variety of local custom and the liability, in the case of copyholds, to manorial incidents, in some cases a very real burden upon the tenant; and on the other hand the sale of land was in many cases for practical purposes impossible. For instance, under the old system the legal estate might be split up into a large number of undivided shares, such shares being vested in different persons, of whom some were unable to convey by reason of infancy or from some other cause, some had a mere term of years for securing a charge, and some had only a life or other limited interest. In such a case the equitable estate in the various undivided shares might also be tied up in a number of different ways. In order to sell the land it was sometimes necessary not only to obtain the concurrence of 20 or more persons but also to institute legal proceedings in order to obtain the sanction of the court; the expense involved might therefore be greater than the value of the land.

All land is now held in free and common socage. By the series of Acts[1] which came into force on Jan. 1, 1926, and which consolidate and profoundly modify the statutes relating to land from the time of Edward I., all copyholds were enfranchised, customary tenures[2] and local rules of descent were abolished, the splitting up of legal estates was made impossible, outstanding legal estates were got in, and infants were disabled from holding or acquiring land. At the same time all existing beneficial interests were preserved (though often in a different form), and it was made possible to create similar interests without thereby subjecting the land to the inconveniences formerly involved.

In brief, this object was attained (1) by abolishing forthwith certain manorial incidents (*e.g.*, customary suits, fealty, escheat and certain forfeitures), and by making provision for the ultimate extinguishment of others (*e.g.*, manorial and customary rents, fines, heriots, etc.), either by agreement as to compensation or by notice to fix compensation or by automatic expiry; (2) by applying the general principle of the convertibility of land into money; (3) by enacting in effect that all land not held absolutely and beneficially by one person capable of conveying the same should be subject either to a trust for sale or a power of sale[3], the persons capable of exercising such trust[4] or power being never more than four, and (4) by reducing to two the number of legal estates in land. A few words of explanation must suffice.

The only estates in land capable of subsisting or of being conveyed or created at law are (a) an estate in fee simple absolute in possession and (b) a term of years absolute; examples of the latter being the estates taken by lessees and legal mortgagees (*see* LANDLORD AND TENANT; MORTGAGE). The only interests or charges in or over land are (1) an easement right or privilege for an interest equivalent to one of the two legal estates already mentioned; (2) a rentcharge in possession, either perpetual or for a term of years absolute; (3) a charge by way of legal mortgage; (4) land-tax, tithe-rentcharge and similar charges; and (5) rights of entry exercisable over or in respect of a legal term of years absolute or annexed to a legal rentcharge. All other estates, interests and charges in or over land take effect in equity and can be enforced by equitable remedies only. Certain mortgages and similar charges on land must be registered either at the land registry or, if the land is in Yorkshire, in the appropriate registry there in order to obtain the protection afforded by the Land Charges Act 1925; if not so registered they can be over-reached. (*See* MORTGAGE.)

Land cannot now be held in undivided shares. The legal estate in fee simple in all land (other than settled land), which prior to 1926 was held in undivided shares, or which after 1926 is conveyed in a manner which under the old system would have created undivided shares, is now subjected to a trust for sale. Upon the appointment of new trustees of a conveyance of land on trust for sale, the same persons must be appointed as are trustees of the settlement of the proceeds of sale. A purchaser, however, is concerned neither to see that this is done nor yet with the manner in which the trustees deal with the purchase money; but as between the trustees for sale and the persons entitled to the undivided shares the purchase money and the income resulting from the investment thereof represent the land and are to be enjoyed in precisely the same manner as the land (*see* TRUST and TRUSTEES). A conveyance of land to persons some or all of whom are infants, either subjects the land to a trust for sale or else operates as a mere declaration of trust or agreement to execute a settlement of the land, according to the circumstances. In the case of settled land the legal estate must be vested in the tenant for life or statutory owner, who is invested with ample powers of selling, leasing, mortgaging and otherwise dealing with the settled land. If upon any such transaction any money arises which is in the nature of capital, such money must be paid to the trustees of the settlement for the purposes of the Settled Land Act. But before any such transaction can be validly effected a document called a vesting instrument must be executed; this document shows who has the legal estate, how the settlement arose, who are at the date of the vesting instrument the trustees of the settlement for the purposes of the Settled Land Act, and what powers (if any) the estate owner has in relation to the settled land over and above those conferred on him by the Act. If new Settled Land Act trustees are appointed, a deed of declaration to that effect must be executed and a memorandum endorsed on the vesting instrument. Upon the acquisition of land to be made subject to the settlement a subsidiary vesting deed is executed. When, upon a death or otherwise, someone other than the person named in the vesting instrument as the estate owner becomes entitled to have the legal estate vested in him, a fresh vesting instrument is executed, if the land remains settled land; but if under the "trust instrument" (*i.e.*, the instrument or series of instruments or events which constitute the settlement of the beneficial interest in the settled property), the land ceases to be settled land, a deed of discharge is executed by the Settled Land Act trustees, and thenceforward a purchaser can safely pay capital money to the estate owner. Only in exceptional cases is a purchaser from the estate owner of settled land concerned to see that the vesting instrument was duly made. (*See* SETTLEMENT.)

Real estate is either corporeal or incorporeal, a division based upon the Roman law. Corporeal hereditaments, says Blackstone, "consist of such as affect the senses, such as may be seen and handled by the body; incorporeal are not the objects of sensation, can neither be seen nor handled, are creatures of the mind, and exist only in contemplation." Incorporeal hereditaments consist chiefly, if not wholly of rights *in alieno solo*. Examples are profits *à prendre* (such as rights of common), easements (such as rights of way[1]), seigniories, advowsons, rents, tithes, titles of honour, offices, franchises.

It remains to mention that a system of registration of title to land has been established; at present, however, the system is only compulsory in the County of London and in one or two outlying districts. (*See* LAND TITLES.)

Title.—This is the name given to the mode of acquisition of rights over real estate. Title may arise either by alienation voluntary or involuntary, or by succession (*see* INTESTACY AND WILL). Voluntary alienation is either *inter vivos* or by will. The former branch is practically synonymous with conveyance, whether by way of sale, settlement, mortgage or otherwise. As a general rule alienation of real estate *inter vivos* must

[1]Law of Property Act 1922, Law of Property Act 1925, Land Registration Act 1925, Settled Land Act 1925, Land Charges Act 1925, Administration of Estates Act 1925, Trustee Act 1925 and Universities and College Estates Act 1925.

[2]The services incident to grand and petty serjeanty are preserved, though the land has become socage land.

[3]The power of sale referred to is a power of sale created by the Acts, and can sometimes only be exercised with the concurrence of the court, *e.g.*, in the case of an equitable mortgagee where the mortgage is not by deed. So far as a deed other than a mortgage purports to give to any persons a power of sale it is, generally speaking, ineffective, except that it may make those persons trustees for the purposes of the Settled Land Act 1925.

[4]The vendors may need to obtain the consent of not more than two persons, but a purchaser is not concerned to see that such consent is obtained.

[1]It should be noticed that an easement in gross cannot exist.

be by deed. Involuntary alienation is by bankruptcy (*q.v.*), and by other means of enforcing the rights of creditors over land, such as distress or execution. It may also arise by the exercise by the State of its rights of eminent domain for public purposes, as under the Lands Clauses and other Acts[1], or by a vesting order made by a court of competent jurisdiction under statutory authority.

Conveyancing.—In the preparation of legal documents the practitioner is much assisted by the use of precedents. These are outlines or models of instruments, collections of which have been in use from early times, certainly since printing became common. The prolixity which formerly characterized most legal documents has largely disappeared, mainly through the operation of statutes which enable many clauses previously inserted at great length to be incorporated by the use of a few prescribed words or omitted altogether. The Solicitors' Remuneration Act 1881 has also assisted the process of curtailment, for there is now little or no connection between the length of a deed and the cost of its preparation. So long as the draftsman adheres to recognized legal phraseology and methods, there is no reason why modern instruments should not be concise.

It is not usual for land to be sold without a formal agreement in writing being entered into. This precaution is due, partly to the Statute of Frauds (*see* above), and partly to the fact that there are few titles which can with prudence be exposed to all the requisitions that a purchaser under an "open contract" is entitled by law to make. Under an open contract a vendor is presumed to be selling the fee simple, free from any incumbrance, liability or restriction as to user or otherwise; and if he cannot deduce a title of the statutory 30 years' length, or procure an incumbrance or restriction to be removed, the purchaser may repudiate the contract. The preparation of an agreement for sale involves accordingly an examination of the vendor's title. Upon a sale by auction the agreement is made up of (1) the particulars, which describe the property; (2) the conditions of sale, which state the terms upon which it is offered; and (3) the memorandum or formal contract at the foot of the conditions, which incorporates by reference the particulars and conditions, identifies the vendor, and is signed by the purchaser. The object of the agreement, whether the sale is by private contract or by auction, is to define accurately what is sold, to provide for the length of title and the evidence in support of or in connection with the title which is to be required, to fix the times at which the principal steps in the transaction are to be taken, and generally to regulate the rights of the parties except so far as it is intended that the general law shall operate. It is usual to require a deposit to be paid by way of security to the vendor against default on the part of the purchaser.

The signature of the agreement is followed by the delivery to the purchaser or his solicitor of the abstract of title, which is an epitome of the various instruments and events under and in consequence of which the vendor derives his title. A purchaser is entitled to an abstract at the vendor's expense unless otherwise stipulated. It begins with the instrument fixed by the contract for the commencement of the title, or, if there has been no agreement upon the subject, with an instrument of such character and date as is prescribed by the law in the absence of stipulation between the parties. From its commencement as so determined the abstract, if properly prepared, shows the history of the property down to the sale; every instrument, marriage, birth, death, or other fact or event constituting a link in the chain of title, being set forth in its proper order. The next step is the verification of the abstract on the purchaser's behalf by a comparison of it with the originals of the deeds, the probates of the wills, and office copies of the instruments of record through which the title is traced. The vendor is bound to produce the original documents, except such as are of record or have been lost or destroyed, but, unless otherwise stipulated, the expense of producing those which are not in his possession falls upon the purchaser. After being thus verified, the abstract is perused by the purchaser's advisers with the object of seeing whether a title to the property sold is deduced according to the contract, and what evidence, information or objection in respect of matters appearing or arising upon the abstract ought to be called for or taken. For this purpose it is necessary to consider the legal effect of the abstracted instruments, whether they have been properly executed and stamped, and whether incumbrances, adverse interests, defects, liabilities in respect of duties or any other burdens or restrictions disclosed by the abstract have been already got rid of or satisfied, or remain to be dealt with before the completion of the sale. The result of the consideration of these matters is embodied in "requisitions upon title" which are delivered to the vendor's solicitors within a time usually fixed for the purpose by the contract. In making or insisting upon requisitions regard is had, among other things, to any special conditions in the contract dealing with points as to which evidence or objection might otherwise have been required or taken, and to a variety of provisions contained in the Law of Property Act 1925. The possibility of the rescission clause now commonly found in contracts for the sale of real estate being exercised in order to avoid compliance with an onerous requisition, is also an important factor in the situation. The requisitions are in due course replied to, and further requisitions may arise out of the answers. A summary method of obtaining a judicial determination of questions connected with the contract, but not affecting its validity, is provided by the Law of Property Act 1925. Before completion it is usual for the purchaser to cause searches to be made in various official registers for matters required to be entered therein, such as judgments, land charges and pending actions, which may affect the vendor's title to sell, or amount to an incumbrance upon the property.

When the title has been approved, or so soon as it appears reasonably certain that it will be accepted, the draft conveyance is prepared and submitted to the vendor. This is commonly done by and at the expense of the purchaser, who is entitled to determine the form of the conveyance, provided that the vendor is not thereby prejudiced or put to additional expense. The common mode of conveying a freehold is now, as already mentioned, by ordinary deed. A deed derives its efficacy from its being signed, sealed and delivered: it is not necessary that its execution should be attested except in special circumstances; but in practice conveyances are attested by one or two witnesses. The framework of an ordinary purchase-deed consists of (1) the date and parties, (2) the recitals, (3) the testatum or witnessing part, containing the statement of the consideration for the sale, the words incorporating covenants for title and the operative words, (4) the parcels or description of the property, (5) the habendum, showing the estate or interest to be taken by the purchaser, and (6) any provisoes or covenants that may be required. A few words will illustrate the object and effect of these component parts.

(1) The parties are the persons from whom the property, or some estate or interest in or in relation to it, is to pass to the purchaser, or whose concurrence is rendered necessary by the state of the title in order to give the purchaser the full benefit of his contract and to complete it according to law. (2) The recitals explain the circumstances of the title, the interests of the parties in relation to the property, and the agreement or object intended to be carried into effect by the conveyance. (3) It is usual to mention the consideration. Where it consists of money the statement of its payment is followed by an acknowledgment in a parenthesis of its receipt, which, in deeds executed since the Conveyancing Act 1881 dispenses with any endorsed or further receipt. A vendor, who is the absolute beneficial owner, now conveys expressly "as beneficial owner," which words imply covenants by him with the purchaser that he has a right to convey, for quiet enjoyment, freedom from incumbrances and for further assurance, limited, however, to the acts and default of the covenantor and those through whom he derives his title otherwise than by purchase for value. A trustee or an incumbrancer joining in the deed conveys "as trustee" or "as mortgagee," by which words covenants are implied that the covenantor individually has not

[1] The right of the State to contribution from land for revenue purposes and to stamp duties on deeds perhaps falls under this head. These imposts are really involuntary alienation of part of the profit of the land.

done or suffered anything to incumber the property or to prevent him from conveying as expressed. As to the operative words, any expression showing an intention to pass the estate is effectual. Since the Conveyancing Act 1881 "convey" has become as common as "grant" which was formerly used. (4) The property may be described either in the body of the deed or in a schedule, or compendiously in the one and in detail in the other. In any case it is usual to annex a plan. (5) The habendum begins with the words "to hold" and defines or "limits" the estate to be taken by the grantee. Until 1882 upon a sale of the fee simple the property was expressed to be held "unto and to the use of 'the grantee' and his heirs" or "heirs and assigns." By the Conveyancing Act 1881 it was made possible to substitute "in fee simple" for the words "and his heirs" or "his heirs and assigns." Unless the appropriate words of limitation were added the purchaser got only an estate for his life. Now, however, the words "to the use of" and "and his heirs" are omitted, and the words "in fee simple" are no longer essential. If the property is to be held subject to a lease or incumbrance, or is released by the deed from an incumbrance previously existing, this is expressed after the words of limitation. (6) Where any special covenants or provisions have been stipulated for, or are required in the circumstances of the title, they are, as a rule, inserted at the end of the conveyance. In simple cases none are needed. Where however, a vendor retains documents of title, which he is entitled to do where he sells a part only of the estate to which they relate, it is the practice for him by the conveyance to acknowledge the right of the purchaser to production and delivery of copies of such of them as are not instruments of record, and (unless he is a trustee or mortgagee) to undertake for their safe custody. The foregoing outline of a conveyance will be illustrated by the following specimen of a simple purchase-deed of a house belonging to an absolute owner in fee:—

THIS CONVEYANCE made the . . . day of . . . BETWEEN A.B. of etc. of the one part and C.D. of etc. of the other part WHEREAS the said A.B. is the estate owner in respect of the fee simple in possession of the messuage hereinafter described and hereby conveyed free from incumbrances and has agreed to sell the same to the said C.D. for £1,000 NOW THIS DEED WITNESSETH that in pursuance of the said agreement and in consideration of the sum of £1,000 paid to the said A.B. by the said C.D. (the receipt whereof the said A.B. doth hereby acknowledge) the said A.B. as beneficial owner doth hereby convey unto the said C.D. ALL THAT messuage or tenement situate etc. and known as etc. TO HOLD the same unto the said C.D. in fee simple. And the said A.B. hereby acknowledges the right of the said C.D. to production and delivery of copies of the following documents of title [mentioning them] and undertakes for the safe custody thereof IN WITNESS etc.

It will be observed that throughout the deed there are no stops, the commencement of the several parts being indicated by capital letters. The draft conveyance having been approved on behalf of the vendor, it is engrossed upon stout paper or parchment, and there remains only the completion of the sale, which usually takes place at the office of the vendor's solicitor. A purchaser is not entitled to require the vendor to attend personally and execute the conveyance in his presence or that of his solicitor. The practice is for the deed to be previously executed by the vendor and delivered to his solicitor, and for the solicitor to receive the purchase money on his client's behalf, since a purchaser is safe in paying the purchase money to a solicitor producing a deed so executed, when it contains the usual acknowledgment by the vendor of the receipt of the money. Upon the completion, the documents of title are handed over except in the case above referred to, and any claims between the parties in respect of interest upon the purchase money, apportioned outgoings, or otherwise are settled. The conveyance is, of course, delivered to the purchaser, upon whom rests the obligation of affixing the proper stamp—which he may do without penalty within 30 days after execution (Stamp Act 1891). It may be added that, subject to any special bargain, which is rarely made, the costs of the execution by the vendor and other parties whose concurrence is necessary, and of any act required to be done by the vendor to carry out his contract, are borne by the vendor.

Upon the sale and conveyance of a leasehold property substantially the same procedure is observed as above indicated in the case of a freehold. A few additional points, however, may be specially mentioned. Under an open contract the vendor cannot be called upon to show the title to the freehold reversion. Accordingly, the abstract of title begins with the lease, however old; but the subsequent title need not be carried back for more than 30 years before the sale. The purchaser, apart from stipulation, must assume, unless the contrary appears, that the lease was duly granted, and upon production of the receipt for the last payment due for rent before completion, that all the covenants and provisions of the lease have been duly performed and observed up to the date of actual completion. The vendor's covenants for title implied by his assigning "as beneficial owner" include, in addition to the covenants implied by those words in a conveyance of freehold, a covenant limited in manner above mentioned, that the lease is valid, and that the rent and the provisions of the lease have been paid and observed up to the time of conveyance. Where the vendor, as is the common case, remains liable after the assignment for the rent and the performance of the covenants, the purchaser must covenant to pay the rent, and perform and observe the covenants and provisions of the lease and keep the vendor indemnified in those respects. This covenant is implied unless a contrary intention appears. (As to leases *see* LANDLORD AND TENANT.)

Procedure.—In some cases rights attaching to real estate are protected by peculiar remedies. At an early period it became more convenient to try the right to the possession of, rather than the right to the property in, real estate. Possessory tended to supersede proprietary remedies, from their great simplicity and elasticity. The general mode of trying the right to both property and possession was from the time of Henry II. the real action, the form called "writ of right" (after Magna Carta gradually confined to the Court of Common Pleas) being used to determine the property, that called "assise of novel disseisin" being the general means by which the possession was tried. About the reign of Elizabeth the action of ejectment became the ordinary form of possessory remedy. Real actions existed until the Real Property Limitation Act 1833, by which they were finally abolished, with unimportant exceptions. The assise of novel disseisin, the action of ejectment in both its original and its reformed stage, and finally the action for the recovery of land in use since the Judicature Acts are all historically connected as gradual developments of the possessory action. There are certain matters affecting real estate over which the Court of Chancery formerly had exclusive jurisdiction, in most cases because the principles on which the court acted had been the creation of equity. By the Judicature Act 1925 (re-enacting the Act of 1873) there are assigned to the Chancery Division of the High Court of Justice all causes and matters for (*inter alia*) the redemption or foreclosure of mortgages, the raising of portions or other charges on land, the sale and distribution of the proceeds of property subject to any lien or charge, the specific performance of contracts between vendors and purchasers of real estates, including contracts for leases, the partition or sale of real estates, and the wardship of infants and the care of infants' estates. In the case of rent a summary mode of remedy by act of the creditor still exists (*see* DISTRESS, RENT).

Conveyancing counsel to the court (*i.e.*, to the Chancery Division of the High Court) are certain counsel, in actual practice as conveyancers, of not less than ten years' standing, who are appointed by the lord chancellor, to the number of six, under s. 40 of the Master in Chancery Abolition Act 1852. They are appointed for the purpose of assisting the court in the investigation of the title to any estate, and upon their opinion the court or any judge thereof may act. Any party who objects to the opinion given by any conveyancing counsel may have the point in dispute disposed of by the judge at chambers or in court. Business to be referred to conveyancing counsel is distributed among them in rotation and their fees are regulated by the taxing officers.

International Law.—The law of the place where real estate

is situated (*lex loci rei sitae*) governs its tenure and transfer. The laws of England and of the United States are more strict on this point than the laws of most other countries. They require that the formalities of the *locus rei* must be observed, even if not necessary to be observed in the place where the contract was made. The *lex loci rei sitae* determines what is to be considered real estate. A foreign court cannot as a general rule pass title to land situated in another country. The English and United States courts of equity have to a certain extent avoided the inconvenience which this inability to deal with land out of the jurisdiction sometimes causes, by the theory that equity acts upon the conscience of the party and not upon the title to the foreign land. Thus in the leading case of *Penn* v. *Lord Baltimore* in 1750 (1 Vesey 444) the Court of Chancery on this ground decreed specific performance of articles for settling the boundaries of the provinces of Pennsylvania and Maryland. The difficulties always arise that, although the court professes to act upon the conscience, it must indirectly act upon the property, and that it cannot carry its decision into execution without the aid of the local tribunals.

See W. Stubbs, *Constitutional History of England* (1896); Williams, *Law of Real Property* (1926); Wolstenholme and Cherry, *Conveyancing Statutes* (1927); Key and Elphinstone, *Precedents in Conveyancing* (1927). (B.)

IN THE UNITED STATES

The history of real property law as of other branches of law in the American Colonies remains to be written. Some of its more striking features, however, are apparent. There were no published reports and the number of professional lawyers was small. Colonial legislatures were active. Military tenure did not gain a foothold nor did copyhold tenure for whereas copyhold tenure survived in England until Lord Birkenhead's Act in 1922 (Law of Property Act, 1922), it was a tenure that harked back through the manor to the days of serfdom and of the village community and was not susceptible of transplanting. The universal tenure was socage, the least burdensome of the English forms of tenure and marked by small rents and payments on inheritance. So foreign did notions of feudal tenure appear that slight as these burdens were they gave rise or contributed to serious incidents, such as Bacon's Rebellion in Virginia in 1676. It was in the proprietary Colonies of Maryland and Pennsylvania that feudal tenure was most conspicuous. In both Maryland (*Matthews* v. *Ward* [1839], 10 Gill and J. 443) and Pennsylvania (*Wallace* v. *Harmstad* [1863], 44 Pa. 492, 499; but see *Ingersoll* v. *Sergeant* [1836], 1 Whart. 337), however, it has been declared by the courts that the Revolution did away with tenure. The Pennsylvania decision has been subject to criticism in that State (Sharswood, *Law Lectures*, p. 220 *et seq.*), but whether that criticism be justified or not, it is clear that since the Revolution tenure in the United States has been such a shadowy thing as to be practically non-existent.

The changes that were taking place in England were accelerated by the pioneer conditions in the Colonies. Conveyances were made by deed and while in New York and probably some other jurisdictions the cumbersome lease and release which prevailed in England for 200 years were used, in most jurisdictions probably a single document was all that was necessary. Sometimes this was a deed of bargain and sale, sometimes a statutory deed in which recording took the place of livery of seisin. Registration of deeds, a favourite scheme of the Commonwealth and one which was adopted for the counties of Middlesex and York in England in the first part of the 18th century, early became a part of the common practice in the Colonies and has remained a distinctive feature of real property law in the United States ever since. A single form of action for the recovery of and trial of title to land, usually the action of ejectment, was the common practice in the Colonies. The fictions of ejectment did not appeal to the New England Puritans, however, and in New England there was a revival of at least the names of Old English real actions, but this did not prevent the adoption in Connecticut and Massachusetts of a single statutory form of action at an early period. In South Carolina in 1791 the action of ejectment as the action to try title gave place to a special action of trespass. The common use of a single action for the trial of title and the prevalence of statutes of limitation modeled on that of 21 James I.c. 16, with a single period of limitation, usually of 20 years but sometimes as short as seven years, made it hard to think of the statute of limitation as merely cutting off a remedy. It became natural to think of it as affecting the right of property, to think of it as one element in a prescription by which the adverse possessor might become the owner of the land. Hence, while in England to-day the statute of limitation as to land is likely to be treated under the general head of limitation of actions, in the United States the statute of limitation as to land is almost certain to be treated under the head of adverse possession. In other words it is treated as one element in the acquisition of property rather than as primarily a matter of procedure.

Entails.—At the time of the settlement of the Colonies the entail was suffering a transformation in England from a means of holding land to a conveyancing device. From the time of the Statute De Donis (13 Edw. I., c. 1 [1285]) the large landed estates had been held by tenants in fee tail, but when the courts devised a way to destroy the entail, the latter ceased to be a sufficient means of keeping the estate in the family and the modern settlement was devised whereby the head of the family is a life tenant rather than a tenant in tail and the tenancy in tail is used for the sons and daughters of the life tenant but rarely comes into possession for on the oldest son reaching his majority a resettlement is made and he is given a life tenancy with remainders in tail in his children. The recent legislation in England which is associated with the name of Lord Birkenhead did away with the fee tail at law but retained it in equity and left the characteristic features of the family settlement unchanged. The strict family settlement never seems to have gained much, if any, of a foothold in the United States and it is not likely that it did in the Colonies, for it required conveyancing skill of a high order. Nor is it likely that the fee tail which had largely ceased to function as an estate in possession in England could have had much of a revival in the Colonies. There would not have been much sense in creating limited estates in possession which could instantly be turned into estates in fee simple by the tenants. That entails were not much favoured in the Colonies is shown by the legislation at the time of the Revolution which either facilitated their destruction or changed them into something else. It is doubtful whether the fee tail either in the United States or the Colonies has ever been anything but a very sporadic thing.

Primogeniture.—Primogeniture originally became the general rule of law in New York and the Southern Colonies, but with the exception of Rhode Island not in the New England Colonies nor in Pennsylvania. In New England in general and in Pennsylvania, however, the oldest son had a double portion. With the Revolution this double portion was abolished as was also primogeniture in those States where it had been the general rule, although it may have had a shadowy continuance in connection with the fee tail.

Settled Land.—The most striking difference between real property in the United States and England has been that in England the great part of the land has been settled land, while in the United States settled land is the exception. Settled land means that the land is family land, that is land, which despite the long prevalence of individual rather than family ownership of land, is so tied up in the family that the beneficial interest of the one in possession is only a partial interest. In England, since the Commonwealth, the prevalent beneficial interest of the one in possession has been a life estate. In the United States most of the land is held either by the owner himself or by a tenant under a lease for years, but this lease is purely a commercial thing and not a family matter.

Abstracts of Titles.—Other striking differences between the law of real property in England and in the United States are that titles in the United States are traced back to the original patent or grant, that except in the older States grants are apt to be based on governmental surveys and thus many of the old troublesome boundary difficulties avoided and that registration of deeds is practically if not quite universal.

The registration of deeds makes conveyancing open instead of

secret and makes the abstract of title an abstract of the public record and not of the deeds themselves. This makes abstracting a different thing from what it is in England and has developed the abstractor who unlike his English brother, the solicitor, is not as such a member of the legal profession. The examination of the abstract, however, is the work of the lawyer and the delays incident to these examinations and the corrections of the record have tended to the spread of the title insurance policy and accordingly to the supercession of the formal abstract.

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(P. Bo.)

LAWS RELATING TO SEAMEN. For legislative purposes seamen may be divided into three classes—seamen in the royal navy, merchant seamen, and fishermen.

Seamen in the Royal Navy.—It is still lawful to impress men for the naval service (*see* IMPRESSMENT), subject to certain exemptions (13 Geo. II. c. 17, 1740). Among persons exempt are seamen in the merchant service. In cases of emergency officers and men of the coastguard and revenue cruisers, seamen riggers and pensioners may be required to serve in the navy (Naval Volunteers Act 1853). There appears to be no other instance (now that balloting for the militia is suspended) where a subject may be forced into the service of the Crown against his will. The navy is, however, at the present day wholly recruited by voluntary enlistment (*see* the Naval Enlistment Acts, 1835 to 1884). Special advantages are afforded by the Merchant Shipping Act 1894 to merchant seamen enlisting in the navy. They are enabled to leave their ship without punishment or forfeiture in order to join the naval service. The discipline of the navy is, unlike that of the army, for which an annual act is necessary, regulated by a permanent Statute, that now in force being the Naval Discipline Act 1866 amended by the Act of 1884. (*See* NAVY AND NAVIES.)

Merchant Seamen.—Most of the acts dealing with this subject, commencing with 8 Eliz. c. 13, were repealed in 1854 and have since been consolidated and extended by the Merchant Shipping Acts 1894, 1906, 1921 and 1925. The act of 1894 defines a seaman as "every person (except masters, pilots, and apprentices duly indentured and registered) employed or engaged in any capacity on board any ship." The engagement and discharge of seamen must take place before a superintendent only when the employment is on a foreign-going ship. If the ship is a home-trade ship, the signing on and discharge take place before a superintendent only if the master so desire. But if the signing on does not take place before a superintendent, the master must cause the agreement to be read and explained to the seaman, and the seaman must sign it in the presence of a witness; copies of all such agreements must be transmitted to the Board of Trade. A copy of every agreement with the crew must be posted in some part of the ship accessible to the crew. Before a seaman can be discharged at any place abroad, the master must obtain the sanction, endorsed on the agreement with the crew, of the like officials or, in their absence, of merchants there resident. A seaman discharged in a foreign country is entitled to be provided with adequate employment on some other British ship bound to the port in His Majesty's dominions at which he was originally shipped, or to a port in Great Britain agreed to by the seaman, or to be furnished with the means of returning to such port or of a passage home. If his ship is wrecked or lost, the seaman is entitled by the Act of 1925 to two months' wages from the date of the termination of his services.

At common law there was no obligation of the owner to provide a seaworthy ship, but by the act of 1876, now superseded by the act of 1894, part v., every person who sends or attempts to send, or is party to sending or attempting to send, a British ship to sea in such unseaworthy state that the life of any person is likely to be thereby endangered is guilty of a misdemeanour, unless he proves that he used all reasonable means to ensure her being sent to sea in a seaworthy state, or that her going to sea in such unseaworthy state was under the circumstances reasonable and justifiable. By the Act of 1906 many of the provisions as to seaworthiness were applied to foreign ships, and they may be detained in a proper case. A return of certain particulars, such as lists of crews and of distressed seamen sent home from abroad, reports on discharge, births and deaths at sea, must be made to the registrar-general of shipping and seamen, an officer of the Board of Trade. The seaman is privileged in the matter of wills (*see* WILL), and is exempt from serving in the militia (42 Geo. III. c. 90, s. 43). There are special enactments in favour of Lascars and foreign seamen on British ships, *e.g.*, s. 125 of the Act of 1894.

Duties of Masters and Seamen.—The duties of the seamen are to obey the master in all lawful matters relating to the navigation of the ship and to resist enemies, to encourage him in which he may become entitled to prize money under 22 and 23 Car. II. c. 11 (*see* PRIZE). Any services beyond these would fall under the head of salvage service, and be recompensed accordingly. There are certain offences for which the seaman is liable to be summarily punished under the Act of 1894. They comprise desertion, neglect or refusal to join his ship or absence without leave, quitting the ship without leave before she is placed in security, wilful disobedience to a lawful command, either on one occasion or continued, assault upon a master or mate, combining to disobey lawful commands or to neglect duty, or to impede the navigation of the ship or the progress of the voyage, wilful damage to the ship, or embezzlement of or wilful damage to her stores or cargo and smuggling.

A seaman is punishable at common law for piracy and by statute for piracy and offences against the Slave Trade Acts. A riotous assembly of seamen to prevent the loading or unloading of any ship or to prevent others from working is an offence under 33 Geo. III. c. 67. By the Merchant Shipping Act 1894 a seaman is not entitled to the rating of "A.B." unless he has served four years before the mast, or three years or more in a registered decked fishing vessel and one year at sea in a trading vessel.

Remedies for Wages.—The remedies of the seaman for wages are a plaint in a county court or an action *in rem* in the admiralty division of the high court (in Scotland in the court of session), a colonial court of admiralty, or a county court having admiralty jurisdiction. A seaman has also a right to take summary proceedings before justices, naval courts, or superintendents of mercantile marine offices. The master has now the same remedies as the seaman for his wages, under which are included disbursements made on account of the ship. At common law he had only a personal action against the owner. He has the additional advantage of being able to insure his wages, which a seaman cannot do. A county court having admiralty jurisdiction may entertain claims for wages where the amount claimed does not exceed £150 (County Courts [Admiralty Jurisdiction] Act 1868, s. 3). Wages cannot be attached. They may be forfeited or reduced by misconduct, such as desertion and smuggling. In actions in all courts of admiralty jurisdiction the seaman has a maritime lien on the ship and freight, ranking next after claims for salvage and damage. The amount recoverable summarily before justices is limited to £50. Orders may be enforced by distress of the ship and her tackle. Proceedings must be taken within six months.

Where a seaman is discharged before a superintendent in Great Britain his wages must be paid through or in the presence of the superintendent, and in the case of home-trade ships may be so paid if the master or owner so desire. The master must in every case deliver either to the superintendent or to the seaman a full account, in a form approved by the Board of Trade, of the wages and of all deductions therefrom; such deductions will only be allowed if they have been entered by the master during the voyage in a book kept for that purpose, together with a statement of the matters in respect of which they are made. Where a seaman is left abroad on the ground of his unfitness or inability to proceed on the voyage, the account of wages must be delivered to the superintendent, chief officer of customs, consular officer, or merchants, from whom the master obtains the certificate without

which he may not leave the seaman behind.

The scale of provisions must be entered in the agreement with the crew, and compensation made for short or bad provisions, and means are provided whereby the crew can raise complaints. In addition, in the case of ships trading or going from any British port through the Suez canal or round the Cape of Good Hope or Cape Horn, the provisions and water are put under inspection by the Board of Trade, and if they are deficient, the ship may be detained until the defects are remedied. By the act of 1906 a certificated cook must be provided for foreign-bound ships. If a seaman receives hurt or injury in the service of the ship, the expense of medical attendance and maintenance, together with the cost of bringing him home, is to be borne by the owner of the ship, and cannot be deducted from wages. By the Workmen's Compensation Act 1925 masters, seamen and apprentices are entitled to compensation in respect of personal injuries or their dependants in case of death.

Manning of British Ships.—The Merchant Shipping Act 1897 gave power to the Board of Trade to detain ships unseaworthy by reason of undermanning, but prescribed no rules for determining when a ship is to be deemed to be undermanned. Apart from that act the law does not interfere with the number of qualifications of the crew. Aliens serving on British ships may by a regulation of the home secretary (April 29, 1904) be naturalized without fee.

Certificates of competency as masters, mates and engineers are granted by the Board of Trade. Such certificates are for the following grades, *viz.*, master or first mate, or second mate, or only mate of a foreign-going ship, master or mate of a home-trade passenger ship, first- or second-class engineer. By virtue of Orders in Council under s. 102 of the act of 1894, certificates granted in many of the British colonies have the same force as if granted by the Board of Trade. The following are the requirements of the act as to the officers to be carried by ships:—*Masters:* A properly certificated master must be carried by every foreign-going ship and every home-trade passenger ship, whatever their tonnage. *Mates:* A mate, with the certificate of the grade of first or only mate, or master, must, in addition to the certificated master, be carried by every foreign-going ship of 100 tons or upwards, unless more than one mate is carried, in which case the first and second mates must have valid certificates appropriate to their several stations on such ship or of a higher grade; and a mate, with a certificate of the grade of first or only mate or master, must, in addition to the certificated master, be carried by every home-trade passenger ship of 100 tons or upwards. *Engineers:* Every foreign-going steamship of 100 nominal horsepower or upwards must have two certificated engineers—the first possessing a first-class engineer's certificate, and the second possessing a second-class engineer's certificate, or a certificate of the higher grade. Every other foreign-going steamship, and every sea-going home-trade passenger steamship, is required to carry as the first or only engineer an engineer having a second-class certificate, or a certificate of the higher grade. Vessels in the home trade (*i.e.*, Great Britain and the continent of Europe between the Elbe and Brest) are not required to carry certificated masters or officers unless they are passenger ships of 100 tons or upwards; and vessels in the foreign trade of less than 100 tons are not required to carry any mate.

Provisions in regard to the apprenticing of boys to shipowners by parents or boards of guardians are contained in the Merchant Shipping Act 1894, ss. 105–109, and are substantially the same as those which govern an apprenticeship for service on land. Where a ship is a British ship, but not registered in Great Britain, the provisions of Part II. apply as follows:

The provisions relating to the shipping and discharge of seamen in Great Britain and to volunteering into the navy apply in every case. The provisions relating to lists of the crew and to the property of deceased seamen and apprentices apply where the crew are discharged or the final port of destination of the ship is in Great Britain. All the provisions apply where the ship is employed in trading or going between any port in Great Britain and any port not situate in the British possession or country in which the ship is registered. The provisions relating to the rights of seamen in respect of wages, to the shipping and discharge of seamen in ports abroad, to leaving seamen abroad, and the relief of seamen in distress in ports abroad, to the provisions, health, and accommodation of seamen, to the power of seamen to make complaints, to the protection of seamen from imposition, and to discipline, apply in every case except where the ship is within the jurisdiction of the Government of the British possession in which the ship is registered.

Fishermen.—The regulations respecting fishermen, which were contained in several acts from 1868, are now to be found in the Merchant Shipping Act 1894, part iv. This provides, *inter alia*, that indentures of apprenticeship are to be in a certain form and entered into before a superintendent of a mercantile marine office, that no boy under 13 is to be employed in sea-fishery, that agreements with seamen on a fishing-boat are to contain the same particulars as those with merchant seamen, that running agreements may be made in the case of short voyages, that reports of the names of the crew are to be sent to a superintendent of a mercantile marine office, and that accounts of wages and certificates of discharge are to be given to seamen. No fishing-boat is to go to sea without a duly certified skipper. Fishermen are exempt from Trinity House dues. The rights of British fishermen in foreign waters and foreign fishermen in British waters are in many cases regulated by treaty, generally confirmed in Great Britain by act of parliament. Special provisions as to fishermen in Scotland are contained in s. 389 of the Act of 1894 and in the Merchant Shipping (Scottish Fishing Boats) Act 1920.

In India and in most British colonies there are laws affecting merchant seamen. In some cases such legislation is identical with the imperial act, but in most there are differences of more or less importance, and the colonial statutes should be consulted. For the law of the United States in reference to seamen, which is in general accordance with that of England, see *The Navigation Laws of the United States* (Government Printing Office, Washington, 1927). For the continental European countries *see* the various commercial codes, which contain provisions of a more or less detailed character.

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THE UNITED STATES

Naval Seamen.—The engagement of seamen in the navy is by voluntary enlistment. Although the officers are required to be American citizens, there is no such requirement with regard to the enlisted personnel. However, both officers and enlisted men must take an oath of allegiance. Minors between the ages of 14 and 18 years may be enlisted with the consent of their parents. Persons who are insane or intoxicated or who have already deserted in time of war from the navy or army, may not be enlisted.

Enlistment may be for terms of two, three, four or six years. A seaman may terminate his service before the end of the enlistment period by purchasing his discharge or by being furloughed without pay for the balance of the term or, without any prejudice to any benefits which he otherwise would have received, may obtain his discharge at any time within three months of the completion of the enlistment period.

On retirement, after 30 years' service, an enlisted man is entitled to receive 75% of his pay and a further sum in lieu of rations and quarters. While on the retired list, he may be called to active duty in time of war. Furthermore, the secretary of the navy may require all enlisted men on discharge to serve four years in the Fleet Naval Reserve. On the death of any enlisted man, his estate is entitled to receive from the Government six months' pay. While under enlistment a seaman may not engage in any other employment which may bring him into competition with civilians.

The discipline of enlisted men is regulated by the articles for

the government of the navy. Among the offences punishable by death are mutiny, disobeying of orders, striking a superior officer, intercourse with the enemy, receiving messages from the enemy, desertion in time of war, deserting a trust in time of war, sleeping on watch, leaving a station, wilful stranding or injury of vessels, unlawful destruction of public property.

For the relief of sick or injured seamen, the navy maintains hospitals at suitable places. For the support of such hospitals, the secretary of the navy is required to deduct from the pay of each seaman at the rate of 20¢ per month. Fines levied upon seamen for offences and forfeitures on account of desertion are passed to the credit of the naval hospital fund. Seamen on naval vessels are also entitled to be treated in case of injury or illness at the marine hospitals maintained by the public health service.

Merchant Seamen.—The definition of the word "seaman" as used in the Revised Statutes is as follows: "Every person having command of any vessel belonging to any citizen of the United States shall be deemed to be the 'master' thereof; and every person (apprentices excepted) who shall be employed or engaged to serve in any capacity on board the same shall be deemed and taken to be a 'seaman'; and the term 'vessel' shall be understood to comprehend every description of vessel navigating on any sea or channel, lake or river, to which the provisions of this Title may be applicable" (Revised Statutes 4612).

In addition to the regular crew, the following persons have been held to be seamen: A musician, a fisherman, a bar-tender, the wife of the cook serving as second cook. The provisions of U.S. statutes with regard to seamen apply to all seamen generally. Specific exceptions are made in the application of certain sections to seamen employed on fishing or whaling vessels and yachts, for which it is necessary to consult the statutes.

Engagement of Seamen.—Seamen employed on vessels bound from a port of the United States to a foreign port other than a port in British North American possessions, the West Indies, or the Republic of Mexico, or on any vessel of the burden of 75 tons or upward, bound from a port on the Atlantic to a port on the Pacific or vice versa, must be engaged in the presence of a shipping commissioner by an agreement in writing in a form prescribed by statute. The written agreement is commonly known as the "articles." It is signed in duplicate and one copy is retained by the shipping commissioner and the other by the master of the ship who is required to post a copy in such part of the vessel as to be accessible to the crew.

However, in the case of all vessels not classified as above, the owner, master or consignee may perform the duties of a shipping commissioner. Moreover, none of the above-mentioned provisions with respect to the engagement of a crew is applicable to the coastwise trade (except the coastwise trade between the Atlantic and Pacific coast) or in the lakegoing trade touching at foreign ports or otherwise, or in the trade between the United States and the British North American possessions, or in any case where the seamen by custom or agreement are entitled to participate in the profits or result of a cruise or voyage.

However, shipping commissioners may at the request of the master or owner engage or discharge crews of vessels engaged in the coastwise trade or the trade between the United States and the Dominion of Canada, Newfoundland, the West Indies or the Republic of Mexico, and, when so doing, are required to observe many of the requirements of the statutes applicable to those vessels which must compulsorily engage seamen with the supervision of a shipping commissioner. Furthermore, vessels of a burden of 50 tons or upward, bound from a port in one State to a port in any other than an adjoining State, except vessels of a burden of 75 tons or upward, bound from a port on the Atlantic coast to ports on the Pacific coast or vice versa, are required in the engagement of seamen to make an agreement in writing declaring the voyage or term of time for which the seamen shall be shipped.

Where the contents of the written agreement are regulated by statute, it is required to show the nature and duration of the intended voyage, the port of termination, the number and description of the crew, the time at which each seaman is to be on board, the capacity in which each seaman is to serve, the wages, a scale of provisions which are to be furnished to each seaman, the requirements as to conduct, the regulations as to fines or other lawful punishments, and stipulations as to allotment of wages.

Seamen may also be engaged in ports out of the United States in which there is a consular officer, provided the sanction of the consular officer be obtained and the seamen be engaged in his presence. In such cases the rules governing the employment of such seamen are the same as those governing the engagement of seamen in the United States before a shipping commissioner.

Discharge of Seamen.—The discharge of seamen in the United States from vessels engaged in foreign voyages, or, being of the burden of 75 tons or upward and engaged in voyages between the Atlantic and Pacific coasts of the United States, must take place before a shipping commissioner, except where some competent court otherwise directs. In foreign ports, either the master or the seaman may apply to the consul for a discharge of the seaman, and if it appears to the consul that the shipping agreement is completed or that the seaman is entitled to his discharge under an Act of Congress or the principles of the maritime law, the consul must discharge the seaman and require at the same time the payment of wages then due. If the discharge is not for neglect of duty, incompetency or injury incurred on the vessel, the master must provide the seaman with employment on another vessel agreed to by the seaman or provide him with one month's extra wages. If the discharge is by voluntary consent, the seaman is entitled only to wages up to the time of his discharge. If the discharge is on account of injury or illness the expenses of the seaman's maintenance and transportation to the United States are paid from the fund for the maintenance and transportation of destitute American seamen. If the discharge takes place by reason of the vessel being sold in a foreign country, the master must provide the seaman with adequate employment on board some other vessel bound to the port of original shipment or to some other port agreed upon or must provide him with passage home or leave with the consul a sum of money sufficient to pay for the maintenance or passage home of the seaman.

Whenever the discharge of a seaman in a foreign country takes place by reason of the consul's finding that the voyage is continued contrary to the original agreement or that the vessel is badly provisioned and unseaworthy or that the officers have cruelly treated the seaman, the master is required to pay the seaman one month's extra wages and to provide him with employment on board some other vessel or with passage either to the port of original shipment or the most convenient port of entry in the United States or a port agreed to by the seaman.

Wages of Seamen.—The written articles of agreement in cases where they are subject to statutory regulation are required to contain the rate of wages to which the seaman is entitled. At the termination of the service, the master is required to pay the seaman in the presence of the shipping commissioner, and both the master and seaman are required to sign a mutual release of all claims for wages. Wages are not dependent upon the earnings of freight.

In case the service of a seaman terminates before the end of the engagement by reason of the loss or wreck of the vessel, the seaman is entitled to wages only up to the termination of his service. However, under such circumstances he is entitled to transportation to the port of shipment as a destitute seaman. If a seaman has signed an agreement and he is discharged before the commencement of the voyage or before one month's wages are earned without fault on his part or without his consent, he is entitled only to a sum equal in amount to one month's wages as compensation and may recover that compensation as if it were wages earned.

Wages of seamen engaged in coastal voyages must be paid within two days after the termination of the agreement or at the time such seaman is discharged, whichever happens first. In the case of vessels making foreign voyages or voyages between the Atlantic and Pacific coasts of the United States, wages must be paid within 24 hours after the cargo has been discharged or within four days after the seaman has been discharged, whichever happens first. The refusal or neglect on the part of the master to

make such payment without sufficient cause makes the master and owner liable to the seaman for a sum equal to two days' pay for each and every day for which payment is delayed beyond the period due, which sum is recoverable as wages. A seaman is entitled to receive on demand from the master one-half of the balance of the wages earned and remaining unpaid at the time when such demand is made at any port where such vessel, after the voyage has been commenced, shall load or deliver cargo before the voyage is ended. A demand may not be made oftener than once in five days or more than once in the same harbour on the same entry. This section is applicable alike to seamen on American vessels and seamen on foreign vessels while the foreign vessels are in a U.S. port.

For the recovery of his wages, a seaman may sue the owner *in personam* at common law or in admiralty, and may also sue the vessel *in rem* in admiralty. For this purpose he has a lien which takes precedence over nearly every other lien against the vessel. In case the wages are not paid within ten days after they are due or any dispute arises between the master or seaman touching wages, the seaman may obtain the intervention of a district judge of the judicial district where the vessel is present, who may summon the master of the vessel to appear before him and show cause why the vessel should not be attached. It is a misdemeanour to pay a seaman wages in advance of the time when he has actually earned them or to pay such wages or make any evidence of indebtedness to any other person or to pay any person for the shipment of the seaman when the payment is deducted or to be deducted from a seaman's wages. In the case of American vessels, such advances in wages or allotment of wages whether made witnin or without the United States are illegal. In the case of foreign vessels they are illegal only when made in the United States. Moreover, the seaman may recover his wages in full without any deductions on account of advances. However, the seaman may stipulate in the "articles" for the allotment of a portion of his wages to his dependent relatives provided the allotment has the approval of the shipping commissioner. The wages of a seaman are not subject to attachment.

Duties of Seaman and Ship-owner.—A seaman is required to obey the lawful commands of his superiors in the navigation of the ship and may be punished for the following offences: for desertion, for neglecting or refusing without reasonable cause to join his vessel, for absence without leave under certain conditions, for quitting the vessel without leave after her arrival at the port of delivery and before she is placed in security, for wilful disobedience to any command at sea, for continued wilful disobedience to lawful commands and continued neglect of duty at sea, for assaulting any master or mate, for wilfully damaging the vessel, for embezzlement or damage to any of the cargo and for smuggling.

The ship-owner is required to provide the seaman with food according to a scale enacted by statute. Provision is made whereby seamen may complain to an officer of the navy, a consul of the United States, a shipping commissioner or chief officer of the customs, in case the provisions for the use of the crew are of bad quality or deficient in quantity, and there is further provision for the correcting of any failure on the part of the master to observe the law with respect to provisions and water. Vessels on foreign voyages and on voyages between the Atlantic and Pacific coasts are required to carry a sufficient quantity of lime and lemon juice or other antiscorbutics, which are to be served to the seamen according to the provisions of the statute. Such vessels are also required to be provided with a slop chest containing a complement of clothing for each seaman employed, and also a full supply of tobacco and blankets. The contents of the slop chest are sold to seamen at a reasonable profit.

It is unlawful for the owner to send his vessel to sea in such unseaworthy condition that the life of any person is likely to be thereby endangered, unless he proves that he used all reasonable means to insure seaworthiness of the vessel, or that the sending of the vessel to sea in an unseaworthy condition was under the circumstances reasonable and justifiable. For the enforcement of these provisions there is further legislation by which inspection of the vessel may be obtained either at domestic ports or foreign ports, and for the discharge of the crew in case the vessel is unfit to go to sea.

The statutes also prescribe the number of cubic feet which must be allotted in the crew's quarters to each seaman, and regulate the lighting and ventilation. Merchant vessels which ordinarily make voyages of more than three days' duration between ports and which carry a crew of 12 or more seamen are required to have a compartment for hospital purposes, having at least one bunk for every 12 men, and not more than six bunks in any case. All merchant vessels constructed since March 3, 1897, and having more than ten men on deck, must have a washing place provided with at least one washing outfit for every two men of the watch.

Manning of Merchant Vessels.—Merchant vessels of more than 100 tons gross are required to divide their sailors into two watches, and their engine-room crew into three watches. While such a vessel is in a safe harbour seamen cannot be required to do unnecessary work on Sundays or on the following named days, New Year's Day, Fourth of July, Labour Day, Thanksgiving Day and Christmas Day. While in a safe harbour, nine hours, inclusive of the anchor watch, constitute a day's work.

Of each department of the crew 75% must be able to understand any order made by the officers, and of the deck crew 65%, exclusive of licensed officers and apprentices, must be of a rating not less than able seamen. A person may be rated an able seaman and qualified for service as such on the seas who is 19 years of age, and who has had three years' service on deck. The requirements for able seamen on the Great Lakes are less.

In case of desertion or casualty resulting in the loss of one or more of the seamen, the master before proceeding to sea must ship others to take their places, if they are obtainable.

Officers on U.S. vessels must be citizens of the United States, and this applies to the chief engineer and assistant engineers of vessels propelled by steam who may be in charge of a watch. However, on foreign voyages vacancies may be filled by otherwise properly qualified persons who are not citizens, until the first return of the vessel to its home port. The president of the United States is authorized in his discretion to suspend the provisions of law as to the citizenship of officers of American vessels. All officers, including the master and the engineers, are required to obtain licences from the Board of Steamboat Inspectors, and such licences are issued only after an examination into the qualifications of the applicant.

Remedies of Seamen in Cases of Injury in Course of Employment.—For every injury and illness incurred while in the service of the vessel and not due to his own vice, a seaman is entitled to the reasonable expenses of his maintenance and cure. This includes medical attention and board and lodging for a reasonable period. In the construction of the reasonableness of the period, there is a tendency to allow a seaman maintenance and cure for that period during which physicians say that treatment can produce a cure. In addition thereto if the seaman's injury or illness is caused by the unseaworthiness of the vessel, or breach of the obligation to furnish good food and water, and prompt and proper medical attention, the seaman may recover damages. By virtue of the Merchant Marine Act of 1920, commonly known as the Jones Act, a seaman may recover against his employer if he is injured through the negligence of the employer or of anyone employed by him. Likewise the representatives of a deceased seaman may recover damages against the employer if the death is caused by the unseaworthiness of the vessel or there is a breach of the obligation to furnish good food and provisions, or prompt and proper medical attention or, under the Jones Act, if the death is caused by the negligence of the employer or anyone employed by him.

The seaman may enforce his right to obtain maintenance and cure, or damages, either *in personam* against the employer or *in rem* against the vessel, or he may sue at common law either in the Federal courts or the State courts. He may not, however, recover under the Jones Act by a proceeding *in rem* in the admiralty courts. The representative of a deceased seaman may

recover damages for the death of a seaman by an action *in personam* in admiralty or an action at common law. Where death statutes give no lien, and they generally do not, the representative may not sue *in rem* in admiralty to enforce a cause of action for death.

The Federal Government provides a number of marine hospitals at the more important ports of the United States, at which seamen may obtain free hospital and medical attention in case of injury or illness occurring while in the service of a merchant vessel. Formerly shipowners were required to contribute to the maintenance of this hospital service, but there is no longer any such requirement. In case a seaman is injured and unable to continue in the service of the ship while she is in a foreign port, the ship-owner has the primary duty of rendering the seaman proper medical attention and arranging for his transportation to a port in the United States. By Act of Congress, however, the U.S. consuls are also required, in case disabled seamen are discharged, to transport them to a port in the United States at the expense of the Government. In case the consul refuses to discharge a seaman, the shipowner must bear the expense of returning him to the United States.

American seamen who are rendered destitute in a foreign country for any reason whatever, are entitled on application to the American consul to be furnished with subsistence and passage to some port in the United States. The consul is empowered to require the master of any American vessel to take such destitute seamen on board at the expense of the Government.

Formerly masters of vessels were permitted to flog seamen in order to enforce discipline. Such practice is now prohibited. Desertion was formerly an offence carrying the penalty of arrest and imprisonment. The seaman is now subject only to the loss of his clothing left on board and his wages. Moreover, there is no provision whereby deserters from either American or foreign vessels may be compelled to rejoin their vessels. The present situation is designed to approximate in the case of seamen to the freedom of obtaining and leaving employment which exists in shore employments.

For the complete text of statutes relating to merchant seamen and their interpretation by the courts, see *U.S. Code Annotated.*

(V. S. J.; R. PAR.)

LAWTON, a city of southern Oklahoma, U.S.A., on Cache creek, near the Wichita mountains, 105 mi. S.W. of Oklahoma City; the county seat of Comanche county. It is served by the Frisco and the Rock Island railways. Pop. (1930) 12,121; 18,055 in 1940. It is in a grazing and farming region, where cotton is an important crop; there are shallow oil fields east of the city. The Cameron State School of Agriculture is there; also the Kiowa Indian hospital and the Fort Sill Indian school. The Fort Sill military reservation, used for a field artillery school, is 4 mi. N., and beyond is the Wichita national forest.

LAWYER, in a broad sense one whose principal occupation is related to the making or administration of the law, and who has received an education sufficiently wide in its scope to distinguish him from minor administrative officials; more specifically one upon whom the State has conferred important special privileges in connection with the administration of justice, to the exclusion, however, of administrative officials, judges, legal scholars or law teachers, as such. Lawyers duly admitted to practice are "officers of the court." The essential distinction between these and "public officers," in a technical sense, is that lawyers are not restricted in number. Instead of being appointed to fill specific official vacancies, they constitute an indeterminate official class or order; they differ also from most public officers in that their official relationship continues during good behaviour, instead of for a specified term, and in that their compensation comes from their clients instead of from the State. These incidental characteristics help to obscure, but do not essentially affect, the peculiarly "public" nature of the legal profession.

A variety of influences—all grounded in this intimate connection between law and politics or government—have caused the lawyers of different countries to differ widely from one another. The Continent bases its jurisprudence upon the university-made civil law, in place of the judge-made common law of England and America. The practice, in a broad sense, of this civil law consists of several co-ordinate professions, each of which constitutes a career in itself. Such are, for instance, the profession of judge, of diplomat, of higher civil servant, of law teacher and scholar. The United States stands at the opposite extreme; the student, after his formal education is completed, is admitted by the State to the privilege of engaging in general practice of the law. There is little or no connection between his course of preparation—which may or may not be in a university—and the particular line of highly specialized legal activity in which he will find himself at first, and from which he will not infrequently pass in time to the bench, into politics or even business. In England the lawyer occupies a position somewhat resembling that of his colleague in the United States, but not to the extreme exemplified there. The principal difference is that English barristers, from whom alone the bench of judges is recruited, are sharply distinguished from the more numerous body of solicitors. Finally, England's self-governing dominions are in a sense intermediate between the mother country and the United States. The profession is usually technically divided at the outset, but outside of Quebec and South Africa, where the civil law prevails, there is no rule against a single individual's practising both as barrister and as solicitor.

Because of these differences in the meaning of the term, comparative figures as to the number of lawyers in different countries are likely to be somewhat misleading. Census figures are used, both because none other are available for the United States, and because in England and Canada the number carried on the lawyers' own official rolls is not always identical with that of active practitioners.

Number of Lawyers

	Date	Inhabitants	Lawyers	Lawyers to each million inhabitants
England and Wales .	1921	37,885,242	17,946	474
Dominion of Canada .	1921	8,788,483	7,548	859
United States . .	1920	105,710,620	122,519	1,159

In the United States the number of lawyers to each million inhabitants ranged, in 1920, from approximately 600 in Alabama, Mississippi and the two Carolinas to 1,800–2,000 in Oregon and California; nearly 3,000 in Nevada and over 5,500 in the Federal capital, Washington, D.C. In Canada the range was from 500 or 600 in the Maritime Provinces to approximately 1,100 in Manitoba, 1,300 in British Columbia, and nearly 4,100 per million in Regina, the provincial capital of Saskatchewan.

The proportion of women to men lawyers is everywhere small. The following table shows that this source of variation counts for very little in explaining why the United States and Canada have so many more lawyers in proportion to their population than has England.

Number of Women Lawyers

	Men and women	Women	% Women
English and Welsh solicitors .	14,973	17	0·1
„ „ „ barristers .	2,973	20	0·7
Canadian barristers, solicitors, judges and justices . . .	7,548	66	0·9
United States lawyers, judges, justices and magistrates . .	122,519	1,738	1·4

The relation between the number of lawyers in different communities and such factors as density of population, wealth and industrial and political conditions, has still to be worked out on a scientific basis. One important explanation, however, of the wide differences that are revealed by these figures is to be found in the dominant political philosophies that underlie existing requirements for admission to legal practice. In older jurisdictions the tendency is to emphasize, to the exclusion of all other considerations, the need of a rigorous course of preparation, designed to promote competency and character among lawyers. Younger juris-

dictions are more alive to the evils that would flow from making access to a lawyer's special privileges unduly difficult for students of modest means. How these two principles—that of efficiency and that of democratic idealism—may be suitably combined, is a matter of current controversy.

See also ATTORNEY; BAR; BARRISTER; COUNSEL AND COUNSELLOR; INNS OF COURT; LEGAL EDUCATION; SOLICITOR.

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(A. Z. R.)

LAY, a word of several meanings. (1) A song or, more accurately, a short poem, lyrical or narrative, which could be sung or accompanied by music; such were the romances sung by minstrels.

(2) "Non-clerical" or "unlearned." The word is now specially applied to persons who are not in orders, and more widely to those who do not belong to other learned professions, particularly the law and medicine. In a cathedral of the Church of England "lay clerks" and "lay vicars" sing such portions of the service as might formerly be performed by clergy in minor orders. "Lay readers" are persons who are granted a commission by the bishop to perform certain religious duties in a particular parish. In a religious order a "lay brother" is freed from duties at religious services performed by the other members, and from their studies, but is bound by vows of obedience and chastity and serves the order by manual labour.

(3) "Lay" as a verb means "to make to lie down," "to place upon the ground," etc.

(4) "Lay-figure" is the name commonly given to articulated figures of human beings or animals, made of wood, papier-maché or other materials; draped and posed, such figures serve as models for artists.

LAYA, JEAN LOUIS (1761–1833), French dramatist, was born in Paris on Dec. 4, 1761 and died in Aug. 1833. He is remembered by his *Ami des lois* (1793). This play, with its scarcely veiled characterizations of Robespierre as Nomophage and of Marat as Duricrâne, was produced at the Théâtre Français (temporarily Théâtre de la Nation) only 19 days before the execution of Louis XVI. Ten days after its first production the piece was prohibited by the commune, but the public demanded its re-presentation; the mayor of Paris was compelled to appeal to the convention, and the piece was played while some 30,000 Parisians guarded the hall. Laya went into hiding, and several persons convicted of having a copy of the obnoxious play in their possession were guillotined. At the end of the Terror, Laya returned to Paris. In 1813 he replaced Delille in the Paris chair of literary history and French poetry; he was admitted to the Academy in 1817.

Laya produced in 1797 *Les Deux Stuarts,* and in 1799 *Falkland,* the title-rôle of which provided Talma with one of his finest opportunities. His *Oeuvres* were collected in 1836–37.

See H. Welschinger, *Théâtre de la révolution* (1880).

LAYAMON, early English poet, was the author of a chronicle of Britain entitled *Brut,* a paraphrase of the *Brut d' Angleterre* by Robert Wace (*q.v.*). All that is known of Layamon is derived from two extant mss., which present texts that often vary considerably, and it is necessary to understand their comparative value before any conclusions can be drawn. The older text (here called the A-text) lies very near the original text, which is unfortunately lost, though it now and then omits lines which are absolutely necessary to the sense. The later text (here called the B-text) represents a later recension of the original version by another writer who frequently omits couplets, and alters the language by the substitution of better-known words for such as seemed to be obsolescent; e.g., *harme* (harm) in place of *balewe* (bale), and *dead* in place of *feie* (fated to die, or dead). Hence little reliance can be placed on the B-text, its chief merit being that it sometimes preserves couplets which seem to have been accidentally omitted in A; besides which, it affords a valuable commentary on the original version.

We learn that Layamon was a priest, and the son of Leovenath (a late spelling of A.-S. Leofnoth); also, that he lived at Ernley, at a church on Severn bank, close by Radstone. This is certainly Areley Regis, or Areley Kings, 1 m. S. of Stourport in Worcestershire. The B-text turns Layamon into the later form Laweman, *i.e.,* Law-man, correctly answering to Chaucer's "Man of Lawe," though here apparently used as a mere name. It also turns Leovenath into Leuca, *i.e.,* Leofeca, a diminutive of Leofa, which is itself a petname for Leofnoth; so that there is no real contradiction. But it absurdly substitutes "with the good knight," which is practically meaningless, for "at a noble church."

We know no more about Layamon except that he was a great lover of books; and that he procured three books which he prized above others. These were: Baeda's *Ecclesiastical History* in the original Latin and in its English translation, and Wace's poem, *Brut d'Angleterre,* which Layamon proceeded to paraphrase in English. The A-text of Layamon's poem may be dated about 1205, and the B-text (practically by another writer) about 1275. Both texts are remarkably free from admixture with words of French origin; the lists that have been given hitherto are inexact, but it may be said that the number of French words in the A-text can hardly exceed 100, or in the B-text 160. Layamon's work is largely original; Wace's *Brut* contains 15,300 lines, and Layamon's 32,240 lines of a similar length; and many of Layamon's additions to Wace are notable, such as his story "regarding the fairy elves at Arthur's birth, and his transportation by them after death in a boat to Avalon, the abode of Argante, their queen"; *see* Sir F. Madden's pref. p. xv.

Wace's *Brut* is almost wholly a translation of the Latin chronicle of the early history of Britain by Geoffrey of Monmouth, who said that he obtained his materials from a manuscript written in Welsh. The name Brut is the French form of Brutus, who was the fabulous grandson of Ascanius, and great-grandson of Aeneas of Troy, the hero of Virgil's *Aeneid.* After many adventures, this Brutus arrived in England, founded Troynovant or New Troy (better known as London), and was the progenitor of a long line of British kings, among whom were Locrine, Bladud, Leir, Gorboduc, Ferrex and Porrex, Lud, Cymbeline, Constantine, Vortigern, Uther and Arthur; and from this mythical Brutus the name Brut was transferred so as to denote the entire chronicle of this British history.

Layamon gives the whole story, from the time of Brutus to that of Cadwalader, who may be identified with the Caedwalla of the *Anglo-Saxon Chronicle,* baptized by Pope Sergius in the year 688. Both texts of Layamon are in a south-western dialect; the A-text in particular shows the Wessex dialect of earlier times (commonly called Anglo-Saxon) in a much later form, and we can hardly doubt that the author, as he intimates, could read the old version of Beda intelligently. The metre of the poem has been sufficiently treated by J. Schipper. An abstract of the poem has been given by Henry Morley; and good general criticisms of it by B. ten Brink and others.

See *Layamon's Brut, or a Chronicle of Britain; a Poetical Semi-Saxon Paraphrase of the Brut of Wace;* . . . by Sir F. Madden (1847); B. ten Brink, *Early English Literature,* trans. by H. M. Kennedy (in Bohn's Standard Library, 1885); H. Morley, *English Writers,* vol. iii. (1888); J. Schipper, *Englische Metrik,* i. (Bonn, 1882), E. Guest, *A History of English Rhythms* (new ed. by W. W. Skeat, 1882). Article "Layamon," in the *Dict. Nat. Biog.; Six Old English Chronicles,* including Gildas, Nennius and Geoffrey of Monmouth (in Bohn's Antiquarian Library); *Le Roux de Lincy, Le Roman de Brut. par Wace, avec un commentaire et des notes* (Rouen, 1836–38). E. Mätzner, *Altenglische Sprachproben* (Berlin, 1867).

(W. W. SK.; X.)

LAYARD, SIR AUSTEN HENRY (1817–1894), British author and diplomatist, the excavator of Nineveh, was born in Paris on March 5, 1817, son of Henry P. J. Layard, of the Ceylon civil service. Much of his boyhood was spent in Italy, where he received part of his schooling, and acquired a taste for the fine arts and a love of travel; but he was at school also in England. France and Switzerland. After spending nearly six years in a solicitor's office in London, he started in 1839 with the intention of making an overland journey across Asia to Ceylon, where he was to enter the civil service. But, after wandering for many months, chiefly in Persia, he returned in 1842 to Constantinople, where

Sir Stratford Canning employed him in various unofficial diplomatic missions in European Turkey. In 1845, encouraged and assisted by Canning, Layard left Constantinople to explore the ruins of Assyria. This expedition fulfilled a design which he had formed, when, during his earlier travels in the East, he had seen the ruins of Nimrud on the Tigris, and the great mound of Kuyunjik, near Mosul, already partly excavated by Botta.

Layard remained in the neighbourhood of Mosul, excavating at Kuyunjik and Nimrud, and investigating the condition of various tribes, until 1847. Returning to England in 1848, he published *Nineveh and its Remains: with an Account of a Visit to the Chaldaean Christians of Kurdistan, and the Yezidis, or Devil-worshippers; and an Inquiry into the Manners and Arts of the Ancient Assyrians* (2 vols., 1848–49), accompanied by *Illustrations of the Monuments of Nineveh* (1849). After a few months in England, Layard returned to Constantinople as attaché to the British embassy, and, in Aug. 1849, started on a second expedition, in the course of which he investigated the ruins of Babylon and the mounds of southern Mesopotamia. His record of this expedition, *Discoveries in the Ruins of Nineveh and Babylon* (1855), was accompanied by a volume of illustrations, *A Second Series of the Monuments of Nineveh.* During these expeditions Layard sent to England the splendid specimens which now form the greater part of the collection of Assyrian antiquities in the British Museum. Apart from the archaeological value of his work in identifying Kuyunjik as the site of Nineveh, these two books of Layard's are among the best-written books of travel in the language.

Layard entered parliament for Aylesbury in 1852. He was for a few weeks under-secretary for foreign affairs, but afterwards freely criticized the government, especially in connection with army administration. He was present in the Crimea during the war, and was a member of the committee appointed to inquire into the conduct of the expedition. In 1855 he refused from Lord Palmerston an office not connected with foreign affairs, was elected lord rector of Aberdeen university, and on June 15 moved a resolution in the House of Commons (defeated by a large majority) declaring that in public appointments merit had been sacrificed to private influence and an adherence to routine. Defeated at Aylesbury in 1857, he visited India to investigate the causes of the Mutiny. He unsuccessfully contested York in 1859, but was elected for Southwark in 1860, and from 1861 to 1866 was under-secretary for foreign affairs in the successive administrations of Lord Palmerston and Lord John Russell. In 1866 he was appointed a trustee of the British Museum, and in 1868 chief commissioner of works in W. E. Gladstone's government and a member of the Privy Council. He retired from parliament in 1869, on being sent as envoy extraordinary to Madrid. In 1877 he was appointed by Lord Beaconsfield ambassador at Constantinople, where he remained until Gladstone's return to power in 1880, when he finally retired from public life. In 1878 he received the G.C.B. Layard's manner was brusque, and his advocacy of the causes which he had at heart, though always perfectly sincere, was vehement to the point sometimes of recklessness. Layard retired to Venice, where he devoted much of his time to collecting pictures of the Venetian school, and to writing on Italian art. On this subject he was a disciple of his friend G. Morelli, whose views he embodied in his revision of F. Kugler's *Handbook of Painting, Italian Schools* (1887). In 1887 he published, from notes taken at the time, a record of his first journey to the East, entitled *Early Adventures in Persia, Susiana and Babylonia.* An abbreviation of this delightful book was published in 1894, shortly after the author's death, with a brief introductory notice by Lord Aberdare. Layard died in London on July 5, 1894.

(A. Gl.; X.)

LAYMEN, HOUSES OF: *see* Convocation; England, The Church of: *Schools and the Church.*

LAYNEZ (or Lainez), **DIEGO** (1512–1565), the second general of the Society of Jesus, was born in Castile, and after studying at Alcala joined Ignatius of Loyola in Paris, being one of the six who with Loyola in Aug. 1534 took the vow of missionary work in Palestine in the Montmartre church. After the order had been definitely established (1540) Laynez was sent to Germany. He was one of the pope's theologians at the council of Trent (*q.v.*), where he played a weighty and decisive part. When Loyola died in 1556 Laynez acted as vicar of the society, and two years later became general. Before his death at Rome, on Jan. 19, 1565, he had strengthened the despotic constitution of the order and developed its educational activities. (*See* Jesus, Society of.)

His *Disputationes Tridentinae* were published in 2 vols. in 1886. *See* H. Müller, *Les Origines de la Compagnie de Jésus: Ignace et Lainez* (1898).

LAZAR, a leper. The term is an adaptation of the name of Lazarus (Luke xvi. 20); in the middle ages it was also used of men suffering from other diseases. Lazaretto or Lazar-House is a hospital for the reception of poor persons suffering from the plague, leprosy, or other infectious or contagious diseases. "Lazaretto" is also an obsolete term for a place in the after-part of a merchant vessel for the storage of provisions, etc. *Lazzarone,* is an Italian term for beggars, particularly the poorest class of Neapolitans, who live chiefly by begging.

LAZAREV, PETR PETROVICH (1878–), Russian physicist, was born in Moscow, April 1, 1878. A doctor of medicine of Moscow university, he did research work in science at Strasbourg, and in 1907 was appointed *Privatdozent* in physics and assistant to Prof. P. N. Lebedev at the University of Moscow. In 1912 he became professor at the technical college in Moscow, and in 1917 member of the Russian academy of sciences and director of the research institute of physics and biophysics in Moscow. Lazarev's early investigations were in photochemistry; he showed by experiment that the velocity of photochemical reactions is proportional to the absorbed energy and does not depend on the wave length of light. Another series of his investigations is in molecular physics. His main work is on the fundamental problem of biophysics—the stimulation of living matter. His ionic theory of stimulation explains the process of senses and of muscular contraction and forms the basis of his theory for the functions of the central nervous system. In 1918 Lazarev became head of the geophysical survey of the Kursk Magnetic and Gravimetric Anomaly. Some of his papers have been published in French (*Comptes rendus de l'Académie,* 1923–24) and in English (*Science;* Lancaster, Pa.); *Journ. of General Physiology* (Baltimore, 1924).

LAZARITES (Lazarists or Lazarians), the popular names of the "Congregation of Priests of the Mission" in the Roman Catholic Church. It had its origin in the successful mission to the common people conducted by St. Vincent de Paul (*q.v.*) and five other priests on the estates of the Gondi family. Archiepiscopal recognition was obtained in 1626, by a papal bull of the 12th of January 1632, the society was constituted a congregation, with St. Vincent de Paul at its head. About the same time the canons regular of St. Victor handed over to the congregation the priory of St. Lazarus (formerly a lazar-house) in Paris, whence the name of Lazarites or Lazarists. Within a few years they had acquired another house in Paris and set up other establishments throughout France. A fresh bull of Alexander VII. in April 1655 further confirmed the society; this was followed by a brief in September of the same year, regulating its constitution. The rules then adopted, which were framed on the model of those of the Jesuits, were published at Paris in 1668 under the title *Regulae seu constitutiones communes congregationis missionis.* The special objects contemplated were the religious instruction of the lower classes, the training of the clergy and foreign missions. During the French Revolution the congregation was suppressed and St. Lazare plundered by the mob; it was restored by Napoleon in 1804 at the desire of Pius VII., abolished by him in 1809 in consequence of a quarrel with the pope, and again restored in 1816. Foreign missions are still maintained in various parts of the world.

Bibliography.—*See* P. Hélyot, *Dict. des ordres religieux,* viii. 64–77; M. Heimbucher, *Die Orden und Kongregationen der katholischen Kirche,* ii. (1897); C. Stork in Wetzer and Welte's *Kirchenlexikon* (Catholic), vii.; E. Bougaud, *History of St. Vincent de Paul* (1908); and art. "Congregation of the Mission" in the *Catholic Encyclopaedia*

LAZARUS, a contracted form of the Heb. name Eleazar ("God has helped," *cf.* 1 Macc. ii. 5; frequent in Josephus), is a name which occurs in the New Testament in two connections.

1. LAZARUS OF BETHANY, brother of Martha and Mary. John xi. relates the story of his being raised from the dead after four days. In the fourth century the house and tomb of Lazarus were shown to pilgrims, and the Gospel narrative, which defines the localities with care (John xi. 18, 30, 32, 38), may be based on the story told to first century visitors to Palestine.

2. LAZARUS is the name given by Luke (ch. xvi.) to the beggar in the parable of "Dives" and Lazarus. It is the only proper name attached to a character in the parables of Jesus.

LAZARUS, EMMA (1849–1887), American Jewish poetess, was born in New York, July 22, 1849. Her first book (1867) included poems and translations written in her teens. At the age of 21 she published *Admetus and Other Poems* (1871), inscribed to Emerson. Much of her next work appeared in *Lippincott's Magazine*. In 1874 she published a prose romance (*Alide*) based on Goethe's autobiography, which was praised by Turgenev. Two years later she visited Concord and made the acquaintance of the Emerson circle, and while there read the proof-sheets of her tragedy *The Spagnoletto*. In 1881 she published her excellent *Translations from Heine*. Another vigorous drama, *The Dance to Death*, is based on the accusation brought against the Jews of poisoning the wells, and thus causing the Black Death. This was included with some translations of mediaeval Hebrew poems, and such shorter pieces as "The Crowing of the Red Cock" and "The Banner of the Jew" in *Songs of a Semite* (1882), dedicated to George Eliot. She devoted much of the short remainder of her life to the cause of Jewish nationalism, visiting Europe, however, in 1883 and 1885–86. In 1887 appeared *By the Waters of Babylon*, a series of "prose poems," full of prophetic fire. She died in New York on Nov. 19, 1887. A sonnet by Emma Lazarus is engraved on a memorial tablet on the Statue of Liberty in New York.

See article in the *Century Magazine*, new series, 14, p. 875 (portrait p. 803), afterwards prefixed as a "Memoir" to the collected edition of *The Poems of Emma Lazarus* (1889); *see* also E. C. Stedman's tribute in his *Genius and Other Essays* (1911). (I. A.)

LAZARUS, MORITZ (1824–1903), German philosopher, was born on Sept. 15, 1824, at Filehne, Posen. The son of a rabbinical scholar, he was educated in Hebrew literature and history, and subsequently in law and philosophy at Berlin. He was professor at Berne (1860–66), at the Kriegsakademie in Berlin (1868–73), and at Berlin university (1873). The fundamental principle of his philosophy was that truth must be sought not in metaphysical or *a priori* abstractions but in psychological investigation, and further that this investigation cannot confine itself successfully to the individual consciousness, but must be devoted primarily to society as a whole. The psychologist must study mankind from the historical or comparative standpoint, analysing the elements which constitute the fabric of society, with its customs, its conventions and the main tendencies of its evolution. In support of this *Völkerpsychologie* (folk- or comparative psychology) he founded, with H. Steinthal, the *Zeitschrift für Völkerpsychologie und Sprachwissenschaft* (1859). His chief work was *Das Leben der Seele* (1855–57; 3rd ed., 1883). Lazarus was pre-eminent among the Jews of the so-called Semitic domination in Germany. Like Heine, Auerbach and Steinthal, he took a leading place in German literature and thought. He protested against the violent anti-Semitism of the time in his *Treu und Frei, Reden und Vorträge über Juden und Judenthum* (1887). In 1869 and 1871 he was president of the first and second Jewish Synods at Leipzig and Augsburg.

LAZARUS, ST., ORDER OF, a religious and military order founded in Jerusalem about the middle of the 12th century. Its primary object was the tending of the sick, especially lepers, of whom Lazarus (*see* LAZAR) was regarded as the patron. From the 13th century, the order made its way into various countries of Europe—Sicily, Lower Italy and Germany (Thuringia); but its chief centre of activity was France, where Louis IX. (1253) gave the members the lands of Boigny near Orleans and a building at the gates of Paris, which they turned into a lazar-house for the use of the lepers of the city. The gradual disappearance of leprosy combined with other causes to secularize the order more and more. It was abolished at the Revolution, reintroduced during the Restoration, and formally abolished by a state decree of 1830.

BIBLIOGRAPHY.—*See* P. Hélyot, *Hist. des ordres monastiques* (1714), pp. 257, 386; J. G. Uhlhorn, *Die christliche Liebesthätigkeit im Mittelalter* (Stuttgart, 1884); articles in the *Catholic Encyclopaedia*.

LAZICA: *see* GEORGIA, U.S.S.R

LEA, HENRY CHARLES (1825–1909), American historian of Quaker descent, was born at Philadelphia on Sept. 19, 1825. He entered his father's publishing business in 1843 but retired in 1880. His works include *Superstition and Force* (1866); *A History of the Inquisition of the Middle Ages* (3 vol., 1888), several times translated and *A History of the Inquisition of Spain* (4 vol., 1906–7). He died at Philadelphia on Oct. 24, 1909.

LEA, HOMER (1876–1912), U.S. soldier, was born at Denver, Colo. on Nov. 17, 1876. He was educated at Occidental college and at Stanford university, where he studied law. Intensely interested in military history and strategy, and unable to join the U.S. army (he was a hunchback), he went to China in 1899, where he soon was in command of a body of volunteers of K'ang Yu-wei, who was plotting the overthrow of the Manchus. The plot was discovered and Lea fled to Hongkong, where he met Sun Yat-sen. He went with Sun to Japan and later became his chief of staff. In 1901 he returned to the United States. He was back in China in 1904 for a short time, then returned permanently to California, where he wrote a novel of the Manchu regime, *The Vermilion Pencil* (1908) and dictated his well-known *The Valor of Ignorance*, published in 1909. In the latter, often termed one of the most brilliant of military analyses, Lea dwelt at length on the inordinate ambitions of the Japanese army. He predicted a U.S.-Japanese war in which Hawaii would be the key position, and specified how the Japanese would conquer the Philippines and attempt an invasion of the United States proper along the coast of Washington and Oregon. Lea died Nov. 1, 1912.

LEACOCK, STEPHEN BUTLER (1869–1944), Canadian author and economist, was born at Swanmoor, Hants., Eng., Dec. 30, 1869, and went to Canada at the age of six. He graduated at the University of Toronto, Upper Canada college (1891–99) and, after teaching awhile, graduated Ph.D. at the University of Chicago. In 1901 he joined the staff of McGill university, Montreal, and was professor of political economy and head of his department 1908–36. Although he did some serious writing, he is best known for his delightful short stories, parodies and skits. His works include: *Elements of Political Science* (1906); biographies of Baldwin and La Fontaine in "Makers of Canada Series" (1907); *Literary Lapses* (1910); *Nonsense Novels* (1911); *Sunshine Sketches of a Little Town* (1912); *Behind the Beyond* (1913); *Moonbeams from the Larger Lunacy* (1915); *Further Foolishness* (1916); *Frenzied Fiction* (1918); *The Unsolved Riddle of Social Justice* (1920); *Winsome Winnie* (1920); *The Garden of Folly* (1924); *Winnowed Wisdom* (1926); *Funny Pieces* (1936); *Here are My Lectures* (1937); *Humour and Humanity* (1937); *Too Much College* (1939); *Canada* (1942); *My Remarkable Uncle* (1942); and *Seaport and City* (1942). He died March 28, 1944, at Toronto.

LEAD (pronounced Leed), a city of Lawrence county, S.D., U.S.A., in the Black Hills, at an altitude of 5,300 ft., 15 mi. from the western boundary of the state. It is on federal highway 85, and is served by the Burlington and the Chicago and North Western railways, and air lines. The population, 1940, was 7,520.

Lead is the centre of the operations of Homestake Mining company, a producer of gold. The Homestake lode was discovered in April 1876, and started producing in 1878. Approximately 1,400,000 tons of low-grade ore, averaging about ⅓ oz. gold per ton, are mined annually.

The first settlement was made by prospectors in 1876. The city was chartered in 1890. Population reached 8,392 in 1910, fell to 5,013 in 1920, and increased 36% in the next five years.

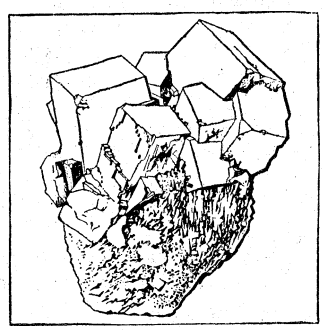
LEAD, a metallic chemical element known to the ancients, and mentioned in the Old Testament. (Symbol Pb, atomic number 82, atomic weight 207.2, chief isotopes 206, 207, 208.) The

Romans used it largely, as it is still used, for the making of water pipes, and soldered these with an alloy of lead and tin. Pliny treats of these two metals as *plumbum nigrum* and *plumbum album* respectively, which seems to show that at his time they were looked upon as being only two varieties of the same species. In regard to the ancients' knowledge of lead compounds, we may state that the substance described by Dioscorides as μολυβδαίνα was undoubtedly litharge, that Pliny uses the word minium in its present sense of red lead, and that white lead was well known to Geber in the 8th century. The alchemists designated it by the sign of Saturn ♄.

Occurrence.—Lead occurs in nature, widely distributed in almost every part of the world. It has been found in the metallic state but such occurrence is very rare and is of scientific interest only. Lead compounds occur in the form of several natural minerals, the most important of which is galena, the sulphide of lead, which contains 86·6% of lead and 13·4% of sulphur. Galena is the principal source of the lead production of the world although cerussite (the carbonate) containing 77·5% of lead and anglesite (the sulphate) containing 68·3% of lead are of some importance.

The mineral galena is found in many parts of the world and some lead is produced in nearly every country. Galena occurs in ore bodies of many different kinds varying in genesis, size, richness and general characteristics. Galena sometimes occurs in genuine fissure veins where the crystallized mineral has been deposited from aqueous solutions in veins or fractures in the earth's surface. These vein or fissure deposits vary in size from a fraction of an inch to many feet in thickness, and in richness from a trace of lead to practically pure galena mineral. Galena also occurs in very large deposits, disseminated through horizontal beds of limestone in the form of small galena crystals.

The surface of the earth contains permanent ground water at some depth which in some places is practically at the surface and in other places, such as the great deserts of the world, may be many feet below the surface. The portions of the galena ore bodies which lie below the permanent ground water level, retain their original form and the pure unaltered galena mineral is found in deposits of this kind. Portions of the ore bodies above the permanent ground water level are affected by the oxidizing action of the air and percolating surface water containing air and in these upper portions of the ore deposits the galena becomes oxidized and forms carbonate of lead and sulphate of lead. Generally the localities in which the large deposits of lead ore are found have permanent ground water level not far below the surface and for this reason the amount of altered galena found in the oxidized surface portions of the ore bodies is very small as compared to the very large amount of pure unaltered galena in the undecomposed ore bodies below the permanent ground water level.



FROM HARN, "LEAD, THE PRECIOUS METAL," THE CENTURY CO.

CRYSTALS OF GALENA

The commercially important deposits of lead ore from which the world's production of lead is obtained occur in many different geologic formations, and most of the deposits extend into the earth to great depths so that their recovery requires deep mining operations. In some lead mines the ore recovered is rich enough to be smelted directly into metallic lead but the ore from most of the mines contains so much closely associated waste mineral that a preliminary milling treatment is required to remove mechanically the waste rock and concentrate the galena. Minerals containing some other valuable metals such as copper, zinc, gold and silver are frequently associated with galena and are separated and recovered in the treatment of the ore.

Other Lead Minerals.—Anglesite, $PbSO_4$, occurs in quantity in France, Spain, Sardinia and Australia. Of other lead minerals we may mention the basic sulphates lanarkite, $PbO,PbSO_4$; leadhillite, $PbSO_4,3PbCO_3$; the basic chlorides matlockite, $PbO,PbCl_2$, and mendipite, $PbCl_2,2PbO$; the chloro-phosphate pyromorphite, $PbCl_2,3Pb_3(PO_4)_2$; the chloro-arsenate mimetesite or mimetite, $PbCl_2,3Pb_3(AsO_4)_2$; the molybdate wulfenite, $PbMoO_4$; the chromate crocoite or crocoisite, $PbCrO_4$; the tungstate stolzite, $PbWO_4$.

Production.—At the beginning of the 19th century the bulk of the world's supply of lead was obtained from England and Spain, the former contributing about 17,000 tons and the latter 10,000 tons annually. Germany, Austria, Hungary, France, Russia and the United States began to rank as producers during the second and third decades; Belgium entered in about 1840; Italy in the 'sixties; Mexico, Canada, Japan and Greece in the 'eighties; while Australia assumed importance in 1888 with a production of about 18,000 tons, although it had contributed small and varying amounts for many preceding decades. The present state and general trend of the lead industry may be seen from the following table, which gives the production of smelter (in metric tons) for the countries having the largest output.

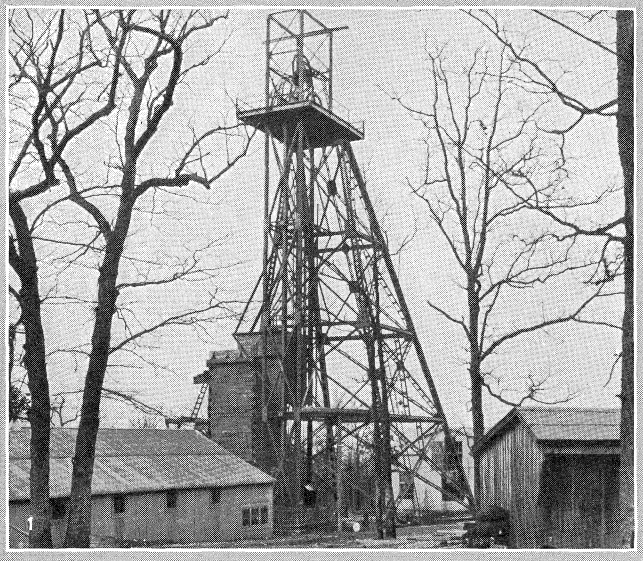
	1933	1935	1936	1937
U. S. A.* . . .	233,499	294,075	362,055	423,232
Australia . . .	208,558	221,431	196,051	238,832
Mexico . . .	118,460	177,630	214,376	223,678
Germany . . .	116,600	122,300	139,100	166,100
Canada . . .	115,469	148,558	164,857	181,162
World output . .	1,156,000	1,381,000	1,478,000	1,702,000

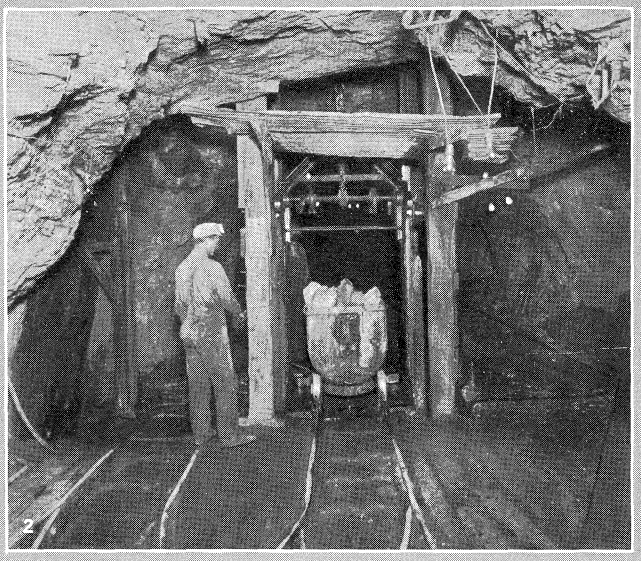
Minerals Yearbook 1938, U. S. Bureau of Mines. *Lead refined from foreign base bullion not included.

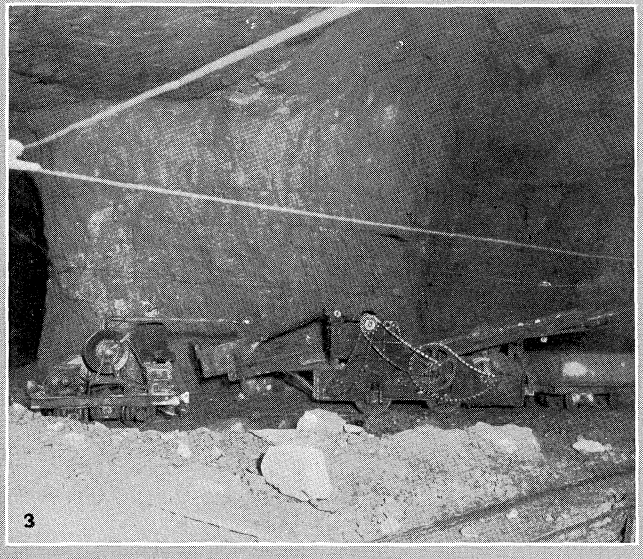
Properties of Lead.—Pure lead is a feebly lustrous bluish-white metal, endowed with a characteristically high degree of softness and plasticity, and almost entirely devoid of elasticity. Its breaking strain is very small: a wire $\frac{1}{10}$ in. thick is ruptured by a charge of about 30 lb. The specific gravity is 11·352 for ingot, and from 11·354 to 11·365 for sheet lead (water at 4° C=1). The expansion of unit-length from 0° C to 100° C is 0·002948 (Fizeau). The conductivity for heat (Wiedemann and Franz) or electricity is 8·5, that of silver being taken as 100. It melts at 327·7° C (H. L. Callendar); at a bright-red heat it perceptibly vapourizes, and boils at a temperature between 1,450° and 1,600°. Its vapour at 1,870° is monatomic. The specific heat is 0·0314 (Regnault). Lead exposed to ordinary air is rapidly tarnished, but the thin dark film formed is very slow in increasing. When kept fused in the presence of air lead readily takes up oxygen, with the formation at first of a dark-coloured scum, and then of monoxide PbO, the rate of oxidation increasing with the temperature.

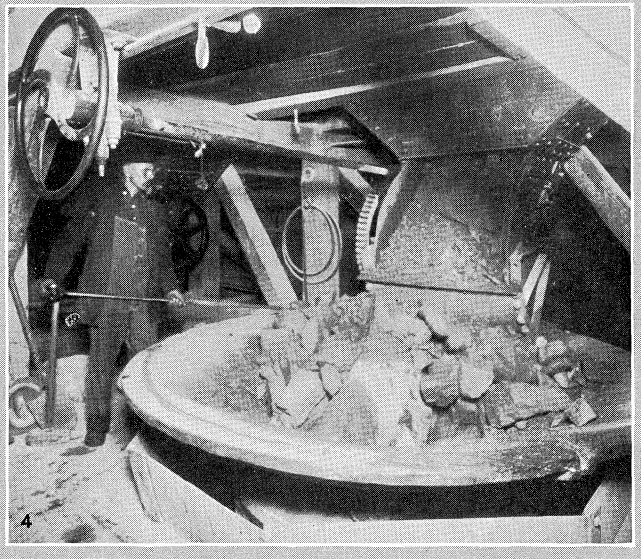
Water when absolutely pure has no action on lead, but in the presence of air the lead is quickly attacked, with formation first of the hydrate $Pb_2O,2H_2O$ and finally of $Pb(OH)_2$, which is appreciably soluble in water to give an alkaline liquid. When carbonic acid is present the dissolved oxide is soon precipitated as basic carbonate, so that the corrosion of the lead becomes continuous. Since all soluble lead compounds are strong cumulative poisons, danger is involved in using lead cisterns or pipes in the distribution of *pure* waters. The word "pure" is emphasized because experience shows that the presence in a water of even small proportions of calcium bicarbonate or sulphate prevents its action on lead. All impurities do not act in a similar way. Ammonium nitrate and nitrite, for instance, intensify the action of a water on lead. Even pure waters, however, such as that of Loch Katrine (which forms the Glasgow supply), act so slowly, at least on such lead pipes as have already been in use for some time, that there is no danger in using short lead service pipes even for them, if the taps are being constantly used. Lead cisterns must be unhesitatingly condemned.

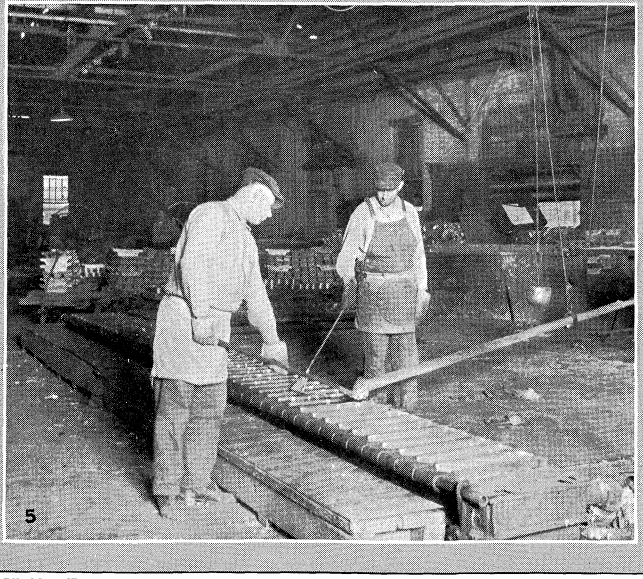
Aqueous non-oxidizing acids generally have little or no action on lead in the absence of air. Dilute sulphuric acid (say an acid of 20% H_2SO_4 or less) has no action on lead even when air is present, nor on boiling. Strong acid does act, the more so the greater its concentration and the higher its temperature. Pure lead is far more readily corroded than a metal contaminated with

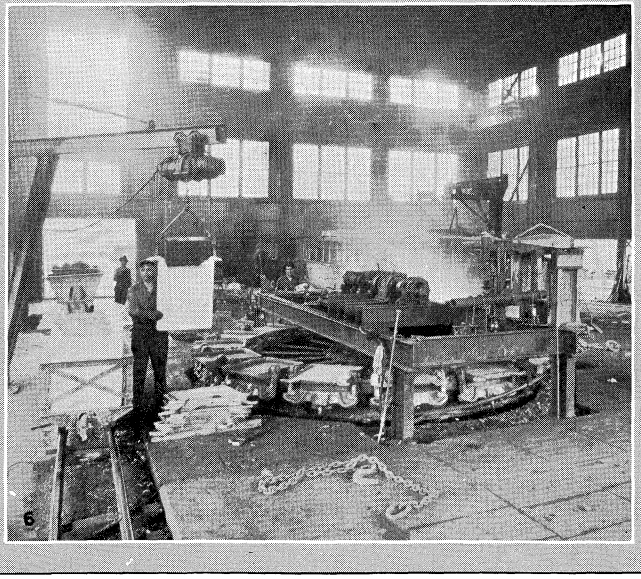












BY COURTESY OF (1-5) THE NATIONAL LEAD COMPANY, (6) THE CANADIAN PACIFIC RAILWAY

MACHINERY FOR MINING, SMELTING AND REFINING LEAD

1. Hoist house and hoist head frame over lead mine shaft
2. View of interior of lead mine, showing loaded ore car on hoist cage
3. Mechanical shoveling and car loading machine in lead mine. After lead ore has been broken in stopes by blasting, the machine gathers it from the floor of mine and loads it into the mine cars
4. Crushing operation showing mine-run lead ore being fed with gyratory crusher
5. Casting market pig lead in a refinery. Impurities are removed while lead is molten and the pure lead is then run into iron moulds
6. Lead refinery showing casting of anodes for electrolytic refining

1% or even less of antimony or copper. Boiling concentrated sulphuric acid converts lead into sulphate, with evolution of sulphur dioxide. Dilute nitric acid readily dissolves the metal, with formation of nitrate $Pb(NO_3)_2$. Lead has the peculiar property of making a lustrous black streak on paper.

Lead Alloys.—Lead unites readily with almost all other metals; hence, and on account of its being used for the extraction of (for instance) silver, its alchemistic name of *saturnus*. Alloys with the following metals may be named:—

Antimony.—An alloy of 83 parts of lead and 17 of antimony is used as type metal; other proportions are used, however, and other metals added besides antimony (*e.g.*, tin, bismuth) to give the alloy certain properties.

Arsenic renders lead harder. An alloy made by addition of about $\frac{1}{56}$ of arsenic has been used for making shot.

Bismuth and Antimony.—An alloy consisting of 9 parts of lead, 2 of antimony and 2 of bismuth is used for stereotype plates.

Bismuth and Tin.—These triple alloys are noted for their low fusing points. An alloy of 5 of lead, 8 of bismuth and 3 of tin fuses at 94·4° C, *i.e.*, below the boiling-point of water (Rose's metal). An alloy of 15 parts of bismuth, 8 of lead, 4 of tin and 3 of cadmium (Wood's alloy) melts below 70° C.

Tin unites with lead in any proportion with slight expansion, the alloy fusing at a lower temperature than either component. It is used largely for soldering.

"Pewter" (*q.v.*) may be said to be substantially an alloy of the same two metals, but small quantities of copper, antimony and zinc are frequently added.

Lead and Radioactivity.—Lead is the end product of several series of radioactive decay (*see* RADIOACTIVITY), and has been proved to be identical with radium-*D*. The atomic weight of lead therefore depends upon the series from which it is derived, and atomic weights as low as 206·0 have been found for lead derived from uranium, as in uraninite, and from several minerals in the Belgian Congo.

Compounds of Lead.—Lead generally functions as a bivalent element of distinctly metallic character, yielding a definite series of salts derived from the oxide PbO. At the same time, however, it forms a number of compounds in which it is most decidedly quadrivalent; and thus it shows relations to carbon, silicon, germanium and tin.

Hydrides.—In 1919, F. Paneth found that traces of a hydride were produced by dissolving a lead-magnesium alloy in acids or by electrolytic reduction of solutions of lead salts. In 1925, E. J. Weeks obtained a hydride, Pb_2H_2, as a grey deposit on aluminium foil placed in a solution of an alkali plumbite.

Oxides.—Lead combines with oxygen to form five oxides, viz. Pb_2O, PbO, PbO_2, Pb_2O_3 and Pb_3O_4. The *suboxide,* Pb_2O, is the first product of the oxidation of lead, and is also obtained as a black powder by heating lead oxalate to 300° out of contact with air. It ignites when heated in air with the formation of the monoxide; dilute acids convert it into metallic lead and lead monoxide, the latter dissolving in the acid. The *monoxide,* PbO, occurs in nature as the mineral *lead ochre.* This oxide is produced by heating lead in contact with air and removing the film of oxide as formed. It is manufactured in two forms, known as "massicot" and "litharge." The former is produced at temperatures below, the latter at temperatures above the fusing-point of the oxide. The liquid litharge when allowed to cool solidifies into a hard stone-like mass, which, however, when left to itself, soon crumbles up into a heap of resplendent dark yellow scales known as "flake litharge." "Buff" or "levigated litharge" is prepared by grinding the larger pieces under water. Litharge is much used for the preparation of lead salts, for the manufacture of oil varnishes, of certain cements, and of lead plaster, and for other purposes. It is also the raw material for the manufacture of "red lead" or "minium"; massicot was formerly used.

Lead monoxide is dimorphous, occurring as cubical dodecahedra and as rhombic octahedra. Its specific gravity is about 9; it is sparingly soluble in water, but readily dissolves in acids and molten alkalis; it is used in making flint glass and glazes. A yellow and a red modification have been described. The corresponding *hydrate,* $PbO.Pb(OH)_2$, is obtained as a white crystalline precipitate by adding ammonia to a solution of lead nitrate or acetate. It dissolves in an excess of alkali to form *plumbites* of the general formula $Pb(OM)_2$. It absorbs carbon dioxide from the air when moist.

Lead dioxide, PbO_2, also known as *puce oxide,* occurs in nature as the mineral plattnerite, and may be most conveniently prepared by heating mixed solutions of lead acetate and bleaching powder until the original precipitate blackens. The solution is filtered, the precipitate well washed, and, generally, is put up in the form of a paste in well-closed vessels. It is also obtained by passing chlorine into a suspension of lead oxide or carbonate, or of magnesia and lead sulphate, in water; or by treating the sesquioxide or red oxide with nitric acid. The formation of lead dioxide by the electrolysis of a lead solution, the anode being a lead plate coated with lead oxide or sulphate and the cathode a lead plate, is the fundamental principle of the storage cell (*see* ACCUMULATOR). Heating or exposure to sunlight reduces it to the red oxide; it fires when ground with sulphur, and oxidizes ammonia to nitric acid, with the simultaneous formation of ammonium nitrate. It oxidizes a manganese salt (free from chlorine) in the presence of nitric acid to a permanganate; this is a very delicate test for manganese. It forms crystallizable salts with potassium and calcium hydrates, and functions as a weak acid forming salts named plumbates. The Kassner process formerly used for the manufacture of oxygen depended upon the formation of calcium plumbate, Ca_2PbO_4, by heating a mixture of lime and litharge in a current of air, decomposing this substance into calcium carbonate and lead dioxide by heating in a current of carbon dioxide, and then decomposing these compounds with the evolution of carbon dioxide and oxygen by raising the temperature.

Quadrivalent Lead.—If a suspension of lead dichloride in hydrochloric acid be treated with chlorine gas, a solution of lead tetrachloride is obtained; by adding ammonium chloride ammonium plumbichloride, $(NH_4)_2PbCl_6$, is precipitated, which on treatment with strong sulphuric acid yields *lead tetrachloride,* $PbCl_4$, as a translucent, yellow, highly refractive liquid. It freezes at −15° to a yellowish crystalline mass; on heating it loses chlorine and forms lead dichloride. With water it forms a hydrate, and ultimately decomposes into lead dioxide and hydrochloric acid. It combines with alkaline chlorides—potassium, rubidium and caesium—to form crystalline *plumbichlorides.* By dissolving red lead, Pb_3O_4, in glacial acetic acid and crystallizing the filtrate, colourless monoclinic prisms of lead tetra-acetate, $Pb(C_2H_3O_2)_4$, are obtained. This salt gives the corresponding chloride, fluoride and phosphate by treatment with the appropriate acid.

These salts are like those of tin; and the resemblance to this metal is clearly enhanced by the study of the alkyl compounds. Here compounds of bivalent lead have not yet been obtained; by acting with magnesium ethyl bromide (*see* GRIGNARD REAGENTS) on lead chloride, *lead tetraethyl,* $Pb(C_2H_3)_4$, is obtained, with the separation of metallic lead. This compound is finding much use under the trade mark "ethyl" as an "anti-knock" in internal-combustion engines. *See* ORGANO-METALLIC COMPOUNDS.

Lead sesquioxide, Pb_2O_3, is obtained as a reddish-yellow amorphous powder by carefully adding sodium hypochlorite to a cold potash solution of lead oxide, or by adding very dilute ammonia to a solution of red lead in acetic acid. It is decomposed by acids into a mixture of lead monoxide and dioxide, and may thus be regarded as lead metaplumbate, $PbPbO_3$. *Red lead, minium* or *triplumbic tetroxide,* Pb_3O_4, is a scarlet crystalline powder of specific gravity 8·6–9·1, obtained by heating very finely divided pure litharge or lead carbonate at 400° for 24 hours in a reverberatory furnace with free access of air; the brightness of the colour depends in a great measure on the roasting. Pliny mentions it under the name of *minium,* but it was confused with cinnabar and the red arsenic sulphide. On heating, it assumes a finer colour, but then turns violet and finally black, regaining, however, its original colour on cooling. On ignition, it loses oxygen and forms litharge. Commercial red lead is frequently contaminated

with this oxide, which may, however, be removed by repeated digestion with lead acetate. Acids decompose it into lead dioxide and monoxide, and the latter may or may not dissolve to form a salt; red lead may, therefore, be regarded as *lead orthoplumbate,* Pb_2PbO_4. It is chiefly used as a pigment and in the manufacture of flint glass.

Lead chloride, $PbCl_2$, occurs in nature as the mineral cotunnite, which crystallizes in the rhombic system, and is found in the neighbourhood of volcanic craters. It is artificially obtained by adding hydrochloric acid to a solution of lead salt, as a white precipitate, little soluble in cold water, less so in dilute hydrochloric acid, more so in the strong acid, and readily soluble in hot water, from which on cooling, the excess of dissolved salt separates out in silky rhombic needles. It melts at 485° and solidifies on cooling to a translucent, horn-like mass; an early name for it was *plumbum corneum,* horn lead. A basic chloride, Pb(OH)Cl, was introduced in 1849 by Pattinson as a substitute for white lead. An anhydrous basic chloride approximating to $PbCl_2{\cdot}7PbO$, but not a definite compound, is obtained by the fusion of the two components; it is used as a pigment under the name of "Cassel yellow." "Turner's yellow" or "patent yellow" is another artificially prepared oxychloride, used as a pigment (*see* PAINTS, CHEMISTRY OF). Mendipite and matlockite are mineral oxychlorides, $PbCl_2{,}2PbO$ and $PbCl_2{,}PbO$, respectively.

Lead fluoride, PbF_2 is a white powder obtained by precipitating a lead salt with a soluble fluoride; it is sparingly soluble in water but readily dissolves in hydrochloric and nitric acids. Lead bromide, $PbBr_2$, a white solid, and lead iodide, PbI_2, a yellow solid, are prepared by precipitating a lead salt with a soluble bromide or iodide; they resemble the chloride in solubility.

Lead carbonate, $PbCO_3$, occurs in nature as the mineral cerussite (*q.v.*). It is produced as an almost insoluble white precipitate by the addition of a solution of lead salt to an excess of ammonium carbonate. Of greater practical importance is a basic carbonate, substantially $2PbCO_3{,}Pb(OH)_2$, largely used as a white pigment under the name of "white lead." This pigment is of great antiquity; Theophrastus called it ψιμύθιον, and prepared it by acting on lead with vinegar, and Pliny, who called it *cerussa,* obtained it by dissolving lead in vinegar and evaporating to dryness. It thus appears that white lead and sugar of lead were undifferentiated. Geber gave the preparation in a correct form, and T. O. Bergman proved its composition. This pigment is manufactured by several methods. In the old Dutch method, pieces of sheet lead are suspended in stoneware pots so as to occupy the upper two-thirds of the vessels. A little vinegar is poured into each pot; they are then covered with plates of sheet lead, buried in horse-dung or spent tanner's bark, and left to themselves for a considerable time. By the action of the acetic acid and atmospheric oxygen, the lead is converted superficially into a basic acetate, which is at once decomposed by the carbon dioxide, with formation of white lead and acetic acid, which latter then acts *de novo.* After a month or so the plates are converted to a more or less considerable depth into crusts of white lead. These are knocked off, ground up with water, freed from metal particles by elutriation, and the paste of white lead is allowed to set and dry in small conical forms. The German method differs from the Dutch inasmuch as the lead is suspended in a large chamber heated by ordinary means, and there exposed to the simultaneous action of vapour of aqueous acetic acid and of carbon dioxide. Another process depends upon the formation of lead chloride by grinding together litharge with salt and water, and then treating the alkaline fluid with carbon dioxide until it is neutral. White lead is an earthy, amorphous powder. The inferior varieties of commercial "white lead" are produced by mixing the genuine article with more or less of finely powdered heavy spar or occasionally zinc white (ZnO). Venetian white, Hamburg white and Dutch white are mixtures of one part of white lead with one, two and three parts of barium sulphate respectively.

Although inexpensive, these methods are very slow, and are being replaced by electrolytic methods based on the oxidation of lead to hydroxide and conversion of this by means of carbon dioxide. The covering power of white lead increases with its density, and the material is more efficient the nearer its composition is to $2PbCo_3{,}Pb(OH)_2$, the pure normal carbonate being quite useless. Lead poisoning (plumbism) has been found to be greatly decreased when the wet rubbing down is used instead of the dry.

Lead sulphide, PbS, occurs in nature as the mineral galena (*q.v.*), and constitutes the most valuable ore of lead. It may be artificially prepared by leading sulphur vapour over lead, by fusing litharge with sulphur, or, as a black precipitate, by passing sulphuretted hydrogen into a solution of a lead salt. It dissolves in strong nitric acid with the formation of the nitrate and sulphate, and also in hot concentrated hydrochloric acid.

Lead sulphate, $PbSO_4$, occurs in nature as the mineral anglesite (*q.v.*), and may be prepared by the addition of sulphuric acid to solutions of lead salts, as a white precipitate almost insoluble in water (1 in 21,739), less soluble still in dilute sulphuric acid and insoluble in alcohol. Ammonium sulphide blackens it, and it is soluble in solution of ammonium acetate, which distinguishes it from barium sulphate. Strong sulphuric acid dissolves it, forming an acid salt, $Pb(HSO_4)_2$, which is hydrolysed by adding water, the normal sulphate being precipitated; hence the milkiness exhibited by samples of oil of vitriol on dilution.

Lead nitrate, $Pb(NO_3)_2$, is obtained by dissolving the metal or oxide in aqueous nitric acid; it forms white crystals, not easily soluble in cold water, readily in hot water and almost insoluble in strong nitric acid. It was mentioned by Libavius, who named it *calx plumb dulcis.* It is decomposed by heat into oxide, nitrogen peroxide and oxygen; and is used for the manufacture of fusees and other deflagrating compounds, and also for preparing mordants in the dyeing and calico-printing industries. Basic nitrates, *e.g.,* $Pb(NO_3)OH$, $Pb_3O(OH)_2(NO_3)_2$, $Pb_3O_2(OH)NO_3$, etc., have been described.

Lead Phosphates.—The normal ortho-phosphate, $Pb_3(PO_4)_2$, is a white precipitate obtained by adding sodium phosphate to lead acetate; the acid phosphate, $PbHPO_4$, is produced by precipitating a boiling solution of lead nitrate with phosphoric acid; the pyrophosphate and meta-phosphate are similar white precipitates.

Lead Borates.—By fusing litharge with boron trioxide, glasses of a composition varying with the proportions of the mixture are obtained, *e.g.,* $Pb_2B_6O_{11}{,}4H_2O$; $PbB_2O_4{,}H_2O$, $PbB_4O_7{,}4H_2O$; some of these are used in the manufacture of glass.

Lead silicates are obtained as glasses by fusing litharge with silica; they play a considerable part in the manufacture of the lead glasses (*see* GLASS).

Lead chromate, $PbCrO_4$, is prepared industrially as a yellow pigment, chrome yellow, by precipitating sugar of lead solution with potassium bichromate. The beautiful yellow precipitate is little soluble in dilute nitric acid, but soluble in caustic potash. The vermilion-like pigment which occurs in commerce as "chrome-red" is a basic chromate, Pb_2CrO_5, prepared by treating recently precipitated normal chromate with a properly adjusted proportion of caustic soda, or by boiling it with potassium chromate. Several other basic chromates of varying shades are known.

Lead acetate, $Pb(C_2H_3O_2)_2{\cdot}3H_2O$ (called "sugar" of lead, on account of its sweetish taste), is manufactured by dissolving massicot in aqueous acetic acid. It forms colourless transparent crystals, soluble in one and a half parts of cold water and in eight parts of alcohol. On exposure to ordinary air they become opaque through absorption of carbonic acid, and form a crust of basic carbonate. An aqueous solution readily dissolves lead oxide, with formation of a strongly alkaline solution containing basic acetates (*Acetum Plumbi* or *Saturni*). When carbon dioxide is passed into this solution the whole of the added oxide, and even part of the oxide of the normal salt, is precipitated as a basic carbonate chemically similar, but not quite equivalent as a pigment, to white lead.

Analysis.—When mixed with sodium carbonate and heated on charcoal in the reducing flame lead salts yield malleable globules of metal and a yellow oxide-ring. Solutions of lead salts (colourless in the absence of coloured acids) are characterized by their behaviour to hydrochloric acid, sulphuric acid and potassium chromate. But the most delicate precipitant for lead is sul-

phuretted hydrogen, which produces a black precipitate of lead sulphide, insoluble in cold dilute nitric acid, less so in cold hydrochloric, and easily decomposed by hot hydrochloric acid with formation of the characteristic chloride.

Pharmacology and Therapeutics.—The chief salts are: (1) *Plumbi oxidum* (lead oxide), litharge. It is not used internally, but from it is made *Emplastrum Plumbi* (diachylon plaster), which is an oleate of lead and is contained in emplastrum hydrargyri, emplastrum plumbi iodidi, emplastrum resinae, emplastrum saponis. (2) *Plumbi Acetas* (sugar of lead), dose 1 to 5 grains. From this salt are made the following preparations: (*a*) *Pilula Plumbi cum Opio,* the strength of the opium in it being 1 in 8, dose 2 to 4 grains; (*b*) *Suppositoria Plumbi composita,* containing lead acetate, opium and oil of theobroma, there being one grain of opium in each suppository; (*c*) *Unguentum Plumbi Acetatis;* (*d*) *Liquor Plumbi Subacetatis Fortior,* Goulard's extract, strength 24% of the subacetate; this again has a sub-preparation, the *Liquor Plumbi Subacetatis Dilutis,* called Goulard's water or Goulard's lotion, containing 1 part in 80 of the strong extract; (*e*) *Glycerinum Plumbi Subacetatis,* from which is made the *Unguentum Glycerini Plumbi Subacetatis.* (3) *Plumbi Carbonas,* white lead, a mixture of the carbonate and the hydrate, a heavy white powder insoluble in water; it is not used internally but from it is made *Unguentum Plumbi Carbonatis,* strength 1 in 10 parts of paraffin ointment. (4) *Plumbi Iodidium,* a heavy bright yellow powder not used internally. From it are made (*a*) *Emplastrum Plumbi Iodidi,* and (*b*) *Unguentum Plumbi Iodidi.* The strength of each is 1 in 10.

Applied externally lead salts have practically no action upon the unbroken skin, but applied to sores, ulcers or any exposed mucous membranes they coagulate the albumen in the tissues themselves and contract the small vessels. They are very astringent, haemostatic and sedative; the strong solution of the subacetate is powerfully caustic and is rarely used undiluted. Lead salts are applied as lotions in conditions where a sedative astringent effect is desired, as in weeping eczema; in many varieties of chronic ulceration; and as an injection for various inflammatory discharges from the vagina, ear and urethra, the Liquor Plumbi Subacetatis Dilutum being the one employed. The sedative effect of lead lotion in pruritus is well known. Internally lead has an astringent action on the mucous membranes, causing a sensation of dryness; the dilute solution of the subacetate forms an effective gargle in tonsilitis. The chief use of the preparations of lead, however, is as an astringent in acute diarrhoea, particularly if ulceration be present, when it is usefully given in combination with opium in the form of the Pilula Plumbi cum Opio. It is useful in haemorrhage from a gastric ulcer or in haemorrhage from the intestine. Lead salts usually produce constipation, and lead is an active ecbolic. Lead is said to enter the blood as an albuminate in which form it is deposited in the tissues. As a rule the soluble salts if taken in sufficient quantities produce acute poisoning, and the insoluble salts chronic plumbism. The symptoms of acute poisoning are pain and diarrhoea, owing to the setting up of an active gastro-enteritis, the faeces being black (due to the formation of a sulphide of lead), thirst, cramps in the legs and muscular twitchings, with torpor, collapse, convulsions and coma. The treatment is the prompt use of emetics, or the stomach should be washed out, and large doses of sodium or magnesium sulphate given in order to form an insoluble sulphate. Stimulants, warmth and opium may be required. For an account of chronic plumbism or saturnine poisoning, *see* LEAD POISONING.

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METALLURGY AND EMPLOYMENT

Nearly all of the lead production of the world is obtained by smelting galena ore by a reduction process. Sometimes the ore is roasted to remove part of the sulphur before the reduction smelting treatment. But some ore, particularly the extremely high grade mill concentrates, is smelted directly without previous roasting. Three different types of smelting furnace are used to reduce the raw or roasted galena ore to metallic lead. The furnace selected depends to a large extent on the richness of the ore and the kind and amount of other metal impurities which, in the form of different minerals, are associated with the galena. The three types of smelting furnace are the ore hearth or Scotch hearth as it is sometimes called, the blast furnace and the reverberatory furnace.

The ore hearth is used principally for very high grade galena mill concentrates which have been ground rather fine in the milling operation and which are fairly free from other metals. The blast furnace is used principally to smelt lower grade crude ore containing a comparatively large amount of waste rock. The blast furnace is also used to smelt low grade mill concentrates, concentrates containing large amounts of other metal impurities and many by-products from the ore hearth and from the lead refineries. Much secondary lead material recovered in the form of waste products from many industries is also treated in the blast furnace. Reverberatory furnaces are used mostly to smelt secondary scrap and waste products and are not used to any great extent to smelt primary lead ores or concentrates.

The ore hearth is one of the simplest and oldest furnaces used for the smelting of lead and consists of a shallow hearth, filled with a bath of molten lead on which floats a coke fire maintained by blowing air through pipes or tuyères at the back of the hearth above the lead bath. The finely ground high grade lead ore is fed on the fire with continual stirring, which results in reduction of a large portion of the galena to metallic lead. The lead passes through to the lead bath underneath leaving a residue of waste materials in the form of slag which contains a considerable amount of lead and which is usually retreated in a blast furnace.

The blast furnace is a shaft furnace filled with a mixture of ore, fluxing materials and coke heated to a high temperature, which is continuously fed at the top and from which molten reduced metallic lead, slag and by-products are removed at the bottom. Combustion of the fuel is maintained by the introduction of compressed air through pipes or tuyères near the bottom. The reverberatory furnace consists of a long brick hearth with low arched roof and has a source of heat at one end and a flue at the opposite end. The material to be smelted is charged on the hearth where smelting with production of metallic lead, slag and by-products takes place.

When lead is reduced to metal in a smelting operation, small amounts of other metals are reduced with the lead. A refining operation is usually necessary to remove the other metal impurities and purify the lead for commercial use.

Use of Lead.—The world consumption of lead is about 1,500,000 tons of which about 750,000 tons or half of the entire consumption is used in the United States. A large proportion of the total lead consumed is used in the form of metallic lead and its alloys, but the largest and most important single use of lead is in the form of white lead for which purpose about 150,000 tons of metallic lead are consumed annually in the United States.

White lead is the hydrated basic carbonate of lead which, in the form of a finely ground white powder, is a very valuable paint pigment. White lead has been the most important white paint pigment for more than 2,000 years and the most durable exterior paints contain a large proportion of white lead. White lead is also used as one of the principal constituents of pottery glazes, for the making of certain chemical colours, and for many other purposes. White lead is made by a chemical process in which, by the aid of acetic acid, carbon dioxide and moisture, metallic lead is corroded into hydrated basic lead carbonate.

Next in importance to white lead is the use of lead in the form of lead oxides, litharge (PbO) and red lead (Pb_3O_4). Both litharge and red lead are used in very large amounts in the manufacture of lead storage battery plates. The plates consist of antimonial lead grids filled with paste which is made by moistening litharge and red lead with sulphuric acid. Red lead is also an important paint pigment and red lead paint is the standard protective coat-

ing for iron and steel. Red lead and litharge are used in pottery glazes and litharge is extensively used in the refining of petroleum, in compounding rubber, in the manufacture of insecticides, in the making of certain colours, particularly chrome yellow and chrome green and for innumerable other purposes. Litharge and red lead are made by oxidizing metallic lead in a furnace at high temperature.

Large amounts of metallic lead in the form of sheet, pipe and plumbers' supplies are used in the construction of buildings, chemical apparatus and water mains and for many other purposes. Lead alloyed with tin in the form of solder is used in large tonnage and many industries could not be carried on in their present form without solder of this kind. Lead alloyed with antimony, tin and copper is used extensively in anti-friction metals for lining the bearings of moving machinery. There are many other uses for lead, such as in cable coverings for telephone wires, ammunition, caulking metal, foil, type metals, linings for X-ray apparatus and others too numerous to mention.

Lead was one of the first metals known to mankind. It has been a great aid in the development of civilization and to-day the value of lead is so great that this metal has become practically indispensable in our modern industrial fabric.

Production and Trade.—During the last few years the world's production of lead has been about 1,500,000 tons per annum. The United States, with an output of about 425,000 tons in 1937, has been the largest producer. Australia and Mexico have been next in importance, each with a production of about 200,000 tons per annum; Canada, with an annual production of about 175,000 tons, was the fourth largest in 1937. The Mexican output has increased rapidly during the last few years, and prior to 1920 the Mexican production was much less than that from Australia and Spain. Lead is obtained from some of the other countries of the world but in much smaller amounts than from the four leading producers, which together furnish about two-thirds of the entire production of the world.

The largest lead producing district of the world is in the United States in the south-eastern part of the State of Missouri. The lead in this district is found in the form of galena disseminated through horizontal bedded limestone. The deposits vary from about 300 ft. to 800 ft. in thickness and are many hundreds of acres in extent. The second largest producing locality is the Broken Hill district in Australia, and the third in size is the large district in Central Spain in the vicinity of the towns of Penarroya and Linares. In both the Australian and Spanish districts, the lead occurs in the form of galena in true vein deposits.

Because of the nature of the ore deposits, nearly all lead mining is done with shafts, tunnels and adits which are required to reach the ore bodies at considerable depth. In some mines, the ore as recovered is sufficiently rich to be smelted directly into metallic lead, but the ore from most of the mines contains so much waste mineral that a preliminary milling treatment is required to mechanically remove the waste rock and concentrate the galena in fairly pure form. (R. L. Ht.; X.)

LEAD AZIDE, a powerful detonator employed in military services instead of mercury fulminate, is a white, sparingly soluble, crystalline powder produced by adding a soluble lead salt to a solution of sodium azide. The methods of preparing alkali azides from organic materials are described under AZOIMIDE. A purely inorganic process for preparing hydrazoic acid (Azoimide) and sodium azide is based on the interaction of hydrazine nitrate with nitrous acid or sodium nitrite,

$$N_2H_4{\cdot}HNO_3+NaNO_2=NaNO_3+N_2NH+2H_2O.$$

Another inorganic method employed for sodium azide is carried out as follows: sodamide, $NaNH_2$, produced by the action of ammonia on sodium, is heated in a stream of nitrous oxide, N_2O, whereby water and sodium azide are obtained.

$$NaNH_2+N_2O=NaN_3+H_2O.$$

The alkali and ammonium salts of hydrazoic acid are freely soluble in water, but neither the free acid nor these soluble salts are suitable for employment in explosives. The lead and silver salts are relatively insoluble in water, and the former only has so far been employed or is manageable. The cobalt and nickel salts are extremely violent explosives, but are deliquescent. When dry they and the silver salts are most sensitive to heat or friction.

Lead azide, PbN_6, as usually prepared should be in very fine crystals or almost amorphous. Large crystals are liable to explode on fracture. (W. R. Ho.)

LEAD CHAMBER PROCESS: *see* SULPHURIC ACID.

LEADER, BENJAMIN WILLIAMS (1831–1923), English painter, the son of E. Leader Williams, an engineer, received his art education first at the Worcester School of Design and later in the schools of the Royal Academy. He began to exhibit at the Academy in 1854, was elected A.R.A. in 1883 and R.A. in 1898, and became exceedingly popular as a painter of landscape. His subjects are attractive and skilfully composed. He was awarded a gold medal at the Paris Exhibition in 1889, and was made a knight of the Legion of Honour. One of his pictures, "The Valley of the Llugwy," is in the National Gallery of British Art. He died at Burrow's Cross near Guildford on March 22, 1923.

See L. Lusk, *The Life and Work of B. W. Leader, R.A.* (1901).

LEADHILLITE, a rare mineral consisting of basic lead sulphatocarbonate, $Pb_4SO_4(CO_3)_2(OH)_2$. Crystals usually have the form of six-sided plates with a perfect basal cleavage on which the lustre is strongly pearly; they are usually white and translucent. The hardness is 2·5 and the sp.gr. 6·26–6·44. The optical characters point to the existence of three kinds of leadhillite, which are, however, identical in external appearance and may even occur intergrown together in the same crystal. The fact that the published analyses of leadhillite vary somewhat from the formula given above suggests that these three kinds may also be chemically distinct.

Leadhillite is a mineral of secondary origin, occurring with cerussite, anglesite, etc., in the oxidized portions of lead-bearing lodes, also in weathered lead slags left by the Romans. It has been found most abundantly in the Susanna mine at Leadhills in Scotland (hence the names leadhillite and susannite). Good crystals have been found at Red Gill, Cumberland and Granby, Missouri.

LEADHILLS, village in Crawford civil parish, Lanarkshire, Scotland, on the Elvanfoot and Wanlockhead section of the L.M.S.R., 15 mi. S. from Douglas. Pop. (1931) *c.* 700. It lies 1,301 ft. above sea level, near the source of Glengonner Water, an affluent of the Clyde. Lead and silver have been mined there and at Wanlockhead, 1½ mi. S.W., for many centuries—according to some authorities even in Roman days. Gold was discovered in the reign of James IV, but its mining has long ceased to be profitable.

LEAD-IN is that portion of a radio antenna system which completes the electrical connection between the elevated outdoor portion and the radio instruments or disconnecting switches inside the building.

LEAD IN ART. The uses to which lead has been put, wherein it achieves a definitely artistic value, in the working of which are needed the judgment and perception of the artist as well as the technique of the craftsman, cover a wide field, ranging from purely architectural application, where structural utility is the chief consideration, and the aesthetic value is achieved by the appreciation of the nature and quality of the material for the purpose, and the sympathetic use of appropriate ornament, to its use in a completely decorative sense, for statuary, garden ornaments, fountains, etc.

It is generally assumed that lead, for the latter purpose, is used from motives of economy, as a substitute for a richer and more costly metal, but this is quite erroneous, as a careful study of the leadworker's art will prove. Used as its limitations permit, it has a charm and dignified simplicity that is achieved with no other material. It is not suitable for the grander conception which needs bronze as its expression, and although capable of much refinement and delicacy of treatment, it is of a kind which would not be happily interpreted in stone.

Its durability and resistance to climatic conditions is such that Sir Christopher Wren wrote in 1708, at the age of 76, regarding roofing for spires, lanterns, etc.,—"Lead is certainly the best and lightest covering, and, being of our own growth and

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ENGLISH DECORATIVE LEAD WORK

1. Oblong cistern of cast lead from Trinity Convent, Bromley, Kent. Front and sides decorated with various heraldic and other devices in relief, including four frames of moulding in quatrefoil. Bears date, 1713, and initials HIR.; height 3 ft., length 5 ft., width 23 in.
2. Statuette in lead, "Love the Pedlar," designed as a garden ornament
3. Lead cistern, front view, showing two ornamental panels, each of which encloses shield of arms with letters HAE, surmounted by a basket of flowers and surrounded by floral design in a quatrefoil. Removed from Royal Agricultural House, Hanover Square, London. Dated 1732; height 3 ft. 11 in., depth 1 ft. 9 in.
4. Rain water head, bird and column design, modern work
5. Hanging cistern of cast lead with rounded front decorated in relief with dolphins, demi-lions and fleurs-de-lis. Wing-top water tap of brass. English 17th century; height 12¾ in., width 13½ in.
6. Decorative lead mask, 14 in. wide, 12 in. high. Modern work
7. Modern ornamental lead garden cistern. Border in floral design, corner panels of riband pattern. Quatrefoil inner panel encloses wreath and shells, surmounted by two cornucopias; ram's head supports panel. Dated 1909
8. Lead cistern, dated 1924 on left end panel. Top border, grape and vine design; alternate squares decorated with fleur-de-lis, fruit basket, and conventionalized fruit and flower designs
9. Modern decorative lead spout and tank for garden wall. Spout and side ornaments of dolphin design; face of semi-cylindrical water tank ornamented with grape vine, nymphs and floral pattern

manufacture and lasting, if properly laid, for many hundreds of years, is without doubt the most preferable."

The use of lead has been apparent from the earliest times. As far back as the 6th century, we know that the Spartans used it for casting their votive figures. It has been used for practically all purposes for which it is suitable, since the earliest days of which we have record. The Romans made considerable use of it, as proved by the lead pigs, and the large amount of worked lead in various forms which has been found in every part of the country, where they had a permanent settlement. Many lead coffins of excellent craftsmanship have been found, those discovered at Colchester, England, being notable examples; and numbers of cast seals and tokens have been brought to light.

After the Roman occupation in England the use of lead was of an even more extensive nature. Apart from its structural uses, chiefly for roofing, and the supply and conveyance of water, such as tanks and cisterns, ornamental rainwater pipes and pipe heads, etc., we have fine examples of mediaeval fonts cast in lead, in various parts of the country, and pilgrims' signs and tokens were cast in great numbers in the 13th, 14th, and 15th centuries. In many places the custody of the casting moulds was vested in the sacristan; this was the case at Walsingham; other moulds have been found at Lynn, and at Dundrennan is a mould which casts six signs at once, which is an indication of their extensive use. Lead was also used for memorial tablets, but not to a great extent. An inscribed leaden tablet was found near Bath, which is an example of its use in this direction.

The sculptors of the 18th century did a great deal for the architectural side of garden craft, and much good lead-work originated at this period,—cisterns, pipes, pipeheads, and garden statuary, vases, and ornaments. Its delightful silvery grey colour, and peculiar appropriateness, rendered its use in the creation of the many beautiful formal gardens planned at this time, a particularly perfect inspiration; its soft delicate unobtrusive quality harmonizes with the gentle and restrained colouring of our countryside, and conveys a sense of complete fitness for an atmosphere essentially English. Among examples of its use in this direction are: Longford Castle, "Flora," by Sir Henry Cheere, in garden temple; Stoneleigh Abbey, vases on Gate Piers; Rousham, Bacchus; Canon's Ashby, Shepherd playing with flute; Nuns Moreton, statues; Wilton House, Amorini; Chiswick House, two vases; Enfield Old Park, vase; Penshurst, vase; Ilford Manor, vase, Victoria and Albert Museum and Enfield, cisterns, Drayton House, Northants, four vases.

A cast lead vase may be seen at Kew Gardens, which is a replica of a Greek vase of black marble in the Louvre. There are many of these in existence; its form was so popular that it was worth while to make an iron casting pattern for it.

A beautiful Italian tank may be seen in the British Museum; the nature of the ornament suggests that it is of the late 15th century. The disfiguring inlet and outlet pipes have obviously been added at a later date, and by someone totally unappreciative of the charm of its decoration.

During the 19th century, unfortunately, the art was greatly neglected, and its position among the building arts was crowded out in favour of others of a more opulent and imposing nature. In all its decorative forms, it seemed to be almost eclipsed. Much of the history of leadwork in England is revealed by a study of that of the Worshipful Company of Plumbers, and the allied craft of the Pewterers, and their position among the City Guilds.

The modern tendency is towards a gradual revival of this simple and useful craft. There is a steady demand for leadwork of a high standard, both from the standpoint of artistic quality, as well as technical merit; but though it can be obtained, it is by no means general throughout the country. The craft has been neglected too long, and the few firms who specialize in good leadwork are practically the only sources of supply.

The fault seems to lie with the leadworkers themselves. The Worshipful Company of Plumbers have done very much to support and inspire the craft technically, but have not dealt with the artistic side at all. Architects are demanding good leadwork of sound design, and traditional methods of working, but although they can obtain work sound enough technically, from the aesthetic standpoint, it is unutterably bad. In order to imbue leadworkers with the right spirit, and feeling for their material, they need to receive their training from an artist, as well as a technical expert, as a perfect technical training, unleavened by any artistic perception, produces the most horrible results. Professor W. R. Lethaby has done a great deal to revive the forgotten spirit of old leadwork, and his book, published in 1893, was greatly needed to stimulate the gradually awakening interest in the ancient and homely craft. Valuable work has been done in the same direction by Mr. F. W. Troup, in his works on the subject.

Among modern examples of excellent leadwork, both from its technique, and admirable design and sense of material is that executed by the Bromsgrove Guild, Worcestershire, which express the traditional and completely English spirit of treatment.

There are many interesting examples of the modern treatment of lead, from a decorative standpoint by individual sculptors and artists, chiefly for the purpose of garden decoration, statuary, bird baths, fountains, rain water tanks, etc., but it could be much more extensively employed than it is.

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(B. E. A.)

LEADING NOTE, in music, the seventh degree of the diatonic scale, situated a semitone below the octave, and so called because the ear instinctively demands that it shall be followed by the octave, to which therefore it may be said to "lead" in a peculiarly irresistible manner. This characteristic of the note is indicated by the French name for it, *la note sensible;* other names by which it is sometimes known being the sub-tonic and the sub-semitone.

LEAD POISONING or **PLUMBISM,** a "disease of occupations," which is itself the cause of organic disease, particularly of the nervous and urinary systems. The workpeople affected are principally those engaged in potteries where lead-glaze is used; but other industries in which health is similarly affected are file-making, house-painting and glazing, glass-making, copper-working, coach-making, plumbing and gasfitting, printing, cutlery, and generally those occupations in which lead is concerned.

The poison affects the entire body but especially the nervous system and the blood-forming tissues. Its victims become pallid, digestion is deranged, appetite fails and painful colic with constipation supervenes. The loss of power is generally shown first in the fingers, hands and wrists, and the condition known as "wrist-drop" soon follows, rendering the victim useless for work. The palsy will extend to the shoulders, and shortly after to the legs also. Other organs frequently involved are the kidneys, which become fibrotic (granular kidney). Owing to optic atrophy the sight is weakened or even lost.

In England the Home Office authorities have from time to time made special rules for workshops, with the object of minimizing or preventing the occurrence of lead-poisoning; and in 1895 notification of cases was made compulsory. New special rules were imposed in 1899 and strengthened subsequently prohibiting the employment of persons under fifteen in the dangerous processes, ordering a monthly examination of all women and young persons working in lead by the certifying surgeon, with power to suspend those showing symptoms of poisoning, and providing for the more effectual removal of dust and the better enforcement of cleanliness. (*See* LABOUR LAW.)

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LEADVILLE, a city of Colorado, U.S.A., 115 mi. S.W. of Denver, at an elevation of 10,200 ft.; the county seat of Lake county, and one of the celebrated mining camps of the world. It is on federal highway 40S, and is served by the Colorado and Southern and the Denver and Rio Grande Western railways. The population in 1940 was 4,774. It lies amid towering mountains on a terrace nearly 2 mi. above sea level, at the head of the valley of the Arkansas river. Great concentration and reduction works and smelters mark its location with a cloud of smoke by day and flames by night. In 1940 the mines of Lake county (nearly all in the Leadville district) produced gold, lead, silver, zinc and copper (named in the order of their importance) valued at $510,778.

Leadville's extraordinary history began with the discovery of placer gold in California gulch late in 1859. The lucky prospectors returned the next spring, and established a camp which they called Oro City. By the end of the year it had a population of 5,000, and in 1861 it was the largest town in Colorado territory. In a few years the placer deposits were exhausted, after yielding some $5,000,000, and Oro City dwindled to a small village. The second spectacular period set in after 1874, when silver-lead ores were recognized by A. B. Wood, an experienced miner and metallurgist, in boulders that the gold miners had regarded merely with annoyance as obstructions to their sluices. Active prospecting began in the spring of 1877. In Jan. 1878, the town was organized and re-named. In 1880 the Denver and Rio Grande railway reached the gulch, and it is estimated there were 35,000 persons in the district. The city now had a population of 15,000, 28 mi. of streets, 5 mi. of water mains, 3 public hospitals, an opera house and an ample supply of saloons; part of it was lighted by gas; the assessed valuation was $30,000,000. It had become the greatest silver camp in the world, with over 30 producing mines, 10 large smelters, and an output (gold, silver and lead) valued at $15,000,000 in 1880. Silver mining was the chief interest until the slump in the price of silver in 1893. About 1900, zinc began to assume importance, and by 1915 it constituted 65% of the total output of the mines (in value). During the war of 1914–18 dumps on Carbonate hill were worked over for zinc ore which had formerly been discarded, and in recent years a considerable amount of silver has been recovered from the slag dumps of old smelters. The veins are still far from exhausted; "unwatering" operations give renewed access to old workings; and new orebodies are still discovered from time to time.

In the early days Leadville was one of the most turbulent and picturesque of the mining camps of the west. There were serious strikes in 1879 and from June 19, 1896, to March 9, 1897. In the course of the latter, many mines were flooded, and the militia was on guard for months; the miners were finally starved out.

LEAF, WALTER (1852–1927), British banker and scholar, was born at Norwood, London, on Nov. 26, 1852 and educated at Harrow and Trinity college, Cambridge. In 1877 he entered the firm of Leaf, Sons and Company, becoming in 1888 chairman of Leaf and Company Ltd. Later he became chairman of the Westminster bank. Leaf was one of the founders of the International Chamber of Commerce, of which he was elected president in 1925. In 1918–19 he was chairman of the committee of the London clearing banks, and from 1919 to 1921, president of the Institute of Bankers. He was president of the Hellenic society and the Classical association. He died on March 28, 1927.

Among his classical works are *The Iliad* (1886–88, 1900–02), with English notes and introduction; *Companion to the Iliad* (1892); *Troy, a Study in Homeric Geography* (1912); *Homer and History* (1915); *Little Poems from the Greek* (1922); and *Strabo on the Troad* (1923). In 1882 he collaborated with Andrew Lang and E. Myers in a translation into English prose of Homer's *Iliad*.

LEAF, the name given in popular language to all the green expanded organs borne upon an axis, and so applied to similar objects. Investigation has shown that many other parts of a plant which externally appear very different from ordinary leaves are, in their essential particulars, very similar to them, and are in fact their morphological equivalents. Such are the scales of a bulb, and the various parts of the flower, and assuming that the structure ordinarily termed a leaf is the typical form, these other structures were designated changed or metamorphosed leaves, a somewhat misleading interpretation.

Development and Structure of Leaves.—Leaves are produced as lateral outgrowths of the stem in definite succession below the apex. This character, common to all leaves, distinguishes them from other organs. In the higher plants we can usually recognize the distinction between stem and leaf. Among the lower plants, however, it is found that a demarcation into stem and leaf is impossible, but that there is a structure which partakes of the characters of both—*i.e.*, the *thallus*. The leaves always arise from the outer portion of the primary meristem of the stem axis, and the tissues of the leaf are continuous with those of the stem. In some cases only the outermost layer of the apical meristem takes part in leaf development, but more often cells of the deeper layers are also involved. By division and growth these cells form a small meristematic protuberance which later develops into the leaf. In the protuberance an apical growing region is early formed, and this by continued activity increases the organ in length and lays down its fundamental structure. In most leaves apical growth is of short duration and is succeeded by general growth throughout the young leaf. The general form and the fundamental structure of most leaves are thus developed while it is still small in size. Differentiation of the vascular tissue begins at the point of divergence of the leaf from the axis and proceeds outwardly to form the veins of the leaf and downwardly as a part of the vascular system of the stem. Thus, when these vascular bundles anastomose with those of older leaves below, continuity of vascular tissue is established. Although in seed plants the increase in length of the leaf by growth at the apex is usually of a limited nature, in some ferns there seems to be a provision for indefinite terminal growth, while in others this growth is periodically interrupted. It not unfrequently happens, especially among monocotyledons, that after growth at the apex has ceased, it is continued at the base of the leaf, and in this way the length may be much increased. Among dicotyledons this is uncommon. In all cases the dimensions of the leaf are enlarged by interstitial growth of its parts.

The simplest leaf is found in some mosses where it consists of a single layer of cells. The typical foliage leaf is characteristically thin and dorsi-ventrally flattened. Structurally it may be divided into three regions: (1) the *epidermis* which forms a protective layer covering the entire surface of the leaf and is continuous with the epidermis of the stem, (2) the *mesophyll* which may be differentiated into *palisade* and *spongy* cells, (3) the *veins* which consist of vascular tissues for the transfer of water (*xylem elements*) and food substances synthesized by the leaf (*phloem*). Associated with the conductive tissues of the vein are *mechanical* elements which give strength and support to the blade and petiole. The epidermis is usually devoid of chloroplasts except for those that occur in the guard cells which bound the *stomata*. These are openings through which gases and vapours may pass into and out from the intercellular spaces of the mesophyll. The size of the stomatal opening is controlled by changes in the turgor of the guard cells. When these are turgid the stoma is open and this condition usually obtains during the hours of sunlight. Stomata may occur on both surfaces of the leaf but are generally more numerous on the under surface when the leaf is oriented dorsi-ventrally. Where the leaf is in a vertical position as in many grasses, the number of stomata is about equal on both surfaces. In some leaves as in *Olea* (olive) and *Ficus* (rubber plant) there are no stomata on the upper surface. Chloroplasts occur in the palisade and spongy cells but are usually more numerous in the former. They are small, spherical, ovoid or discoid bodies lying in the cytoplasm and contain green pigments known as chlorophyll and others that are orange or yellow, carotenoids. Some submerged leaves, or leaves which are developed under water, differ in structure from aerial leaves. They have usually no fibro-vascular system, but conduction takes place through

cells which sometimes become elongated and compressed so as to resemble veins. Such leaves have a layer of compact cells on their surface, but no true epidermis and no stomata. Their internal structure consists of spongy tissue and sometimes the spaces are filled with air which gives buoyancy to the leaf. When exposed to the air these leaves lose moisture rapidly and become shrivelled and dry. In some cases there is only a network of filament-like cells, the intercellular spaces between giving a skeleton appearance to the leaf as in *Ouvirandra fenestralis* (Lattice plant). (*See* PLANTS AND PLANT SCIENCE: *Anatomy.*)

Function of Leaves.—The form and arrangement of the parts of a typical foliage leaf are intimately associated with the part played by the leaf in the life of the plant. The flat surface permits the maximum amount of sunlight to fall upon it, as it is by the absorption of energy from the sun's rays by means of the chlorophyll contained in the cells of the leaf that the building up of plant food is rendered possible; this process is known as photosynthesis. It is a complex process, and all the chemical reactions that take place in the synthesis of carbohydrates are not known, but it involves the combination of carbon dioxide and water. The xylem elements (*tracheae* and *tracheids*) of the vascular bundles or veins of the leaf are continuous throughout the petiole and stem with those of the root which absorbs water from the soil. The absorption of carbon dioxide is carried on through the stomata and the intercellular spaces of the mesophyll. The formation of carbohydrates from these raw materials occurs in the chloroplasts in the living cells of the palisade and spongy tissue. The water taken up by the root from the soil contains nitrogenous and mineral salts which combine with the first product of photosynthesis—a carbohydrate—to form more complicated nitrogen-containing food substances. These or their simpler products are then distributed by other elements of the vascular bundles (the phloem) through the leaf to the stem and so throughout the plant to wherever growth and development or storage of reserve foods is going on. A large proportion of the water which ascends to the leaf passes out in the form of water vapour through the stomata—this process is known as transpiration. Hence the extended surface of the leaf exposing a large area to light and air is eminently adapted for the carrying out of the processes of photosynthesis and transpiration. The arrangement of the leaves on the stem and branches (see *Phyllotaxis,* below) is such that the upper leaves do not shade the lower, and the shape of the leaf serves towards the same end—the disposition of leaves on a branch or stem often forms a "mosaic," each leaf fitting into the space between neighbouring leaves and the branch on which they are borne without overlapping.

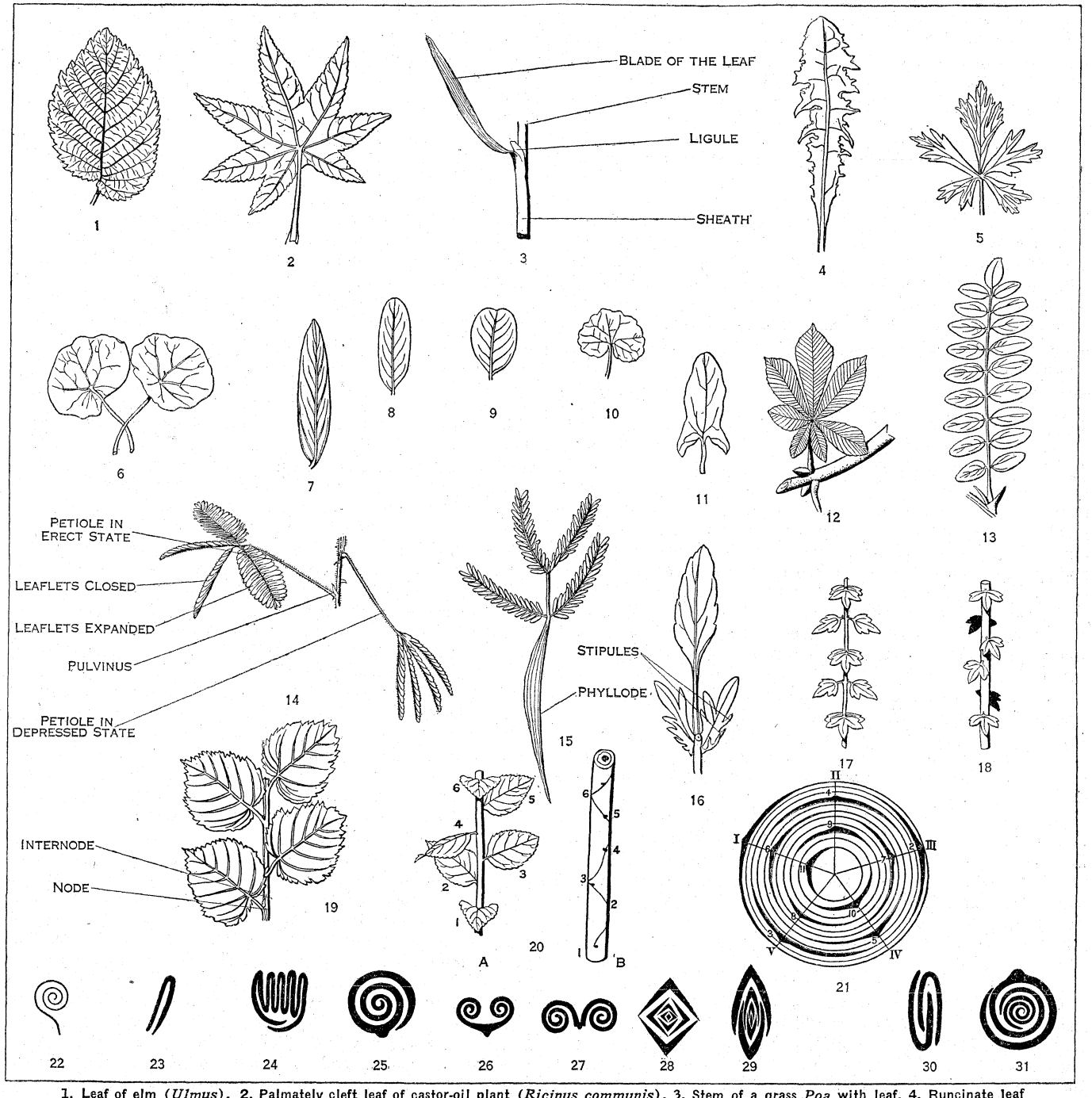
GROSS ANATOMY

A leaf, whether aerial or submerged, generally consists of a flat expanded portion, called the blade, or *lamina,* of a narrower portion called the *petiole* or stalk, and sometimes of a portion at the base of the petiole, which forms a *sheath* or is developed in the form of outgrowths, called *stipules.* The sheathing or stipulary portion is frequently wanting. When a leaf has a distinct stalk it is *petiolate;* when it has none, it is *sessile,* and if in this case it embraces the stem it is said to be *amplexicaul.* The part of the leaf next the petiole or the axis is the *base,* while the opposite extremity is the *apex.* The leaf is usually flattened and expanded horizontally, *i.e.,* at right angles to the longitudinal axis of the shoot. In some cases leaves, as in *Iris,* or leaf-like petioles, as in Australian species of *Acacia* and *Eucalyptus,* have their plane of expansion parallel to the axis of the shoot, there is then no distinction into an upper and a lower surface, but the two sides are developed alike; or the leaf may have a cylindrical or polyhedral form, as in *Mesembryanthemum* (Ice plant). The upper angle formed between the leaf and the stem is called its *axil;* it is there that buds are normally developed. The leaf is sometimes articulated with the stem, and when it falls off a *scar* remains; at other times it is continuous with it, and then decays, while still attached to the axis. In their early state all leaves are continuous with the stem, and it is only in their after growth that articulations are formed. When leaves fall off annually they are called *deciduous;* when they remain for two or more years they are *persistent,* and the plant is *evergreen.* The laminar portion of a leaf is occasionally articulated with the petiole, as in the orange, and a joint at times exists between the stipulary portion and the petiole.

Venation.—The arrangement of the vascular system in the lamina constitutes the *venation.* In an ordinary leaf, as that of the elm, there is a large central vein running from the base to the apex of the leaf, the *midrib* (fig. 1) and there are lateral veins (*primary veins*). The venation is described as *pinnate* or *feather-veined.* In some cases, as sycamore or castor-oil plant (fig. 2), in place of there being only a single midrib there are several large veins (*ribs*) of nearly equal size, which diverge from the juncture of the blade and the petiole or stem. The venation is then *palmate.* In addition to the primary veins there are secondary veins and tertiary veins, and so on until a complete vascular network is produced. The larger veins are usually prominent on the under surface of the leaf. To a distribution of veins such as this the name of *reticulated* or *netted* venation has been applied. In the leaves of some plants there exists a midrib with large veins running nearly parallel to it from the base to the apex of the lamina, as in grasses (fig. 3); or with veins diverging from the base of the lamina in more or less parallel lines, as in fan palms (fig. 7), or with veins extending from it throughout its whole course, and running parallel to one another in a straight or curved direction toward the margin of the leaf, as in plantain and banana. In these cases the veins are often united by cross veinlets, which do not, however, form an angular network. Such leaves are said to be *parallel-veined.* The leaves of monocotyledons have generally this kind of venation, while reticulated venation most usually occurs among dicotyledons. Some plants, which in most points of their structure are monocotyledonous, have reticulated venation, as in *Smilax* and *Dioscorea.* The distribution of the system of vessels in the leaf is usually easily traced, but in succulent plants, as *Hoya,* agave, stonecrop and *Mesembryanthemum,* the veins are obscure.

In nearly all plants, except Thallophyta, leaves are present at some period of their existence. In *Cuscuta* (Dodder, *q.v.*), however, we have an exception. The forms assumed by leaves vary much, not only in different plants, but in the same plant. It is only among the lower classes of plants—mosses, Characeae, etc. —that all the leaves on a plant are similar; in the higher plants they are more variable. The structures ordinarily designated as leaves are frequently spoken of as *foliage leaves.* In relation to their production on the stem when they are small they are always produced in great number, and as they increase in size their number diminishes correspondingly. The cellular process from the axis which develops into a leaf is simple and undivided; it may remain so, but in progress of growth frequently becomes segmented in various ways, either longitudinally or laterally, or in both ways. By longitudinal segmentation we have a leaf formed consisting of sheath, stalk and blade; or one or other of these may be absent, and thus stalked, sessile, sheathing, etc., leaves are produced. Lateral segmentation affects the lamina, producing indentations, lobings or fissuring of its margins. In this way two marked forms of leaf are produced—(1) *Simple* form, in which the segmentation, however deeply it extends into the lamina, does not separate completely portions of the lamina and (2) *Compound* form, where portions of the lamina are separated as detached *leaflets,* which become articulated with the midrib or petiole. Of both simple and compound leaves, according to the amount of segmentation and the mode of development of the parenchyma and direction of the vascular bundles, many types are produced.

Simple Leaves.—When the lamina is developed symmetrically on each side of the midrib or stalk, the leaf is *equal;* if otherwise, the leaf is *unequal* or *oblique* (fig. 1). If the margins are even and present no divisions, the leaf is *entire;* if there are slight projections which are more or less pointed, the leaf is *dentate* or toothed; when the projections lie regularly over each other, like the teeth of a saw, the leaf is *serrate* (fig. 1); when they are rounded the leaf is *crenate.* If the divisions extend more deeply



1. Leaf of elm (*Ulmus*). 2. Palmately cleft leaf of castor-oil plant (*Ricinus communis*). 3. Stem of a grass *Poa* with leaf. 4. Runcinate leaf of dandelion. 5. Five-partite leaf of aconite. 6. Peltate leaves of Indian cress (*Tropaeolum majus*). 7. Lanceolate leaf of species of senna. 8. Oblong leaf of species of senna. 9. Emarginate leaf of species of senna. 10. Reniform leaf (*Nepeta glechoma*), margin crenate. 11. Sagittate leaf of Convolvulus. 12. Palmately compound leaf of Horse-chestnut (*Aesculus hippocastanum*). 13. Imparipinnate (unequally pinnate), leaf of Robinia. 14. Branch and leaves of sensitive plant (*Mimosa pudica*). 15. Leaf of an acacia (*Acacia heterophylla*). 16. Leaf of pansy, showing stipules. 17. Stem with opposite leaves. 18. Stem with alternate leaves, arranged in pentastichous or quincuncial manner. 19. Portion of a branch of a lime tree (*Tilia*). 20. Part of branch cherry with six leaves. (A) branch, with leaves numbered in order; (B) magnified representation of branch, showing points of insertion of leaves and their spiral arrangement. 21. Diagram of a phyllotaxis represented by the fraction 2/5. 22. Circinate vernation. 23. Transverse section of conduplicate leaf. 24. Transverse section of plicate or plaited leaf. 25. Transverse section of convolute leaf. 26. Transverse section of involute leaf. 27. Transverse section of revolute leaf. 28 and 29. Transverse sections of buds in which leaves are respectively arranged in an accumbent and an equitant manner. 30. Transverse section of a bud, showing two leaves folded in an obvolute manner. 31. Transverse section of a bud, showing two leaves arranged in a supervolute manner

into the lamina than the margin, the leaf receives different names according to the nature of the segments; thus, when the divisions extend about half-way down (fig. 4), it is *cleft;* when the divisions extend nearly to the base or to the midrib the leaf is *partite.*

If these divisions take place in a simple *feather-veined* leaf it becomes either *pinnatifid* (fig. 4), when the segments extend to about the middle, or *pinnatipartite,* when the divisions extend nearly to the midrib. These primary divisions may be again subdivided in a similar manner, and thus a feather-veined leaf will become *bipinnatifid* or *bipinnatipartite;* still further subdivisions give origin to *tripinnatifid* and *laciniated* leaves. The same kinds of division taking place in a simple leaf with palmate or *radiating* venation, give origin to *lobed, cleft* and *partite* forms. The name *palmate* (fig. 2) is the general term applied to leaves with radiating venation, in which there are several lobes united by a broad expansion of parenchyma, like the palm of the hand, as in the sycamore, castor-oil plant, etc. The divisions of leaves with radiating venation may extend to near the base of the leaf, and the names *bipartite, tripartite, quinquepartite,* etc., are given according as the partitions are two, three, five or more. The term

dissected is applied to leaves with radiating venation, having numerous narrow divisions, as in *Geranium dissectum*.

When in a radiating leaf there are three primary partitions, and the two lateral lobes are again cleft, as in hellebore, the leaf is called *pedate* or *pedatifid,* from a fancied resemblance to the claw of a bird. In all the instances already alluded to the leaves have been considered as flat expansions, in which the ribs or veins spread out on the same plane with the stalk. In some cases, however, the veins spread at right angles to the stalk, forming a *peltate* leaf as in Indian cress (fig. 6).

The form of the leaf shows a very great variety, ranging from the narrow *linear* form with parallel sides, as in grasses or the needle-like leaves of pines and firs, to more or less rounded or *orbicular*—descriptions of these will be found in works on descriptive botany—a few examples are illustrated here (figs. 8, 9, 10). The apex also varies considerably, being rounded, or *obtuse,* sharp or *acute,* notched (fig. 9), etc. Similarly the shape of the base may vary, when rounded lobes are formed, as in dog-violet, the leaf is *cordate* or heart-shaped; or kidney-shaped or *reniform* (fig. 10) when the apex is rounded as in ground ivy. When the lobes are prolonged downwards and are acute, the leaf is *sagittate* (fig. 11); when they proceed at right angles, as in *Rumex acetosella,* the leaf is *hastate* or halbert-shaped. When a simple leaf has two leaf-like appendages at its base, it is called *auriculate*. When the development of parenchyma along the margin of the leaf continues after the veins are differentiated, the margins become *wavy, crisp* or *undulated,* as in *Rumex crispus* and *Rheum undulatum*. By cultivation and selection the mesophyll tissue is often much increased, giving rise to the *curled* leaves of greens, savoys, cresses, lettuce, etc.

Compound leaves.—Compound leaves are those in which the divisions extend to the midrib or petiole, and the separated portions are each articulated with it. The midrib, or petiole, resembles a branch with separate leaves attached to it, but it is considered properly as one leaf because in its earliest state it arises from the axis as a single primordium, and its subsequent development results in the formation of distinct leaflets. The leaflets are either sessile (fig. 12) or have stalks, called *petiolules*. Compound leaves are *pinnate* (fig. 13) or *palmate* (fig. 12) according to the arrangement of leaflets. When a pinnate leaf ends in a pair of pinnae it is *equally* or *abruptly pinnate* (paripinnate); when there is a single terminal leaflet (fig. 13), the leaf is *unequally pinnate* (imparipinnate); when the leaflets or pinnae are placed alternately on either side of the midrib, and not directly opposite to one another, the leaf is *alternately pinnate;* and when the pinnae are of different sizes, the leaf is *interruptedly pinnate*. When the division is carried into the second degree, and the pinnae of a compound leaf are themselves pinnately compound, a bipinnate leaf is formed.

Petiole.—The *petiole* is the portion between the blade and the stem. It is absent in *sessile* leaves, and this is also frequently the case when a sheath is present, as in grasses (fig. 3). It consists of the fibro-vascular bundles with a varying amount of cellular tissue. The petiole varies in length, being usually shorter than the lamina, but sometimes much longer. In some palms it is 15 or 20 ft. long, and is so rigid as to be used for poles or walking-sticks. Sometimes it is compressed laterally, as in the aspen, and to this peculiarity the trembling of the leaves of this tree is due. At other times it is winged, as in lemon and *Dionaea,* or pitcher-like, as in *Sarracenia*. In certain of the Australian acacias, and in some species of *Oxalis* and *Bupleurum,* the petiole is flattened in a vertical direction, the vascular bundles separating immediately at their point of divergence from the stem and running nearly parallel from base to apex. This kind of petiole (fig. 15) has been called a *phyllode*. In these plants the laminae or blades of the leaves are pinnate or bipinnate, and occur at the extremities of the phyllodes in a horizontal direction; but in many instances they are not developed, and the phyllode functions as a leaf. Some petioles are long, slender and sensitive to contact, and function as tendrils by means of which the plant climbs; as in the garden nasturtiums (*Tropaeolum*), clematis and others. The lower part of the petiole is often swollen (fig. 14), forming the *pulvinus,* the cells of which exhibit the phenomenon of irritability. In *Mimosa pudica* (fig. 14) and other species, stimuli are transmitted to the pulvinus which upon irritation results in depression of the whole bipinnate leaf. A similar property exists in the pulvini at the base of the leaflets which fold upwards.

Leaf base.—The leaf base is often developed as a *sheath* which embraces the whole or part of the circumference of the stem (fig. 3). This sheath is uncommon in dicotyledons, but occurs in the family Umbelliferae. It is much more common among monocotyledons. In sedges the sheath forms a complete investment of the stem, while in grasses it is open on one side. In the latter plants there is also a membranous outgrowth, the *ligule,* at right angles to the median plane of the leaf from the point where the sheath merges into the lamina, there being no petiole (fig. 3).

In leaves in which no sheath is present small foliar organs, *stipules,* frequently occur at the base of the petiole (fig. 16). The stipules are generally two in number. Thus they occur in the pea and bean family, in rosaceous plants and the family Rubiaceae. They are not common in dicotyledons with opposite leaves. Leaves having stipules are called *stipulate;* those having none are *astipulate*. Stipules may be large or small, entire or divided, deciduous or persistent. They are not usually of the same form as the ordinary foliage leaves of the plant, from which they are distinguished by their lateral position at the base of the petiole. In the pansy (fig. 16) the true leaves are stalked and crenate, while the stipules are large, sessile and pinnatifid. In *Lathyrus aphaca* and some other plants the true pinnate leaves are abortive, the petiole forms a tendril, and the large stipules alone perform the functions of leaves. In other instances the stipules are non-diverged and occur on the side of the stem opposite the leaf forming an *ochrea,* as in the dock family. The stipules are sometimes so minute as to be scarcely distinguishable without the aid of a lens, and so fugacious as to be visible only in the very young state of the leaf. They may assume a hard and spiny character, as in *Robinia pseudoacacia* (fig. 13), or, as in *Smilax,* each stipule may be represented by a tendril. At the base of the leaflets of a compound leaf, small stipules (*stipels*) occasionally are present.

Modifications.—Variations in the structure and forms of leaves and leaf-stalks are produced by the increased development and differentiation of cellular tissue, by the abortion or degeneration of parts, by the multiplication or repetition of parts and by adhesion or non-divergence of parts. When parenchymatous tissue is developed to a great extent, leaves become succulent and occasionally assume a crisp or curled appearance. Such changes take place naturally, but they are often increased by the art of the gardener, and the object of many horticultural operations is to increase the bulk and succulence of leaves. It is in this way that cabbages and savoys are rendered more delicate and nutritious. The leaves of barberry and of some species of *Astragalus,* and the stipules of the false acacia (*Robinia*) are spiny. To the same cause is due the spiny margin of the holly-leaf. When two lobes at the base of a leaf are prolonged beyond the stem as a non-diverged structure, the leaf is *perfoliate,* the stem appearing to pass through it, as in *Bupleurum perfoliatum* and *Chlora perfoliata;* when the bases of two leaves are non-diverged they become *connate,* as in *Lonicera caprifolium;* and when leaves adhere to the stem, forming a sort of winged or leafy appendage, they are *decurrent,* as in thistles. The formation of *peltate* leaves has been traced to the non-divergence of the lobes of a leaf. In the leaf of the *Victoria regia* the transformation may be traced during ontogeny. The first leaves produced by the young plant are linear, the second are sagittate and hastate, the third are rounded-cordate and the next are orbicular. The cleft indicating the union of the lobes remains in the large leaves. The parts of the leaf are frequently developed as *tendrils,* which may twine round other plants for support. In leguminous plants (the pea tribe) the pinnae are frequently modified to form tendrils, as in *Lathyrus aphaca,* in which the stipules perform the function of true leaves. In *Flagellaria indica, Gloriosa superba*

and others, the midrib of the leaf ends in a tendril. In *Smilax* there are two stipulary tendrils.

The pitchers of insectivorous plants are formed either by petioles or by laminae, and they are composed of one or more leaves. In *Sarracenia* and *Heliamphora* the pitcher is composed of the petiole of the leaf. In *Nepenthes* the pitcher is a modification of the lamina, the petiole often plays the part of a tendril, while the leaf base is flat and leaf-like. In *Utricularia* bladder-like sacs are formed by a modification of leaflets on submerged leaves.

In some cases the leaves are reduced to mere *scales—cataphylls;* they are produced abundantly upon underground shoots. In parasites (*Lathraea, Orobanche*) and in plants growing on decaying vegetable matter (*saprophytes*), in which no chlorophyll is formed, these scales are the only leaves produced. In *Pinus* the leaves produced on the main stem and the larger lateral shoots are scales; those on some of the short branches are acicular. In *Cycas* whorls of scales alternate with large pinnate leaves. In many plants, as already stated, phyllodes or stipules perform the function of leaves. The production of leaf-buds from leaves sometimes occurs as in *Bryophyllum,* and many plants of the order Gesneraceae. The leaf of Venus's fly-trap (*Dionaea muscipula*) when cut off and placed in damp moss has produced buds from which young plants were obtained. Some species of saxifrage and of ferns also produce buds on their leaves. In *Nymphaea micrantha* buds appear at the upper part of the petiole.

Phyllotaxis.—Leaves occupy various positions on the stem and branches, and have received different names according to their situation. Thus leaves arising from an unelongated crown stem so that they appear to be coming from the root, as in the primrose, are called *radical;* those on the stem are *cauline;* on flower-stalks, *floral* leaves (*see* FLOWER). The first leaves developed are known as seed leaves or *cotyledons.* The arrangement of the leaves on the axis and its appendages is called *phyllotaxis.*

In their arrangement leaves follow a definite order. The places on the stem at which leaves appear are called *nodes;* the part of the stem between two nodes is the *internode.* When two leaves are produced at the same node, one on each side of the stem or axis, and at the same level, they are *opposite* (fig. 17); when more than two are produced they are *verticillate,* and the circle of leaves is then called a *verticil* or *whorl.* When leaves are opposite, each successive pair may be placed at right angles to the pair immediately preceding. They then *decussate,* following thus a law of alternation (fig. 17). The same occurs in the verticillate arrangement, the leaves of each whorl rarely being *superposed* on those of the whorl next it, but usually alternating so that each leaf in a whorl occupies the space between two leaves of the whorl next to it. There are considerable irregularities, however, in this respect, and the number of leaves in different whorls is not always uniform, as may be seen in *Lysimachia vulgaris.* When a single leaf is produced at a node, and the nodes are separated so that each leaf is placed at a different height on the stem, the leaves are *alternate* (fig. 18). A plane passing through the point of divergence of the leaf at the node, dividing the leaf into similar halves, is the median plane of the leaf; and when the leaves are arranged alternately on an axis so that their median planes coincide they form a straight row or *orthostichy.* On every axis there are usually two or more orthostichies. In fig. 19 the leaves arise at nodes and the nodes are separated from one another by internodes, the arrangement resulting in one leaf being placed above the other. In this case, then, there are two orthostichies, and the arrangement is said to be *distichous.* When the fourth leaf is directly above the first, the arrangement is *tristichous.* The same arrangement continues throughout the branch, so that in the latter case the 7th leaf is above the 4th, the 10th above the 7th; also the 5th above the 2nd, the 6th above the 3rd and so on. The size of the angle between the median planes of two consecutive leaves in an alternate arrangement is their *divergence;* and it is expressed in fractions of the circumference of the axis which is supposed to be a circle. In a regularly-formed straight branch covered with leaves if a thread is passed from one to the other, turning always in the same direction, a spiral is described, and a certain number of leaves and of complete turns occur before reaching the leaf directly above that from which the enumeration commenced. If this arrangement is expressed by a fraction, the numerator of which indicates the number of turns, and the denominator the number of internodes in the spiral cycle, the fraction will be found to represent the angle of divergence of the consecutive leaves on the axis. Thus, in fig. 20 *A, B,* the leaf cycle consists of five leaves, the 6th leaf being placed vertically over the 1st, the 7th over the second and so on; while the number of turns between the 1st and 6th leaf is two; hence this arrangement is indicated by the fraction $\frac{2}{5}$. In other words, the distance or divergence between the first and second leaf, expressed in parts of a circle, is $\frac{2}{5}$ of a circle or $360° \times \frac{2}{5} = 144°$. In fig. 19 the spiral is $\frac{1}{2}$, *i.e.,* one turn and two leaves; the third leaf being placed vertically over the first and the divergence between the first and second leaf being one-half the circumference of a circle, $360° \times \frac{1}{2} = 180°$. Again, in a tristichous arrangement the number is $\frac{1}{3}$, or one turn and three leaves, the angular divergence being 120°.

This is a convenient mode of expressing on paper the exact position of the leaves upon an axis. And in many cases such a mode of expression is of excellent service in an understanding of the relations of the leaves.

The spiral is not always constant throughout the whole length of an axis. The angle of divergence may alter either abruptly or gradually, and the phyllotaxis thus becomes very complicated. This change may be brought about by arrest of development, by increased development of parts or by a torsion of the axis.

In dicotyledonous plants the first leaves produced (the cotyledons) are opposite. This arrangement often continues during the life of the plant, but at other times it changes, passing into distichous and spiral forms. Some tribes of plants are distinguished by the opposite or verticillate, others by their alternate, leaves. Labiate plants have decussate leaves, while Boraginaceae have alternate leaves, and Tiliaceae usually have distichous leaves; Rubiaceae have opposite leaves. Such arrangements as $\frac{2}{5}$, $\frac{3}{8}$, $\frac{5}{13}$ and $\frac{8}{21}$ are common in dicotyledons. In monocotyledonous plants there is only one seed-leaf or cotyledon, and hence the arrangement is at first alternate; and it generally continues so more or less, rarely being verticillate. Such arrangements as $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{2}{3}$ are common in monocotyledons, as in grasses, sedges and lilies. It has been found in general that, while the number 5 occurs in the phyllotaxis of dicotyledons, 3 is common in that of monocotyledons.

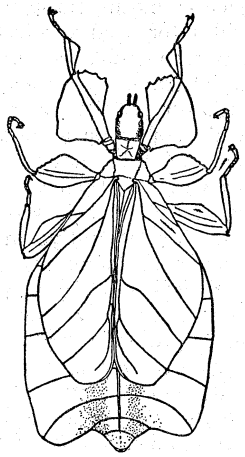
Axillary Buds.—In the axil of previously formed leaves leaf-buds arise. These leaf-buds contain the rudiments of a shoot, and consist of leaves covering a growing point. The buds of trees of temperate climates, which lie dormant during the winter, are usually protected by scale leaves. These scales or protective appendages of the bud consist either of specialized laminae or of the enlarged petiolary sheath, or of stipules, as in the fig and magnolia, or of one or two of these parts combined. These are often of a coarse nature, serving a temporary purpose, and then falling off when the leaf is expanded. They are frequently covered with a resinous matter, as in balsam-poplar and horse-chestnut, or by a thick downy covering as in the willow. In plants of warm climates the buds have often no protective apparatus, and are then said to be *naked.*

The arrangement of the leaves in the bud is termed *vernation* or *prefoliation.* The manner in which each individual leaf is folded and also the arrangement of the leaves in relation to each other vary in different plants, but in each species they follow a regular law. The leaves in the bud are either placed simply in apposition, or they are folded or rolled up longitudinally or laterally, giving rise to different kinds of vernation, as delineated in figs. 22 to 31, where the folded or curved lines represent the leaves, the thickened part being the midrib. The leaf taken individually is either folded longitudinally from apex to base, as in the tulip-tree, and called *reclinate* or *replicate;* or rolled up in a circular manner from apex to base, as in ferns (fig. 22), and called *circinate;* or folded laterally, *conduplicate* (fig. 23), as in oak; or it has several folds like a fan, *plicate* or *plaited* (fig. 24), as in vine and sycamore, and in leaves with radiating vernation, where the ribs mark the foldings; or it is rolled upon itself, *convolute* (fig. 25), as in banana

and apricot; or its edges are rolled inwards, *involute* (fig. 26), as in violet; or outwards, *revolute* (fig. 27), as in rosemary. The different divisions of a cut leaf may be folded or rolled up separately, as in ferns, while the entire leaf may have either the same or a different kind of vernation. The leaves have a definite relation to each other in the bud, being either opposite, alternate or verticillate; and thus different kinds of vernation are produced. Sometimes they are nearly in a circle at the same level, remaining flat or only slightly convex externally, and placed so as to touch each other by their edges, thus giving rise to *valvate* vernation. At other times they are at different levels, and are applied over each other, so as to be *imbricated,* as in lilac, and in the outer scales of sycamore; and occasionally the margin of one leaf overlaps that of another, while it in its turn is overlapped by a third, so as to be *twisted, spiral* or *contortive.* When leaves are applied to each other face to face, without being folded or rolled together, they are *appressed.* When the leaves are more completely folded they either touch at their extremities and are *accumbent* or *opposite* (fig. 28), or are folded inwards by their margin and become *induplicate;* or a conduplicate leaf covers another similarly folded, which in turn covers a third, and thus the vernation is *equitant* (fig. 29), as in privet; or conduplicate leaves are placed so that the half of the one covers the half of another, and thus they become *half-equitant* (fig. 30), as in sage. When in the case of convolute leaves one leaf is rolled up within the other, it is *supervolute* (fig. 31). The scales of a bud sometimes exhibit one kind of vernation and the leaves another. The same modes of arrangement occur in the flower-buds.

Leaves, after performing their functions for a certain time, wither and die. In doing so they frequently change colour, and hence arise the beautiful and varied tints of the autumnal foliage. Leaves which are articulated with the stem, as in the walnut and horse-chestnut, fall and leave a scar, while those which are continuous with it remain attached for some time after they have lost their vitality. Many of the non-coniferous trees of non-tropical climates have deciduous leaves, their duration not extending over more than a few months, while in trees of warm climates the leaves often remain for two or more years. In tropical countries, however, many trees lose their leaves in the dry season. The period of defoliation varies in different countries according to the nature of the climate. Trees which are called evergreen, as pines, live oak and citrus, frequently lose a certain number of leaves at intervals, sufficient being left, however, to preserve their green appearance. The fall is sometimes directly accompanied by the formation of a layer of tissue across the base of the leaf-stalk; the cells of this layer separate from one another; the leaf remains attached only by the fibres of the veins until it becomes detached by wind or frost. Before its fall the leaf may become dry owing to loss of water; certain of the materials of the leaf pass back into the stem and are available for further growth. The leaf scar is protected by a change of a corky nature (suberization) in the walls of the exposed cells. (A. B. R.; V. H. B.; H. E. Hd.)

LEAF-CUTTER BEE, the name applied to solitary bees of the genus *Megachile,* which line their nests with portions of leaves or flower petals. These they cut out with their mandibles and fit together one within the other, into thimble shaped cells, each one containing an egg and some pollen and honey paste. There are numerous species on both sides of the Atlantic, often utilizing rose leaves. (*See* Bee; Hymenoptera.)



A FEMALE LEAF INSECT.

LEAF INSECT, a flat green leaflike phasmid of the family Phylliidae; closely allied to stick insects (*see* Orthoptera). The resemblance to leaves involves form as well as colour; the legs and abdomen bear lateral expansions, and the large female tegmina, lying edge to edge on the abdomen, forcibly suggest in their veining the midrib and veins of a leaf. Females have reduced, functionless hind wings; males have small tegmina and ample non-leaflike and functional hind wings. Newly hatched young are reddish, but turn green after feeding on leaves a short time. Since leaf insects are phytophagous, or plant-eating, their cryptic colour and form are doubtless purely protective. Their eggs, like those of stick insects, are also probably protected from enemies by their similarity to various seeds. Leaf insects range from India and the Seychelles eastward to the Fiji Islands. Three genera and about 20 species are known. (T. H. Hl.)

LEAGUE OF NATIONS. The creation of the League of Nations by the incorporation of the Covenant in the Treaty of Versailles and the other Treaties of Peace in 1919, was perhaps the most remarkable of all the direct results of the World War. For the text of this document *see* p. 832. (*See* also Europe; Security.)

I. ORIGINS AND FOUNDATION

The League of Nations is not an abnormal achievement of human idealism—a great leap in advance beyond the achievements of the present age, outstripping the practical needs and requirements of the world. On the contrary, it is a practical method for achieving practical ends which are of importance to every citizen of every country. The demand for an international organization to prevent war has often been made in the last four centuries. Fundamentally, this demand is that the relations of States shall be subjected to something analogous to the system of law and order to which men have subjected themselves within the smaller units in which they live. It is one example of the truth of the maxim of the Roman lawyers—*ubi societas ibi lex.* But the purpose and the content of the rules for the conduct of their relations—the *lex*—necessarily depend on the nature of the units of the society and on the nature of their relations.

When Grotius wrote his famous work on the Law of Nations, he was writing of a Society of States whose intercourse was disturbed by the continual outbreak of war. Indeed, Europe had been convulsed by the Thirty Years' War for a whole generation prior to the publication of his work. Thus it was natural and indeed inevitable that the rules which Grotius produced for the guidance of the Society of States, as he knew it, amounted to little more than a code of laws for the better conduct of war. He did, indeed, sketch the outlines of a law for the pacific relations of States, and, in the following century and a half, his successors developed to some extent what he had begun. But only after the Napoleonic wars was the first serious attempt made to establish an organized system of conducting international affairs with a view to the avoidance of war.

To Alexander of Russia's scheme of a holy alliance we need only briefly allude. Though admirable in intention, it was rejected as "sublime nonsense and mysticism" by Castlereagh, and it eventually degenerated into a mere prop of despotism supported by the empires of Central Europe and France. But the work of Castlereagh himself is worthy of closer attention. He tried to substitute for the chaotic political methods of the past a system of diplomacy by conference, confining his efforts, however, to the Great Powers, though he desired to make their attitude to the smaller Powers one of "influence rather than authority." He provided his "Conference of Ambassadors" with an organized plan of work and with a secretariat, and he supplemented it by occasional conferences of the principal statesmen of the Concert. His conference of ambassadors continued to sit in one form or another for almost six years, and he held four or five of his conferences of principal statesmen.

The European Concert.—Later in the 19th century, Castlereagh's work bore fruit in the European Concert, which proved on many occasions to be an effective instrument for the joint settlement of Balkan problems and for the maintenance of European peace. But at the time, and for the purpose for which he had created it, Castlereagh's system of diplomacy by conference almost completely failed. It did so because it never had in it the seeds of life. Its members differed fundamentally on all the greater issues of international politics—while some of them were independent and autocratic sovereigns, subject to no control, and without the pressure behind them of a general democratic will for peace. It could truly be said that international society was not ready for such schemes.

Since the Napoleonic wars, however, forces have been at work

which have changed the economic condition of the world, knitting its many parts together, and making possible a permanent international political organization. The first of these forces is the revolution in communications in the course of the last century, which has brought the most remote parts of the world nearer to each other than neighbouring towns were 100 years ago. The second of the forces—a result of the first—is the remarkable raising of the standards of civilization through the co-operation of mankind in ever larger groups and in enterprises conceived and conducted on an ever greater scale. To-day, much of the world's commerce is international, and it has become evident that the interests of any one civilized country are indissolubly bound up with those of every other country, so much so that no sensible statesman will ever again base his policy on the principle that his country will gain by another country's loss.

Nor is this community of interests between peoples confined to their material well-being. It extends to every sort of scientific, political and moral activity in which men co-operate for the progress of their race. On the other hand, revolution in communications, rapidly destroying the factors of space and time, has rendered possible a development of warfare which has changed its whole character and rendered it universal and destructive in a sense never hitherto imagined. Indeed, it is not too much to assert that another World War would almost certainly throw mankind back into the dark ages. For these, among other reasons, some sort of international organization for the conduct of the relations of States was, in 1919, essential, if the human race was not to abandon the hopes and the ideals for which it had striven during centuries of progress.

ESSENTIAL PROVISIONS OF THE COVENANT

With the reasons for the failure of the earlier scheme of a century before, and with the nature of modern national States in our minds, we can perhaps now proceed to analyse the essential provisions of the Covenant.

It may be taken as commonly accepted that the purposes and objects of a league are the following: first, the maintenance of peace; second, and as a corollary to the first, the solution of international disputes by methods of law, if and when the necessary law exists; when it does not, their solution by political methods, by public debate, by impartial investigation and by conciliation on the basis of the accepted canons of right and justice; third, the promotion of international co-operation.

Membership.—Article 1 of the Covenant consists of the rules of membership of the League. These rules constitute a statement of the principles concerning membership that are essential if the members of the League are to have confidence that their mutual undertakings will be carried out.

Representation.—Articles 2, 3 and 4 of the Covenant stipulate for the creation of an Assembly consisting of three representatives of each member of the League, and for a smaller Council. The Covenant does not lay down the intervals at which these bodies shall meet; it merely stipulates that the Assembly shall meet at stated intervals and from time to time as occasion may require; and that the Council shall meet in the same way, and at least once a year.

Articles 6 and 7 provide for the necessary secretariat, and for the nomination of a secretary-general, who shall make all the appointments to the staff with the approval of the Council. These articles also provide that every position in the secretariat shall be open to women. So much for the institutional organisation of the League as it was established by the Covenant.

Disputes.—With regard to the agreements not to resort to war, the Covenant embodies almost everything that any responsible authority had in 1919 advocated as practicable. By Article 12 the members agree that if there should arise between them any dispute likely to lead to a rupture, they will submit the matter either to arbitration or to judicial settlement, or to inquiry by the Council, and they agree that they will in no case resort to arms until three months after award by the arbitrators or judicial decision, or a report has been made by the council. Article 12 thus not only embodies an agreement not to go to war without previous recourse to peaceful methods of settlement for disputes, but also lays down alternative procedures by which, through the agency of the League, settlement can be effected. These two articles, indeed, leave great elasticity, but their purpose was to secure the establishment of a permanent court of international law to which the parties should in the normal course take disputes of a legal nature.

There is, moreover, at the end of Article 14, a clause designed to increase the value of the Permanent Court. This clause provides that the court may give an advisory opinion upon any dispute or question referred to it by the Council or by the Assembly. Thus the Covenant included provisions which went far towards enabling all international disputes of a genuinely legal nature to be determined by legal methods.

With regard to the other alternative method provided for the settlement of disputes, which members agree to by Article 12, that is to say, inquiry by the Council, Article 15 lays down in considerable detail the procedure which is to be adopted. It provides that any party to a dispute can oblige the League to take cognizance of it by giving notice to the secretary-general. The parties undertake to communicate to the secretary-general as promptly as possible statements of their case, with all the relevant facts and papers. The Council is then given discretion to endeavour to effect a settlement of the dispute, and it is provided that if its efforts are successful, a statement shall be made public giving such an account of the dispute and of the settlement arrived at as the Council may deem proper. If the Council fails to settle the dispute, it is to make a report setting forth the merits of the dispute and the recommendations which the Council thinks would be suitable for a settlement, and this report is to be published. A report may be made either unanimously or by a majority vote, and any individual member of the League which is represented on the Council has a right to make its own public statement concerning the dispute.

There is a further provision in Article 15 to the effect that if such a report is agreed to by the Council unanimously, with the exception of the representatives of one or more of the parties to the dispute, the members of the League—including the parties—agree that they will not go to war with any party to the dispute who complies with the provisions of the report. This is a most important additional limitation of the right of members to resort to arms. Article 15 also allows an appeal from the Council to the Assembly, provided it is made within 14 days after the submission of the dispute to the Council. If a dispute is so referred to the Assembly, the Assembly is to deal with the matter in the same way as the Council, and if its report is agreed to by all the members of the League represented on the Council, and by a majority of the other members of the League, exclusive in each case of the representatives of the parties to the dispute, it has the same force as a unanimous report agreed to by the Council, *i.e.*, the members of the League must not go to war with any of the parties to the dispute which accept it.

These Articles, then, provide two, or rather three, methods by which disputes can be settled by peaceful means through the agency of the League. The first provides for legal verdicts by the Permanent Court, when such verdicts are possible and useful; the second for arbitration by some special tribunal agreed to by the parties to a dispute; and the third, for settlement by the political agency of the Council or the Assembly, in accordance with procedure based on the principles of full publicity and strict impartiality. The authors of the Covenant believed that publicity would of itself ensure impartiality; that it was not conceivable that a council, acting as the representative of the whole body of the League and in circumstances of utmost publicity, should conduct its inquiries into a dispute in any way not consistent with the strictest fairness to all the parties concerned.

Sanctions.—Articles 12 to 15 also make provision for the next essential of a league—united pressure by all the members against any of their number which disregards its undertakings. In providing for a public report by the Council on the merits of a dispute and for the publication of its recommendations as to a settlement, the Covenant lays down a method which, in prac-

tice, must exert the strongest moral pressure on any State which in defiance of Article 12 is disposed to go to war.

But the Covenant goes beyond this, and provides in Article 16 that, if any member of the League in contravention of its agreements resorts to arms, such a member is *ipso facto* "deemed to have committed an act of war against all other members of the League," and the other members are obliged to prevent all financial, commercial or personal intercourse between the nationals of the Covenant-breaking State and the nationals of any other State. It is difficult in the disturbed condition of the world after the World War to realise just what would be the effect of such a complete economic and financial boycott in times of normal peace. But it is not too much to say that no civilised State would, in 1914, have ventured to declare war had it been threatened by such a universal boycott as is stipulated by Article 16 of the Covenant.

It is sometimes held that in providing for such a universal boycott, the Covenant goes beyond the essentials of a league. It is sometimes even held that it goes beyond what is practicable and wise. But it must be remembered that Article 16 only comes into force if a State insists on going to war without waiting for any attempt at peaceful settlement, or where an agreed tribunal or a unanimous council have given a decision which has been accepted by the other party. In other cases ultimate resort to war is envisaged under the Covenant as legitimate, and the obligations of Article 16 would not come into force. Indeed against a genuinely recalcitrant member of the League, the Covenant goes even further. Article 16 lays down that in addition to the blockade which is an automatic obligation of all the members of the League, the council shall consider and shall *recommend* to the several Governments concerned, what military, naval or air forces members of the League shall severally contribute to the armed forces to be used to protect the Covenant. In other words, while leaving again the greatest possible elasticity, the Covenant foreshadows united military action, if it is necessary, against a Covenant-breaking State.

The provisions summarized above, relating to membership, machinery, arrangements for the peaceful settlement of disputes and sanctions, cover the essentials of any league designed to maintain peace.

FURTHER PROVISIONS OF THE COVENANT

How far, and in what respects, does the Covenant go beyond these essentials?

Guarantees.—First, there are the much-discussed provisions of Article 10. This Article has been very generally misunderstood. Its effect is to guarantee the members of the League *against external aggression* which would impair their territorial integrity or political independence; but this guarantee is only to be enforced as the Council acting unanimously shall agree. In practice the protection against sudden and unjust attacks provided by Articles 12–16 will probably be much more useful, and, if executed, all that is required. Article 10 is really only a rather clumsy assertion that territorial or political changes shall not be made by aggressive war. Such changes, if required, must be made under Article 19, which enables the Assembly to reconsider treaties which have become obsolete or dangerous to peace.

Armaments.—Secondly, it may perhaps be said that, by the provisions of Article 8 on the subject of armaments, the Covenant introduces something which is extraneous to an agreement to preserve the peace. But the history of the 20th century has demonstrated that if you prepare for war you will have war; that increase of armaments in one country provokes increase of armaments in other countries, and that if rivalry in preparation for war continues, within a certain time war will break out. The authors of the Covenant believed that unless rivalry in armaments could be prevented, any league of nations, however it be constituted, would fail. They therefore thought an agreement not to engage in unlimited competition in armaments absolutely necessary to the peace of the world. The Covenant deals with the matter in a way which is pre-eminently practical and sane. It recognises that the maintenance of peace requires the reduction of national armaments to the lowest point consistent with national safety, and directs the Council to formulate plans for such reduction for the consideration of the several members of the League. In other words, the members agree to co-operate in working out a general international plan embodying scales in accordance with which their armaments shall be limited or reduced. (*See* DISARMAMENT.)

Further, the members agree that they will, through the League, endeavour to take measures for abolishing the evil effects of the private manufacture of armaments and material of war, and they agree to exchange full information as to their armaments, their preparations for war and the condition of their industries which may be adapted to warlike purposes. Lastly, by Article 23 they agree that, subject to conventions to be arranged, the international traffic in arms, admittedly one of the minor contributing causes of war, shall be placed under the League's supervision.

These are only general principles. In themselves they would be of small value. But it was hoped by the authors of the Covenant that the action of the permanent machinery of the League would in time enable its members to give effect to the purpose of Article 8; and that thus great strides would be made towards the disarmament which everyone desires. In this respect, as in others, the authors of the Covenant were careful not to travel too fast; they laid foundations on which those who were to wield authority in the League could later build.

Secret Treaties.—By providing in Article 18 for the publication of all treaties, the Covenant may be regarded as again going beyond the essentials of a League of Nations. Yet no reasonable man can doubt that, under the diplomatic system which prevailed before 1914, secret treaties of alliance, directly by their mere existence and indirectly through the mistrust which they created, were one of the serious causes of international conflict.

Mandates.—Article 22 of the Covenant introduces a new principle into international affairs which is certainly extraneous to the central purpose of a league. The mandates system which it creates is a great experiment in the government by advanced peoples of backward territories and races. The main principles are simple. The Article is based on the proposition that backward peoples and territories are not for the future to be exploited for the exclusive benefit of those who govern them; that, on the contrary, their interests and well-being constitute a sacred trust of civilisation and that the way in which they are ruled is a matter of interest to the world at large. The Article therefore lays down that in the government of such territories the interests and progress of the inhabitants must be the guiding purpose of the administration. The methods by which their interests are to be protected and their development secured vary, of course, in every case with the nature of the territory and the character of the people concerned. But in every case the fundamental principles are the same; and to secure the observance of them the Covenant imposes on the mandatories a duty to make annual reports for submission to a permanent mandates commission; which is, in turn, to report to the Council. Here again the Covenant relies on publicity and public opinion as a guarantee that Article 22 will be faithfully carried into effect. (*See* MANDATE.)

International Co-operation.—With regard to international co-operation, the Covenant in Articles 23 and 24 goes a great deal further than might be considered essential. It provides in general terms for the establishment of a labour organisation (which in fact has been elaborated separately by another agreement; *see* INTERNATIONAL LABOUR ORGANIZATION); for the equitable treatment of commerce; for the development of freedom of transit; for League supervision of the traffic in arms; for League action in matters of public health and for the general supervision by the League of all official, and also, if necessary or useful, of unofficial, international offices established for international purposes of general interest. The general effect of these provisions is to make the League what it is clearly desirable that it should be—a central organism through which international activities of every sort can be co-ordinated and, when useful, assisted by the Council and the secretariat. There can be no doubt that the result of this must be to prevent waste of effort and promote efficiency in the conduct

of international business of every kind.

Amendments.—In the last place the Covenant, by Article 26, provides a method by which it can itself be amended; and this, it may be held, is not an essential of a league. It is true that the Covenant might have been regarded as an ordinary international treaty, valid, as most treaties are now made, for a certain fixed period, at the end of which it might have been renewed or changed by the ordinary methods. But it was precisely because the authors of the Covenant did not regard it as an ordinary international treaty that they provided a special means for amendment; and there can be no doubt that, morally, Article 26 is of great significance, and that practically it may prove to be of great constitutional value. It still leaves it difficult to secure amendment of the terms of the Covenant. It can only be done if all the members of the Council and the majority of the members of the Assembly are agreed. But the fact that amendment is definitely envisaged is in itself important.

General Observations.—Generally, it may be said that when the Covenant goes beyond the essential features which are necessary to any effective league to preserve peace, it does so with one of two objects in view. Either it is with the purpose of giving real life to the machinery which it establishes: of bringing the international forces actually at work into effective co-operation, in order that members of the League may be brought closer together, and the League itself be strengthened and have the vitality that comes from continuous and varied work; or else it is with the purpose of removing those deep-seated causes which public opinion has recognised as having led to war. It is not by chance that the Covenant contains more or less elaborate provisions concerning armaments, the traffic in arms, annexation by conquest, the avoidance of unfair economic competition, imperial rivalry in the exploitation of backward countries, secret treaties and alliances. It is because these things have led to war in the past that the Covenant seeks to deal with them in a practical and effective way, to the end that war may be rendered less probable in the future.

Elasticity is one of the chief "notes" of the whole machinery of the League. The Council and the Assembly are free to develop their own methods and systems as they choose, to appoint committees and commissions at their discretion, and to draw up codes of procedure which they can themselves change; they are thus able to give to the general principles of the Covenant the free development which experience may dictate.

PREPARATION AND ENFORCEMENT

The Covenant was prepared by a special commission of the Peace Conference of Paris, consisting of ten representatives of the Great Powers and nine representatives of the smaller Allied States. This commission, appointed on Jan. 20, 1919, was a body of remarkable authority. Presided over by President Wilson, its members included Colonel House, General Smuts (later Prime Minister of South Africa), Lord Robert (Viscount) Cecil, M. Léon Bourgeois (former Prime Minister of France), M. Venizelos (Prime Minister of Greece), M. Pessoa (later President of Brazil), M. Vesnitch (later Prime Minister of Yugoslavia), M. Scialoja (later Foreign Minister of Italy), M. Hymans (Foreign Minister of Belgium) and others.

The first draft prepared by the commission, based on proposals put forward jointly by the British and American delegations, was laid before the Peace Conference at a public meeting on Feb. 14; it was thereafter amended in the light of criticisms made by the Conference, by the press and by the neutral Powers at a special meeting held for the purpose of hearing their views; and the final draft was adopted by the Plenary Conference at another public meeting on April 28. It was, on the insistence of President Wilson, inserted as Part I. of the Peace Treaties made with Germany, Austria, Hungary and Bulgaria. By this device the Allied Powers were prevented from making peace with their enemies without being members of the League.

With the entry into force of the Treaty of Versailles on Jan. 10, 1920, the League of Nations came legally into existence. Prior to this date, preliminary organisation of its work had been carried on by the secretary-general under the authority of a committee of the Powers. When all the Allied Powers had ratified the Peace Treaties (except the U.S.A., Hejaz and Ecuador, who failed to do so) the members of the League numbered 29. To these were added during the course of 1920 the neutral Powers, 13 in all, who in accordance with Article I. of the Covenant acceded to it without reservation. By successive admissions of ex-enemy and other States, the number of members had by 1928 risen to 54.

See also DISARMAMENT; SANCTIONS AND GUARANTEES; TREATIES: VERSAILLES, TREATY OF, etc.

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II. TEXT OF THE COVENANT

(The following articles embody [in *italics*] amendments to Article 6 [in force from Aug. 13, 1924], Articles 12, 13 and 15 [in force from Sept. 26, 1924], and Article 4 [in force from July 29, 1926]. The numbering of the paragraphs is in accordance with the resolution adopted by the Assembly on Sept. 21, 1926.)

THE COVENANT OF THE LEAGUE OF NATIONS

THE HIGH CONTRACTING PARTIES,

In order to promote international co-operation and to achieve international peace and security

by the acceptance of obligations not to resort to war,

by the prescription of open, just and honourable relations between nations,

by the firm establishment of the understandings of international law as the actual rule of conduct among Governments,

and by the maintenance of justice and a scrupulous respect for all treaty obligations in the dealings of organised peoples with one another,

Agree to this Covenant of the League of Nations.

ARTICLE 1

1. The original Members of the League of Nations shall be those of the Signatories which are named in the Annex to this Covenant and also such of those other States named in the Annex as shall accede without reservation to this Covenant. Such accession shall be effected by a Declaration deposited with the Secretariat within two months of the coming into force of the Covenant. Notice thereof shall be sent to all other Members of the League.

2. Any fully self-governing State, Dominion or Colony not named in the Annex may become a Member of the League if its admission is agreed to by two-thirds of the Assembly, provided that it shall give effective guarantees of its sincere intention to observe its international obligations, and shall accept such regulations as may be prescribed by the League in regard to its military, naval and air forces and armaments.

3. Any Member of the League may, after two years' notice of its intention so to do, withdraw from the League, provided that all its international obligations and all its obligations under this Covenant shall have been fulfilled at the time of its withdrawal.

ARTICLE 2

The action of the League under this Covenant shall be effected through the instrumentality of an Assembly and of a Council, with a permanent Secretariat.

ARTICLE 3

1. The Assembly shall consist of Representatives of the Members of the League.

2. The Assembly shall meet at stated intervals and from time to time as occasion may require at the Seat of the League or at such other place as may be decided upon.

3. The Assembly may deal at its meetings with any matter within the sphere of action of the League or affecting the peace of the world.

4. At meetings of the Assembly, each Member of the League shall have one vote, and may have not more than three Representatives.

ARTICLE 4

1. The Council shall consist of Representatives of the Principal Allied and Associated Powers,[1] together with Representatives of four other Members of the League. These four Members of the League shall be selected by the Assembly from time to time in its discretion. Until the appointment of the Representatives of the four Members of the League first selected by the Assembly, Representatives of Belgium, Brazil, Spain and Greece, shall be Members of the Council.

2. With the approval of the majority of the Assembly, the Council may name additional Members of the League whose Representatives shall always be Members of the Council[2]; the Council with like approval may increase the number of Members of the League to be selected by the Assembly for representation on the Council.[3]

2 *bis*.[4] *The Assembly shall fix by a two-thirds majority the rules dealing with the election of the non-permanent Members of the Council, and particularly such regulations as relate to their term of office and the conditions of re-eligibility.*

3. The Council shall meet from time to time as occasion may require, and at least once a year, at the Seat of the League, or at such other place as may be decided upon.

4. The Council may deal at its meetings with any matter within the sphere of action of the League or affecting the peace of the world.

5. Any Member of the League not represented on the Council shall be invited to send a Representative to sit as a member at any meeting of the Council during the consideration of matters specially affecting the interests of that Member of the League.

6. At meetings of the Council, each Member of the League represented on the Council shall have one vote, and may have not more than one Representative.

ARTICLE 5

1. Except where otherwise expressly provided in this Covenant or by the terms of the present Treaty, decisions at any meeting of the Assembly or of the Council shall require the agreement of all the Members of the League represented at the meeting.

2. All matters of procedure at meetings of the Assembly or of the Council, including the appointment of Committees to investigate particular matters, shall be regulated by the Assembly or by the Council and may be decided by a majority of the Members of the League represented at the meeting.

3. The first meeting of the Assembly and the first meeting of the Council shall be summoned by the President of the United States of America.

ARTICLE 6

1. The permanent Secretariat shall be established at the Seat of the League. The Secretariat shall comprise a Secretary-General and such secretaries and staff as may be required.

2. The first Secretary-General shall be the person named in the Annex; thereafter the Secretary-General shall be appointed by the Council with the approval of the majority of the Assembly.

3. The secretaries and staff of the Secretariat shall be appointed by the Secretary-General with the approval of the Council.

4. The Secretary-General shall act in that capacity at all meetings of the Assembly and of the Council.

5[1]. *The expenses of the League shall be borne by the Members of the League in the proportion decided by the Assembly.*

ARTICLE 7

1. The Seat of the League is established at Geneva.

2. The Council may at any time decide that the Seat of the League shall be established elsewhere.

3. All positions under or in connection with the League, including the Secretariat, shall be open equally to men and women.

4. Representatives of the Members of the League and officials of the League when engaged on the business of the League shall enjoy diplomatic privileges and immunities.

5. The buildings and other property occupied by the League or its officials or by Representatives attending its meetings shall be inviolable.

ARTICLE 8

1. The Members of the League recognise that the maintenance of peace requires the reduction of national armaments to the lowest point consistent with national safety and the enforcement by common action of international obligations.

2. The Council, taking account of the geographical situation and circumstances of each State, shall formulate plans for such reduction for the consideration and action of the several Governments.

3. Such plans shall be subject to reconsideration and revision at least every ten years.

4. After these plans shall have been adopted by the several Governments, the limits of armaments therein fixed shall not be exceeded without the concurrence of the Council.

5. The Members of the League agree that the manufacture by private enterprise of munitions and implements of war is open to grave objections. The Council shall advise how the evil effects attendant upon such manufacture can be prevented, due regard being had to the necessities of those Members of the League which are not able to manufacture the munitions and implements of war necessary for their safety.

6. The Members of the League undertake to interchange full and frank information as to the scale of their armaments, their military, naval and air programmes and the condition of such of their industries as are adaptable to warlike purposes.

ARTICLE 9

A permanent Commission shall be constituted to advise the Council on the execution of the provisions of Articles 1 and 8 and on military, naval and air questions generally.

ARTICLE 10

The Members of the League undertake to respect and preserve as against external aggression the territorial integrity and existing political independence of all Members of the League. In case of any such aggression or in case of any threat or danger of such aggression the Council shall advise upon the means by which this obligation shall be fulfilled.

ARTICLE 11

1. Any war or threat of war, whether immediately affecting any of the Members of the League or not, is hereby declared a matter of concern to the whole League, and the League shall take any action that may be deemed wise and effectual to safeguard the peace of nations. In case any such emergency should arise the Secretary-General shall on the request of any Member of the League forthwith summon a meeting of the Council.

[1]The Principal Allied and Associated Powers are the following: The United States of America, the British Empire, France, Italy and Japan (*see* Preamble of the Treaty of Peace with Germany).

[2]In virtue of this paragraph of the Covenant, Germany was nominated as a permanent Member of the Council on September 8th, 1926.

[3]The number of Members of the Council selected by the Assembly was increased to six instead of four by virtue of a resolution adopted by the Third Assembly on Sept. 25, 1922. By a resolution of the Assembly on Sept. 8, 1926, the number of members of the Council selected by the Assembly was increased to nine.

[4]This Amendment came into force on July 29, 1926, in accordance with Article 26 of the Covenant.

[1]This Amendment came into force on August 13, 1924, in accordance with Article 26 of the Covenant and replaces the following paragraph:

"5. The expenses of the Secretariat shall be borne by the Members of the League in accordance with the apportionment of the expenses of the International Bureau of the Universal Postal Union."

2. It is also declared to be the friendly right of each Member of the League to bring to the attention of the Assembly or of the Council any circumstance whatever affecting international relations which threatens to disturb international peace or the good understanding between nations upon which peace depends.

Article 12[1]

1. The Members of the League agree that if there should arise between them any dispute likely to lead to a rupture they will submit the matter either to arbitration *or judicial settlement* or to enquiry by the Council, and they agree in no case to resort to war until three months after the award by the arbitrators *or the judicial decision* or the report by the Council.

2. In any case under this Article the award of the arbitrators *or the judicial decision* shall be made within a reasonable time, and the report of the Council shall be made within six months after the submission of the dispute.

Article 13

1. The Members of the League agree that whenever any dispute shall arise between them which they recognize to be suitable for submission to arbitration or *judicial settlement,* and which cannot be satisfactorily settled by diplomacy, they will submit the whole subject-matter to arbitration *or judicial settlement.*

2. Disputes as to the interpretation of a treaty, as to any question of international law, as to the existence of any fact which, if established would constitute a breach of any international obligation, or as to the extent and nature of the reparation to be made for any such breach, are declared to be among those which are generally suitable for submission to arbitration *or judicial settlement.*

3. *For the consideration of any such dispute, the court to which the case is referred shall be the Permanent Court of International Justice, established in accordance with Article 14, or any tribunal agreed on by the parties to the dispute or stipulated in any convention existing between them.*

4. The Members of the League agree that they will carry out in full good faith any award *or decision* that may be rendered, and that they will not resort to war against a Member of the League which complies therewith. In the event of any failure to carry out such an award *or decision,* the Council shall propose what steps should be taken to give effect thereto.

Article 14

The Council shall formulate and submit to the Members of the League for adoption plans for the establishment of a Permanent Court of International Justice. The Court shall be competent to hear and determine any dispute of an international character which the parties thereto submit to it. The Court may also give an advisory opinion upon any dispute or question referred to it by the Council or by the Assembly.

Article 15

1. If there should arise between Members of the League any dispute likely to lead to a rupture, which is not submitted to arbitration *or judicial settlement* in accordance with Article 13, the Members of the League agree that they will submit the matter to the Council. Any party to the dispute may effect such submission by giving notice of the existence of the dispute to the Secretary-General, who will make all necessary arrangements for a full investigation and consideration thereof.

2. For this purpose the parties to the dispute will communicate to the Secretary-General, as promptly as possible, statements of their case with all the relevant facts and papers, and the Council may forthwith direct the publication thereof.

3. The Council shall endeavour to effect a settlement of the dispute, and if such efforts are successful, a statement shall be made public giving such facts and explanations regarding the dispute and the terms of settlement thereof as the Council may deem appropriate.

4. If the dispute is not thus settled, the Council either unanimously or by a majority vote shall make and publish a report containing a statement of the facts of the dispute and the recommendations which are deemed just and proper in regard thereto.

5. Any Member of the League represented on the Council may make public a statement of the facts of the dispute and of its conclusions regarding the same.

6. If a report by the Council is unanimously agreed to by the members thereof other than the Representatives of one or more of the parties to the dispute, the Members of the League agree that they will not go to war with any party to the dispute which complies with the recommendations of the report.

7. If the Council fails to reach a report which is unanimously agreed to by the members thereof, other than the Representatives of one or more of the parties to the dispute, the Members of the League reserve to themselves the right to take such action as they shall consider necessary for the maintenance of right and justice.

8. If the dispute between the parties is claimed by one of them, and is found by the Council, to arise out of a matter which by international law is solely within the domestic jurisdiction of that party, the Council shall so report, and shall make no recommendation as to its settlement.

9. The Council may in any case under this Article refer the dispute to the Assembly. The dispute shall be so referred at the request of either party to the dispute provided that such request be made within fourteen days after the submission of the dispute to the Council.

10. In any case referred to the Assembly, all the provisions of this Article and of Article 12 relating to the action and powers of the Council shall apply to the action and powers of the Assembly, provided that a report made by the Assembly, if concurred in by the Representatives of those Members of the League represented on the Council and of a majority of the other Members of the League, exclusive in each case of the Representatives of the parties to the dispute, shall have the same force as a report by the Council concurred in by all the members thereof other than the Representatives of one or more of the parties to the dispute.

Article 16

1.[1] Should any Member of the League resort to war in disregard of its covenants under Articles 12, 13 or 15, it shall *ipso facto* be deemed to have committed an act of war against all other Members of the League, which hereby undertake imme-

[1]The Amendments printed in italics in Articles 12, 13 (1) (2) (3) (4) 15 (1), came into force on September 26, 1924, in accordance with Article 26 of the Covenant. The original texts were identical with these now in force except for the absence of the words in italics.

[1]The Second Assembly, in October 1921, proposed that Article 16, paragraph I., be amended to read:

"Should any Member of the League resort to war in disregard of its Covenants under Articles 12, 13, or 15, it shall *ipso facto* be deemed to have committed an act of war against all other Members of the League, which hereby undertake immediately to subject it to the severance of all trade or financial relations, the prohibition of all intercourse between persons residing in their territory and persons residing in the territory of the Covenant-breaking State, and the prevention of all financial, commercial or personal intercourse between persons residing in the territory of the Covenant-breaking State and persons residing in the territory of any other State, whether a Member of the League or not."

On Sept. 27, 1924 the Fifth Assembly expressed the view that "it is no longer opportune for further Members of the League to ratify the said amendment" to Article 16, paragraph I., and recommended "in place thereof" the following:

"The latter part of the first paragraph of Article 16 of the Covenant shall read as follows: "Which hereby undertake immediately to subject it to the severance of all trade or financial relations and to prohibit all intercourse at least between persons resident within their territories and persons resident within the territory of the Covenant-breaking State, and if they deem it expedient, also between their nationals and the nationals of the Covenant-breaking State, and to prevent all financial, commercial or personal intercourse at least between persons resident within the territory of that State and persons resident within the territory of any other State, whether a Member of the League or not, and if they deem it expedient, also between the nationals of that State and the nationals of any other State, whether a member of the League or not."

diately to subject it to the severance of all trade or financial relations, the prohibition of all intercourse between their nationals and the nationals of the Covenant-breaking State, and the prevention of all financial, commercial or personal intercourse between the nationals of the covenant-breaking State and the nationals of any other State, whether a Member of the League or not.

2.[1] It shall be the duty of the Council in such case to recommend to the several Governments concerned what effective military, naval or air force the Members of the League shall severally contribute to the armed forces to be used to protect the covenants of the League.

3. The Members of the League agree, further, that they will mutually support one another in the financial and economic measures which are taken under this Article, in order to minimise the loss and inconvenience resulting from the above measures, and that they will mutually support one another in resisting any special measures aimed at one of their number by the Covenant-breaking State, and that they will take the necessary steps to afford passage through their territory to the forces of any of the Members of the League which are co-operating to protect the covenants of the League.

4. Any Member of the League which has violated any covenant of the League may be declared to be no longer a Member of the League by a vote of the Council concurred in by the Representatives of all the other Members of the League represented thereon.

Article 17

1. In the event of a dispute between a Member of the League and a State which is not a Member of the League, or between States not Members of the League, the State or States not Members of the League shall be invited to accept the obligations of membership in the League for the purposes of such dispute, upon such conditions as the Council may deem just. If such invitation is accepted, the provisions of Articles 12 to 16 inclusive shall be applied with such modifications as may be deemed necessary by the Council.

2. Upon such invitation being given the Council shall immediately institute an inquiry into the circumstances of the dispute and recommend such action as may seem best and most effectual in the circumstances.

3. If a State so invited shall refuse to accept the obligations of membership in the League for the purposes of such dispute, and shall resort to war against a Member of the League, the provisions of Article 16 shall be applicable as against the State taking such action.

4. If both parties to the dispute when so invited refuse to accept the obligations of membership in the League for the purposes of such dispute, the Council may take such measures and make such recommendations as will prevent hostilities and will result in the settlement of the dispute.

[1]The Second Assembly, Oct. 4, 1921, also proposed to insert the three following paragraphs between paragraphs 1 and 2 of the original text;

"It is for the Council to give an opinion whether or not a breach of the Covenant has taken place. In deliberations on this question in the Council the votes of Members of the League alleged to have resorted to war, and of Members against whom such action was directed, shall not be counted.

"The Council will notify to all Members of the League the date which it recommends for the application of the economic pressure under this Article.

"Nevertheless, the Council may, in the case of particular Members, postpone the coming into force of any of these measures for a specified period where it is satisfied that such a postponement will facilitate the attainment of the object of the measures referred to in the preceding paragraph, or that it is necessary in order to minimise the loss and inconvenience which will be caused to such Members."

The Sixth Assembly, Sept. 21, 1925, proposed that the following amendment should be made to paragraph 2 of the original text (which becomes paragraph 5 of the text as amended in 1921);

"The words 'in such case' in the second paragraph of the original text of Article 16 of the Covenant shall be deleted."

None of these proposed amendments had come into force by Nov. 1928.

Article 18

Every treaty or international engagement entered into hereafter by any Member of the League shall be forthwith registered with the Secretariat and shall as soon as possible be published by it. No such treaty or international engagement shall be binding until so registered.

Article 19

The Assembly may from time to time advise the reconsideration by Members of the League of treaties which have become inapplicable and the consideration of international conditions whose continuance might endanger the peace of the world.

Article 20

1. The Members of the League severally agree that this Covenant is accepted as abrogating all obligations or understandings *inter se* which are inconsistent with the terms thereof, and solemnly undertake that they will not hereafter enter into any engagements inconsistent with the terms thereof.

2. In case any Member of the League shall, before becoming a Member of the League, have undertaken any obligations inconsistent with the terms of this Covenant, it shall be the duty of such Member to take immediate steps to procure its release from such obligations.

Article 21

Nothing in this Covenant shall be deemed to affect the validity of international engagements, such as treaties of arbitration or regional understandings like the Monroe doctrine, for securing the maintenance of peace.

Article 22

1. To those colonies and territories which as a consequence of the late war have ceased to be under the sovereignty of the States which formerly governed them and which are inhabited by peoples not yet able to stand by themselves under the strenuous conditions of the modern world, there should be applied the principle that the well-being and development of such peoples form a sacred trust of civilization and that securities for the performance of this trust should be embodied in this Covenant.

2. The best method of giving practical effect to this principle is that the tutelage of such peoples should be entrusted to advanced nations who by reason of their resources, their experience or their geographical position can best undertake this responsibility, and who are willing to accept it, and that this tutelage should be exercised by them as Mandatories on behalf of the League.

3. The character of the mandate must differ according to the stage of the development of the people, the geographical situation of the territory, its economic conditions and other similar circumstances.

4. Certain communities formerly belonging to the Turkish Empire have reached a stage of development where their existence as independent nations can be provisionally recognised subject to the rendering of administrative advice and assistance by a Mandatory until such time as they are able to stand alone. The wishes of these communities must be a principal consideration in the selection of the Mandatory.

5. Other peoples, especially those of Central Africa, are at such a stage that the Mandatory must be responsible for the administration of the territory under conditions which will guarantee freedom of conscience and religion, subject only to the maintenance of public order and morals, the prohibition of abuses such as the slave trade, the arms traffic and the liquor traffic, and the prevention of the establishment of fortifications or military and naval bases and of military training of the natives for other than police purposes and the defence of territory, and will also secure equal opportunities for the trade and commerce of other Members of the League.

6. There are territories, such as South-West Africa and certain of the South Pacific Islands, which, owing to the sparseness of their population, or their small size, or their remoteness from the

centres of civilization, or their geographical contiguity to the territory of the Mandatory, and other circumstances, can be best administered under the laws of the Mandatory as integral portions of its territory, subject to the safeguards above mentioned in the interests of the indigenous population.

7. In every case of mandate, the Mandatory shall render to the Council an annual report in reference to the territory committed to its charge.

8. The degree of authority, control, or administration to be exercised by the Mandatory shall, if not previously agreed upon by the Members of the League, be explicitly defined in each case by the Council.

9. A permanent Commission shall be constituted to receive and examine the annual reports of the Mandatories and to advise the Council on all matters relating to the observance of the mandates.

ARTICLE 23

Subject to and in accordance with the provisions of international conventions existing or hereafter to be agreed upon, the Members of the League:

(*a*) will endeavour to secure and maintain fair and humane conditions of labour for men, women and children, both in their own countries and in all countries to which their commercial industrial relations extend, and for that purpose will establish and maintain the necessary international organizations;

(*b*) undertake to secure just treatment of the native inhabitants of territories under their control;

(*c*) will entrust the League with the general supervision over the execution of agreements with regard to the traffic in women and children, and the traffic in opium and other dangerous drugs;

(*d*) will entrust the League with the general supervision of the trade in arms and ammunition with the countries in which the control of this traffic is necessary in the common interest;

(*e*) will make provision to secure and maintain freedom of communications and of transit and equitable treatment for the commerce of all Members of the League. In this connection, the special necessities of the regions devastated during the war of 1914–1918 shall be borne in mind;

(*f*) will endeavour to take steps in matters of international concern for the prevention and control of disease.

ARTICLE 24

1. There shall be placed under the direction of the League all international bureaux already established by general treaties if the parties to such treaties consent. All such international bureaux and all commissions for the regulation of matters of international interest hereafter constituted shall be placed under the direction of the League.

2. In all matters of international interest which are regulated by general conventions but which are not placed under the control of international bureaux or commissions, the Secretariat of the League shall, subject to the consent of the Council and if desired by the parties, collect and distribute all relevant information and shall render any other assistance which may be necessary or desirable.

3. The Council may include as part of the expenses of the Secretariat the expenses of any bureau or commission which is placed under the direction of the League.

ARTICLE 25

The Members of the League agree to encourage and promote the establishment and co-operation of duly authorized voluntary national Red Cross organizations having as purposes the improvement of health, the prevention of disease and the mitigation of suffering throughout the world.

ARTICLE 26

1. Amendments to this Covenant will take effect when ratified by the Members of the League whose Representatives compose the Council and by a majority of the Members of the League whose Representatives compose the Assembly.

2. No such amendments shall bind any Member of the League which signifies its dissent therefrom, but in that case it shall cease to be a Member of the League.[1]

III. THE WORK OF THE FIRST YEARS

In order to understand what has determined the character, scope and varying efficacy of the League during the first eight years of its existence, it is necessary to bear in mind the general conditions under which it has been working. It is only by realising these that we shall understand why some of the main international problems have been dealt with by the League and some outside it; and why its success in those which it has undertaken has varied from case to case, according to the particular circumstance and nature of the questions under consideration.

The first of the determining political conditions is that the process of settling the terms of peace, of resolving the immediate problems left by the World War, was only begun and not ended by the treaties of peace signed in 1919. For years afterwards peace was still being negotiated in every capital in Europe. One of the treaties, indeed, the Treaty of Sèvres, was never ratified. Renewed war between Greece and Turkey, rather the continuation, after an interval, of one section of the World War than the outbreak of a new one, was to precede the new Treaty of Lausanne of 1923. But even those treaties which were duly ratified left unsettled questions of the first political importance, in the forefront "reparation" and in the second rank a host of secondary, but still difficult and important, problems, which will require prolonged consideration before a satisfactory settlement can be made.

In the second place, the scope of the League's work has been limited by the fact that, while in essence a world organisation, it has not in the first eight years of its existence received the adhesion of all countries.

These conditions derive additional importance from the fundamental character of the League as an organisation. The League is not a super-State with either the right or the authority to impose its will on the sovereign States which compose it. It is essentially an organ for securing agreement between them, and its power of action is at any time limited by the extent of possible agreement.

Except in special cases, of which the most important is that members undertake not to go to war to enforce a claim rejected by all the members on the Council except the disputants themselves, signature of the Covenant does not involve an obligation on any State to accept a decision of the League without its own consent.

For the great bulk of its work, therefore, the League requires unanimity. It can persuade, it can elicit a collective world opinion, both private and official, which it may use to aid its persuasion, but, except before the imminent threat of war, it cannot compel; and even in this case unanimity of the non-disputant members of the Council is required. It follows, therefore, that the power of the League varies with the policies and characters of the countries which compose it and of their relations between each other. How far this is from involving impotence, how great is the difference between the policy a country would pursue if left alone from that

[1]The Second Assembly, Oct. 3, 1921, proposed that Article 26 should be amended as follows:—

"Amendments to the present Covenant the text of which shall have been voted by the Assembly on a three-fourths majority, in which there shall be included the votes of all the Members of the Council represented at the meeting, will take effect when ratified by the Members of the League, whose Representatives composed the Council when the vote was taken and by the majority of those whose Representatives form the Assembly.

"If the required number of ratifications shall not have been obtained within twenty-two months after the vote of the Assembly, the proposed amendment shall remain without effect.

"The Secretary-General shall inform the Members of the taking effect of an amendment.

"Any Member of the League which has not at that time ratified the amendment is free to notify the Secretary-General within a year of its refusal to accept it, but in that case it shall cease to be a Member of the League."

This amendment had not come into force by July 1928.

which it can be induced to follow under the persuasion of collective opinion, the following account will show. But however wide the range within which such persuasion can be effective, there is at any given moment a limit beyond which a country cannot be moved. And beyond such limits the League is, for the great bulk of its work, impotent. In dealing with its various problems the League has to deal with exactly the same forces and differences of policy and interest as if they were handled by other methods of negotiation; and the organs of the League, the Assembly and the Council comprise, indeed consist of, Representatives of interested Governments themselves. It follows that any serious divergencies of policy between members of the League, and especially its more important members, will be likely to enfeeble the League for its general work. And it is obvious that the obstinate differences on reparation and other questions touching Germany and on Near Eastern affairs, affecting as they did for some years the general relations of some of the principal countries on the Council, necessarily limited the League's general power and progress.

These limiting factors have diminished in importance as the years have passed. Little by little, the specifically War problems have found a settlement, the transitional instruments of negotiation, supreme councils or allied conferences or the Conference of Ambassadors (*see* SAN REMO, CONFERENCE OF; SPA, CONFERENCE OF; PARIS, CONFERENCE OF; LONDON, CONFERENCE OF; CANNES, CONFERENCE OF; GENOA, CONFERENCE OF; LAUSANNE, CONFERENCE OF; and LOCARNO, PACT OF; also AMBASSADORS, CONFERENCE OF; SUPREME COUNCIL) have ended or retired to a secondary place; and the permanent organisation has come into the foreground. The number of member States has risen from the 42 of the first Assembly to 54, in 1928, and the new members include Germany. The continued absence of the United States and Russia; the notice of withdrawal, now happily cancelled, of Spain; the partial absence of the Argentine and the retirement of Brazil has meant that the League has been far from universal in its character. For this and other reasons, some of the main problems of world interest, China, naval competition, recent troubles in Albania, have been the subject of negotiations in which it has taken no part. In the problems which it has handled, the League still shows notable fluctuations in its power of effective action, corresponding with changes in the relations between its principal members. On the whole, however, and on any reasonably long period of survey, the increase in its authority is incontestable.

ORGANISATION OF THE LEAGUE

The principal organs of the League are the Assembly, meeting usually once a year and representing all States; the Council meeting usually every third month and consisting, in 1935, of four permanent members (Great Britain, France, Italy and the U.S.S.R.)—and ten non-permanent members elected by the Assembly; the permanent secretariat; a whole series of special organisations and committees (for finance and economics, transit, health, armaments, mandates, intellectual co-operation, opium, traffic in women, etc.); and, working independently of the Council and Assembly, the Permanent Court of International Justice (*q.v.*) and the International Labour Organization (*q.v.*).

The respective spheres of competence of the Assembly and the Council are not exactly defined in the Covenant. Each may deal with any matter within the League's competence or affecting the peace of the world. In practice, the size, composition and times of meeting of the two bodies determine their functions. The Assembly affords an opportunity for an annual review, by the responsible representatives of the Governments of the world, of the international situation. It largely creates the atmosphere and determines the general lines of policy for the ensuing year, and it is a convenient instrument for the concluding stages in the negotiation of conventions and general agreements of world interest. The Council, on the other hand, has become the League's executive organ. It deals with the host of special questions that arise for settlement throughout the year, and directs the multifarious permanent tasks of the League and the special organisations through which they are carried on.

These special organisations are in some respects the most interesting feature of the League as an administrative machine. They consist for the most part of permanent committees, composed of specialists and experts drawn either from the departments of the national Governments or from private institutions. These experts live and work normally in their own countries, and have the special knowledge of national forces and conditions, and possess the national influence, which no purely international officials can retain. But they meet periodically as members of a regular organisation. By this system, which follows closely the principles of the inter-Allied central organisation built up in the later years of the World War, the League obtains an executive instrument more expert, more effective and more economical than could possibly be obtained by the unaided service of its own whole-time officers. It binds together the national administrations of the world and forms them into an instrument of international work. More than this, it permeates with its own spirit those who in their own countries are carrying on national work which reacts on the interests of other countries.

In these eight years thousands of such persons, no small proportion of those who throughout the world are forming and executing the policies which determine international relations, have learnt, in regular co-operation with those of corresponding position in other countries, the international point of view. It is thus a system which, apart from its direct utility, effects a peaceful penetration of the League point of view into national systems. In this elaborate and elastic system the permanent secretariat is the uniting element—the "coupling." Its importance results from the immense range and variety of the organs which it serves, and from the fact that these organs consist of councils, commissions or committees meeting periodically, not in permanent session, and consisting of persons whose main work is elsewhere, in their respective countries.

POLITICAL DISPUTES

It is the task of the League to prevent political disputes causing war. It is most successful where it has been able by patient work in improving international relations, to remove the causes of disputes before they arise. In this wider sense most of the work of the League has a political aspect. In its mandates and minorities work, for example, the League is continually trying to establish conditions which will diminish the risks of future conflict; and in such a piece of international co-operation as the reconstruction of Hungary, the existence of political differences constituted one of the main obstacles to success, and their settlement one of its main rewards. The definite political disputes threatening to disturb international relations and, in some cases, the peace of the world, which have been submitted to the League of Nations are treated in this work under the individual headings, but something must be said here to illustrate the methods by which the League discharges its primary responsibility of preserving the peace.

The first of these disputes (1920–21) was between Sweden and Finland over the *Åland Islands* and resulted in a notable success. The second (1920–22) about *Vilna* (*see* VILNIUS) was definitely a failure. The third issue, *Upper Silesia* in 1921 resulted from the incompleteness of the provision of the Treaty of Versailles. The settlement, of which details are given in the article SILESIA, has been considerably criticized both in Germany and Great Britain. It must be remembered, however, that the League had no authority to fix an ideal frontier line, but only to apply the treaty provisions. At least a decision was reached, a long-standing cause of dissension between the Allies was removed, work was resumed and rioting ceased. In a further case, an invasion of *Albania* (*q.v.*) in 1921 by Yugo-Slav troops was successfully arrested. The *Memel* (*q.v.*) case (1923) is another instance of a peace treaty question handed over to the League because the Allies, acting through their normal machineries, had been unable to settle it. The Council, after enquiry through an impartial Commission, secured the acceptance of a convention by both parties.

The Corfu Dispute.—A much more important dispute, affecting a principal Power, was brought before the League in the autumn of 1923. An Italian general and his staff, who were

engaged as representatives of the Conference of Ambassadors in fixing the frontier between Albania and Greece, were murdered on Greek soil, by persons unknown, on Aug. 27, 1923. The Italian Government demanded reparation and apologies of the Greek Government, who accepted some of the conditions and refused others. The Italian naval authorities thereupon occupied the island of Corfu, loss of life occurring in the operation (*see* CORFU). Greece appealed to the League, but also stated her willingness to accept any decision of the Conference of Ambassadors. The position of the Conference, as a body whose decision both parties agreed to accept and as itself directly interested, made the formal competence of the Council doubtful. The Council therefore confined itself to discussing detailed suggestions for a settlement and forwarding them to the Conference of Ambassadors. The Conference adopted most of these suggestions, but with an important modification on the question of reparation. With regard to this it dispatched an Allied committee of inquiry and, on receipt of its report, which it withheld from publication, it awarded Italy the full amount of reparation which she had demanded. Corfu was then evacuated. The immediate question thus settled, the Council referred to a committee of jurists the question of legal principle which the case had raised with regard to the competence of the Council, the right of coercive action and the responsibility of a State for political crimes committed on its territory. Unanimous replies were received to these questions and were transmitted by the Council to the Assembly; and the legal position was thus more clearly established as regards similar incidents in the future.

The case was an extremely intricate one, and there has been much difference of opinion as to the action of the League. The League facilitated a quick settlement, the early evacuation of Corfu and the avoidance of hostilities; and the actual proposals which it made as to the details of settlement are not open to adverse criticism. But it did not secure the adoption of all these proposals. The action of the Conference of Ambassadors, in giving its award while withholding the report on which it purported to base it, would have been impossible if the League had been in full control of the case. The factors which made effective League action difficult were partly the special and dual position of the Conference of Ambassadors in the question and partly, it must be recognised, the fact that one of the parties involved was a Great Power and that the general relations of the Powers were at the moment complicated by other questions of policy. The degree and limits of the League's action accurately reflect the extent to which it was possible to make a collective world opinion effective under the conditions created at the moment by the relations between the governments, and especially the Great Powers on the Council. That this collective opinion had an important influence on the settlement is indisputable, and the expression of this opinion, made possible by the meeting of the Assembly, was indeed a revelation to all who witnessed it of what is bound to be henceforth a new force of the first importance in the political life of the world.

Mosul.—The Conference of Lausanne in 1923 found that its most difficult question in the settlement of the terms of peace with Turkey was the frontier line between Turkey and the British "mandate" territory of 'Iraq. Agreement having failed, the treaty provided that Turkey and Great Britain should attempt to reach agreement by friendly negotiations, and that, if these did not succeed within nine months, the question should be referred to the Council of the League. The negotiations failed, and in Aug. 1924 the question was accordingly brought before the Council, which appointed a commission of three (a Swede, a Hungarian and a Belgian) to investigate on the spot. The commission worked for eight months and then presented a report in which, after reviewing exhaustively all the factors of the case, they recommended unanimously that the best solution would be for the disputed district, including the town of Mosul, to be included in 'Iraq if the British mandate could be continued for 25 years, but that, if this were impossible, it would be better to assign it to Turkey. When the Council had this report before them in Sept. 1925, they were faced with the contention of Turkey that the Council's task under the Treaty of Lausanne was one of mediation, not arbitration, and that no decision could be binding unless Turkey herself had assented to it. The Council asked an advisory opinion of the Permanent Court of International Justice, which replied that the Treaty had given arbitral powers and that the consent of the two parties was not required, though unanimity of the other members was necessary. With this opinion, the Council in Dec. decided, by a unanimous vote of all members other than the disputants, that the territory should be assigned to 'Iraq, subject to the prolongation of the British mandate and the assurance of full protection for the Kurdish population. The Turks refused to accept the Court's opinion that an arbitral decision was binding, and withdrew from the Council at which the above decision was taken. The British Government undertook to ask for authority to accept the prolongation of the mandate for 25 years or until such earlier date as 'Iraq could be accepted as a member of the League, and announced their intention to attempt the renewal of negotiations with Turkey.

During this difficult period the Council took various measures to assist in the maintenance of the *status quo* without hostilities and to investigate complaints as to Turkish deportations of Christians and violations of the frontier. The mission of Gen. Laidoner on behalf of the League for this latter purpose is of special interest as being the first of its kind. (For the general settlement *see* MOSUL.)

The Graeco-Bulgar Incident.—On Oct. 19, 1925 shots were exchanged between two Greek and Bulgarian sentries occupying frontier posts separated by 40 yards on the frontiers northeast of Salonika. On Oct. 22, Greek troops, under orders from Athens, entered Bulgarian territory through the Struma valley and penetrated about 8 km. on a front of about 32 kilometres. Bulgaria telegraphed an appeal to Geneva asking the secretary-general to convene a special meeting of the Council under the powers conferred on him by Article 11 of the Covenant. This appeal arrived on Friday morning, Oct. 23. The secretary-general at once decided to convene the Council, and after telephonic conversation with M. Briand, the president for the time being, fixed it at the most quickly accessible place, Paris, and at the earliest date physically possible for members requiring to come from Stockholm, London and Rome, namely, Monday, Oct. 26. At the same time it was arranged that a telegram should be sent to both Governments in M. Briand's name, as president, calling on both sides to abstain from all hostilities. This telegram was also dispatched the same Friday morning. Preparations had been made for a Greek attack on the Bulgarian town of Petrich with a force of 1,000 men and three batteries at 6 A.M. on Saturday, Oct. 24; and the Bulgarian Commander had orders to resist. Briand's telegram, arriving in the two capitals on Friday, was immediately effective. Orders arrived from Athens just in time to stop the Greek attack on Petrich.

On Monday, the 26th, the Council met in Paris. The situation of immediate danger, viz., the presence of Greek troops on Bulgarian territory, was at once dealt with. Evacuation was demanded within a time-limit of 60 hours, and an assurance that the necessary orders had been given was asked within a time-limit of 24 hours. The same day orders were telegraphed to British, French and Italian military attachés to proceed from Belgrade and Athens to supervise the evacuation. The attachés received their instructions on Tuesday, proceeded immediately by special trains, and arrived on the scene of action about 2 P.M. on Wednesday, Oct. 28. There followed one of the most dramatic and significant scenes in history. The attachés at once summoned the two commanders and gave them detailed instructions in the name of the League of Nations as to the evacuation, prescribing the time at which the evacuating troops should move and the interval which was to elapse before Bulgarian troops might enter the abandoned territory. Within about 11 hours of the officers' arrival, and eight hours before the expiration of the time limit, the last Greek soldier left Bulgarian soil.

The Council proceeded to deal with the question of reparation and of safeguards against the recurrence of similar incidents. They appointed a commission, under the chairmanship of Sir Horace Rumbold, and including French and Italian generals and Dutch and Swedish civilian members. The commission reported

to the Council at Geneva at its meeting in the first week in December. Its findings (*see* BULGARIA) were approved by the Council and accepted by the two Governments. The incident was closed and future security in the Balkans substantially increased.

The League in this case acted with promptitude and efficacy. The spirit expressed and developed at the recent Locarno conference, the relative weakness of the countries directly concerned and the fact that this was the kind of problem with which the League was designed to deal, and was not complicated by the difficulties of incompletely defined treaty provisions, all doubtless contributed to this result.

These cases have been chosen as best illustrating the character of the political problems with which the League was faced during the years 1920–5, and its method of working. Other disputes were brought before the League: between Hungary and Rumania, about the compensation of certain Hungarian nationals expropriated in Transylvania (an intricate question which has appeared on the Council's agenda for over two years without so far any settlement being reached); between Hungary and Austria about the Burgenland; between Hungary and Czechoslovakia about a frontier delimitation; between Finland and Russia about Eastern Karelia; a frontier dispute (Jaworzina) between Poland and Czechoslovakia, and a dispute between France and Great Britain with regard to the nationality of persons born of British parents but resident at Tunis.

Two Comments.—In reviewing the League's action in these political disputes as a whole, two comments at once suggest themselves:—

1. The extent of the League's power to act effectively necessarily varies with the general international relations of the governments in and outside the League. After Locarno the Council dealt promptly and decisively with the Graeco-Bulgar trouble. With the Vilna incident, which occurred when the relations between the principal Powers were difficult and complicated by many divergencies of policy on other questions, the action is slow, indecisive and unsuccessful.

2. The League, whose normal task is to preserve peace on the basis of treaties fully concluded, is placed in a difficult position when it is asked to complete the work of settling terms of peace. In the Upper Silesia, Memel, Vilna and 'Iraq cases this was a complicating factor. In such cases the treaties are either incomplete or ambiguous; they may be complicated by *obiter dicta* in the course of the negotiations; the League is held responsible by public opinion not only for a decision within the limits of its mandate but for the character of the mandate which it has had no power to vary; and by the very fact that it is continuing the work of making terms imposed by a victor its impartiality is compromised.

DISARMAMENT AND SECURITY

The reduction of armaments is the first of the specific tasks imposed by the Covenant. There is none on which the League has achieved so little direct and tangible result, for armaments remain, in the world as a whole, at a level not very substantially lower than in 1913, and no reduction is directly traceable to League action. But the indirect results have been of great importance. For it at once appeared that reduction of armaments required an increased sense of security; and the search for methods of obtaining this led to the growth of a belief in all-inclusive arbitration, the most notable and fruitful political development since the Covenant.

The first action of the League was to appoint a "temporary mixed commission" to prepare the way for armament reduction. This commission, consisting partly of politicians (though not representing their Governments), partly of military and other technical experts, and partly of persons representing special classes of public interest (*e.g.*, working-class opinion), finally elaborated a draft treaty of mutual assistance. The basic principle was a combination of a general and special guarantees. Within the cadre of a general treaty, groups of States would enter into detailed arrangements to support each other if attacked, and as a condition of being entitled to this support they would agree to proportional disarmament. The proposal was criticised on the ground that the detailed plans for reciprocal military support contemplated would be unlikely in fact to lead to reduced armaments and, above all, that the authorised grouping of friendly States against prospective enemies was in conflict with the essential spirit of the League. At the 1924 Assembly, when it was clear that these objections would be fatal to the draft Treaty, the whole problem was reviewed on another basis. In a month the "Geneva Protocol" was elaborated and unanimously agreed for recommendation to the Governments (*see* SECURITY). This second scheme also failed to win acceptance, the new Conservative Government of Great Britain taking the lead in its rejection as the previous Labour Government had led the opposition to the earlier treaty. Great Britain was not prepared to accept the unlimited obligation of arbitration in her own disputes, or the responsibility of assisting the enforcement of such arbitration over an unrestricted range of other countries who might accept the obligation.

When all is said, however, it is difficult to regret even the haste of the 1924 Assembly, for the demonstration which it gave of the genuine desire of a large part of Europe for all-inclusive arbitration, and the impetus it gave to the movement towards arbitration throughout the world, have been among the most important factors in political history since 1919.

Certainly the preparation of these two schemes was essential to the Locarno agreements of 1925. By "preparation" of course is not meant merely the technical elaboration of the proposals. In international agreements, that is always the least part of the work. It is the preparation of the public opinion of the world, of the minds of ministers and their advisers, which is the important thing. The preparation, in this wider sense, at Geneva was the indispensable basis of the Locarno treaties. These treaties provide for all-inclusive arbitration, on very much the Protocol principle, but over a restricted though wide range of countries; and for mutual guarantees and support somewhat similar to those of the original treaty of mutual assistance. It is, however, of their essence that the main vital guarantee is "bilateral" and not based upon a grouping of Powers presumed to be friendly against others presumed to be unfriendly.

Meantime the movement towards arbitration has found further expression in the conclusion of a large number of bilateral agreements. As a complement to these, less specific in its provisions but more universal in its scope, is the Treaty, signed in Aug. 1928, for the renunciation of war "as an instrument of national policy" (*see* OUTLAWRY OF WAR). By the side of this movement, developed outside but obviously aided by the political preparation of the League, the League itself (working through a "Preparatory Commission" for the Disarmament Conference), has proceeded with detailed work designed to increase the sense of security. It has prepared plans for assisting the Council to take effective action in case of a threat of war (under Art. 11 etc., . . .), these plans ranging from the improvement of material facilities of communication by telegram, wireless, telephone, etc., . . . to the drafting of an interesting plan of "financial assistance to the victim of aggression" (which is still under consideration). Effective measures of disarmament are still awaiting an increased sense of security; and while some advance has been made in the technical work of arranging the form in which reduction of armaments could most suitably be expressed, the date of an effective Disarmament Conference is still uncertain. The abortive Naval Conference of 1927, which though held at Geneva was conducted quite independently of the League, did not advance the general problem. Meantime, as might be expected, increasing emphasis is being placed by Germany on the assurance given to her at the signature of Peace that her disarmament was intended to be followed by reduction of armaments of other countries. Ultimate advance of course depends upon the public opinion of the different countries.

THE SAAR, DANZIG, MANDATES, MINORITIES

In certain areas of the world the League, normally an instrument through which sovereign States settle their differences or co-operate in matters of international concern, has itself direct and special responsibilities for government and administration.

In the Saar it has the full responsibility of a sovereign State, exercised through a Permanent Commission appointed by and responsible to the Council. The small free city of Danzig is under its special protection, and a resident High Commissioner of the League acts as arbitrator on disputes between the free city and Poland. Over the large area of the mandated territories separated from the German and Turkish Empires by the terms of peace, it is responsible for seeing that the mandatory powers govern and administer in accordance with the mandate and the provisions of the Covenant. And in a number of States it has duties with regard to the protection of minority populations.

The Saar Basin.—The Saar Basin is a large mining district, with a predominant German population of some 700,000, which the Treaty of Versailles transferred from Germany to the trusteeship of the League for 15 years, after which its future fate was to be decided by a plebiscite. The treaty prescribed the form of government, through a Governing Commission, subject to the Council of the League only, the inhabitants having no rights of representative government outside purely local administration, though the Commission was required to consider the views of elected representatives before changing the laws or imposing new taxes. The treaty also transferred the property in the mines to France in compensation for the destruction of the mines in Northern France.

The Saar Government was thus, by treaty provision, not by League decision, purely autocratic and unrepresentative. With an overhanging plebiscite and situated between France and Germany, it was inevitable that its inhabitants should have developed an extremely sensitive political consciousness and that the district should have been a mirror reflecting the controversies of its two great neighbours. There did in fact occur considerable political friction and tension, varying directly with the changing political relations of France and Germany.

The main grievances, substantial though they had often been, proved in reality to be for the most part complaints against conditions which the provisions of the treaty made practically inevitable. Entrusted with the execution of terms imposed by the victor, the League was at once compelled by those terms to action which bore the mark of its origin, and at the same time was criticised by the standards properly applicable to an international authority impartial and unfettered. Difficulties in the Saar question fluctuated with the entry of Germany into the League, the improved Franco-German relations following Locarno, Germany's withdrawal from the League, and the imminence of the plebiscite.

Danzig.—The free city of Danzig, a small wedge between East Prussia and the Polish Corridor, is important as the chief outlet to the sea for Polish trade. To act as a kind of court of first instance for the disputes bound to arise out of the intricate and nicely balanced provisions of the Danzig constitution (*see* DANZIG), it was provided by the Treaty of Versailles that the League should appoint a resident High Commissioner, a further appeal lying to the Council. There was great tension and mutual suspicion throughout practically the whole of the first six years between Danzig and Poland, such as sometimes almost to make negotiations between the two impossible. Under these conditions the Council has had to devote much time at nearly every meeting to disputes of which the one about Poland's right to have post-boxes under her own control within Danzig is typical and the best known. The economic life of the city has on the whole been satisfactory, the vessels entering the port and the exports rising considerably above the pre-War level. The huge inflation of the German mark caused great difficulties, however, and capital was urgently needed to adjust Danzig's port and other facilities to the new conditions. The League gave an expression of its special interest in the city by assisting her to introduce successfully a stable currency of her own and later to raise first a municipal loan for development purposes, and later a financial stabilization loan for the Free City.

Mandates.—The German colonies and the Arab provinces of the Turkish Empire, ceded as a result of the World War, were not transferred to other States in full sovereignty. Their administration was entrusted to different mandatory powers under the general supervision of the League. For the terms on which the mandates were given and the general supervision exercised by the League through the permanent mandates commission, *see* MANDATE.

It is difficult to measure the extent to which this system of supervision does in fact modify colonial administration. No indication can of course be found by searching the League records for instances of censure and repentance. That is not the way in which the influence of a collective opinion operates, or can operate without disruptive results on the conduct of Great Powers. That does not mean, however, that this influence is not profoundly effective. Mandatory powers and their administrators are keenly sensitive to the candid and informed criticism which is always forthcoming in the Commission's meetings, even if it finds little reflection in the public resolutions; and the desire to avoid risk of exposure to it is a factor in daily colonial administration comparable with the influence exercised by Parliament on Whitehall by the right to ask questions of the responsible minister.

Minorities.—The work of the League in the protection of minorities (*q.v.*) is one of the most important, and perhaps the most delicate of all its current duties. Nine States are under treaty obligation, and five others have by declarations accepted a similar engagement, to observe in their administration certain principles designed to secure to racial and religious minorities within their territories protection of life and liberty, the free exercise of religious rights and the free use of their native tongue, with opportunities of education in it where it is the native tongue of a considerable proportion of the population. The minorities number in all some 30,000,000; many are so situated that no possible treaty provisions or frontiers could have given them rights of sovereign self-government without creating innumerable States or enclaves. They are free citizens of the States to which they belong, and the only ultimately satisfactory solution is that they should become indistinguishably incorporated in the general political life of the country. In the meantime the racial, religious and traditional feelings of enmity between them and those who form the majority of the population subject them to the dangers of differential majority government and administration.

The difficulties so caused constitute perhaps the greater part of the political troubles and political dangers of Europe. It is a problem of peculiar delicacy, for the minorities constitute a kind of State within the State, and interference with or even open criticism of the Government on which the daily conditions of their life depend may always do more harm than good. For this reason complaints are only considered officially by the Council if they are put on the agenda by a member of the Council, who satisfies himself that they are sufficiently serious and well founded to justify this action; and the council itself deals directly with these questions, not entrusting them beforehand to any technical committee. The League's influence is exercised for the most part in the form of private representations and conversations which gain their authority from the fact that the sanction of a public discussion at the Council always remains as a possibility in the background.

Economic and Financial Reconstruction.—The reconstruction work of the League shows, better than anything else, that the League is not confined to a limited range of special tasks, but is an instrument which the Governments of the world can use for any form of international co-operation they wish to undertake. The Covenant imposes scarcely any specific economic or financial duties. It implies the preparation of economic sanctions; it contains the obligation to secure and maintain freedom of communications and transit and (in a vague and ambiguous phrase) equitable treatment for the commerce of all member States; but there is nothing which directly contemplates such tasks as that of the financial restoration of a country.

The League's work in this sphere began with the Brussels financial conference held under its auspices in Sept. 1920. Experts from 39 countries, named by the Governments but not representing their policy, met to consider the methods by which stable finances and currencies could be restored. They drew up a series of unanimous resolutions which, elaborated as they were by the later Genoa Conference of 1922, have since served as a useful guide and support to countries attempting to restore their finances. More important, however, than the establishment of this general

body of doctrine was the League's practical work in itself restoring the finances of two countries, *Austria* and *Hungary*, whose problem was beyond their own unaided resources. (*See* AUSTRIA; HUNGARY.) This was pioneer work and the success achieved was a most valuable encouragement and example to financial restoration in other countries in Europe. If currency fluctuations have now ceased practically throughout the world, this result—or at least the date at which it has been achieved—owes much to the first experiments in Austria and Hungary.

Greek Refugee Settlement.—Reconstruction work of a different kind has been undertaken by the League in the settlement of Greek refugees (*see* REFUGEES AND THE EXCHANGE OF POPULATIONS) who to the number of nearly 1,500,000 or more than a fifth of the population of Greece, fled back to Greece as a result of the Graeco-Turkish War, a task evidently beyond the unaided resources of the country. With the aid of the League a loan of £10,000,000 was raised to settle the refugees in productive employment, mainly upon the land. The work, directed by a refugee settlement commission, consisted of an American chairman and a British vice-chairman, selected by the League, and two Greek members, chosen with the Council's approval by the Greek Government. The bulk of the refugees were housed, allotted land, and started on their new careers with a small initial capital and the necessary equipment. (A second loan of £6,000,000 was raised under League auspices, to secure financial stabilisation in Greece, and to complete the work of refugee settlement.)

Bulgarian Refugees.—A similar problem, on a smaller scale, was in 1926 undertaken in Bulgaria. £2,250,000 was devoted to building houses and settlements under the control of a League Commissioner in conjunction with the Government. As in Greece it was found necessary to supplement this by a financial reconstruction scheme. A plan involving a loan of £5,000,000 has been approved, but the loan has not yet (July, 1928) been issued.

Among other work carried on under the direction of the financial committee have been the introduction of a new and stable currency, later followed by a municipal loan, for Danzig; financial advice to Estonia and Albania; and a study, which is still continuing, of the problem of double taxation.

Trade and Commerce.—Meantime there has been patient work at the task of securing more "equitable treatment" for commerce in the spirit of Article 23 of the Covenant, and in removing impediments to international trade. Up to 1927 the most important achievement in this sphere was the conclusion in Oct. 1923, of a convention for the simplification of customs formalities. In addition, a convention has been arranged which has removed some of the obstacles to commercial arbitration. Work has also been done upon the equitable treatment of foreigners (the recommendation of a code of principles to guide Governments in their treatment of foreign enterprises established in their territories) and the suppression of fraudulent trade marks.

World Economic Conference.—In May 1927, the World Economic Conference, perhaps the most authoritative body of experts which has ever met to discuss world economic problems, immensely widened the range and changed the scale of this work. The conference was preceded by nearly two years of preparation on a wide international basis. When it met it showed, with surprising force and unanimity, that now that currency fluctuations had practically come to an end the chief obstacle to economic progress was to be found in the weight, complexity and frequent changes of tariffs and trade barriers. It also advised that the development of "international industrial agreements" (the so-called cartels) should be watched and reported upon, and made some recommendations as to agricultural questions. The Conference left a great mass of detailed work, mostly designed to remove or reduce "trade barriers" in their multifarious forms, to be executed under the direction of the Council with the help of its economic committee (a body consisting mostly of the chief officials of the Boards of Trade of the principal countries and meeting four times a year). A new permanent committee, "the economic consultative committee," which meets annually and is in its range of qualification and nationality a kind of miniature world conference, has also been set up to follow the general progress of the work. An important convention has been signed for the abolition (with limited exceptions) of all prohibitions (as distinct from tariffs) on exports and imports. It is too early to estimate the general results, but the review of the first year (ending May, 1928) showed that the rapid upward movement of tariffs had apparently been at least arrested. Much depends, both for world prosperity and for the establishment of the conditions favourable for peace, upon the future success of the policy so authoritatively recommended by the Conference.

Communications and Transit.—A communications and transit committee, with numerous subcommittees, includes experts in land, sea and air transport, and is responsible to a periodical conference. The first important conference was held at Barcelona in 1921, when two conventions were approved laying down the general principles that transport originating in one State and crossing a second into a third, or transport making use of through international waterways (*see* INLAND WATER TRANSPORT), should enjoy complete liberty of transit with equal treatment for all flags and freedom from customs duties and vexatious dues. A second conference held at Geneva in Nov. 1923 dealt with international railway traffic, equality for shipping in maritime ports, the transmission of electric power across a third State and the development of hydraulic basins situated between two or more States. The maritime ports convention, drawn up at this conference, provides for equal treatment of all States in port dues and regulations, while the railway convention codifies existing railway practice as regards international traffic and aims at simplifying frontier formalities for passenger and goods traffic. All the conventions concluded at these conferences provide for machinery of compulsory arbitration similar to those contained in the clauses of the Peace Treaties of 1919 relating to communications and transport. In such cases the transit committee of the League acts as a mediatory body before a case goes for compulsory settlement to the international court of justice. The transit organisation has been instrumental in effecting considerable improvements in the passport system (particularly in the abolition of visas in many cases).

Among other questions studied are the reform of the calendar, commercial aerial law, wireless regulations, international motor drivers' licences, etc.

MISCELLANEOUS QUESTIONS

The League is also an instrument of positive co-operation in work of general benefit to the world. The short space here allotted to this must not be taken as an adequate measure of its relative importance in the general achievements of the League.

Health Work.—The League has the assistance of a technical health committee, composed, like the financial, economic and transit committees, of experts. This health organisation has the active co-operation of the United States and Russia, as well as the member States, and its activities have extended throughout Europe and the Eastern Mediterranean, tropical Africa and the Far East.

In Poland an Epidemic Commission with western experience helped to prevent the spread of typhus through Poland to Europe. For this purpose it was necessary to attack the problem in Russia itself, and the Commission went to Russia, established effective co-operation and opened offices in Moscow and Kharkov. This was followed by a European conference at Warsaw in May 1922, attended by Soviet Russia, the Ukraine, Turkey, Germany and 24 other States. A draft convention was drawn up and has since become the basis of bi-lateral agreements between the nations adjoining Poland and Russia. Public health courses were arranged for health officers at Moscow, Kharkov and Warsaw. The Epidemic Commission next gave assistance to the Greek health authorities in dealing with the dangers of epidemic resulting from the sudden immigration of masses of Greek refugees in and after the Graeco-Turkish war.

Apart from such emergency assistance, much has been done to secure an interchange of knowledge and experience between the public health organisations of the world, to promote their co-operation and to study the characteristics of special epidemic or endemic diseases and the methods of combating them. Various

missions have visited the Eastern Mediterranean, the Far East, Greece and Albania, the Balkan States, Russia and Italy, Palestine and Syria and Persia. Scientific work is also being done with a view to the standardisation of sera and of certain drugs for the treatment of diphtheria, tetanus and dysentery.

An interesting experiment, which has been made possible on a large scale by the generosity of the Rockefeller foundation, is the interchange of selected officers of health administrations. Officers of one country visit those of another, study their methods, participate for some weeks or months in practical work and then meet at Geneva to compare results. Lastly, the health organisation maintains an epidemiological intelligence service, publishing at regular intervals detailed information of the movement of epidemic disease throughout the world.

Drug Traffic.—Of what may be called the social questions handled by the League the control of noxious drugs, and particularly opium, has been the most difficult and important. The League took as its starting point the Opium Convention of 1912, which had been signed by most countries in the world. An advisory committee was appointed to prepare a plan to make the application of this convention, more effective in practice. They took as their aim the restriction of the traffic to medicinal and scientific requirements, and started an investigation to discover the extent of these requirements. The U.S. Government sent a delegation to participate in the work of this committee, and in any conference which might follow, and to attend the 1924 Assembly which reviewed the progress of the previous year and a half. Plenipotentiary conferences followed in the winter of 1924-5. The first of these dealt with the question of the gradual suppression of opium smoking in the Far East with a view to its ultimate abolition. At this an agreement was reached under which the signatory States undertook (*a*) to strengthen the measures already provided for in the convention of 1912 and (*b*) to suppress entirely the consumption of prepared opium in their respective territories within 15 years from the date at which the poppy-growing countries should succeed in preventing the clandestine exportation of raw opium from constituting a serious obstacle to the restriction of consumption in the former territories. The second conference drew up a convention for the more effective restriction of the production or manufacture of narcotics and of the international trade in them. The latter is to be controlled in particular by a system of export authorisations and import certificates. A permanent central board is to be established which is to receive periodical estimates from the contracting parties of the quantities of narcotics they need and ask for explanations if they are such as to suggest a danger of illicit traffic. A further protocol engages the signatory States to take measures which shall completely prevent, within five years, the smuggling of opium out of their territories from constituting a serious obstacle to the suppression of the use of prepared opium in other countries.

White Slave Traffic.—Certain work has also been done by the League in connection with the traffic in women and the protection of children. A convention was drawn up by the 1921 Assembly strengthening in certain respects the provisions of two pre-War conventions dealing with traffic and has been signed by 33 States. More important perhaps has been the effect on public opinion of an investigation conducted on a wide scale as to the conduct of the traffic in many countries. The attention attracted by the report of this investigation seems likely to have a considerable effect upon policy. The problem is also being studied by one of the two committees of the Commission for the protection and welfare of children and young people, which includes representatives of voluntary organisations and makes annual recommendations to the Assembly. The study of child welfare is undertaken by the child welfare committee of this commission.

Apart from this general work the League took direct practical measures in 1921 to rescue, and where possible restore to their own people, women captured and removed from their homes during the military operations in the Near East, houses of refuge being established at Constantinople and Aleppo. Lastly, in 1923, the League arranged a conference at which a convention was drawn up to assist in the suppression of the international traffic in obscene publications.

Humanitarian Work.—Two important pieces of humanitarian work have been undertaken by the League through Dr. Nansen. In 1920 large numbers of war prisoners were still in Russia and adjacent countries awaiting the means of repatriation. With the aid of certain charitable societies Dr. Nansen organised a fleet of steamers under League charter in the Baltic and Black seas and 427,386 prisoners of 26 different nationalities were repatriated at the astonishingly low cost of less than £1 a head. Dr. Nansen also undertook somewhat similar work for the settlement of large numbers of Russian refugees. Their movements were assisted by the invention of a special system of identity certificates, as a substitute for passports, and considerable progress has been made in finding them employment. (*See* REFUGEES AND THE EXCHANGE OF POPULATIONS.)

Two other pieces of humanitarian work may be mentioned in conclusion, a convention drawn up at the 1925 Assembly for the suppression of slavery (*q.v.*) and restriction of forced labour, and the scheme prepared by Senator Ciraolo and now being worked out in collaboration with Red Cross organisations, for the provision of insurance against national calamities such as earthquakes. Among other tasks, the most novel departure has perhaps been the work of the committee on Intellectual Co-operation (*q.v.*), presided over successively by M. Bergson, Dr. Lorentz and Prof. Gilbert Murray and including among its other members Prof. Einstein and Madame Curie. Under Article 24 of the Covenant some international bureaux established by convention must be, and others may be, brought under the League. Four such organisations have now been affiliated, viz.: a relief bureau (for the repatriation of distressed persons), a hydrographic bureau (to secure co-ordination in hydrographic work), an office for the control of liquor traffic in Africa and a committee for air navigation. The question of closer relations with the Institute of Agriculture at Rome is now under discussion. The League issues a handbook giving information about some 360 international organisations and a quarterly bulletin giving some account of their work. Limits of space have forbidden an account of much of the work of the League, among which may be mentioned the convention on the traffic in arms, a Press Conference, and the work now in progress on the codification of international law.

CHANGES IN THE COUNCIL, MACHINERY AND METHODS OF WORK

The decision of Germany to enter the League, after the Locarno agreement, marked a stage of the first importance in the development of the League. Hitherto the Council had included no belligerent in the World War except those on the Allied side, and the League itself only those of secondary power. It was of course understood that Germany's entry would and should be simultaneous with her election as a permanent member of the Council. The whole balance of forces and interests which finds its expression in Council decisions would necessarily, and rightly, be changed. The distinction between permanent and non-permanent members on the Council, however, had aroused some jealousy, and the election of Germany was taken as the occasion for putting forward claims to a permanent seat for Spain, Poland and Brazil (and later China): These claims were not accepted, but they led to considerable constitutional changes. The Council was enlarged to 14, Germany being added to the permanent members, and the non-permanents being raised from 6 to 9. It was arranged that the non-permanent members should normally have a tenure of 3 years, three retiring each year on a rotation system; but it was provided that three members may, by a two-thirds majority of the Assembly, be accorded a longer tenure. This provision did not satisfy Spain and Brazil, who gave notice of withdrawal from the League. The former cancelled the notice before the expiration of the statutory two years and therefore remains a member, but Brazil's withdrawal took effect in June 1928.

Meantime the enlargement of the Council, the inclusion of Germany, the gradual disappearance from it of most of the personalities who had been most prominently associated with the early days of the League made it in character, and in some respect in its

outlook and method of working, a different body from the earlier and smaller body. This development accompanied an important change in the attitude to the League of the principal Governments. In the first years most of the more immediately practical questions had fallen outside the League; the League itself was at once comparatively unfettered in discussion but weak in action. Gradually the League has become recognized as a definite and permanent institution through which, and not outside which, the Foreign Offices work and conduct their negotiations. The Foreign Ministers of the great Powers, and of some others, attend regularly; each main Foreign Office has a special branch for following League questions; and the League has become for each of them an important organ, though not the only one, through which they press their respective policies. It is natural therefore that, for both good and ill, the League has become less idealistic and more realistic. The greater interest of the Foreign Offices in the League is perhaps reflected in the increased proportion of *diplomats de carrière* now in the higher posts in the Secretariat, a change which has been welcomed by some as assisting a closer *liaison* with the national administrations and criticized by others as possibly endangering, if it passes certain limits, the spirit of the Secretariat as an international civil service. Lastly it is a characteristic of the new stage of the League's development that the smaller countries sometimes complain that they have a less influential voice in Council decisions. This does not mean that a small country used to have, or claimed to have, as powerful an influence as the great Powers. But a country like Sweden had an influence of a special kind, and many think of a very valuable kind, because she was often more interested in the principles upon which a given dispute was settled, and their permanent effect in moulding League policy, than in the substance of the particular settlement. Few political settlements are based solely upon a principle of general application; most contain also elements of a bargaining compromise. But the proportions in which the two elements are found varies greatly and some have feared that the latter may tend to increase. Such are the main features of the League's recent development. They are all signs of the League being more deeply rooted in the actual life and real forces of the world, a development which means greater strength and at the same time possibly new dangers. In 1933 the League was shaken by the withdrawal of Japan and Germany, both permanent members of the Council; but in 1934 the U.S.S.R. was admitted, with a permanent seat.

SUMMARY OF WORK

In these nine years (1919–28), therefore, the League has averted hostilities in some half-dozen cases and probably prevented at least minor wars in several of them. It has made a substantial contribution to Europe's recovery by the guidance and influence of the Brussels Financial Conference; by the direct reconstruction of Austria and Hungary; by the model so afforded for the solution of the German problem, and the self-restoration achieved in other countries; and by a series of transit and customs formalities, Conventions and other measures designed to remove the impediments to international trade. It has repatriated some hundreds of thousands of refugees and established nearly 1,000,000 in productive employment in Greece and Bulgaria. It has exercised a varying but increasing influence over the Government of some 30,000,000 of minority populations entrusted to its guidance. It has supervised the mandatory administration of the former colonial Empire of Germany and Turkey. It has directly governed the district of the Saar and has assisted in the government of Danzig. It has worked at a number of social problems, the regulation of opium and other drugs, and the protection of women and children.

Apart from these tangible and visible results, it has penetrated and modified the policies of national governments through the regular contact, and co-operation in international work, of Foreign Ministers, quarterly and annually at meetings of the Council and Assembly, and of their advisers and technical assistants both at these meetings and at a series of technical conferences and discussions. Beginning with disarmament but extending to security, it has prepared the way for the great extension of comprehensive arbitration embodied in the Locarno agreements and doubtless destined to extend beyond them.

On the other hand, the League remained long impotent before the protracted conflicts which reflected the incompleteness of the conclusion of peace in 1919 both in diplomacy, as in the reparation question, and in actual hostilities, as between Greece and Turkey. In some of the disputes which it has handled, it has been indecisive or ineffective; in others, the nature of its action has apparently been determined as much by the relative strength of the disputants as by considerations of ideal justice. It has made no material progress in securing disarmament. Its work in removing the fundamental causes of war, and in particular those which spring from economic policy, has only begun.

Whether these results will be regarded as disappointing or as satisfactory will doubtless depend mainly on the standard by which they are judged. By comparison with the pre-War position and methods of negotiation there can be no doubt that they represent a very great achievement. No better illustration can perhaps be found than in two references to Lord Grey's book, *Twenty-five Years* (1926). Of the London Conference of Ambassadors of 1913, for example, he says in effect that it lasted eight months, discussed minor questions and settled nothing, but was well worth while because it gave the world a sense of confidence to think that there was some method of international contact during a period of tension.

In contrast with this, the Assembly of 1928, one of the least spectacular of recent years, in three weeks dealt with a mass of useful work, of real if secondary importance, and the assurance of a regular method of international contact is now not temporary but permanent. Still more significant is the account which Viscount Grey gives of the conference of the Balkan Powers when they met, as it happened in London, after the first Balkan conflict of 1912. He believed that the policy they were discussing would mean both the resumption of war and a disastrous result, as indeed it did. But neither Great Britain nor any other Great Power was directly concerned. If his opinion were asked in unofficial conversations he gave it, informally, tentatively—and in fact without effect. Neither he nor anyone else felt able to intervene in a matter directly affecting only the negotiating States. The second disastrous war followed. In contrast with this the settlement of the recent Graeco-Bulgar dispute of 1925 illustrates the recognition of the new principle that a war is the concern of the whole world.

If, however, our standard of judgment for the results of the eight years is not the pre-War position but the ultimate ideals of the League, it is no less clear that the League's work is only in its infancy. The League is not yet universal in its composition. Its ability to deal with a first-class dispute between first-class Powers has fortunately not yet been tested. There is as yet no complete assurance that such a dispute would find the League united and effective. Nor has more than a beginning been made in removing the causes from which such disputes may arise. This, the ultimate object of the League, must in the nature of the case be a progressive, and indeed a permanent task. It means a complete, if gradual, revolution in the traditional and historic attitude of the nations of the world to each other and a transformation of many of their policies. In this work the League may lead, but it can never advance far beyond, the public opinion of the world. The scope is illimitable and the task unending.

(A. Sa.)

The Years After 1928.—The years since 1928 have been critical for the League of Nations. Perhaps it could hardly be expected that the League would escape its share in the most serious depression the world has ever known. Increasing tendency toward an extreme nationalism to meet domestic problems of utmost urgency would result inevitably in severe strain upon the machinery of international co-operation. Where considerable sacrifices of nationalist ambitions were called for, the League has therefore met with great difficulties. In its less spectacular but important rôle of smoothing the path of international intercourse through the securing of agreements on common technical problems, steady progress has been achieved.

Changes in Structure and Membership.—Before discussing the various phases of the League's work, it is well to indicate

the changes in composition and structure that have occurred in recent years. League membership has assumed a more universal aspect through the admission of six states, Afghanistan, Ecuador, Iraq (the first state to pass from a mandatory régime to independence), Mexico, Turkey, and the Union of Soviet Socialist Republics, the last of special significance. On the other hand, two great powers, Japan and Germany, have withdrawn from the League under circumstances described below. The United States in recent years has offered increasing co-operation, climaxed by its adherence to the International Labour Organization in August, 1934.

The Union of Soviet Socialist Republics, upon her admission in September, 1934, was made the sixth permanent member of the Council, though withdrawal of Japan and Germany now reduces the number of permanent Council members to four. The number of non-permanent members of the Council was in 1933 provisionally increased from nine to ten, in order to provide a place for those states, not belonging to any particular geographical or political grouping, whose chances for Council membership, under the existing system of regional representation, had hitherto appeared remote.

Until 1932 executive action for the preservation of peace had always been regarded as a function in which the Council should take the lead. In that year, however, the Assembly was appealed to by China, when the Council had failed to act effectively, and it pursued a prompt and vigorous course which increased its authority and prestige.

The League has, in the period under review, lost its first Secretary-General, Sir James Eric Drummond, a veritable "charter member," named in the Annex to the Covenant. His resignation, effective in June, 1933, was received with profound regret, for no small part of whatever success the League had attained during its first decade was due to his tact and skill. M. Joseph Avenol of France was elected his successor.

Disputes Handled by the League.—With the spirit of nationalism everywhere in the ascendant, League machinery for the peaceful settlement of disputes did not until 1935 function with the hoped-for effectiveness. The League's failure to bring about a peaceful adjustment of the differences between China and Japan was a set-back of the first order. On the other hand, in cases where the parties concerned could be brought to a realization of their responsibilities under the Covenant, several successes have been achieved. In the case of Japan, the fault did not appear to lie with the League's machinery as such, but rather in the unwillingness of the great powers to utilize it. Now in the closing months of 1935, led by Great Britain and France, the League has at last come to grips with the question of whether its machinery is adequate to protect a weaker nation against aggression, prevent a major conflict, and effect a just peace.

Japan and the League.—In September, 1931, Japan, in an attempt to protect her special position in Manchuria which she felt was jeopardized by Chinese nationalism, undertook extensive military operations which finally resulted in the complete separation of the territory in question from China and the establishment of an independent state under Japanese domination. Hope that the League would be able to prevent just such forceful revision of the *status quo* had been one of the fundamental reasons for its creation. But the methods that the League can employ are restricted to those which its leading members will support. Sanctions, though urged in many quarters, were not used, because the great powers upon whom the burden of enforcement would rest refused to run the risk of war with Japan to compel her to observe her Covenant obligations. The methods adopted, namely, attempts at conciliation, impartial investigation, world-wide condemnation proved ineffective.

Immediately after the first explosion, the Council, at the request of China, took jurisdiction over the dispute. Finding itself unable to effect a cessation of hostilities or to devise conciliatory procedure acceptable to both sides, it appointed a neutral commission to go to Manchuria and investigate the fundamental causes of the controversy. The commission found that a restoration of the *status quo* would be undesirable, but it proposed a solution designed to preserve the integrity of China while maintaining Japanese privileges in Manchuria. The Assembly, to which the dispute had now been referred by China, adopted these views as its own and recommended in addition that all states should withhold recognition of the new Manchoukuo. The United States officially approved. Japan, however, refused to agree to any settlement not based on Manchoukuo's independence, and when confronted by unanimous insistence, withdrew from the League.

Public condemnation and continued non-recognition of the altered status of Manchuria have not been able to shake the Japanese position. In spite of the League's failure to persuade Japan to settle her differences with China by peaceful methods, the report of the Lytton Commission and the subsequent action of the Assembly were unprecedented events, marking the first time that a great power's course of action was made subject to disinterested review, and the first example of unanimous condemnation of that same power by an international body.

Italy and Ethiopia.—Perhaps the League learned certain lessons from its experience with Japan; undoubtedly the interests of leading European powers, particularly Great Britain, were far more vitally affected by Italy's current attempt at expansion in Africa, than by Japan's adventure in Manchuria. In any case when vanishing trade, increasing population, and unemployment presented problems which the Italian Government decided to meet by the time-honoured method of a colonial campaign, the League acted with a swiftness and decision which surprised even its friends. True, there were some months of inaction and hesitation following on the Wal Wal border incident of December, 1934. But when Italian troops actually began their forward movement in Ethiopia in October of 1935, the Council formally found Italy the aggressor. Two days later a committee composed of representatives of all member states moved toward the imposition of sanctions against Italy. The measures decided upon, to take full effect on November 18, 1935, were (1) an arms embargo, (2) ban on loans and credits, (3) boycott of Italian imports, (4) embargo on export of certain key raw materials.

Great Britain's representatives took the lead along these untried paths, with apparently unanimous support of her people. At the same time Sir Samuel Hoare, speaking for Britain in the League Assembly, expressed sympathy for Italy's needs and pledged willingness on the part of his Government to open the question of distribution of raw materials. France in spite of special friendship for Italy, was almost equally firm. President Roosevelt, for the United States, recognized the state of war in Ethiopia even before League action, and declared the arms embargo (against both parties) for which recent neutrality legislation had provided. He warned Americans against shipping goods to either belligerent, and travel on belligerent ships.

The need for a rigid embargo on oil supplies, which might have proved effective to stem the tides of war, was appreciated by the League. But this sanction was, in fact, never imposed. At the conclusion of hostilities between Italy and Ethiopia in 1936, the League raised the sanctions imposed on Italy since they had failed to achieve their purpose, but refused to recognize the Italian occupation of Abyssinia.

Disputes in South America.—Further indication that the effectiveness of the peace machinery depends on the willingness of nations to make use of it is revealed by two wars in South America. Both originated in boundary disputes distinctly susceptible to adjudication. Bolivia and Paraguay, however, in their bitter contest over the Gran Chaco, for years rejected all suggestions for peace. The earlier difficulty seems to have been a conflict of jurisdiction between the League and groups of American neutrals, which were attempting to mediate. Later, when the task was turned over fully to the League, and it followed the same procedure as in Manchuria, the bitterness engendered by the conflict made conciliation extremely difficult.

Bolivia finally accepted certain League proposals, but Paraguay failed to do so, and when an arms embargo imposed by 28 League powers was consequently raised as against Bolivia, Paraguay in February, 1935 gave notice of withdrawal from the League. At this point neighbouring South American States again took the lead, with the happy result that hostilities were definitely ended

in June, 1935, and a peace conference is now in session.

More decisive than the Chaco affair was the League's settlement of the difficulties between Peru and Colombia over Leticia. Here the Council, supported by the United States, was able to insist that Peru evacuate Colombian territory and that the two nations negotiate their differences. Administration of the disputed territory by an international commission for one year facilitated a successful solution. Again, Great Britain, in referring to the Council a dispute growing out of the cancellation by the Persian government of a concession granted to the Anglo-Persian Oil Company, showed a noteworthy readiness to submit to international review a matter in which her interests were involved.

Other Problems.—Deserved credit may be accorded the League for its handling of two serious European situations in the winter of 1934–35. In the dispute between Yugoslavia and Hungary arising from the assassination of King Alexander, the ominous parallel to the events of 1914 stimulated the Council to efforts which resulted in a compromise formula agreed to by both parties, and the threatened conflict was averted.

More alarming still was the tension which developed between France and Germany over the Saar plebiscite. As the date approached for the taking of the vote which was to determine whether the territory would remain under the control of the League, go over to France, or return to Germany, feeling ran high. Intense German propaganda led to fear of reprisals should the vote go against her, or even of a *putsch* in advance of the plebiscite.

But upon the League Council rested the duty of ensuring fairness, order, and secrecy in the voting. These heavy responsibilities it turned over to a specially appointed Plebiscite Commission, backed by an international police force, responsible to the League, and composed of troops from Great Britain, Italy, The Netherlands and Sweden, which marched into the Saar a month before the plebiscite. Under the careful safeguards planned by the Commission, with agreements against reprisals secured by the Council, and with well worked out advance plans for the transfer of the territory, the plebiscite was taken with "discipline and dignity." The vote was for the Fatherland, and on March 1, 1935 the Saar was turned over by the League to Germany.

Disarmament.—In no other field has the blighting effect of nationalism been more apparent than in the attempts of the League to obtain reduction and limitation of armaments, for such an agreement would imply greater, rather than less, confidence in the value of international co-operation.

The World Disarmament Conference, so long planned, was finally convened in February, 1932. But as in previous disarmament discussions, this conference was soon lost in a maze of conflicting proposals, each nation seeking to improve its own relative status by suggesting the reduction or abolition of those weapons essential to potential opponents and the retention of those considered necessary to its own national defence. Two principles did, however, emerge, namely that the possibility of aggression should be diminished by the reduction of offensive arms, and that the execution of the future disarmament convention should be supervised by a Permanent Disarmament Commission. In September, 1932 Germany brought the Conference face to face with her demand for equality in arms by refusing to participate further in its work until her claims were met. Recognition by the great powers of the principle of equality of rights under a system assuring the security of all nations, and an expression of their intention to effect an immediate and substantial reduction of armaments induced her to return in December, 1932. Then came Hitler's rise to power early in 1933. The fear and suspicion aroused by the new National Socialist Government in Germany so terrified her neighbours as to make immediate reduction of arms impossible. When further delays were therefore interposed, Germany not only withdrew from the Conference but resigned from the League. Although the Conference technically remains in session and committees are at work on specific problems, no full sessions have been held since 1933. Not only Germany's open rearmament, but more recently the new threat to peace from Italy, have relegated any talk of reduction still further to the background. The most recent real advance was made late in 1934, when interest centred upon an American proposal for international regulation of both public and private manufacture of arms under a permanent disarmament commission.

A feverish striving on the part of all governments for self-contained nationalism has resulted in the failure of all attempts by the League to secure reduction of trade barriers. A convention finally agreed upon for the abolition of import and export prohibitions failed to go into effect for want of sufficient ratifications. A similar fate befell a project for a tariff truce. Another proposal looking toward a lowering of tariffs was the ambitious scheme for a federation of European states, fathered by M. Briand. This, too, has been overwhelmed by the prevailing tendency toward autarchy. The London Economic Conference convened by the League at the request of the Lausanne Conference in a desperate attempt to end the depression by simultaneous international action ended in almost complete failure.

Promotion of International Co-operation.—Nationalistic attitudes have thus prevented the attainment of any degree of political or economic disarmament. But in other fields the members of the League have exhibited a continued readiness to utilize League facilities for international teamwork in the solution of common problems.

A conference on Road Traffic, meeting in 1931, adopted a uniform system of signals; a European Conference on Rural Hygiene in 1931 laid down guiding principles for the organization of medical health service in rural districts; agreements have been reached on the unification of commercial law as regards bills of exchange, promissory notes and checks. Most important of all, perhaps, is the convention of 1931 for limiting manufacture of narcotic drugs, now in force as between 55 countries.

There could be no more eloquent testimony to the practical and scientific value of the work of the League's various technical organizations than the increasing tendency of governments to turn to them for assistance. Representatives of the Health Organization have undertaken, on request, to make suggestions for complete reorganization of national health services in Bolivia, China, Greece and Czechoslovakia. Experts of the Transit Organization have studied various programs for large scale public works proposed by governments as a remedy for unemployment. Outstanding assistance has been given by the League to the government of China in its comprehensive plan for national reconstruction, with particular reference to reorganization of health work, education and the construction of roads. The states of Central and Southern Europe, forced in the financial crisis of 1931 to partial default on loans issued under League auspices in 1923, turned again to the Financial Committee, and with the help of its experts have achieved a measure of financial stability.

A complete chronicle of the activities of the League from 1928 to 1935 would within the scope of this article be impossible. The disposition of its leading members to subordinate the interests of the international community to their own nationalist ambitions has at times brought the League's prestige to low ebb. But strive toward self-containment as they may, no nation can escape the incontrovertible fact of world interdependence and the consequent necessity for international co-operation. Now in Geneva splendid new buildings to house the League are nearing completion, an appropriate symbol of its permanent character.

(R. B. F.)

BIBLIOGRAPHY.—The main authorities are the League's own publications, which give complete information as to all its activities. In the first place the *Official Journal* contains the minutes of the Council with the documents presented to it; while the records of Assembly meetings are issued in special supplements. All Treaties registered under Article 18 of the Covenant are published in the *Treaty Series*. All reports of specially appointed League Commissions are at once published, as are also the periodical reports of permanent officers and authorities carrying on League work (such as the Commissioners General in Austria and Hungary, the Greek Refugee Settlement Commission, the Saar Governing Commission, etc.). As these official records are very voluminous the League also publishes (*a*) an abbreviated *Monthly Summary*, giving a regular account of League activities and (*b*) a series of special pamphlets as to special tasks (health work; reconstruction of Austria; mandates,

etc.) and a general summary "A Survey." In addition, the League issues technical publications on various subjects of world interest. Of these the most important are the *Economic Publications* (including a *Monthly Bulletin of Statistics,* which gives a synopsis of all main statistics indicative of economic development throughout the world, and annual publications on *Currency, Public Finance, Trade and Commerce*), a *Military Year Book* and a *Monthly Epidemiological Report.* These publications are issued in English and French through League agents (in England Messrs. Constable).

Books on the League work are numerous, especially with regard to special subjects (the Saar, Opium, etc.) and the general principles and conception of the league. Of those which summarise the general work of the League the following may be mentioned: Publications by the League of Nations Union (1920, etc.); Organisers of the League of Nations. *The League of Nations Starts* (1920); W. Schücking and H. Wehberg, *Die Satzung des Völkerbundes. Kommentiert* (1921); L. V. A. Bourgeois, *L'Oeuvre de la Société des Nations 1920–1923* (1923); P. Munch, *Les Origines et l'Oeuvre de la Société des Nations* (1923); R. Williams, *The League of Nations To-day* (1923); H. G. Alexander, *The Revival of Europe* (1924); M. Fanshawe, *Reconstruction,* a full summary to 1925, well documented (1925). League of Nations Information Section, *Pamphlets on the League of Nations,* its Covenant and its various activities; P. J. N. Baker, *The Geneva Protocol for the Pacific Settlement of International Disputes* (1925); Sir G. G. Butler, *A Handbook to the League of Nations, brought down to the end of the 5th Assembly, with an explanation of the* Protocol . . . with an introduction by the Right Hon. Viscount Cecil of Chelwood, 2nd ed. (1925). The publications of the World Peace Foundation include a number on the work of the League. Among these are *Handbook on the League of Nations, 1920–24,* and the *Yearbook of the League of Nations* (1925). (A. SA.)

LEAGUE OF NATIONS AND EDUCATION. The question of interesting the younger generation in the ideals and aims of the League was first raised in the Assembly of the League in 1923. The 1924 Assembly instructed the secretariat to make it a subject of special investigation.

Proposals.—A report was presented to the Assembly in 1925, who decided to request the international committee on intellectual co-operation "to consider the possibility of summoning a sub-committee of experts to consider and co-ordinate the means for making the League of Nations known to young people, and for familiarizing them with the idea of international co-operation."

The committee on intellectual co-operation accepted this proposal. A sub-committee was appointed and its report was submitted to the Assembly of 1927. It recommended: (1) Instruction in the League in international co-operation as part of the formal education of every child; (2) such instruction, where possible, to be correlated with the geography, history, civics or moral instruction; (3) special attention to the subject in training colleges; (4) similar instruction in all special schools, agricultural, technical, military, etc.; (5) provision of special literature, including reference books by experts; (6) facilities for special courses for teachers at Geneva, etc.; (7) special lectures in universities as to international law compulsory for all law students.

As regards administrative machinery, the report recommended: (*a*) A national conference in each country "to ensure co-operation between the administrative authorities, teachers and voluntary associations;" (*b*) an official centre for information concerning the progress of the work; (*c*) the maintenance of the sub-committee of experts to review progress and consider further action. Meanwhile the Assembly of 1926 had passed a further resolution asking the Governments and other competent authorities to provide scholarships to enable students to visit Geneva before and during the Assembly, so as to obtain a first-hand knowledge of the League.

Results Attained.—Up to Aug. 1928, 25 Governments had sent in reports to the secretary-general recording progress: South Africa, Argentine, Australia, Belgium, Bulgaria, Canada, Cuba, Denmark, Estonia, Finland, Greece, Guatemala, Hungary, the Irish Free State, Liberia, Lithuania, Holland and the Dutch Indies, New Zealand, Nicaragua, Rumania, Salvador, Siam, Venezuela and Yugoslavia. One Government, that of Great Britain, had held a national conference of local education authorities. Eight Governments (Czechoslovakia, Denmark, Hungary, Italy, Poland, Rumania, Sweden and the Saar Territory) had awarded scholarships to enable students to visit Geneva and gain a first-hand knowledge of the League through attendance at the Geneva School of International Studies, which had been organized to serve this purpose. The fifth session of the school was held in the summer of 1928. It was attended by 311 university students and teachers from 29 nationalities, of whom 167 stayed for a month and over. Among these were parties of secondary school teachers from Great Britain, the United States and the Saar Territory; 46 in all.

See *How to Make the League of Nations Known and to Develop the Spirit of International Co-operation:* Recommendations by the sub-committee of experts (1927); Alfred Zimmern, *Learning and Leadership* (1928). (A. Z.)

LEAKE, WILLIAM MARTIN (1777–1860), British antiquarian and topographer, was born in London on Jan. 14, 1777. He entered the marine artillery and was lent by the British Government to the Turks as an artillery instructor. In 1801, after travelling across the desert with the Turkish army to Egypt, he was, on the expulsion of the French, employed in surveying the valley of the Nile as far as the cataracts; unfortunately he sailed for England on the ship chartered to bring to London the Elgin marbles, and he lost all his maps and observations when the vessel foundered off Cerigo. He was then sent out to survey the coast of Albania and the Morea, with the view of assisting the Turks against attacks of the French from Italy. There he made a valuable collection of coins and inscriptions. In 1807, war having broken out between Turkey and England, he was a prisoner at Salonica for a short time. He then went on a diplomatic mission to Ali Pasha of Iannina, with whom he remained for more than a year as British representative. In 1815 he retired from the army, in which he held the rank of colonel. Leake died at Brighton on Jan. 6, 1860. The marbles collected by him in Greece were presented to the British Museum; his bronzes, vases, gems and coins were purchased by the University of Cambridge after his death, and are now in the Fitzwilliam museum.

See *Memoir* by J. H. Marsden (1864); the *Architect* for Oct. 7, 1876; E. Curtius in the *Preussische Jahrbücher* (Sept. 1876); J. E. Sandys, *Hist. of Classical Scholarship,* iii. (1908), pp. 442.

LEAMINGTON (lĕm′ĭng-ton), municipal borough in the Warwick and Leamington parliamentary division, Warwickshire, England, on the Leam, 98 mi. N.W. from London, served by the G.W.R. and L.M.S.R. Pop. (1938) 30,070. Area 4.2 sq.mi. The centres of the towns of Leamington and Warwick are 2 mi. apart, Warwick lying to the west, but they are united by the intermediate parish of New Milverton. There are saline springs, pump-rooms, baths and pleasant gardens on the right bank of the river. The parish church of All Saints is modernized, and the other churches are modern. Industries include iron foundries and brick-works. The town lies in a well-wooded and picturesque country, within a few miles of such interesting towns as Warwick, Kenilworth, Coventry and Stratford-on-Avon. It is a favourite health resort and residential centre and caters extensively to visitors.

Leamington was a village of no importance until about 1786, when baths were first erected. The town was incorporated in 1875. By royal licence granted in 1838 it was called Royal Leamington Spa.

LEAP YEAR (otherwise *bissextile*), the name given to the year containing 366 days. The astronomers of Julius Caesar, 46 B.C., settled the solar year at 365 days 6 hours. These hours at the end of four years made a day which was added to the fourth year. The English name for the bissextile year is an allusion to a result of this interposition; for after Feb. 29 a date "leaps over" a day of the week. Of the custom for women to woo during leap year no satisfactory explanation has ever been offered. In 1288 a law was enacted in Scotland that "it is statut and ordaint that during the rein of hir maist blissit Megeste, for ilk yeare knowne as lepe yeare, ilk mayden ladye of bothe highe and lowe estait shall hae liberte to bespeke ye man she likes, albeit he refuses to taik hir to be his lawful wyfe, he shall be mulcted in ye sum ane pundis or less, as his estait may be; except and awis gif he can make it appeare that he is betrothit ane ither woman he then shall be free." A few years later a like law was passed in France, and in the 15th century the custom was legalized in Genoa and Florence.

LEAR, EDWARD (1812–1888), English artist and humorist, was born in London on May 12, 1812. His earliest drawings were ornithological. When he was 20 years old he published a brilliantly coloured selection of the rarer Psittacidae. Its power attracted the attention of the 13th earl of Derby, who employed Lear to draw his Knowsley menagerie. He became a permanent favourite with the Stanley family, and Edward, 15th earl, was the child for whose amusement the first *Book of Nonsense* was composed. From birds Lear turned to landscape, his earlier efforts in which recall the manner of J. D. Harding; but he quickly acquired a more individual style. About 1837 he set up a studio at Rome, where he lived for ten years, with summer tours in Italy and Sicily, and occasional visits to England. During this period he began to publish his *Illustrated Journals of a Landscape Painter:* charmingly written reminiscences of wandering, which ultimately embraced Calabria, the Abruzzi, Albania, Corsica, etc. From 1848–1849 he explored Greece, Constantinople, the Ionian Islands, Lower Egypt, the wildest recesses of Albania, and the desert of Sinai. He returned to London, but the climate did not suit him. In 1854–1855 he wintered on the Nile, and migrated successively to Corfu, Malta and Rome, finally building himself a villa at San Remo. From Corfu Lear visited Mount Athos, Syria, Palestine and Petra; and when over 60, by the assistance of Lord Northbrook, then Governor-General, he saw a large area of India.

The last task he set himself was to prepare for popular circulation a set of some 200 drawings, illustrating from his travels the scenic touches of Tennyson's poetry; but this he did not live to complete. He died at San Remo on Jan. 30, 1888. Until sobered by age, his conversation was brimful of humorous fun. The paradoxical originality and ostentatiously uneducated draughtsmanship of his numerous nonsense books won him a more universal fame than his serious work. Ruskin placed the *Book of Nonsense* first in the list of a hundred delectable volumes of contemporary literature.

See *Letters of Edward Lear to Chichester Fortesque, Lord Carlingford, and Frances, Countess Waldegrave* (1907), edited by Lady Strachey, with an introduction by Henry Strachey; and a *Memoir* by Franklin Lushington, prefixed to Lear's *Illustrations to Tennyson, Nonsense Songs and Stories* (6th ed., 1888).

LEASE: *see* LANDLORD AND TENANT; LAND TENURE: ECONOMIC AND AGRARIAN ASPECTS.

LEATHER is manufactured from the hides and skins of various animals, the principal of which are cattle, calves, sheep, goats and pigs. The skins of many rarer animals such as the walrus, seal, antelope, deer; the reptiles (snake, lizard and alligator); and the ostrich, camel and elephant are also converted into leather for special purposes. The object of tanning (or the manufacture of leather) is the conversion of the putrescible skin into a material which under ordinary conditions of use does not putrefy, and which can be wetted and subsequently dried without becoming hard or horny. A characteristic difference between dried skin and leather is that the former becomes soluble in water at a temperature of 140° F whilst leather is unaffected by such immersion.

Treatment of Hides and Skins.—Hides and skins must be treated to prevent putrefaction; *i.e.*, must be cured in some suitable way. The chief methods are drying and salting. Ordinary domestic stock is simply treated with a small quantity of salt which acts as a temporary preservative during the period of transit from the slaughter house to the tanner. Imported hides and skins are received in one or other of the following conditions—(a) Sun Dried, (b) Dry Salted, (c) Wet Salted. *Sun dried skins* are prepared for shipment by laying them on the ground in the shade, or by hanging them on poles, until they have become thoroughly dry. Such skins are sometimes treated with a weak arsenical solution before drying in order to lessen the risk of putrefaction and of insect damage. *Dry salted skins* are lightly sprinkled with salt prior to drying. In countries where salt is subject to taxation and where salt is scarce, the "salting" process consists in the application of some native saline earth, which may be composed of a large number of salts. *Wet salted skins* are prepared by either applying salt to the flesh side or by first completely immersing the hide or skins in a strong brine and then subsequently re-salting with fresh salt applied to the flesh side. The moisture is so reduced by the de-hydrating action of the salt that the goods are no longer liable to drip, but have been converted into a semi-dry condition. The methods of sun drying and of salting depend for their efficacy upon the removal of the natural moisture from the hide or skin or the replacement of it by brine, since bacterial action, which results in putrefactive damage, cannot occur in the absence of moisture or in strong salt solutions.

Sources of Supply.—The following figures give the estimated average slaughterings in various countries—

	Cattle hides	Calf skins	Goat and kid skins	Sheep and lamb skins
Australia	2,000,000	800,000	..	12,000,000
Austria	1,250,000	..	87,000	175,000
Argentine	7,500,000	..	2,000,000	5,000,000
China	7,000,000	..	13,000,000	6,500,000
Denmark	250,000	260,000	..	..
France	1,750,000	1,350,000	400,000	..
Germany	7,500,000	5,000,000	480,000	1,500,000
Great Britain	2,000,000	..	..	8,000,000
India (estimated)	20,000,000	..	6,000,000	..
Italy	1,750,000	2,300,000	1,000,000	3,500,000
New Zealand	500,000	150,000	..	3,800,000
Spain	700,000	350,000	1,110,000	6,250,000
Switzerland	550,000	..	140,000	120,000
United States	14,500,000	..	110,000	15,000,000
Union of South Africa	650,000	40,000	2,500,000	8,000,000

Histology of Skin.—A knowledge of the histology and complex chemical constituents of animal skin is essential to a proper understanding of the intricate reactions taking place in manufacturing commercial leather. (*See* SKIN AND EXOSKELETON.) The skin may be said to consist of living cells and the products of cell activity, *e.g.*, fibres, dead cells, etc. Skin consists of 3 well defined layers, distinct both in structure and origin. There are (1) a thin outer layer of epithelial cells, the *epidermis,* (2) a thick layer called the *derma* and (3) a subcutaneous layer or adipose tissue known commercially as "flesh." The epidermal tissue is completely removed for tanning. The derma is the layer converted into leather. The hair is embedded in a pocket or follicle of epidermis, the hair follicle and hair being penetrated by a projection coming from the derma and known as the hair papilla.

Variation of Fibre Structure.—The variation of fibre structure determines the resulting tensile strength and pliability of the leather produced from it and the satisfactory preparation of skins for tanning depends upon the separation of these white fibres without damage. The derma consists of connective tissues and fat cells in varied proportions in different skins, determining the general character of the finished product; where large groups of fat cells are present interspersed between the collagen fibres the result will be the production of soft, spongy leather because of the empty spaces left when the fat cells have been removed, by the preparatory processes to which the skin is subjected. In considering fibre structure from the tanner's standpoint the presence of connective fibres, which consist of yellow fibres as distinct from the white fibres of the collagen, and which are of different chemical composition and are composed of the protein elastin, is of great importance. The presence or absence of these in the finished leather has an important influence on its physical character, particularly as to the grain the leather possesses, and also influences stretch and elasticity. These elastins are removed to a pre-determined degree in order to effect desired variations of character.

Chemical Composition of Skin.—The following occur naturally in skin—Water, proteins, fatty matter, carbohydrates and mineral matter. The proportions vary according to the kind of animal, and, in a given species, according to the age, sex, mode of feeding, climatic conditions, etc.; further in a given kind of skin they vary from place to place. The composition of the skin as received by the tanner differs from that in the natural state because foreign matter is picked up by the animal while it is alive, and is introduced during curing and also because soluble matter may be washed out during the curing process. The composition is further modified by bacterial and other changes occurring in the interval

between flaying and receipt by the tanner. The skin also contains enzymes and bacteria.

Collagen forms about 95% of the protein matter in the derma of calf, steer and cow hides, *i.e.*, the layer which is converted into leather. The fatty matter consists of numerous other substances besides glycerides. The amount in hides is usually small and during the tanning process it is for the most part converted to lime soaps which are removed during scudding. If not properly eliminated it may give rise to greasy leather. The naturally present mineral matter consists of sodium chloride; in addition there are chlorides, sulphates, phosphates, silicates of sodium, potassium, calcium and magnesium. The mineral matter introduced is removed in the wet work. The chief carbohydrate is glycogen.

PROCESSES PRELIMINARY TO TANNING

The first operation preliminary to tanning consists in washing and soaking the hides or skins.

Washing and Soaking.—The method ordinarily practised in the case of freshly butchered hides or skins which have only been very lightly salted and which have not subsequently been dried, is to carry out the soaking in a pit. This vessel which is also commonly employed in liming consists of a brick or cement chamber sunk to ground floor level and of a capacity of usually 1,000 gallons The skins are immersed in water in this vessel for varying periods dependent upon their condition, to remove the small amount of salt, and to effect the removal of blood, the extraction of albumens and other nitrogenous matters soluble in water, and the softening of adhering dung so that the latter can be removed by mechanical means. The soaking of dried skins is very much more difficult. In this case the proteins have been coagulated by the temperature to which the skins have been subjected in the drying and some liquefaction of the collagen has taken place with the result that the fibres have become attached to each other by a hard film of gelatinous matter; and in addition, even when dried at moderate temperatures, the natural greases of the skin have formed a water-resisting film on the surface.

When the soaking is done in water only as in the case of comparatively fresh goods, they should be immersed for as short a time as possible and preferably in two or more successive changes of clean water. In the case of highly dried goods the use of some chemical agent to effect the swelling of the fibres in as short a time as possible without detrimental influence is now almost universal. The chemical agents so employed may be divided into two classes (a) alkaline (b) acids. Probably the most commonly employed alkaline agents are sodium sulphide and sodium hydroxide; the goods being soaked in a comparatively weak solution of one or other of these until a sufficient amount of swelling and water absorption has been effected to bring the skins back into a condition of pliability. The soaking operation is usually supplemented by working the goods over an inclined beam by hand with a dull unhairing knife to stretch the skin in every direction and thereby facilitate the separation of the fibres; this latter operation is termed "breaking" and is commonly applied to sheepskins. Hides and goatskins are subjected, instead, to a "dry drumming" process. This consists in placing the skins when moderately soft in a large wooden circular drum, which is mechanically rotated and which is provided with shelves or pegs in the interior for the purpose of lifting the skins up during rotation and allowing them to fall from a point midway between the top and the bottom of the vessel, whilst the drum is rotated some 8 or 10 revolutions per minute. The weight of skins falling upon each other assists in the separation of the fibres by the constant kneading action so produced. After this mechanical treatment the goods are then usually subjected to a further immersion either in water or in a weak solution of the soaking agent, the operations being repeated until the skins have acquired the desired degree of flaccidity and flexibility comparable with that of a freshly flayed skin. Weak solutions of acetic, formic, sulphurous and boric acids are also used. For sheepskins, the wool of which is detrimentally affected by strong alkaline solutions, sodium bisulphide or sulphurous acid are commonly employed. The quality and yield of the finished leather is materially affected by this soaking process. Loss of skin material should be avoided.

Unhairing.—The next process is a suitable treatment that will loosen the hair covering so that it can be removed by mechanical means. One of the oldest methods is the one known as sweating. This consists in hanging the goods in a closed chamber or sweat pit, usually constructed below ground floor level in order to provide regularity of temperature. The skins or hides are hung in the chamber previously heated to warm summer temperature and left until putrefactive organisms have effected the requisite loosening of the hair or wool. This process is now usually used only upon fine woolled sheepskins, as it has less deleterious influence upon the wool than the alkaline treatment.

The modern sweat chamber is usually lined internally with white glazed tiles or bricks with a floor which can be kept scrupulously clean, and is provided with means of regulating the heat and humidity. Temperature, atmospheric humidity and ventilation must be very carefully controlled. The time required for this operation is usually three or four days. During this time watchfulness is necessary to guard against the destruction of the grain surface of the skin. On account of the difficulty of control this method is confined to skins carrying high grade wool.

The Liming Process.—The object of liming is to solubilise the epidermis layer, thereby loosening the hair sheath and making easy the removal of the hair by mechanical means, and to swell the hide fibres to the degree requisite for the production of leather possessing the desired properties, either of plumpness, solidity or stretch. The method ordinarily practised consists in immersing the goods in a mixture of lime and water for varying periods. During the process of immersion the goods are periodically withdrawn from the liquor, piled up, and allowed to drain.

The methods of liming can be classified as follows:—(1) Pit method, (2) Paddle method, (3) Painting methods. The first mentioned is the oldest and is carried out in a series of rectangular brick pits, varying in size, according to the class of goods to be processed, from a capacity of 300 to 1,200 gallons. It is customary to use an amount of lime greatly in excess of that which is soluble, and consequently the major portion of the lime is in suspension in the liquor. The goods are thrown into the well mixed liquor singly, and a thin film of undissolved lime deposits itself on the uppermost side of each skin as it is submerged. The greater the amount of lime in direct proximity to the goods, the more rapidly will the lime solution be maintained saturated.

The modern method consists usually of "sharpening" the lime by the addition of sodium sulphide, which dissolves keratin with very great rapidity and consequently effects quickly the loosening of the hair. Liming has also been speeded up by mechanical aid. Sheepskins and goatskins are commonly limed in a paddle wheel, where they can be kept in motion by the operation of a paddle fixed to a semi-circular vessel and slightly dipping in the liquor. In the case of sheepskins where it is undesirable that the wool covering should come in contact with lime, the method of fellmongering these goods consists in the application to the flesh side of a paste of lime to which sodium sulphide sufficient in quantity to loosen the wool in a maximum period of 12 hours has been added.

When the skins have been limed to a condition in which the epidermis has become sufficiently loosened they are removed from the liming pit or vat and are then unhaired. Unhairing is more commonly done in the case of calf and goat skins by machine.

Fleshing.—The next operation is the mechanical one of fleshing. This is also effected either by hand over the fleshers' beam or by machine, and has for its object the removal of fat and fleshy matters from the underside of the skin.

Washing and Deliming.—Next in order is the washing operation preliminary to the chemical removal of lime and other alkali, and to convert the pelt from an alkaline to a mildly acid condition, as it is not possible to tan pelt by the usual processes when in an alkaline condition. The goods are first washed in water. The operation is preferably done in running soft water and is prolonged until the goods are freed from surface lime. The more complete removal of the lime content is commonly effected by the use of a suitable acid. The degree of deliming is

determined by the condition required in the resulting leather; for example, when the leather is to be firm and lacking in stretch, *e.g.*, sole leather, the deliming is usually carried to a stage in which the lime is only removed from the outer surfaces. If the leather is required to be soft and pliable deliming is carried on until all of the lime has been neutralised. In the case of lighter leathers, *e.g.*, sheepskins, the deliming is always carried out thoroughly.

Bating.—Bating, practised almost exclusively upon skins, has for its objects the further removal of lime; an emulsification of the natural grease and some hydrolysis of the collagen fibres to obtain the degree of stretch demanded in such leathers as glove leathers, etc., or a smoother, more elastic and cleaner grain surface in the case of calfskins, and to make the finished leather softer and more pliable. There is still some uncertainty as to the way the skin is modified by bating but there is a removal or breaking down of elastin fibres, a further degree of deliming and a certain degree of hydrolysis of the collagen.

Pickling.—A further preparatory process commonly employed upon sheep, goat and calf skins is that known as pickling. This consists in processing the goods, most commonly by drumming or paddling, in a solution containing a mixture of sulphuric acid and common salt. Pickling brings the skins to a uniform degree of acidity before tanning; thoroughly cleanses the goods; and effects a further separation of the fibres to enhance softness.

TANNING

Tannin or tannic acid is abundantly distributed in many different forms of plant life. Whereas the older type of tanner processed his skins exclusively with oak bark, the modern tanner uses tannin-containing materials from various sources and of different types. Tannins were originally classified as belonging to the pyrogallol or catechol class, but this classification has been superseded by more scientific grouping either according to Freudenberg by the chemical groups of (A) hydrolyzable tannins and (B) condensed tannins; or to Perkin in 3 groups (1) gallo-tannins, (2) ellagi-tannins and (3) phloba-tannins or catechol-tannins. For the practical tanner the latter grouping is of most interest.

The following is a brief table of the most common tannins showing the classification of Perkin; and classified according to their behaviour in the tanning process, as to whether they deposit "bloom"—a crystalline deposition of ellagic acid—which conduces to firmness in the finished leather but is objectionable when goods are to be subsequently dyed.

Gallo-Tannins		*Ellagi-Tannins*		*Catechol-Tannins*	
Do not produce bloom		Produce bloom		Do not produce bloom	
	Per cent tannin		Per cent tannin		Per cent tannin
Galls (*Quercus Infectoria*)	50/60	Myrobalans (*Terminalia Chebula*)	33/36	Canaigre (*Rumex Hymenosepalum*)	25/30
Sumach (*Rhus Coriaria*)	26/30	Divi-divi (*Caesalpinia Coriaria*)	39/42	Gambier (*Nauclea Gambir*)	35/45
		Valonia (*Quercus Aegilops*)	30/40	Hemlock (*Abies Canadensis*)	8/20
		Oak Bark (*Quercus Robur*)	10/12	Larch (*Larix Europaea*)	9/10
		Algarobilla (*Caesalpinia Brevifolia*)	60/80	Mimosa or Golden Wattle (*Acacia Pycnantha*)	38/49
				Mallet Bark (*Eucalyptus Occidentalis*)	20/25
Tanning Extracts					
Chestnut Wood Extract (*Castanea Vesca*)	26/30	Myrobalan Extract (*Terminalia Chebula*)	50/55	Oak Wood Extract (*Quercus Family*)	26/28
				Quebracho Extract (*Quebracho Colorado*)	62/68
				Mimosa Extract (*Acacia Family*)	62/64

Synthetic Tannins.—There are a number of synthesised products manufactured from phenols and hydrocarbons, such as naphthalene, which are converted into leather forming materials by sulphonation with sulphuric acid and subsequent condensation with formaldehyde. These products are being used to a considerable extent as re-tanning agents and for bleaching dark coloured leather. These products are not synthetic tannins in the strictly chemical sense for their chemical constitutions are entirely different from those of the natural tannins.

Vegetable Tanning.—Vegetable tanning may be conveniently dealt with in two distinct groups, (a) the tannage of heavy leather —sole, belting, harness etc. and (b) the tannage of light leather —shoe upper leather, fancy, bookbinding, etc.

Tannage of Sole Leather.—The world's production of sole leather is estimated to aggregate half a million tons per annum, of which the United States produces 200 million pounds, Great Britain 175 million pounds, and Germany 130 million pounds. In Great Britain, preliminary to the tannage for sole leather, the hides in the limed condition are subjected to "rounding"; this consists in cutting the hide into several portions—butt or bends, shoulder and bellies. In the United States, Australia and elsewhere, the tannage is very often done in sides, the hide being divided into two portions by cutting down the line of the backbone.

The tannage of sole leather usually consists of three group operations:—1. Colouring, by suspending the goods in a series of weak liquors of gradually increasing strength. 2. Laying the goods in strong liquors and transferring them to stronger liquors as the tannage proceeds; the operation being called handling and the series of pits being described as the "handlers." 3. Placing the goods for comparatively long periods in a strong liquor after they have been dusted (in layer pits, called "dusters") with a small quantity of solid tanning material between each piece of leather. The suspender tannage is accomplished in a series of pits containing weak liquors that have been used upon previous goods.

The goods are usually moved daily into gradually increasing strength solutions and their position is also changed in the same pit once or twice daily. The length of time and the number of pits used varies in different tanneries.

The goods are moved from the strongest suspender pits to the "handlers" or "floaters," being handled daily by being drawn up on the side of the pit, allowed to drain and then re-transferred to the pit in a horizontal position, moving the goods to pits of gradually increasing strength of tannin. "Handling" becomes less necessary as the tannage proceeds. In the latest stages of the handler round it is customary in Great Britain to sprinkle the goods with a little solid material; Mimosa bark, ground myrobalans or valonia, as a preliminary to the "layers," or "dusters." At the end of the "handler" round the goods are usually almost completely tanned and are then transferred to the "layers" which contain very strong liquor obtained from the leaches, of previously unused tannin; or by the addition of chestnut or oak wood extract.

In the "layers" the goods may be allowed to remain for long periods without change, being lifted and re-transferred into increasing strength solutions at the end of each one or two weeks. This treatment permits the deposition of bloom and conduces to the production of firmer, harder, heavier and better wearing leather. To complete the process, the goods are removed and drained and then scoured to remove the deposited bloom from the grain.

Tannage of Calfskins.—One of the essential differences in the manufacture of this leather by the vegetable process is in the preparation before tanning. After liming, unhairing, fleshing and scudding the goods are either most commonly bated, or very thoroughly delimed. The goods after bating are sometimes pickled; sometimes, however, this operation is omitted.

Usually the tannage is begun by suspending the skins in non-astringent liquors consisting of used liquors originally prepared from a mixture of two or more of the following materials—

Mimosa bark, myrobalans, gambier, quebracho, chestnut and oak wood extract. After the goods have been suspended for a period varying from two to seven days the tannage may be completed in a "handler" round, the goods being finally given a re-tannage with a view to lightening the colour by drumming, paddling or suspending in a warm sumach infusion. Alternatively, the tannage is sometimes done entirely in paddles using gambier in the earlier stages and gradually strengthening up the tannin content of the solution by adding quebracho-myrobalan extract, chestnut extract, etc. As calfskins are required in the majority of cases to be dyed it is the usual custom to avoid "bloom-giving" tanning materials, the irregular deposition of bloom on the surface of the leather detracting from the production of a level dyed result.

Tannage of Skivers.—Skivers are the grain portions of sheepskins, which have been split in the limed condition. The universal tannage used in their manufacture is sumach (*Rhus coriaria*), this material being chosen because it readily produces a white leather capable of being dyed in any pale or brilliant colour.

The goods, as removed from the splitting machine in their limed condition, require to be washed, delimed and very thoroughly bated, after which they are most commonly pickled and then tanned in a paddle wheel. The goods are placed in the paddle wheel with the sumach in the ground leaf form and preferably after having been infused with water for a few minutes at a temperature of 140° F; the tannage being usually commenced at a temperature of about 90° F. The goods are usually completely tanned within 12 hours, when they may be removed, drained, rinsed in water and hung up to dry into the "crust" condition.

Bottle Tannage.—A number of goatskins and also some few calfskins and sheepskins are tanned by a primitive method commonly termed bag or bottle tanning. The goods after being bated are individually sewn into a bag by doubling the skin down the ridge or backbone and then sewing round by means of a power driven sewing machine. The skin bag is then filled by means of a funnel to about $\frac{1}{3}$ of its capacity with a sumach infusion through an aperture left for the purpose. A quantity of air is blown into the bag and the aperture is closed by tying round with a cord. The skin bags are immersed in a shallow tank previously filled with a warm sumach infusion in which they float, the position of the bags being changed by keeping the goods in motion and turning them over with a wooden pole. The goods are withdrawn after 2–3 hours and are then placed upon a draining rack and left for several hours until the liquor has drained from them, when they are again re-filled with a stronger infusion of sumach liquor and immersed in a still stronger and warmer infusion. After two or three immersions the goods become thoroughly tanned, when the bags are cut open and then either rinsed and dried, or given a further re-tannage by paddling in a stronger infusion of sumach. The distending of the skins produces a thin leather devoid of contracted grain, and not liable subsequently to stretch.

Mineral Tannages.—The oldest process of tanning by mineral salts is the *alum process*. This is still very largely practised in the manufacture of glove leather. The proportions of the materials used vary, but the following may be taken as an example:—alum, 8 lbs.; salt, 8 lbs.; flour, 3–5 lbs.; egg yolk, 2–4 lbs., for 100 lbs. weight of prepared skins. It is customary to add all of the ingredients at the commencement of the tanning and prolong the drumming for about two hours until the leathering process is completed when the goods are removed, drained, and dried.

Chrome Tanning by the "Double-bath" Method.—This method is commercially applied chiefly in the tanning of goatskins for the manufacture of glacé kid; it is also used in the tannage of calfskins for willow calf; and for mechanical leathers.

The prepared pelt is first treated with a comparatively weak solution of potassium or sodium bichromate acidified with hydrochloric or sulphuric acid. After this solution has been absorbed by the skins, they are transferred to a solution of sodium thiosulphate ("hypo"), to which hydrochloric or sulphuric acid is added as the reduction process proceeds. The free sulphurous acid produced reduces the chromic acid resulting from the action of the acid on the bichromate solution, into a basic chromium chloride or a basic chromium sulphate salt; the thiosulphate during the reduction process undergoing oxidation to sodium tetrathionate and sodium sulphate. At the same time, sulphur is liberated and deposited in the interstices between the fibres as well as in and on the fibres of the skins. The sulphur deposit is one of the principal features which distinguish leather tanned by the "two-bath" process from that produced by the "one-bath" method.

The method now commercially practised is first to pickle the skins with sulphuric acid and common salt, and then drum in a solution of sodium bichromate and acid. The more complete the absorption of chromic acid resulting from the chemical action the better, as this has an important influence on the finished leather.

After the goods have been thoroughly impregnated, they should be of a bright orange yellow colour. They are then removed from the solution, and carefully drained for a minimum period of 24 hours, when they are passed through a striking-out machine for the purpose of laying the grain of the skin perfectly flat and removing any wrinkles that may have appeared.

The reducing operation is done in the drum or paddle-wheel, but in the case of heavy goods it may be done in pits. The following is probably the best procedure:—The necessary quantity of sodium thiosulphate is dissolved and placed in the paddle. About one-third of the acid required, after dilution, is added to the solution of sodium thiosulphate. The mixture should be well stirred either by paddling or by hand, with a wooden stirrer, when after a few minutes the solution will become slightly cloudy, as a result of precipitation of finely divided sulphur which shows that the reaction has begun. A further $\frac{1}{3}$ of the diluted acid is added, and after about 1 hour the remainder.

Generally, the reduction takes place in fairly well defined stages indicated by the colour of the goods. In the early stages there is a change from the original yellowish orange to a darker shade of yellow and to a lightly brownish yellow. Later the colour becomes a greenish olive, and finally a pale bluish green.

The following are suggested quantities for the two solutions:—

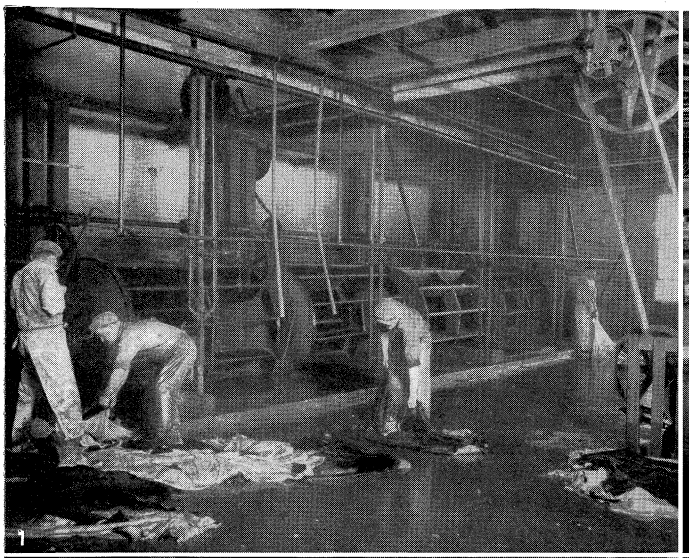
1st Bath	*2nd Bath*
6 % bichromate of soda	15 % sodium thiosulphate
4½ hydrochloric acid	7½ hydrochloric acid
or	*or*
1¾% sulphuric acid	3 % sulphuric acid

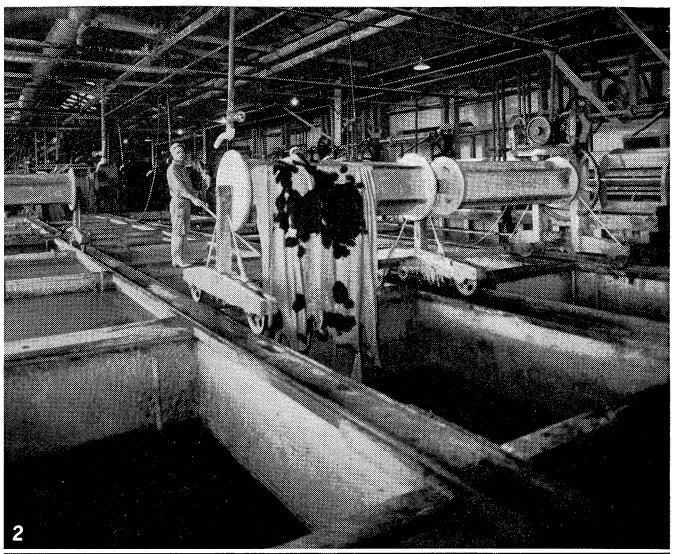
Chrome Tanning by the "Single-bath" Method.—The "single-bath" method is more largely practised than is the "two-bath" process, particularly in the case of calfskins intended for "box" and "willow," or suede finish; hides for side leathers; and sheep for gloving, upper leather, linings, and fancy purposes. The "single-bath" process is simpler, and less liable to produce irregular results. The essential difference is that, whereas in the "double-bath" process the basic salt of chromium is formed on the fibres, in the "single-bath" method the basic chromium salt is applied direct to the skins in solutions of gradually increasing strength.

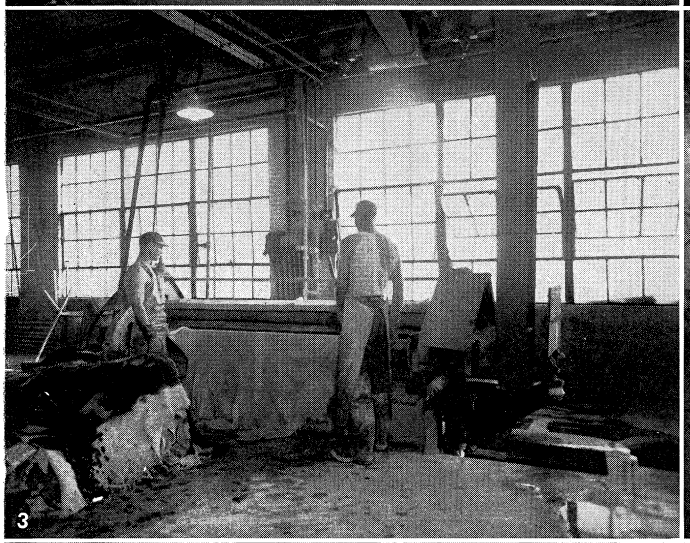
One of the simplest methods of preparation of a "single-bath" chrome liquor consists of neutralising the acid of chromium sulphate or chrome alum by adding sodium carbonate. The following proportions of sodium carbonate and chrome alum should be used to produce the salt, $Cr(OH)SO_4$, which is most generally suitable. For each 1,000 lbs. pelt to be tanned, dissolve:—150 lbs. chrome alum in 50 gallons water, at a temperature of about 85 to 95 deg. C. When the whole of the chrome alum has gone into solution, cautiously add a solution, prepared by dissolving 16 lbs. soda ash or 60 lbs. washing soda crystals in 25 gallons hot water. When all of the sodium carbonate has been added, the solution should be thoroughly stirred.

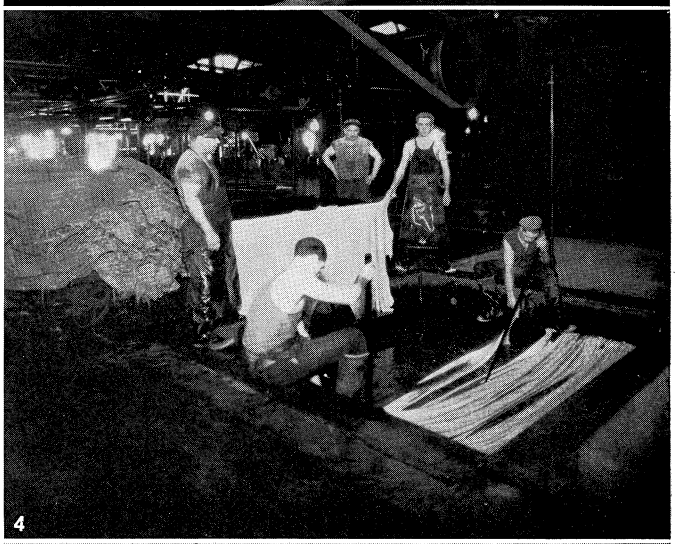
The usual procedure is to mix together carefully in a suitable lead-lined tank equal parts of sodium bichromate and concentrated sulphuric acid after dissolving the bichromate in a small quantity of water. The reducing agent is then very cautiously added until the colour of the solution is changed from the original orange yellow colour to a bright bottle-green shade.

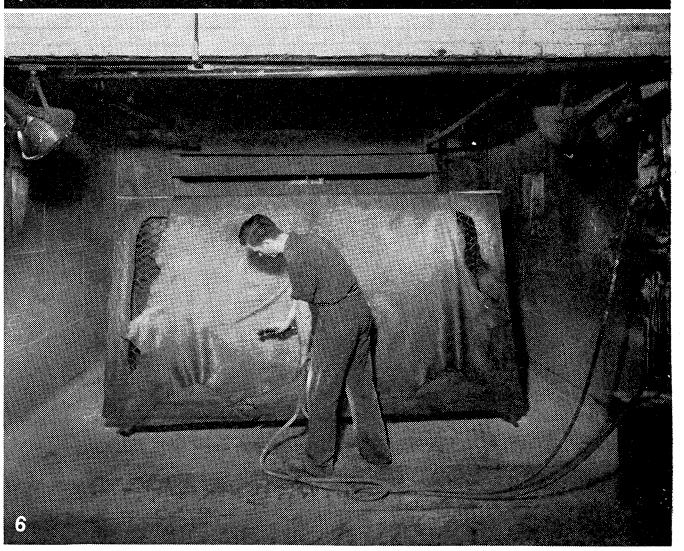
The following quantities produce a liquor which is considered of a satisfactory chemical composition:—200 lbs. Bichromate; 200 lbs. Sulphuric acid (95%); 50 lbs. Glucose; 100 gal. Water. The tannage is carried out on lines more or less identical with those of vegetable leathers; the processing being done either









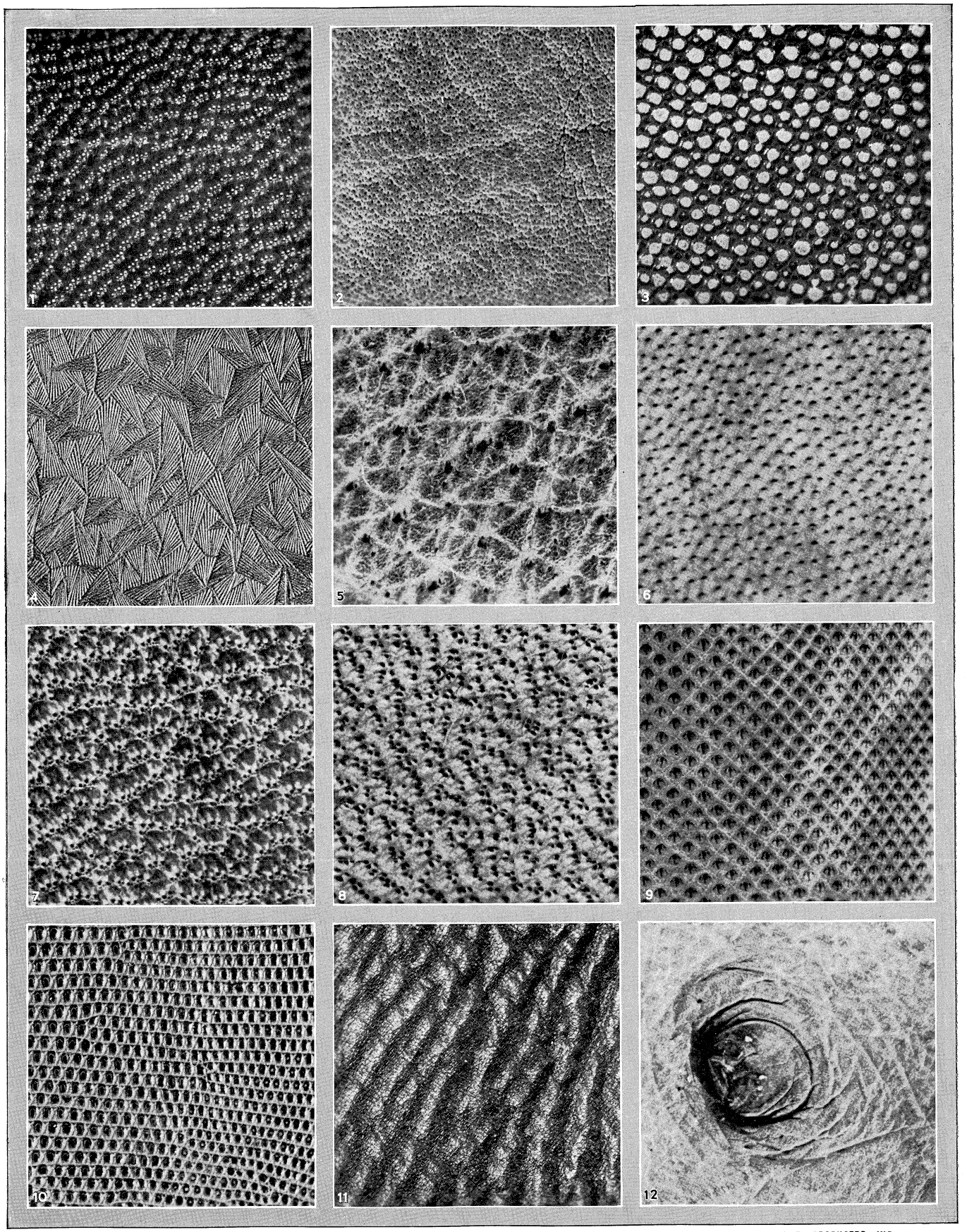


BY COURTESY OF EAGLE-OTTAWA LEATHER COMPANY

OPERATIONS IN TANNING UPHOLSTERY LEATHER

1. Washing hides in vats with revolving paddle wheels and cold running water
2. Reeling hides in large vats of hydrated lime and sodium sulphide. The hair roots are destroyed in this process, which requires four or five days
3. Scraping the hairs off by means of a dull-bladed machine. The hides at this stage are swelled by lime and must be treated with bate, an organic compound which neutralizes the lime and makes the hides soft and pliable, ready for the tanyard
4. A tanyard. After bating, the hides are subject to decomposition and must be tanned to prevent rotting. They are placed in vegetable tanning liquor of progressively increasing strength
5. Splitting machine with belt knife which operates horizontally and splits leather to the required thickness
6. Finishing leather. Airbrushes are used to apply the colour and finishing material

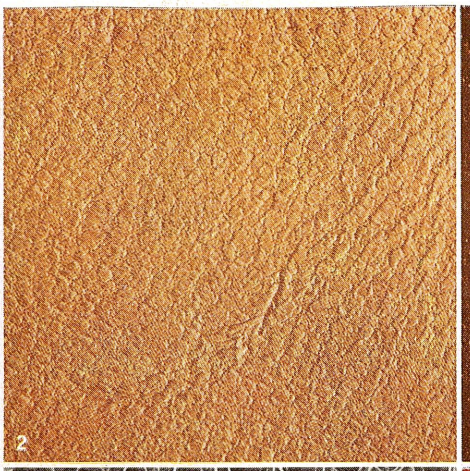
LEATHER

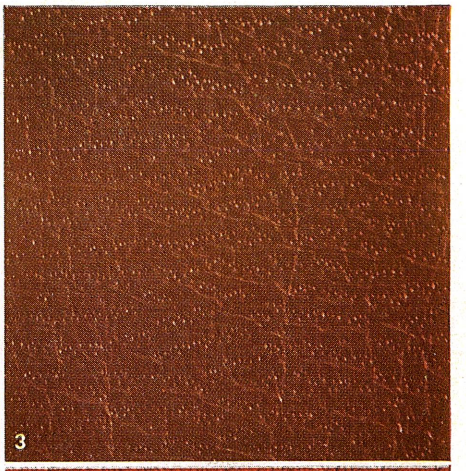


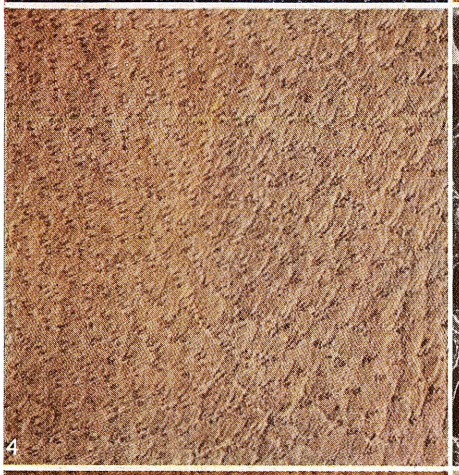
BY COURTESY OF (1, 2, 5, 6, 7, 8, 12) THE U.S. DEPARTMENT OF AGRICULTURE, BUREAU OF CHEMISTRY AND SOILS, (3, 4, 9, 10, 11) THE AMERICAN LEATHER PRODUCERS, INC.

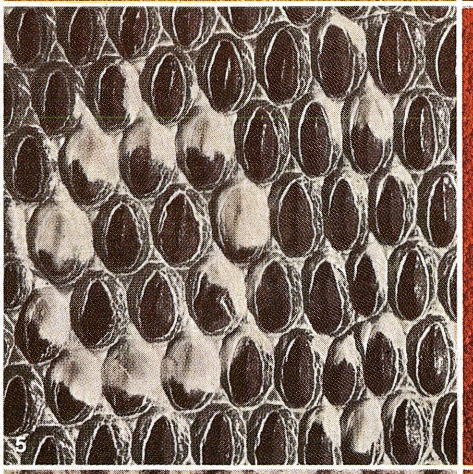
MICROSCOPIC ENLARGEMENT (FIVE DIAMETERS) OF COMMERCIAL LEATHERS

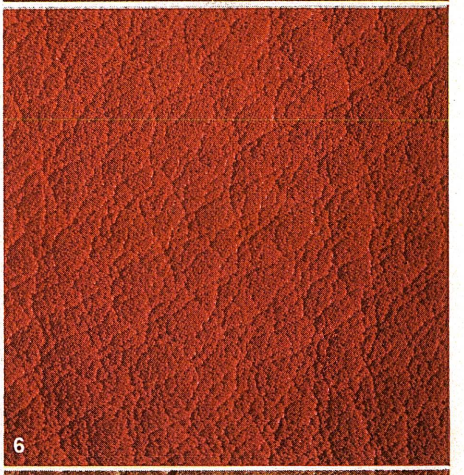
1. Kid. 2. Calf. 3. Galluchat shark grain on calf. 4. Grained calf. 5. Pigskin. 6. Kangaroo. 7. Goat. 8. Cowhide. 9. Watersnake. 10. Calcutta Lizard. 11. Shark. 12. Ostrich

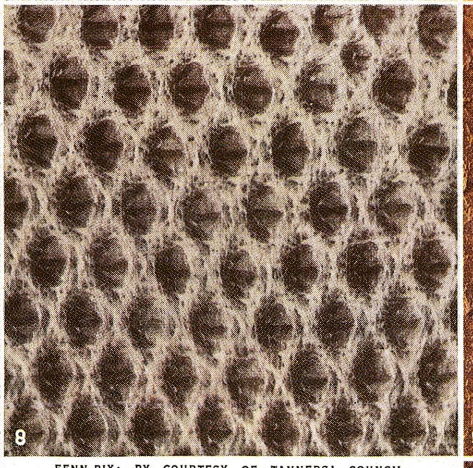


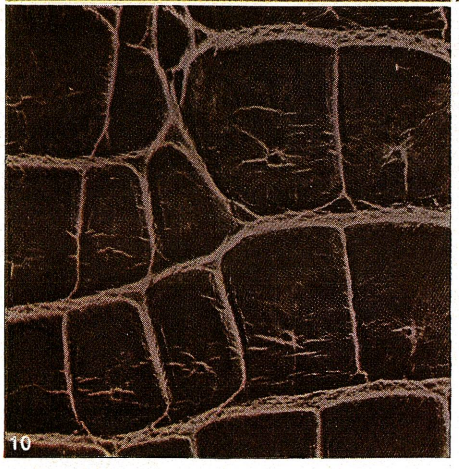


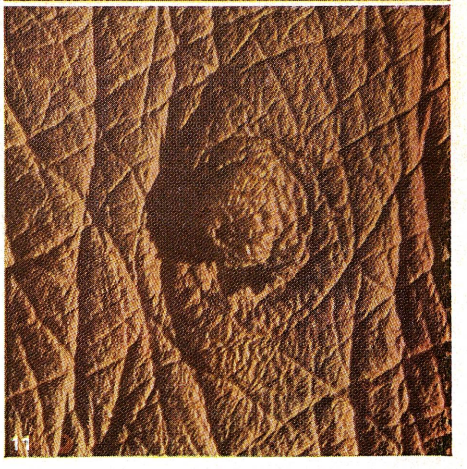












FENN-PIX; BY COURTESY OF TANNERS' COUNCIL OF AMERICA

MICROSCOPIC ENLARGEMENTS IN COLOUR OF VARIOUS KINDS OF LEATHER

1. Crushed kid. 2. Sheepskin. 3. Horsehide. 4. Kid. 5. Java ring lizard. 6. Calf suede. 7. Cowhide. 8. Watersnake. 9. Pigskin. 10. Alligator. 11. Ostrich. The magnification is approximately four linear diameters

in the drum or paddle-wheel for the lighter classes of leather, and by suspension in vats for chrome sole leather, hydraulic and similar leathers. Starting with a weak solution, the strength is increased until complete penetration has been effected.

Chrome tanned leather possesses properties not associated with leather produced by vegetable tanning. For example, properly tanned chrome leather will stand high temperature without any detrimental effect. Chrome leather is also more resistant to atmospheric influences, and to chemical fumes and moisture.

On account of the comparative quickness of the tanning process, and the good wearing properties of the leather, this process is largely replacing the vegetable tanning process in the case of boot and shoe uppers, and for special purposes where the above mentioned properties are advantageous; also where extreme tensile strength is demanded. The disadvantage of this leather in comparison with vegetable leather for sole leather is that unless impregnated with waxes it tends to slip in wear and it is not practicable to obtain the desired thickness.

Oil Tannage.—One of the very earliest processes for converting pelt into leather was the application of oil and fatty substances. The modern method of manufacturing chamois leather (made from the flesh split of a sheepskin), deer, antelope, and similar skins, consists in the impregnation with an oxidisable fish oil of the goods when in a weakly alkaline condition, and subsequently processing to effect further oxidation of the oil on the fibres.

The goods as they leave the splitting machine are re-limed to effect a further swelling of the fibres and decomposition of the fat cells with a view to subsequent removal of the natural grease. The goods having been re-limed sufficiently are then frized on the split side. This operation is somewhat similar to that of hand fleshing but consists of the removal of the coarse fibred surface or "ground" from the split side nearest to the grain, by cutting this away with a sharp two handled knife on a frizing beam.

The goods are now delimed either by employing a fermented infusion of bran or other flour offal, or by the use of a suitable acid. The object to be attained by oil tanning is the substitution for the moisture in the fibres of a suitable fish oil. The goods are first drained and then pressed in some hydraulic or other press to express from them as much moisture as possible. They are then hung up to become partially dry. This requires very careful supervision to prevent the goods becoming too dry, and the fibres in consequence becoming repellant to the subsequent absorption of the oil and becoming stuck to each other. After as much moisture has been eliminated as practicable without causing the fibres to adhere to one another, the goods are then placed in a machine called the "stocks." This consists of two heavy hammers working in a semi-cylindrical vessel in which the goods are placed and subjected to a hammering or beating action; at the same time the goods are continuously turned over by reason of the shape of the vessel. They are sprinkled with a fish oil, usually cod liver oil, during the process of stocking or kneading and are processed until they become sufficiently saturated. They are then further dried and re-sprinkled with oil and re-stocked.

These operations are repeated until the goods are fully saturated and practically all moisture has been replaced by fish oil. The oil is then decomposed on the fibres by the application of heat.

PROCESSES FOLLOWING TANNING

Drying.—The old method is to hang the goods up in a loft which is ventilated as required by louvres, the goods usually hung up from tenterhooks in rails placed parallel to the current of air.

A light coating of oil is usually applied to the wet leather before drying in order to act as a protective film against the drying of the grain surface and to ensure that the evaporation of the moisture is chiefly from the flesh side. The regularity of the colour of the leather when dry is in the main dependent upon the rate of evaporation of the moisture. Thick sole leather requires to be dried more slowly than thin goods (calf or sheep leather); and vegetable tanned leather much more slowly than mineral tanned leather, which is dried in a few hours at a comparatively high temperature and with little ventilation.

During the past few years considerable improvements have been effected with a view to accelerating the process. The method now employed for all of the lighter classes of leather and also for some of the heavy classes is to dry the goods by machine. There are various machines, which differ mechanically, but are similar in general principle and are modelled more or less on the continuous type of baker's oven.

Currying.—The old time currier was a skilled craftsman who was capable of undertaking the whole of the processes from the crust tanned condition to the finished commercial product, when the leather was required to be of a greasy type. The term currying is applied to-day to the impregnating of leather with grease. The goods after tanning and drying are split or shaved, and then scoured either by hand or machine until the grain surface is thoroughly cleansed from "bloom" and excess tannins. The leather is then usually re-tanned with sumach to obtain a better colour, after which it is ready for grease impregnation.

Grease impregnation may be done in three different ways (1) hand stuffing, (2) drum stuffing and (3) dipping. Hand stuffing consists in applying to the previously moistened leather a thick layer of dubbin prepared by mixing together about equal parts of beef tallow and cod liver oil. The application is made, usually to the flesh side of the leather, with a brush and the leather is afterwards slowly dried. As drying proceeds by evaporation the more oily portions of the dubbin are absorbed by capillarity, and become thoroughly distributed and absorbed by the fibres. This method is now only practised upon a few high grade leathers and has been replaced by drum stuffing and dipping. Drum stuffing consists in drumming the leather, which has been previously got into an equable condition of moisture by damping, in a drum which has been heated either by live steam or by hot air circulating through the vessel.

Dipping is chiefly practised upon heavy leathers, for example, harness backs, strapping, etc., and consists in immersing the leather, which has been previously well dried, in a tank filled with molten grease (usually paraffin wax). The dried leather offers little resistance to the penetration of the molten wax and complete permeation is effected in a few minutes. This impregnation is not so satisfactory as drum or hand stuffing because of the non-oxidisable and little lubricating properties of the wax.

Dyeing.—The dyeing process is accomplished by the following methods: (1) brush dyeing or "staining", (2) dipping, (3) dyeing in paddle or drum, (4) spraying. The first mentioned is used in the colouring of the heavy types of leathers, such as hides for upholstery, bag and portmanteau work, etc., which on account of their size and weight are inconvenient to handle by dipping or other immersion processes. This method consists of brushing a weak solution of the dye on the surface of the prepared leather, usually two or three applications being given to obtain regularity of colour. The dyes employed are the usual coal tar colouring materials of the acid or basic class.

Dyeing by immersion in rectangular wooden trays or by dipping pairs of skins at a time in a shallow wooden or porcelain vessel either by machine or by hand is practised when small quantities of leather are to be processed.

The spray method in which the dyestuff is applied to the leather in an atomised state through a spray pistol is used upon leather for the application of dyestuffs and also of insoluble paint-like compositions. The application of mineral pigments, such as the ochres and umbers in suspension in a water medium in which has been dissolved some binding agent such as casein or shellac, has effected a considerable improvement in the regularity of shade of colour. The modern practise is to dye with coal tar dyestuffs with a top coating of a suitable pigment mixture.

The Finishing of Leather.—The finishing of leather in order to make it suitable for the purpose for which it is required in commercial usage necessitates considerable mechanical treatment according to the kind of finish required. The following may be considered amongst the most important:—

Sole Leather.—In order to obtain the requisite degree of firmness and solidity to ensure satisfactory wearing qualities sole leather must be compressed as compactly as possible. This is done by either rolling or hammering. The system in Great

Britain and America is to roll the leather, commencing first in a slightly damp condition and afterwards in the dry state, on a girder type of heavy rolling machine under heavy pressure.

Upper Leather.—The finishing of upper leather, box calf, willow calf, etc., consists of staking which is performed by a machine which forcibly drags the skin over the edge of blunted knife blades, to impart the necessary softness. After staking, the skins are fluffed or buffed on the flesh side by a buffing machine, a rapidly rotating emery-covered cylinder imparting a suede or pile finish to the flesh side. The necessary polish is imparted by first applying a "seasoning" mixture consisting usually of a weak solution of albumen or casein mixed with milk for the purpose of limiting the liability of damage by friction, and a little dissolved dyestuff for the purpose of enhancing the colour. The leather is then friction-glazed by a machine, a glass cylinder being rapidly rubbed over the surface under heavy pressure, thus imparting a high polish.

The box or willow grain is produced either by hand or machine. The skin is doubled, grain side inside, and then pressure is applied to the doubled portion in the required directions either by hand with a cork covered board or by rotating cork covered rollers, so as to make the natural grain take a defined form. Skins of this type are often finally smoothed by placing the grain surface of the skins in pressure contact with a polished plate.

Moroccos.—Goatskins for moroccos are usually grained by hand after glazing on a special type of glazing machine. For the best leather this is done, whilst the skin is wet, by hand with a cork covered hand graining tool, working the skin in five or more directions until the natural grain has been raised in a rounded or "birds-eye" form. The grain is fixed by drying the goods at a high temperature. The goods are re-glazed and re-grained if a high polish is required. Sheepskins required for linings and leathers demanding a smooth finish are given a light rolling on a pendulum rolling machine.

Suede Leathers.—The suede or pile required is attained by "wheeling." This consists in applying the flesh side of the skin to the surface of a rapidly rotating emery or carborundum covered cylinder, which grinds the flesh fibres to a fine pile.

Embossed Leathers.—A very large quantity of leather is embossed with an artificial grain in simulation of more expensive skins. The embossing is done by passing skins through machines possessing an engraved roller or electrotype plate, on which has been reproduced an intaglio of the kind of grain required.

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(M. C. L.)

LEATHER, ARTIFICIAL, or leather substitute, has been made in various ways for over seventy-five years, the earliest patents having been granted in England about 1850. The most popular material used at present consists essentially of a suitable cotton base fabric to which has been applied a waterproof coating composition. The material so prepared is smooth and in order to simulate genuine leather must be given a suitable pattern or design. The design may be either a reproduction of genuine leather or merely a conventional pattern. The material may be made in either solid colours or in multitone effects by applying additional coatings of contrasting colours after embossing. In this way Spanish or Morocco leather finishes as well as many other pleasing effects can be produced. The fabrics used as a base for the material may be either sheetings which are of the plain weave type, or drills, sateens, moleskins and broken twills which are of the twill weave type. The weight per square yard of the fabrics varies from 2 ounces to 20 ounces depending on the type of material to be manufactured. Before coating the fabrics are usually dyed a colour similar to that of the coating composition to be applied. The heavier fabrics are often napped on the uncoated side to make the finished product softer and more pliable. The coating compositions applied to the fabric are of two general types,—Cellulose Nitrate compositions or drying oil compositions, the former being the most commonly used. The Cellulose Nitrate compositions consist of dry Cellulose Nitrate dispersed in a mixture of suitable organic solvents, such as denatured Ethyl Alcohol or Methyl Alcohol, Methyl, Ethyl or Butyl Acetate, Acetone and hydrocarbons of the Methane or Benzene series, to which is added pigment previously dispersed in a suitable softener or plasticizer. The finished composition thus consists of Cellulose Nitrate dispersed in an organic medium, pigment and softener or plasticizer. The most common softener used is pure castor oil; Oxidized castor, rapeseed, cottonseed, fish or linseed oil are also used. Among common plasticizers used are Dibutyl Phthalate, Dibutyl Tartrate, Triphenyl and Tricresyl Phosphate. The pigments used are usually of mineral origin, although many lakes are used to produce the more brilliant colors. The drying oil compositions consist essentially of suitably bodied drying or semi-drying oils, pigment and fillers, such as clay, talc or barytes. The coating composition is applied by passing the fabric under a "doctor" knife attached to a suitable framework. The coated fabric is then passed through a drying chamber where the solvent is volatilized, to be recovered by some manufacturers. The drying oil compositions must be "baked" or dried for a period of several hours. Rubber compound coated fabrics are sometimes embossed in leather grains and the material sold as Artificial Leather. This material, however, cannot be produced in the variety of colours and grains that is possible with the Cellulose Nitrate type.

Artificial leather finds a variety of uses, in many places taking the place of leather and in some instances being preferred to genuine leather. Among innumerable uses are upholstery of furniture and automobile seats, automobile tops, both of open and closed type, bookbinding, notebook covers, luggage of various kinds, various parts of shoes, protective coverings where waterproofness is essential, decorative purposes as wall coverings, table covers, etc. The manufacture of Artificial Leather in the United States occupies an important position in the industries of the country. The material is also manufactured in Europe and finds extensive uses there. In the United States between 45 and 50 million yards are manufactured yearly and the industry is steadily growing.

(E. H. N.)

LEATHER, CARE OF. All articles made of leather must be given careful attention in order to obtain maximum wear and use therefrom. The rules of care are very simple and easy to follow and apply. In a general manner all kinds and types of leather can be cleaned by the same method. Water and dirt ruin more leather than ordinary use and wear. If the leather article becomes wet, rapid drying should be avoided, heat should not be applied, nor should the article be placed near a hot stove or on a hot radiator. Alkalies like washing soda should not be used for cleaning leather; solvents such as benzine, naphtha or carbon tetrachloride should not be used except with great caution. Poisonous chemicals like nitro-benzol (also known as oil of mirbane), aniline oil, and benzol must not be used either as cleaners or as part of a polish or grease. The best form of cleaner for all kinds of leather is tepid water and a neutral soap used liberally to remove dirt and other foreign matter. Toilet, castile, and good grades of saddle soap are recommended.

Shoes.—*Dress Shoes.*—For cleaning use a soft brush or a sponge with soap and water, rub gently but firmly over spots that offer resistance, wipe with a clean cloth and while still damp apply a light film of castor oil and permit the shoes to dry slowly. Use of other oils will cause difficulty in polishing. After the shoes are dry, apply a good polish two or three times. If shoes are polished lightly every day their life will be extended materially. Suede shoes are best cleaned with a soft wire brush which raises the nap and removes dirt. Grease spots are best removed by cover-

ing the stain with a rubber solution and peeling it off when dry. White shoes are also best cleaned with neutral soap and water. Care should be taken not to rub the surface too firmly and disturb the original finish of the leather. White buck or suede should first be brushed with a soft wire brush. If all dirt is not removed in that manner, then the spots should be rubbed with powdered chalk and brushing repeated. Formulae for polishes and white dressing are described below.

Work Shoes.—This class also embraces boots for hunting and other purposes. This type of footwear is usually made of heavy leather which is subjected to abnormal conditions by the average wearer and is best preserved by thoroughly greasing with one of the compounds described below. When the shoes are new, and before wearing them, they should be well greased over all; particular attention should be given to seams and the stitching at the welt. The shoes or boots should be permitted to stand overnight with a heavy application of grease. This gives the grease time to be absorbed by the leather. The next morning, the shoes are wiped with a soft cloth to remove the excess. Shoes of workers in the building trades are especially subjected to scuffing and liberal applications of grease to those parts is very beneficial. When shoes or boots become muddy, the best procedure is as follows: if at all possible, do not permit the shoes to dry out while covered with mud and dirt, but wash clean with warm water, using a soft brush to clean the seams and the welt. When thoroughly clean wipe with a soft cloth and while the shoes are damp apply the water-proofing compound liberally with the fingers, rubbing it into the leather well. Pay especial attention to the seams and at the place where the upper meets the sole. Let stand in a warm place over night and the next morning remove the excess grease with a soft cloth. The grease is best applied as warm as the hand will bear. The shoes can be greased while dry but the grease will penetrate best while the leather is wet. Even if the shoes do not get muddy and dirty, it is best to grease them no less than once a week. This preserves the leather and keeps it soft.

Polish.—A suitable polish is made by melting together two parts of beeswax, 1 part paraffin wax, and 2 parts of turpentine to which is added oil soluble dye for colours and lamp black for black. Allow to cool and apply in the ordinary manner.

Waterproofing Grease or Compound.—The best type of materials for this purpose is animal oils and greases. Melt together 6 parts cake tallow, 4 parts wool grease, and 2 parts cod oil.

White Shoe Dressing.—Boil together 2 parts carnauba wax, 1 part castile soap, and 3 parts water. Stir the mass while boiling, and when an emulsion is obtained add 4 parts titanium dioxide and 20 parts more of water. Shake well before it is used.

White Cleaner for Suede and Buck.—Boil together 2 parts castile soap, 10 parts titanium dioxide, and 100 parts water. Apply to the leather. Permit to dry and brush with a soft wire brush.

Harness.—Harness should be cleaned and oiled from three to four times a year depending upon the amount of wear. The same procedure as for cleaning and greasing work shoes should be applied.

The grease for work shoes will also answer the purpose for harness. Neatsfoot oil, however, can be used in place of the grease.

Driving Belts.—A belt should not be exposed to unduly wet conditions nor become oil soaked. This may cause it to stretch and lose its "drag" or pulling property. Water may also cause the laps to open, although most belts are joined with water resisting cements. Belts should be inspected frequently and treated regularly while in use.

Treatment consists of thorough cleaning with neutral soap and warm water. Lumps of dirt are removed with a soft brush. Oil soaked belts should be sent to the manufacturer for cleaning and treatment.

After the belt is cleaned it is wiped dry with a soft cloth and, while still damp, the dressing is applied. Dressings are made of mixtures of tallow, wool grease, and neatsfoot oil; the same kind of dressing is applied while the belt is in use. Belts, old or new, while in storage should be kept in a cool, well-ventilated room. Old or used belts should first be cleaned and dressed before storing away.

(*See* BELTING FOR POWER TRANSMISSION.)

Bookbinding Leathers.—Atmospheric conditions contribute to their deterioration: if too low in relative humidity and if laden with products of fuel combustion, bindings will absorb them and in a short time show the effects. If possible, the bindings should be kept in an atmosphere of 65% relative humidity, away from direct sunlight and an atmosphere free from coal, gas, and the like. A light oiling with neatsfoot oil every six or eight months is beneficial. Rub the oil gently into the leather with a soft woollen cloth. (*See* BOOKBINDING.)

Upholstery Leather.—The proper care of this type of leather is simple. Use warm, not hot or cold water, and any mild soap, such as castile. Work up a thin suds on a piece of cheesecloth and go over the leather surface. Go over the leather a second time with a piece of cheesecloth using no soap. Finish up by rubbing with a dry soft cloth.

The soap and water may remove the gloss, but the friction of the dry cloth will restore it. Never use furniture polishes, oils, or varnish. They may soften the finish and cause it to become sticky.

Bags, Cases.—These are made to withstand considerable abuse but are subject to scratches and bruises. They are best repaired by the manufacturer of bags and cases. Ordinary soil and spots are removed with a neutral soap, a soft cloth and gentle rubbing. A light coat of castor oil is applied to them, while they are damp, and allowed to be absorbed.

Mildew.—Mildew is mould and thrives in an atmosphere of high humidity. Leather articles should not be stored or kept any length of time in a room or place that is dark and damp, even though the room be cool; mould will readily grow under such conditions. The room should be dry, well-ventilated, and light. The ordinary attic is an ideal place.

Never store leather articles in a basement on a cement floor for such a place is usually damp and the air is not well circulated. It is unwise to use strong disinfectants on leather articles that are mildewed. Often no more damage is done by the mildew than to discolour the spot where it has grown, with a consequent destruction of the finish. Mildewed areas are best treated by washing with a neutral soap solution to which is added a small amount of oil of eucalyptus or oil of sassafras, about one teaspoonful to a pint of soap suds is sufficient. After this treatment, it is well to let the affected parts of the article stand in the direct sunshine for about one hour.

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LEATHERHEAD, an urban district in Surrey, England, 18 mi. S.S.W. of London, on the S.R. Pop. (1938) 21,170. Area 17.5 sq.mi. It lies at the foot of the North Downs in the valley of the Mole.

The church of SS. Mary and Nicholas is 14th century. Leatherhead is largely residential and includes Ashtead, Fetcham and the Bookhams. A planning scheme is in force.

LEATHERJACKET, larvae of several kinds of crane flies or daddy-long-legs (Tipulidae) which feed on the roots of grasses and other crops. *Tipula oleraceae* is the chief offender in Europe, while *Nephrotoma ferruginea* and others cause damage in North America. They are controlled by use of poisons and rotation of crops. They are distinguished from wire-worms (Elateridae, *see* COLEOPTERA), which they closely resemble, by the absence of legs. Larvae of most crane flies are aquatic or semiaquatic. *See* DIPTERA and ENTOMOLOGY: *Economic.* (C. H. CN.)

LEAVEN, a substance which produces fermentation, particularly in the making of bread (Latin, *levamen,* a means of raising, in the sense of alleviation, comfort); a portion of already fermented dough added to other dough for this purpose. (*See* BREAD AND BREAD MANUFACTURE.) Figuratively, any element or

influence which effects a subtle change. The Hebrew association of the idea of fermentation with that of corruption may have been one source of the prohibition of the use of leavened bread in sacrificial offerings. For the use of unleavened bread at the feasts of the Passover and of Massôth *see* PASSOVER.

LEAVENWORTH, oldest city of Kansas, U.S.A., is in the northeastern part of the state, on bluffs overlooking the Missouri river; the county seat of Leavenworth county and the seat of important national institutions.

It is on federal highway 73, and is served by the Burlington, the Chicago Great Western, the Missouri Pacific, the Santa Fe and the Union Pacific railways. The land area is 7.4 sq.mi.

The population in 1930 was 17,466; in 1940 it was 19,220 by the federal census.

Leavenworth has many fine public buildings, a Roman Catholic cathedral and several charitable institutions under religious auspices. It is a commercial and manufacturing city of importance.

The products include furniture, stoves and ranges, wagons, trailers, truck bodies, mill and mine and road machinery, steam engines, ice machines, auto and farm lighting batteries, farming implements, hay presses, bridge and structural iron and steel, sash and doors, flour, mattresses, gloves and amusement devices.

At Ft. Leavenworth, one of the oldest military posts west of the Mississippi, on a reservation of 8,000 ac. N. of the city, are the army service schools, enrolling 400 officers of high rank; the U.S. federal prison, with nearly 3,000 inmates in 1942; and the U.S. disciplinary barracks, with 1,000 military prisoners. Ft. Leavenworth is the site of Sherman army air field.

Just south of the city is the western branch of the Veterans Administration facility, Wadsworth, Kansas, occupying 1,000 ac., where 3,000 veterans of the Civil and Spanish-American wars and World War I are cared for.

At Lansing, 3 mi. S., is the state penitentiary, with 2,000 prisoners employed in coal mining and other occupations, and the state industrial farm for women, completed in 1922.

In Leavenworth are St. Mary's academy and St. Mary's college, schools for women conducted by Catholic sisters.

Ft. Leavenworth was built in 1827 by Col. Henry Leavenworth (1783-1834), for the protection of the traffic between the Missouri river and Santa Fe. The city was founded in 1854, by settlers from Missouri, and its early sympathies were proslavery.

A free-state convention, meeting there on April 3, 1858, adopted a radically antislavery constitution, which was nominally approved by popular vote, and was submitted to congress, but never came into effect.

Leavenworth was headquarters of the transportation company which promoted much of the western travel by wagon. During the Civil War it was an important mobilization and supply centre, and until 1880 was the largest city of the state. It was incorporated in 1854, secured a new charter in 1881, and in 1908 adopted a commission form of government.

LEBANON, a republic located at the eastern end of the Mediterranean sea, bordered on the N. and E. by Syria and on the S. by Palestine. Part of the French mandate of Syria in 1920, it was later made a separate republic under the mandate because of its predominant Christian population. Lebanon has an area of approximately 3,600 sq.mi. and a population of 1,025,000 (est. March 1943); its chief cities are the modern port of Beirut (234,000), Tripoli (70,800), Saida (anc. Sidon) and esSur (anc. Tyre). Lebanon consists of a narrow discontinuous coastal plain along the sea; the steep Lebanon mountains (Jebel Lubnan) rising to 9,900 ft. in Mount Sannin, over 100 mi. in length and up to 28 mi. in width; the rift valley of the Biqa' or Buka'a (anc. Coele-Syria), to about 3,500 ft. in altitude and 10 mi. in width; and the dry Anti-Lebanon mountains (Jebel esh-Sharki). Its subtropical climate has a dry hot summer and a cool rainy winter. The mild temperatures of its mountains made Lebanon a popular near eastern summer resort between World Wars I and II. In 1942 the United Nations extended the standard gauge railway line 143.5 mi. from Tripoli to Haifa, Palestine.

The district west of Lebanon, averaging about 20 mi. in breadth, and composed in the main of Upper Jurassic and Upper Cretaceous rocks, slopes in an intricate series of plateaux and terraces to the Mediterranean. The coast is mainly abrupt and rocky, often leaving room for only a narrow path along the shore. Most of the mountain spurs run from east to west, but in northern Lebanon the prevailing direction of the valleys is north-westerly, and in the south some ridges run parallel with the principal chain. Most of the valleys have been deeply excavated by mountain streams as is typical of a limestone region; the heights are crowned by lesser villages, castles or cloisters. The chief perennial streams include the Nahr Akkar, N. Arka, N. el-Barid, N. Kadisha, "the holy river" Wadi el-Joz (falling into the sea at Batrun), Wadi Fidar, Nahr Ibrahim, Nahr el-Kelb (the ancient Lycus), Nahr Beirut (the ancient Magoras, entering the sea at Beirut), Nahr Damur (ancient Tamyras), Nahr el-'Auwali (the ancient Bostrenus). The 'Auwali and the Nahr el-Zaherani, the only other considerable streams before the Litany, flow north-east to south-west, in consequence of the interposition of a ridge subordinate and parallel to the central chain. On the north, where the mountain bears the special name of Jebel Akkar, the main ridge of Lebanon rises gradually from the plain. Valleys run to the north and north-east, among them that of the Nahr el-Kebir (anc. Eleutherus). The Berdani rises in Jebel Sunnin, and enters the Buka'a plain by a gorge at Zahleh.

The highest summits occur in the north. The "Cedar block" consists of a double line of four and three summits respectively, ranged from north to south with a general elevation just under 10,000 ft. (Zahr el-Kazib, 10,018 ft.). South from them is the pass (8,351 ft.) which leads from Baalbek to Tripoli S. Farther south is a second group of summits—the snow-capped Sunnin visible from Beirut (8,554 ft.). Between this group and the more southerly Jebel Kuneiyiseh (6,825 ft.) lies the pass (4,700 ft.) traversed by the road between Beirut and Damascus. Among the summits farther south are the ridge of Jebel el-Baruk (about 7,000 ft.), the Jebel Niha, with the Tamât Niha (6,070 ft.), near which is a pass to Sidon, and the Jebel Rihan (5,389 ft.).

The Buka'a, the valley which separates Lebanon from Anti-Lebanon, is composed mainly of recent deposits flanked by the limestones on the west and Eocene rock followed by the Upper Cretaceous of Anti-Lebanon on the east. It is watered by two rivers having their watershed near Baalbek, at an elevation of about 3,600 ft. That flowing northwards, El-'Asi, is the ancient Orontes (*q.v.*); the other is the Litany. In the lower part of its course the latter has scooped out a deep and narrow bed in typical limestone country. It bends suddenly westwards over the Cretaceous rocks. Near the bend are the ruins of the old castle of Kal'at esh-Shakif. In its lower part the Litany bears the name of Nahr el-Kasimiyeh.

The Buka'a used to be known as Coelesyria (Strabo, xvi. 2, 21); but that word as employed by the ancients had a much more extensive application.

Anti-Lebanon rises from the plain of Hasya-Homs, and in its northern portion is arid. It has not so many offshoots as occur on the west of Lebanon; under its precipitous slopes stretch broad steppe plateaux. It is composed in the main of Upper Cretaceous material surrounded by the Eocene rocks. Patches of basalt show through the Cretaceous. Along the western side of northern Anti-Lebanon stretches the Khasha'a, a succession of hard limestone ridges, cut by a succession of grassy ravines. The eastern slopes show typical Karst features. One of the best watered valleys of Anti-Lebanon is that of Helbun, the ancient Chalybon, the Helbon of Ezek. xxvii. 18. The highest points of the range are Halimat el-Kabu (8,257 ft.), Tal'at Musa (8,721 ft.) and the adjoining Jebel Nebi Baruh (7,900 ft.); and a third group near Bludan, in which the most prominent names are Shakif, Akhyar and Abu'l-Hin. The Wadi Yafufa descends westward. A little farther south, running north and south, is the rich upland valley of Zebedani, where the Abana (Barada) has its highest sources. The latter flows eastward to the plain of Damascus, and the portion of Anti-Lebanon traversed by it was called Abana (Canticles iv. 8). From the point where the southerly continuation of Anti-Lebanon begins to take a more westerly direction, a low ridge shoots out towards the south-west. Eastward from the

Hasbany branch of the Jordan lies the meadow-land Merj 'Iyun, the ancient Ijon (1 Kings xv. 20). In both Lebanon and Anti-Lebanon the southern portion is less arid and barren than the northern, and the western valleys (open to Mediterranean influences) better wooded and more fertile than the eastern.

Vegetation.—The western slope of Lebanon has the common characteristics of the flora of the Mediterranean coast, but the Anti-Lebanon belongs to the poorer region of the steppes, and the Mediterranean species are met with only sporadically along the water-courses. There is much low brushwood and the higher ridges maintain alpine plants only so long as patches of snow continue to lie. On the western slope, to a height of 1,600 ft., is the coast region, with the locust tree and the stone pine; in *Melia Azedarach* and *Ficus Sycomorus* (Beirut) is an admixture of foreign and partially subtropical elements. The great mass of the vegetation, however, is of the *maquis* type. The mountain region (1,600–6,500 ft.) exhibits sparse woods and isolated trees wherever shelter and moisture permit their growth. From 1,600 to 3,200 ft. is a zone of dwarf hard-leaved oaks, amongst which occur the Oriental forms *Fontanesia phillyraeoides, Acer syriacum* and the red-stemmed *Arbutus Andrachne*. Between 3,700 and 4,200 ft., a tall pine, *Pinus Brutia,* is characteristic. Between 4,200 and 6,200 ft. is the region of the two most interesting forest trees of Lebanon, the cypress and the cedar. The former still grows thickly, especially in the valley of the Kadisha; the horizontal is the prevailing variety. The cypress and cedar zone exhibits a variety of other leaf-bearing and coniferous trees mainly oaks and the rare Cilician silver fir (*Abies cilicica*). Rhododendrons are plentiful. Into the alpine region (6,200 to 10,400 ft.) penetrate a few very stunted oaks (*Quercus subalpina*), junipers and a barberry (*Berberis cretica*).

Then follow dense dwarf bushes, thorny and grey, *Astragalus* and the peculiar *Acantholimon,* found to within 300 ft. of the highest summits.

The spring vegetation, which lasts until July, is rich. The alpine flora of Lebanon is more closely associated with the Oriental flora of lower altitudes than it is with the glacial flora of Europe and northern Asia.

The culture of the mulberry and silk, of tobacco, of the olive and vine, of many kinds of fruits and cereals as well as of cotton, has expanded enormously. Beirut exports silk, fruit and carpets and imports machinery, tin plates, etc. Lebanon has thick deposits of lignite coal of inferior quality. Iron has been worked from ancient times. Manufactures are of small account, the raw material going mostly to the coast, where the silk industry is important in Beirut. Olive-oil is made, together with various wines, of which the most famous is the *vino d'oro.*

(X.)

HISTORY

Though the inhabitants of Lebanon have played a minor part in history, commercial, religious and strategical causes have frequently linked their fortunes with those of more powerful Near Eastern and Mediterranean communities. Almost at the beginning of history Lebanon appears in the character, which it preserves until the days of the Byzantine empire, of the well-wooded background of the Phoenician coast-towns which exploit its forests. Whether or not certain Egyptian cults (*see* EGYPT: *Religion*) originated in or near Lebanon, the value of its pines and cedars to timberless Egypt sufficiently explains the close connection, commercial and religious, between that country and Phoenicia which is now known to have been established as early as 3,000 B.C. (*see* ARCHAEOLOGY and JEBEIL). Under the Thothmosid and earlier Ramessid Pharaohs Lebanon with Phoenicia was an Egyptian protectorate. During the Egyptian decadence under the XXIst Dynasty Hiram of Tyre formed an alliance with Solomon of Israel which was based upon the exchange of Lebanese timber for Palestinian grain and olive-oil (1 Kings, ch. v.). The Phoenician rulers seem to have been able to control their valuable mountain hinterland and the comparative rarity of Phoenician remains in Lebanon is probably due to the fact that it was mainly inhabited by woodcutters and shepherds, and though Lebanon was included in Joshua's programme of conquest (Joshua, ch. xiii.) there is no evidence that it ever tempted Hebrew invasion. Under Persians and Seleucids there is no change; archaeological evidence suggests closer settlement in the Roman period, but it is not till the 6th and 7th centuries of the Christian era that Lebanon begins to have any political importance apart from the towns of the coast.

In the 6th century Monothelite sectaries flying from orthodox Byzantine persecution in North Syria colonized the Mountain and apparently Christianized it after their fashion. In the next century they appear first as the allies of Justinian II. against the caliph and then as rebels, hence called "Mardaites" against his authority. The next four centuries were marked by the infiltration into southern Lebanon of the heretics of Islam, who finally coalesced into the Druse community, but the early history of the Druses and of their Christian Maronite rivals is most obscure. The latter are certainly the descendants of the Monothelites, with whom they were ranked by Abulfaragius at the end of the 13th century; their reconciliation with Rome was not effectual till the 18th century and the status of their church as a body affiliated to the Church of Rome was not definitely fixed until 1736. Their history has been much darkened by propaganda designed to remove the reproach of past heresy, and to represent them as the potent allies rather than the unimportant auxiliaries of the crusading French. Latin ecclesiastical and crusading political influence certainly entered the northern Lebanon in the 12th century, but after the collapse of the Frankish adventure the "Mountain" was left to itself and its subsequent history until the massacres of 1860 will be found under DRUSES and MARONITES. By giving informal protection to the latter community in the early 18th century France sowed the seeds of the feud between Maronite and Druse. The reviving Turkish sultanate encouraged the Druses in the 19th century against an infidel community which looked to the West for countenance; the feudal organization of both communities broke down between 1840 and 1860. The Druses disclaimed their Shehab amirs and the Maronites in 1858 revolted from the Khazin family. Civil war led to European intervention which brought the constitution of the Lebanon as an autonomous province in 1864. Its natural ports, Beirut, Saida (Sidon) and Tarablus (Tripoli-in-Syria) remained, however, under the direct rule of the Turk.

The Lebanon Sanjak was governed from 1864 until 1914 by a Christian military governor (*mushir*) assisted by a council (mejlis) of 12 elected representatives of the three religions of the Mountain and their sects. Sub-governors (Qaimaqams) administered the seven districts of the Sanjak. Order was preserved by a local militia and Turkish troops were not quartered in the province. The system worked well for 50 years (1864–1914). Lebanon enjoyed peace and a relative prosperity tempered by the exiguity of its budget. The railway from Beirut to Damascus was constructed through mid-Lebanon; numerous roads were built; many villages became summer resorts for Syrians and foreigners; many missionary stations and schools were founded. A number of Druses emigrated, but the Christian population increased out of proportion to the resources of the province and from about 1890 an increasing number emigrated to the United States, Egypt and South America, to return in many cases and settle down as comfortable *petits bourgeois.* The World War put an end to the prosperity of the Sanjak. Remittances from abroad ceased; the tourists and summer visitors vanished; Turkish troops occupied the Sanjak and famine, fostered by Turkish official connivance, thinned the Maronites. At the end of the war the province became the kernel of "O.E.T.A.N." (Occupied Enemy Territory Administration North). Its subsequent fortunes under the French Mandate are described under SYRIA.

On Nov. 26, 1941, the Free French declared their intention to make Lebanon an independent republic, despite the objections of Syria. A parliament of 55 members was elected Aug. 29, 1943; it selected Sheikh Bishara el Khoury as president (Sept. 21) and Riad Solh as prime minister.

(P. GR.; X.)

LEBANON, a town of New London county, Connecticut, U.S.A., about 27 mi. E.S.E. of Hartford, served by the Central Vermont railroad. Pop. (1940) 1,467. Though it is known to

have been settled as early as 1695, the first record of a town meeting is 1698. It was formally organized in 1700. As the home of Jonathan Trumbull, governor of Connecticut 1769–84, Lebanon occupied a prominent place in revolutionary history. Then on the direct road to Boston, it ranked 14th among the 76 towns enumerated in 1774, with a population of 3,960, and was 11th in taxable property. When word of the Lexington alarm was received there, Governor Trumbull's store, adjoining his home, became the centre from which the military and naval activities of Connecticut were directed and has ever since been known as the "War Office." In May 1775, the general assembly of the Colony appointed a committee of nine to assist the governor. This committee became known as the Council of Safety, or War Council of the Colony, and was convened at the "War Office." The first meeting, on June 7, 1775, authorized the shipment of 50 bbl. of powder of 108 lb. each, in response to the call from Massachusetts, and it is estimated that more than one-half of the entire amount of ammunition used by the Americans at Bunker Hill was forwarded from this point. In 1891, the "War Office" was presented to the Connecticut Sons of the American Revolution, by whom it was restored and re-dedicated to public purposes.

LEBANON, a city of southeastern Pennsylvania, U.S.A., in the Lebanon valley, 86 mi. N.W. of Philadelphia; county seat of Lebanon county. It is on federal highway 22 and the Cornwall, the Pennsylvania and the Reading railways. Pop. in 1940, 27,206. About 5 mi. S. of the city are the Cornwall iron mines, one of the most productive magnetite deposits in the world. Limestone, brownstone and brick clay also abound. The city has iron and steel works, and numerous industries making use of these products. The output of its 108 factories in 1939 was valued at $26,880,000. Bank deposits in 1939 amounted to $22,459,070. The city has a commission form of government. The first settlement was made about 1730, and 20 years later a town was laid out by one of the landowners, George Steitz, and named Steitztown. About 1760 it became known as Lebanon. It was incorporated as a borough in 1821, and chartered as a city in 1885. The iron deposits at Cornwall have been worked since 1740. An early settler, Peter Grubb, leased the use of the red dirt from the Conewago Indians "as long as grass grows and water flows." During the Revolution, Baron Steigel used this ore to make cannon for the Continental army.

LE BARGY, CHARLES GUSTAVE AUGUSTE (1858–1936), French actor, was born at La Chapelle (Seine). He became a member of the Comédie Française, and made a great reputation in *Le Duel, L'Énigme, Le Marquis de Priola, Le Dédale* and other plays. His wife, Simone le Bargy *née* Benda, an accomplished actress, made her debut at the Gymnase in 1902, and in later years had a great success in *La Rafale* and other plays. In 1910 he had differences with the authorities of the Comédie Française and ceased to be a *sociétaire.*

LEBEDEV, PETR NIKOLAIEVICH (1866–1912), Russian physicist, was born on Feb. 24 (old style) 1866 in Moscow. In 1887 he went to study physics under Kundt in Strassburg. He took his doctor's degree in 1891 and published his first research on the Mossotti-Clausius theory of dielectrics. In the same year he was appointed assistant in physics at the University of Moscow and in 1892 professor. He succeeded in proving, experimentally (1899), the existence of the extremely small pressure which light exercises on bodies (*see* RADIATION, RAYS; LIGHT). In 1901 appeared his classical work: *Experimental Research on Light Pressure.* In 1910 (*Annalen der Physik*) he succeeded in measuring this pressure, theoretically determined by Maxwell. In 1911 Lebedev started a private laboratory. His further work was mainly on the origin of the earth's magnetism, but death from heart failure on March 1, 1912 stopped his experiments. He founded in Moscow the Lebedev Physical society. In 1913 his *Collected Researches* were published in Russian under the auspices of this society.

LE BEL, JEAN (d. 1370), Belgian chronicler, was born near the end of the 13th century. His father, Gilles le Beal des Changes, was an alderman of Liége. Jean entered the church and became a canon of the cathedral church, but he and his brother Henri followed Jean de Beaumont to England in 1327, and took part in the border warfare against the Scots. His will is dated 1369, and his epitaph gives the date of his death as 1370. Jacques de Hemricourt, author of the *Miroir des nobles de Hesbaye,* has left a eulogy of his character, and a description of the magnificence of his attire, his retinue and his hospitality. Hemricourt asserts that he was 80 years old or more when he died. For a long time Jean le Bel (or Lebel) was only known as a chronicler through a reference by Froissart, who quotes him in the prologue of his first book as one of his authorities. A fragment of his work, in the ms. of Jean d'Outremeuse's *Mireur des istores,* was discovered in 1847; and the whole chronicle, preserved in the library of Châlons-sur-Marne, was edited in 1863 by L. Polain. Jean le Bel gives as his reason for writing a desire to replace a certain misleading rhymed chronicle of the wars of Edward III by a true relation of his enterprises down to the beginning of the Hundred Years' War. His chief merit is his refusal to narrate events unless either he himself or his informant had witnessed them. Writing for the public of chivalry, he preserves no general notion of a campaign, which resolves itself in his narrative into a series of exploits on the part of his heroes. Froissart was indebted to him, and seems to have borrowed from him some of his best-known episodes, such as the death of Robert the Bruce, Edward III and the countess of Salisbury, and the devotion of the burghers of Calais.

LE BEL, JOSEPH ACHILLE (1847–1930), French chemist, was born at Pechelbronn, Alsace on Jan. 21, 1847. He studied at the Polytechnique in Paris, and then became préparateur at the University of Strassburg. Later he was assistant to Antoine J. Balard, the discoverer of bromine, and then to Charles A. Wurtz (*q.v.*). His family owned petroleum workings at Pechelbronn, and when he inherited these lucrative properties he retired from academic work and fitted up a private laboratory. He was a marked individualist and hated bureaucracy which he criticized openly. He associated little with his fellow scientists and was difficult to know. Since he had no academic post he had no students. He was president of the French Chemical society in 1892 and was a member of the Academy of Sciences. He (along with Jacobus H. van't Hoff) was awarded the Davy medal of the Chemical Society of London in 1893.

He is remembered chiefly for his theory of the asymmetric carbon atom in optically active compounds (*see* STEREOCHEMISTRY). He and van't Hoff (*q.v.*) independently and almost simultaneously published their ideas in 1874. Van't Hoff seems to have been influenced more by Friedrich A. Kekulé (*q.v.*) while Le Bel followed Louis Pasteur (*q.v.*). His argument is more abstract, less easy to understand, but more general. He believed the tetrahedral carbon atom represented only the simplest solution of the problem, which probably had other more general solutions. He argued that the four univalent radicles attached to a carbon atom should be considered as a problem in equilibrium. He was the first to separate an optically active component from a synthetic mixture of the two mirror image components of a compound containing an asymmetric carbon atom. He used mostly the selective destructive action of lower organisms on the dextro and laevo isomerides. He was also the first to demonstrate that the optical activity disappears when the asymmetric carbon of the type CWXYZ is changed to CX_2YZ. He predicted that other asymmetric elements would give rise to optical activity. In 1899, William J. Pope, using advanced techniques not available to Le Bel, accomplished the resolution of these optical isomers.

Le Bel's few publications were permeated by a philosophic spirit. His later work comprised mainly mathematical treatments of various chemical and physical topics. No one understood his abstruse cogitations and so none of this material was published. His lasting work had been achieved by the time he was 30. Le Bel died in Paris on Aug. 6, 1930.

See W. J. Pope, *Journal of the Chemical Society* (London, 1930); E. Wedekind, *Zeitschrift für angewandte Chemie* (1930). (R. E. O.)

LEBESGUE, HENRI LÉON (1875–1941), French mathematician, was born at Beauvais, Oise, on June 28, 1875. He studied at the École Normale Supérieure, and in 1902 received the doctor's degree at the University of Paris with a thesis on *Integral, Length, and Area.* He was Maître des Conferences at

Rennes until 1906, when he went to Poitier, first as Chargé de Cours of the Faculty of Sciences and later as professor. About six years later he was called to Paris as Maître des Conferences, and afterward he became professor at the Collège de France. In 1917 he was awarded Le prix Saintour, and in 1922 he was elected to the Paris Academy of Sciences. He was made an honorary member of the London Mathematical society in 1924 and a foreign member of the Royal society in 1930. He died in Paris on July 26, 1941.

One of the greatest mathematicians of his day, Lebesgue was a pronounced specialist. He made one important contribution to topology in the "pavement theorem" and did some work on Fourier series and potential theory; but his chief claim to fame is in integration, a field which he largely remade. Toward the close of the 19th century mathematical analysis was limited effectively to continuous functions, and artificial restrictions were necessary to keep out the growing number of exceptions. Under the classical Cauchy-Riemann definition of the integral, the operations of differentiation and integration were mutually inverse only for continuous or well-behaved functions. Influenced by the work of Émile Borel, Camille Jordan, and others on theories of measure and content, Lebesgue formulated, in brilliant memoirs of 1901 and 1902, a new definition of the definite integral. The consequence of this notion of the integral is that any bounded summable function is the derivative of its indefinite integral, except perhaps for an ensemble of points of measure zero. This "Lebesgue integral" is one of the great achievements of modern real analysis.

Besides about 50 papers, a bibliography of which is given in the *Journal of the London Mathematical Society,* XIX (1944), 56–64, Lebesgue wrote two classic books: *Leçons sur l'ntégration et la recherche des fonctions primitives* (1904, 1928); and *Leçons sur les séries trigonométriques* (1906). (C. B. Br.)

LE BLANC, a town of central France, capital of an arrondissement, in the department of Indre, 44 mi. W.S.W. of Châteauroux on the Orléans railway between Argenton and Poitiers. Pop. (1936) 4,637. Le Blanc, which is identified with the Roman *Oblincum,* was in the middle ages a lordship belonging to the house of Naillac and a frontier fortress of the province of Berry. The Creuse divides it into a lower and an upper town. The church of St. Génitour dates from the 12th, 13th and 15th centuries, and there is an old castle restored in modern times. It is the seat of a subprefect, and has a tribunal of first instance. Wool spinning, and the manufacture of linen goods and edge tools are among the industries. There is trade in horses and in the agricultural and other products of the surrounding region.

LEBOEUF, EDMOND (1809–1888), marshal of France, was born at Paris on Nov. 5, 1809, passed through the École Polytechnique and the school of Metz. He served in Algeria, in the Crimean War, and in the Italian War of 1859, when his action at Solferino materially assisted in achieving the victory. In Sept. 1866, having in the meantime became aide-de-camp to Napoleon III, he was despatched to Venetia to hand over that province to Victor Emmanuel. In 1869 Leboeuf became minister of war, and reorganized the war office and the civil departments of the service. In the spring of 1870 he received the marshal's baton. On the declaration of war with Germany Leboeuf delivered himself in the Corps Législatif of the historic saying, "So ready are we, that if the war lasts two years, not a gaiter button would be found wanting." Leboeuf took part in the Lorraine campaign, at first as chief of staff (major general) of the army of the Rhine, and afterwards, when Bazaine became commander-in-chief, as chief of the 3rd corps, which he led in the battles around Metz. Shut up with Bazaine in Metz, on its fall he was a prisoner in Germany. On the conclusion of peace he returned to France and gave evidence before the commission of inquiry into the surrender of Metz, when he strongly denounced Bazaine. He died at the Château du Moncel near Argentan on June 7, 1888.

LE BON, JOSEPH (1765–1795), French politician, born at Arras on Sept. 29, 1765, was curé of a constitutional church in the Pas-de-Calais, and was elected to the Convention on July 2, 1793. His severities against counterrevolutionaries during his missions (1793–94) to the departments of Somme and Pas-de-Calais led to his arrest on July 10, 1795, on a charge of abuse of power. He was tried before the Somme tribunal, and executed at Amiens on Oct. 10, 1795. Whatever his offences may have been, he saved Cambrai from falling into the hands of the Austrians, and his condemnation was probably mainly due to political enmities.

LE BOURGET AIRPORT, owned and operated by the French government, is situated approximately 7 mi. from the centre of Paris. Regular aeroplane passenger service is carried on between Le Bourget and most of the principal cities of Europe. The landing area at Le Bourget includes approximately 800 ac. and provides one runway more than 8,000 ft. in length and another runway 5,000 ft. long. The new terminal building at Le Bourget is approximately 722 ft. by 115 ft. and cost between 12,000,000 and 14,000,000 French francs to construct. Three tiers of stepped-back terrace overlook the landing area and provide space for spectators. The entire central portion of the building is taken up by a large three-story hall which measures approximately 680 ft. by 50 ft. Above are located administrative offices and the control tower from which aeroplane traffic is regulated. All air lines using the airport have their own traffic counters and offices adjacent to the terminal area on the ground floor. Ample hangar facilities are provided, although many of the buildings are not of the most modern type. Le Bourget was, however, in 1939, provided with complete modern lighting and radio equipment to facilitate night and bad weather flying. (*See* Aerodrome.) (D. Se.)

LE BRAZ, ANATOLE (1859–1926), Breton scholar, was born on April 2, 1859 at Duault, Côtes-du-Nord, and educated at the Lycée St. Louis, and at the Faculté des Lettres at Paris. He held posts as professor of philosophy at the college of Etampes (1884–86) and the Lycée of Quimper (1886–1900); and as lecturer at the university of Harvard (1906). He made lecturing tours in Canada and the United States in 1907, 1912 and 1915.

His publications include *Soniou Breiz-Izel* (1892); *La Chanson de la Bretagne* (1892); *Pâques d'Islande* (1897); *La Terre du Passé* (1901); *Au Pays des Pardons* (1894); *La Légende de la mort chez les Bretons-armoricains* (1902, later ed., 1922); *Vieilles Histoires du pays Breton* (1897); *Au Pays d'exil de Chateaubriand* (1909); *Ames d'Occident* (1911).

LEBRIJA or Lebrixa, a town of southern Spain, in the province of Seville, near the left bank of the Guadalquivir. Pop. (1940) 12,598 (mun., 14,536). Lebrija is 44 mi. S. by W. of Seville, on the Seville-Cadiz railway. Lebrija is the *Nabrissa* or *Nebrissa,* surnamed *Veneria,* of the Romans; by Silius Italicus (iii, 393), who connects it with the worship of Dionysus, the name is derived from the Greek *νέβρις* (a "fawn-skin," associated with Dionysiac ritual). *Nebrishah* was a strong and populous place during the period of Moorish domination (from 711); it was finally recovered in 1264. Its chief buildings are a ruined Moorish castle and the parish church, containing some early specimens of the carving of Alonzo Cano (*q.v.*).

LEBRUN, ALBERT (1871–), French statesman, was born on Aug. 29, 1871. At first he devoted himself to engineering, but turned to politics about 1900. He was minister of the colonies, 1911–13 and 1913–14; minister of war, 1913; and minister of blockade and liberated regions, 1917–19. He became a senator in 1920, and was president of the senate, 1931–32. In May 1932, after the assassination of President Doumer, Lebrun became president of the French Republic. He was created G.C.B. in 1938.

LE BRUN, CHARLES (1619–1690), French painter born at Paris on Feb. 24, 1619, was at the age of 11 placed by Chancellor Séguier in the studio of Vouet. At 15 he received commissions from Cardinal Richelieu. His early work evoked the commendations of Poussin, who in 1642 accompanied him to Rome, where he remained four years. After his return to Paris Le Brun enjoyed the patronage of Fouquet and Mazarin, and others.

Colbert also promptly recognized Le Brun's powers of organization, and attached him to his interests. Together they founded the Academy of Painting and Sculpture (1648), and the Academy of France at Rome (1666), and gave a new development to the industrial arts. In 1660 they established the Gobelins, which at first was a great school for the manufacture, not of tapestries only, but of every class of furniture required in the royal pal-

aces. Commanding the industrial arts through the Gobelins—of which he was director—and the whole artist world through the Academy—in which he successively held every post—Le Brun imprinted his own character on all that was produced in France during his lifetime, and gave a direction to the national tendencies which endured after his death.

The nature of his emphatic and pompous talent was in harmony with the taste of the king, who, full of admiration at the decorations designed by Le Brun for his triumphal entry into Paris (1660), commissioned him to execute a series of subjects from the history of Alexander. The first of these, "Alexander and the Family of Darius," so delighted Louis XIV. that he knighted Le Brun (Dec. 1662), who was also created first painter to his majesty with a pension of 12,000 livres, the same amount as he had yearly received in the service of the magnificent Fouquet. From this date all that was done in the royal palaces was directed by Le Brun. The works of the gallery of Apollo in the Louvre were interrupted in 1677 when he accompanied the king to Flanders (on his return from Lille he painted several compositions in the Château of St. Germain), and finally he reserved for himself at Versailles the Halls of War and Peace, the Ambassadors' Staircase, and the Grande Galerie des Glaces, other artists being forced to accept the position of his assistants. At the death of Colbert, Louvois, who succeeded him in the department of public works, showed no favour to Le Brun, and in spite of the king's continued support he felt the change in his position. He died on Feb. 22, 1690.

See H. Jouin, *Charles Le Brun et les Arts sous Louis XIV.* (1889); P. Marcel, *Charles Le Brun* (1909).

LEBRUN, CHARLES FRANÇOIS, duc de Plaisance (1739–1824), French statesman, was born at St.-Sauveur-Lendelin (Manche) on March 19, 1739. He was an adviser of the chancellor Maupeou and shared in his downfall in 1774. After the revolution he professed liberal views, in the Constituent Assembly, and proposed various financial laws. After the *coup d'état* of the 18th Brumaire in the year VIII. (Nov. 9, 1799), Lebrun was made third consul and he took an active part in the reorganization of finance and of the administration of the departments of France. In 1804 he was appointed arch-treasurer of the empire, and in 1805–1806 as governor-general of Liguria effected its annexation to France. In 1808 he reluctantly accepted the title of duc de Plaisance (Piacenza). He was governor-general of the departments formed in Holland from 1811 to 1813. He accepted the *fait accompli* of the Restoration in April 1814, and Louis XVIII. made him a peer of France; but during the Hundred Days he accepted from Napoleon the post of grand master of the university. On the return of the Bourbons in 1815 he was suspended from the House of Peers, but was recalled in 1819. He died at St. Mesmes (Seine-et-Oise) on June 16, 1824.

See M. de Caumont la Force, *L'Architrésorier Lebrun* (1907); M. Marie du Mesnil, *Mémoire sur le prince Le Brun, duc de Plaisance* (1828); *Opinions, rapports et choix d'écrits politiques de C. F. Lebrun* (1829), ed. with a biographical notice, by his son Anne-Charles Lebrun.

LECAN, an independent linguistic stock of South American Indians, so called from the Lecas, its most important tribe. The Lecas lived in north-western Bolivia, just east of Lake Titicaca, on the eastern slope of the Andes. Their original home is said to have been on the Tipuani river and its tributaries, but they later moved east and north-east to the Mapiri and Beni rivers in the provinces of Larecaja and Caupolican, where, in the vicinity of Aten, their modern descendants live.

See A. F. Chamberlain, "Sur quelques familles linguistiques . . . de l'Amérique du Sud," *J. Soc. Americanistes de Paris* (n.s.), vol. vii., pp. 179–202.

LE CARON, HENRI (whose real name was THOMAS MILLER BEACH) (1841–1894), British secret service agent, was born at Colchester, on Sept. 26, 1841. At nineteen he went to Paris, where he found employment in business connected with America. He crossed the Atlantic in 1861 and enlisted in the Northern army, taking the name of Henri Le Caron. In 1864 he married a young lady who had helped him to escape from some Confederate marauders; and by the end of the war he rose to be major. In 1865, through a companion in arms named O'Neill, he was brought into contact with Fenianism, and having learnt of the Fenian plot against Canada, he mentioned the designs when writing home to his father. Le Caron, from that time till 1889, acted for the British government as a paid military spy. He remained for years on intimate terms with the most extreme men in the Fenian organization. His services enabled the British government to take measures which led to the fiasco of the Canadian invasion of 1870 and Riel's surrender in 1871, and he supplied full details concerning the various Irish-American associations, in which he himself was a prominent member. He was in the secrets of the "new departure" in 1879–1881, and in 1882 had an interview with Parnell at the House of Commons, when the Irish leader spoke sympathetically of an armed revolution in Ireland. For 25 years he lived at Detroit and other places in America, paying occasional visits to Europe, and all the time carrying his life in his hand. The Parnell commission of 1889 put an end to this. Le Caron was subpoenaed by *The Times*, and in the witness-box the whole story came out. He published the story of his life, *Twenty-five Years in the Secret Service.* He died on April 1, 1894. The report of the Parnell commission is his monument.

See references under PARNELL, CHARLES STEWART.

LE CATEAU, a town of northern France, in the department of Nord, on the Selle, 15 mi. E.S.E. of Cambrai by road. Pop. (1936) 8,034. Formed by the union of the two villages of Péronne and Vendelgies, Le Cateau became the seat of an abbey in the 11th century. In the 15th it was frequently taken and retaken, and in 1556 it was burned by the French. It was finally ceded to France by the peace of Nijmwegen in 1678. Le Cateau suffered much damage during World War I. It was the scene of the battle of Le Cateau in Aug. 1914 and in Oct. 1918 was bombarded after the British entered it. It has a board of trade arbitration. It manufactures cloths, etc.

LE CATEAU, BATTLE OF, 1914. This was the battle which Gen. Smith-Dorrien's II Corps, the left wing of the British Expeditionary Force, as also of the Franco-British line of armies, fought during the retreat from Mons (*q.v.*). It thus formed a pendant to the Battles of the Frontier. (*See* FRONTIER, BATTLES OF THE.) Too closely pressed by the advancing German I. Army (Kluck) to continue its retreat safely, the II. Corps paused to fight, on the initiative of its commander, and against the intentions of the British commander-in-chief. By its resolute resistance, at serious cost to itself, it averted a disaster to the British Expeditionary Force and contributed to the secure retreat of the Allied armies.

LECCE, town and archiepiscopal see of Apulia, Italy (anc. *Lupiae*), capital of the province of Lecce, 24 mi. S.E. of Brindisi by rail. Pop. (1936) 42,622 (town); 49,261 (commune). The town is rich in buildings of the 17th century, in rococo style. They are built in the light yellow stone of the district, which closely resembles that of Malta. Among them are the cathedral of S. Oronzo, the churches of S. Croce, S. Angelo, S. Irene, S. Matteo, etc., and the Prefettura (containing a museum). There are remains of a Roman amphitheatre, and the church of SS. Nicola e Cataldo, built by Tancred in 1180, may be noted, as well as the massive castle of 1539 and the walls and bastions of the same period. Lecce is the centre of a fertile agricultural district and is a very clean and prosperous town. It makes statues of papier-mâché. The small harbour of S. Cataldo is $7\frac{1}{2}$ m. E. and is reached by electric tramway. Lecce occupies the site of a Messapian city of unknown name. Hardly a mile west was Rudiae, the birthplace of the poet Ennius. The name Lycea, or Lycia, begins to appear in the 6th century. The city was for some time held by counts of Norman blood, including Bohemund, son of Robert Guiscard. Its remoteness from the larger centres has given it a life of its own, and it has produced so many men of letters that it has been called the Athens or the Florence of Apulia. Allied planes bombed Lecce in World War II.

See M. S. Briggs, *In the Heel of Italy* (London, 1910); G. Gigli, *Il Tallone d'Italia I. Lecce e Dintorni* (Bergamo, 1911).

LECCO, town of Lombardy, province of Como, 32 mi. by rail N. by E. of Milan, 673 ft. above sea-level. Pop. (1936) 19,784 (town); 36,973 (commune). It is near the south end of the east-

ern branch of the Lake of Como, which is frequently distinguished as the Lake of Lecco. From Lecco the line to Colico was one of the earliest in Europe to be run by electricity (overhead wires). Branches run to Chiavenna and Sondrio; and another line runs to Bergamo. To the south the Adda is crossed by a fine bridge originally constructed in 1336–38 by Azzone Visconti and rebuilt in 1609 by Fuentes. Almost the only old building is the castle, of which a part remains. Besides iron works, there are copper works, brass-foundries, olive oil mills and a manufacture of wax candles; and silk-spinning, cotton-spinning and wood carving.

In the 11th century Lecco, previously seat of a marquisate, was presented to the bishops of Como by Otto II; but in the 12th century it passed to the archbishops of Milan. During the 13th century it was struggling with the metropolitan city. In 1283 the Visconti drove its inhabitants across the lake to Valmadrera. But in a few years the people returned and Azzone Visconti made Lecco a strong fortress. During the 15th and 16th centuries the citadel of Lecco was an object of endless contention. In 1647 the town with its territory was made a countship. Morone, Charles Vs Italian chancellor, was born in Lecco.

LECH (*Licus*), a river of Bavaria, 177 mi. long, with a drainage basin of 2,550 sq.miles. It rises in the Vorarlberg Alps, winds out of the gloomy limestone mountains, flows north-northeast and enters the plains at Füssen (2,580 ft.). Here it forms rapids, and a fall, then pursues a northerly course past Augsburg, where it receives the Wertach, and joins the Danube from the right just below Donauwörth (1,330 ft.). It is not navigable. (*See* DANUBE.)

LE CHAMBON-FEUGEROLLES, a town of France in the department of Loire, $7\frac{1}{2}$ mi. S.W. of St. Étienne by rail, on the Ondaine. Pop. (1936) 9,529. Coal is mined in the neighbourhood; and there are forges, steel works, manufactures of tools and other iron goods. Between Le Chambon and St. Étienne is La Ricamarie (pop. [1936] 8,524), also of importance for its coal mines. Many of the galleries of these mines have been burning from the 15th century, probably from spontaneous combustion.

LE CHAPELIER, ISAAC RENÉ GUY (1754–1794), French politician, was born at Rennes on June 12, 1754. He studied law and in 1789 was elected to the states general. He adopted advanced opinions, and was one of the founders of the Breton club. He was elected president of the Constituent assembly and presided during the important period following Aug. 3, 1789. He was a leading member of the committee which drew up the new constitution; he further presented a report on the liberty of theatres and on literary copyright. He also opposed Robespierre's proposal to exclude members of the Constituent assembly from the new assembly. After the flight of the king to Varennes (June 20, 1792), his opinions became more moderate, and on Sept. 29 he brought forward a motion to restrict the action of the clubs. This, together with a visit which he paid to England in 1792 made him suspect, and he was denounced on his return. He was executed at Paris on April 22, 1794.

See A. Aulard, *Les Orateurs de la constituante* (2nd ed., 1905); R. Kerviler, *Recherches et notices sur les députés de la Bretagne aux états généraux* (2 vols., Rennes, 1888–89); P. J. Levot, *Biographie bretonne* (2 vols., 1853–57).

LE CHATELIER, HENRY LOUIS (1850–1936), French inorganic chemist, is best known for the "Le Chatelier principle" which states that if a system is in stable equilibrium, and one of the conditions is changed, then the equilibrium will shift in such a way as to tend to restore the original condition. This principle is invaluable for predicting the optimum conditions for achieving a reaction, either in the laboratory or industrially.

In the course of his long career, Le Chatelier became an authority on metallurgy, on cements, glasses, fuels, and explosives. He investigated the physical properties of alloys, the processes of annealing and tempering, the calcining and the setting of cements, the fusion, firing, and annealing of ceramic and glass ware, the combustion of fuels, and the phenomenon of allotropy.

Le Chatelier's work yielded not only many new facts, but also a wealth of theoretical principles and experimental methods. His interest in the calcining of cements led him to develop the platinum-rhodium thermocouple for measuring high temperatures, and to introduce the use of the melting points of sulphur and gold to calibrate the thermocouples. He made improvements in optical pyrometry, introduced the differential dilatometer for high temperature work, worked out new methods of preparing abrasives for polishing metallographic sections, and devised an improved microscope for examining such sections.

Le Chatelier was a great teacher, stressing precise measurement and scientific reasoning, and introducing facts only to illustrate general principles. He wrote prolifically, producing books on alloys, ceramics, steels, silicates, the combustion of fuels, and the relationship of science to industry. He founded the *Révue de Metallurgie,* and was its editor from 1904 to 1914.

Le Chatelier was born in Paris, Oct. 8, 1850. He graduated from the École des Mines, spent two years as a mining engineer, and then returned to the École des Mines as professor of chemistry. He succeeded Henri Moissan (*q.v.*) at the University of Paris in 1908. He died Sept. 17, 1936.

For biographical details *see* R. E. Oesper, *Journal of Chemical Education,* 8, 442 (1931); C. H. Desch, *Journal Chemical Society* (London) p. 139 (1938); M. Bodenstein, *Berichte d. deutschen chemischen gesellschaft* 72A, 122 (1939).

LECKY, WILLIAM EDWARD HARTPOLE (1838–1903), Irish historian and essayist, was born at Newtown Park, near Dublin, on March 26, 1838, being the son of John Hartpole Lecky and his first wife, Mary Anne Tallents. Lecky was educated at Kingstown, Armagh, Cheltenham and Trinity college, Dublin, from which he graduated B.A. in 1859 and M.A. in 1863. An early interest in theology led to the publication of *Religious Tendencies of the Age,* in 1860; but this, together with a book of poems and *Leaders of Public Opinion in Ireland* (1861), met with little success. In 1863, he made his fourth venture as an author with the *Declining Sense of the Miraculous,* subsequently incorporated in the *History of Rationalism* (1865). In spite of its length and discursiveness, the book, which is indicative throughout of wide knowledge, clear thought and sound judgment, achieved an instantaneous success. His reputation was enhanced by the appearance of the *History of European Morals* (1869). Both books are, in a sense, an attempt to explain the same set of facts from a different standpoint; or, in his own words, both "are an attempt to examine the merits of certain theological opinions according to the historical method. . . . The 'Morals' is a history of the imposition of those opinions upon the world and attempts to show how far their success may be accounted for by natural causes. . . . The 'Rationalism' is a history of the decay of those opinions."

Lecky's marriage in 1871 with Elizabeth van Deden involved him in a multiplicity of social duties, but he did not allow these to interrupt his work. In the same year he brought out a revised edition of *Leaders of Public Opinion,* but it still failed to please, and Lecky returned to his magnum opus, *The History of England in the 18th Century.* This work, which occupied him for 19 years, was published in 12 volumes, each of which was received with acclamation. The book is distinguished by its lucidity, reliability and scrupulous impartiality, qualities which are most conspicuous in the section dealing with Ireland, a subject in which Lecky was intensely interested.

In 1895, he was elected member of parliament for Dublin university as a Liberal Unionist and on taking his seat in the House he became a keen advocate of reform in Ireland. He supported the extension of educational facilities for Roman Catholics, and upheld Plunkett's agricultural policy, but he continued to oppose the granting of Home Rule. Lecky was the recipient of many honours. In 1897 he was made a privy councillor, in 1902 he became one of the first members of the British academy founded in that year, and soon after he received the Order of Merit. He died on Oct. 22, 1903, in London.

Apart from the works mentioned, Lecky wrote: *Democracy and Liberty* (1896, revised ed., 1899); *The Map of Life* (1899); and in 1903 he published a third and finally revised edition of *Leaders of Public Opinion.* He contributed to several periodicals and two of his lectures, *The Political Value of History* and *The Empire, its Value and its Growth,* were published in 1892 and 1893 respectively. A collection of essays and biographical sketches was published posthumously in 1908 by Mrs. Lecky, under the title of *Historical and Political Essays.*

LECLANCHE CELL, an electrolytic cell formerly used for purposes such as ringing electric bells, where only an intermittent current is required. (*See* BATTERY: *Depolarization by Oxidation.*)

LE CLERC [CLERICUS], **JEAN** (1657–1736), French Protestant theologian, was born on March 19, 1657 at Geneva, where his father was professor of Greek. In 1679 were published *Liberii de Sancto Amore Epistolae Theologicae* (Irenopoli: Typis Philalethianis), usually attributed to Le Clerc; they deal with the doctrine of the Trinity, the hypostatic union of the two natures in Christ, original sin, and the like. At Amsterdam he met John Locke and Philip v. Limborch, professor at the Remonstrant college; the acquaintance with Limborch soon ripened into a close friendship, which strengthened his preference for the Remonstrant theology. In 1684 he finally settled at Amsterdam, first as a moderately successful preacher, and afterwards as professor of philosophy, belles-lettres and Hebrew in the Remonstrant seminary. He died on Jan. 8, 1736.

His publications are listed with biographical material, in E. and E. Haag's *France Protestante* and in J. G. de Chauffepie's *Dictionnaire.* His series of Biblical commentaries appeared between 1693 and 1731; the portion relating to the New Testament included the paraphrase and notes of Henry Hammond (1605–60). Le Clerc's commentary had a great influence in showing the necessity for a more scientific inquiry into the origin and meaning of the biblical books, but it was on all sides hotly attacked. His *Ars Critica* appeared in 1696, and, in continuation, *Epistolae Criticae et Ecclesiasticae* in 1700. Le Clerc's new edition

of the *Apostolic Fathers* of Johann Cotelerius (d. 1686), published in 1698, marked an advance in the critical study of these documents. But the greatest influence of Le Clerc was exercised by means of the journals which he edited. These were the *Bibliothèque universelle et historique* (Amsterdam, 25 vols. 1686–93), begun with J. C. de la Croze; the *Bibliothèque choisie* (Amsterdam, 28 vols. 1703–13); and the *Bibliothèque ancienne et moderne* (29 vols., 1714–26).

See Le Clerc's *Parrhasiana ou pensées sur des matières de critique, d'histoire, de morale, et de politique: avec la défense de divers ouvrages de M. L. C. par Théodore Parrhase* (Amsterdam, 1699); and *Vita et opera ad annum MDCCXI., amici ejus opusculum, philosophicis Clerici operibus subjiciendum,* also attributed to himself. The supplement to Hammond's notes was translated into English in 1699, *Parrhasiana, or Thoughts on Several Subjects,* in 1700, the *Harmony of the Gospels* in 1701, and *Twelve Dissertations out of M. Le Clerc's Genesis* in 1696.

LECOCQ, ALEXANDRE CHARLES (1832–1918), French musical composer, was born in Paris, on the 3rd of June 1832, and studied at the Conservatoire. His chief success was made with *La Fille de Madame Angot* (Paris, 1873; London, 1873), which was performed for 400 nights consecutively, and has retained enormous popularity. After 1873 Lecocq produced a large number of comic operas, though he never repeated the triumph of *La Fille de Madame Angot.* He died in Paris on Oct. 24, 1918.

LE CONTE, JOSEPH (1823–1901), American geologist, of Huguenot descent, was born in Liberty county (Ga.), on Feb. 26, 1823. He was educated at Franklin college (Ga.), where he graduated (1841) and received a degree in medicine at the New York college of Physicians and Surgeons in 1845. After practising for three or four years at Macon (Ga.), he entered Harvard, and studied natural history under L. Agassiz. At this time he developed a keen interest in geology. After graduating at Harvard, Le Conte in 1851 accompanied Agassiz on an expedition to study the Florida reefs. On his return he became professor of natural science in Oglethorpe university (Ga.); and from 1852 to 1856 was professor of natural history and geology in Franklin college. From 1857 to 1869 he was professor of chemistry and geology in South Carolina college, and he was then appointed professor of geology and natural history at the University of California, a post which he held until his death. He published papers on monocular and binocular vision, and also on psychology. His chief contributions, however, related to geology, and in all he wrote he was lucid and philosophical. He described the fissure-eruptions in western America, discoursed on earth-crust movements and their causes and on the great features of the earth's surface. As separate works he published *Elements of Geology* (1878, 5th ed., 1889); *Religion and Science* (1874); and *Evolution: its History, its Evidences, and its Relation to Religious Thought* (1888). He died in the Yosemite Valley (Calif.), on June 6, 1901.

A bibliography of his work is given in *Bulletin* of the Geol. Soc. of America, vol. 26, p. 54.

See Obituary by J. J. Stevenson, *Annals of New York Acad. of Sciences,* vol. xiv. (1902), p. 150.

LECONTE DE LISLE, CHARLES MARIE RENÉ (1818–1894), French poet, was born in the island of Réunion on Oct. 22, 1818. His father, an army surgeon, who brought him up with great severity, sent him to travel in the East Indies with a view to preparing him for a commercial life. After this voyage he went to Rennes to complete his education, studying especially Greek, Italian and history. He returned once or twice to Réunion, but in 1846 settled definitely in Paris. His first volume, *La Vénus de Milo,* attracted to him a number of friends many of whom were passionately devoted to classical literature. In 1873 he was made assistant librarian at the Luxembourg; in 1886 he was elected to the Academy in succession to Victor Hugo. His *Poèmes antiques* appeared in 1852; *Poèmes et poésies* in 1854; *Le Chemin de la croix* in 1859; the *Poèmes barbares,* in their first form, in 1862; *Les Erinnyes,* a tragedy after the Greek model, in 1872; for which occasional music was provided by Jules Massenet; the *Poèmes tragiques* in 1884; *L'Apollonide,* another classical tragedy, in 1888; and two posthumous volumes, *Derniers poèmes* in 1899, and *Premières poésies et lettres intimes* in 1902. In addition to his original work in verse, he published a series of admirable prose translations of Theocritus, Homer, Hesiod, Aeschylus, Sophocles, Euripides, Horace. He died at Voisins, near Louveciennes (Seine-et-Oise) on July 18, 1894.

In Leconte de Lisle the Parnassian movement seems to crystallize. His verse is clear, sonorous, dignified, deliberate in movement, classically correct in rhythm, full of exotic local colour, of savage names, of realistic rhetoric. It has its own kind of romance, in its "legend of the ages," so different from Hugo's, so much fuller of scholarship and the historic sense, yet with far less of human pity. Coldness cultivated as a kind of artistic distinction seems to turn all his poetry to marble, in spite of the fire at its heart. Most of Leconte de Lisle's poems are little chill epics, in which legend is fossilized. They have the lofty monotony of a single conception of life and of the universe. He sees the world as what Byron called it, "a glorious blunder," and desires only to stand a little apart from the throng, meditating scornfully. Hope, with him, becomes no more than this desperate certainty:—

"Tu te tairas, ô voix sinistre des vivants!"

His only prayer is to Death, "divine Death," that it may gather its children to its breast:—

"Affranchis-nous du temps, du nombre et de l'espace,
Et rends-nous le repos que la vie a troublé!"

(A. Sy.)

See Paul Bourget, *Nouveaux essais de psychologie contemporaine* (1885); J. Lemaître, *Les Contemporains* (2nd series, 1886); M. Spronck, *Les Artistes littéraires* (1889); F. Brunetière, *L'Evolution de la poésie lyrique en France au XIXe siècle* (1894), and *Nouveaux essais sur la litt. contemp.* (1895); J. Dornis, *Leconte de Lisle intime* (1895); F. Calmette, *Un Demi-siècle littéraire, Leconte de Lisle et ses amis* (1902); M. A. Leblond, *Leconte de Lisle d'après des documents nouveaux* (1906); E. Estève, *Leconte de Lisle* (1922).

LE CORBUSIER, M. (CHARLES EDOUARD JEANNERET) (1887–), Swiss architect, was born at La Chaux de Fonds, near Neuchatel, in 1887. He built his first house at the age of 17, and shortly afterwards studied for a time under Auguste Perret, who, with his brother was a pioneer of reinforced-concrete construction. Le Corbusier settled in Paris in 1916 and for some years worked at industrial research and as a painter of the modern school. Both in theory and practice he is one of the most notable of contemporary architects. Associated with him is his cousin, Pierre Jeanneret, a native of Geneva. Le Corbusier explicitly proclaims "engineer-building" as the only form corresponding spiritually no less than economically to the age:—"Styles are a lie"; "the house is a habitable machine"; "beauty will always come when the intention towards it exists, and the means, *which are proportion.*" The stripped economy and exact functional fitness of the steamship, the automobile and the aeroplane are held up by him as models to builders who have eyes to see. It follows from these indications that he is working for the industrialization of building, since "engineer-building" means reinforced-concrete constructions, and the expense of the moulds for these demands their use in a series of houses. The details of the series, *e.g.,* window-frames, and even built-in furniture are then naturally produced also in mass. Type-houses are the "Citrohan" and the "Monol," while another form has been erected at Pessac, near Bordeaux.

Endless ingenious methods of construction appear to be at Le Corbusier's disposal. The flat roof with roof-garden, which he advocates, is not merely a tribute from architecture to health; but the thick concrete flags laid on sand, with open, grass-sown joints, insulate the house beneath and lessen the considerable reaction of a concrete structure to varying weather conditions. His best known non-series buildings include the Maison Laroche, Auteuil, a private house at Garches; a contribution to the Werkbund exhibition at Stuttgart in 1927; the Pavillon de l'Esprit Nouveau at the Paris exhibition of 1925, and the design for the Palace of the Nations at Geneva (one of the two chosen for final selection from 377 entries), a magnificent conception which is perhaps most simply described as fulfilling all that is best in the 20th century. In 1922 he elaborated a complete scheme for a city of three million inhabitants, on a basis of decentralization, communal services and fresh air for everybody.

His publications include: *Vers Une Architecture* (Paris, 1922), *L'Art Décoratif d'Aujourd'hui* (1922), *Urbanisme* (1925), and *Des Canons, des Munitions, Merci!—des Logis s.v.p.*

See *Baubücher II.*, "Internationale Neue Baukunst" (Stuttgart).

LECOUVREUR, ADRIENNE (1692–1730), French actress, was born on April 5, 1692, at Damery, Marne, the daughter of a hatter, Robert Couvreur. She showed a natural talent for declamation and was instructed by La Grand, *sociétaire* of the Comédie Française. After a long apprenticeship, she made her Paris début in 1717, as Électre, in Crébillon's tragedy of that name, and Angélique in Molière's *Georges Dandin*. She was immediately received into the Comédie Française, and for 13 years she was the queen of tragedy there, attaining a popularity never before accorded an actress. She is said to have played no fewer than 1,184 times in a hundred rôles, of which she created 22. Adrienne Lecouvreur abandoned the stilted style of elocution of her predecessors for a naturalness of delivery and a touching simplicity of pathos that delighted and moved her public. In Baron, who returned to the stage at the age of 67, she had an able and powerful coadjutor in changing the stage traditions of generations. The jealousy she aroused was partly due to her social success; she was on visiting and dining terms with half the court, and her *salon* was frequented by Voltaire and all the other notables and men of letters. She was the mistress of Maurice de Saxe from 1721, and sold her plate and jewels to supply him with funds for his ill-starred adventure as duke of Courland. Adrienne Lecouvreur died on March 30, 1730, and it was believed that she was poisoned by a jealous rival mistress of de Saxe. She was denied the last rites of the Church, and her remains were refused burial in consecrated ground. Voltaire, in a fine poem on her death, expressed his indignation at the barbarous treatment accorded to the woman whose "friend, admirer, lover" he was.

Her life formed the subject of the tragedy (1849), by Eugène Scribe and Ernest Legouvé. See *Lettres d'Adrienne Lecouvreur* (ed. G. Monval, 1892); A. Bourgeois, *Adrienne Lecouvreur* (1895); G. Rivollet, *Adrienne Le Couvreur* (1925).

LE CREUSOT, a town of France in the department of Saône-et-Loire, 55 mi. S.W. of Dijon on the Paris-Lyon railway. Pop. (1936) 22,329. Le Creusot is situated in a district rich in coal and iron and it has the most extensive iron works in France. The coal bed of Le Creusot was discovered in the 13th century; but it was not till 1774 that the first workshops were founded there. The royal crystal works were transferred from Sèvres to Le Creusot in 1787, but this industry came to an end in 1831. Meanwhile several enterprises for the manufacture of metal had ended in failure. It was only in 1836 that the foundation of iron works by Adolphe and Eugène Schneider definitely inaugurated the industrial prosperity of the place. They supplied war material at first, but later they enlarged their size and manufactured steel, armourplate, guns, locomotives, electrical machinery, etc. A network of railways about 37 mi. in length connects the works and the Canal du Centre. Special attention is paid to the welfare of the workers, and good schools have been established. In 1897 the ordnance-manufacture of the Société des Forges et Chantiers de la Méditerranée at Le Havre was acquired by the company, which also has important branches at Chalon-sur-Saône, where shipbuilding and bridge-construction is carried on, and at Sète.

LECTERN, a reading desk, usually restricted to ecclesiastical use. In the early church the ambo (*q.v.*) served as a reading desk, but by the 15th century the use of special stands for the large books then in vogue became common. On the Continent, especially in Italy, there are many beautiful examples of the Renaissance period in carved wood, usually with heavily scrolled, spreading, triangular base, and a support of generally baluster type. In the Anglican church, where the lectern is usually reserved for the reading of the lessons, a type has become traditional in which the book-rest is supported on the wings of an eagle or a pelican. In many cases these are of metal.

LECTION, LECTIONARY. A lection, or lesson, is a reading from Scripture, patristic homilies or lives of saints in the Roman Catholic Church. The custom of reading extracts from the Pentateuch and prophetic books (*cf.* Luke iv. 16–20, xvi. 29) in Synagogues on the Sabbath was taken over with others into the Christian divine service, additions being made from the writings of the apostles and evangelists. We find traces of such additions within the New Testament itself in such passages as Col. iv. 16; 1 Thess. v. 27.

There are traces of fixed lessons coming into existence in the 3rd century: Origen refers to the book of Job being read in Holy Week (*Commentaries on Job,* lib. i.). Allusions of a similar kind in the 4th century are frequent. John Cassian (*c.* 380) tells us that throughout Egypt the Psalms were divided into groups of twelve, and that after each group there followed two lessons, one from the Old, one from the New Testament (*De caenob. inst.* ii. 4), implying but not absolutely stating that there was a fixed order of such lessons just as there was of the Psalms. St. Basil the Great mentions fixed lessons on certain occasions taken from Isaiah, Proverbs, St. Matthew and Acts (Hom. xiii. *De bapt.*). From Chrysostom (Hom. lxiii. *in Act.*, etc.), and Augustine (Tract. vi. *in Joann.*, etc.) we learn that Genesis was read in Lent, Job and Jonah in Passion Week, the Acts of the Apostles in Eastertide, lessons on the Passion on Good Friday and on the Resurrection on Easter Day. Nothing in the shape of a lectionary is extant older than the 8th century, though there is evidence that Claudianus Mamertus made one for the church at Vienne about 450. The council of Carthage in 397 forbade anything but Holy Scripture to be read in church; this rule has been adhered to so far as the liturgical epistle and gospel, and occasional additional lessons in the Roman missal are concerned, but in the divine office, on feasts when nine lessons are read at matins, only the first three lessons are taken from Holy Scripture, the next three being taken from the sermons of ecclesiastical writers, and the last three from expositions of the day's gospel; but sometimes the lives or *Passions* of the saints, or of some particular saints, were substituted for any or all of these breviary lessons.

LECTISTERNIUM (from Lat. *lectum sternere,* "to spread a couch"), a rite of Greek origin, but common in Rome from 399 B.C. (*see* Livy, v., 136) onward. It consisted of a meal offered to gods and goddesses, represented by their busts or statues, perhaps originally by aniconic symbols (*see* Festus, p. 56, 12 Lindsay). These symbols were laid upon a couch (*lectus*) or *pulvinar* (from *pulvinus,* a cushion) in the attitude of reclining. In front of the couch, which was placed in the open street, a meal was set out on a table.

On the first occasion couches were prepared for three pairs of gods—Apollo and Latona, Hercules and Diana, Mercury and Neptune. The feast, which on that occasion lasted for eight (or seven) days, was also celebrated by private individuals; the citizens kept open house, quarrels were forgotten, debtors and prisoners were released, and everything done to banish sorrow. Similar honours were paid to other divinities in subsequent times, always after consultation of the Sibylline books and as a propitiatory ceremony. The gods being grouped in Greek fashion and being frequently of Greek origin, it is plain that the rite is Greek, presumably Cumaean, since the Sibylline books came from Cumae; but in this form it does not seem to be found in Greece. In addition, *lectisternia* were held annually, or oftener (for the greater part of the year in some shrines, Livy xxxvi., 1, 2; xlii., 30, 8) at temples of gods originally Greek, as Ceres. This largely replaced the old Roman *epulum* or *daps,* in which a table was spread for the god, who was not visibly represented. A sort of compromise is the *sellisternium,* in which a goddess is provided with a chair (*sella*), not a couch, according to the Roman custom by which women did not recline but sat at meals (*e.g.* Valerius Max., ii. 1, 2). In Christian times the word was used for a feast in memory of the dead (Sidonius Apollinaris *Epistulae,* iv. 15).

See G. Wissowa, *Religion u. Kultus d. Römer,* p. 421 (bibl.).

LECTOR or READER, a minor office-bearer in the Christian Church. From an early period men have been set apart, under the title of *anagnostae, lectores* or readers, for the purpose of reading Holy Scripture in church. We do not know what the custom of the Church was in the first two centuries, the earliest reference to readers, as an order, occurring in the writings of Tertullian (*De praescript. haeret.* cap. 41); there are frequent allusions to them in the writings of St. Cyprian and afterwards. Cornelius, bishop of Rome in A.D. 251–252, in a well-known letter mentions readers among the various church orders then existing

at Rome. The custom has not fallen out of use, but the precise duties and method of appointment vary greatly.

LECTOURE, a town of France in the department of Gers, 21 m. N. of Auch. Pop. (1936) 2,753. Lectoure, capital of the Iberian tribe of the *Lactorates* and for a short time of Novempopulania was the seat of a bishopric in the fourth century. In the 11th century the counts of Lomagne made it their capital, and on the union of Lomagne with Armagnac, in 1325, it became the capital of the counts of Armagnac. In 1473 Cardinal Jean de Jouffroy besieged the town on behalf of Louis XI. and after its fall put the population to the sword. In 1562 it again suffered severely at the hands of the Catholics under Blaise de Montluc. The church of St. Gervais and St. Protais was once a cathedral. The massive tower which flanks it belongs to the 15th century. Its industries include distilling, the manufacture of wooden shoes, furniture and biscuits, and market gardening; it has trade in grain, flour, cattle, wine and brandy.

LEDA (parentage variously given), in Greek legend, was wife of Tyndareus and *either* was loved by Zeus in the form of a swan, and laid an egg, or eggs, from which came Helen and one or both of the Dioscuri (*cf.* CASTOR AND POLLUX), *or* hatched out a similar egg laid by Nemesis. Clytaemnestra was her daughter by Tyndareus.

See Roscher's *Lexikon der Inythologie,* art. "Leda."

LE DAIM (or LE DAIN), **OLIVER** (d. 1484), favourite of Louis XI. of France, was born at Thielt, Flanders. He became court barber and valet to Louis XI., and in 1474 he was ennobled under the title Le Daim, and in 1477 made comte de Meulant. In 1477 he was sent to Burgundy to influence the young heiress of Charles the Bold, but he was ridiculed and compelled to leave Ghent. He thereupon seized and held Tournai for the French. Le Daim amassed a fortune, and was named gentleman-in-waiting, captain of Loches, and governor of Saint-Quentin. After the death of Louis XI., he was arrested, tried before the parlement of Paris, and on May 21, 1484 hanged at Montfaucon without the knowledge of Charles VIII. Le Daim's property was given to the duke of Orleans.

See the memoirs of the time, especially those of Ph. de Commines (ed. Mandrot, 1901–03, Eng. trans. in Bohn Library); Robt. Gaguin, *Compendium de origine et gestis Francorum* (Paris, 1586)—it was Gaguin who made the celebrated epigram concerning Le Daim: "Eras judex, lector, et exitium"; De Reiffenberg, *Olivier le Dain* (Brussels, 1829); Delanone, *Le Barbier de Louis XI.* (Paris, 1832); G. Picot, "Procès d'Olivier le Dain," in the *Comptes rendus de l'Académie des sciences morales et politiques,* viii. (1877), 485–537. The memoirs of the time are uniformly hostile to Le Daim.

LEDBURY, market town and urban district in Hereford parliamentary division, Herefordshire, England, 14½ mi. E. of Hereford by the G.W.R., on the S.W. slope of the Malvern hills. Pop. (est. 1938) 3,262. Area .8 sq.mi. Cider and perry are the chief articles of trade, and there are limestone quarries in the neighbouring hills. The town contains many timbered houses, the principal being the Market House (1633) raised on pillars of oak. The church of St. Michael exhibits all the Gothic styles, the noteworthy features being the Norman chancel and west door, and a series of ornate Decorated windows. Among several charities is the hospital of St. Catherine, founded by Hugh Foliot, bishop of Hereford, in 1232. The grammar school dates from before Edward VI's time. Wall Hills Camp is the earliest evidence of a settlement near Ledbury (Liedeburge, Lidebury). The manor was given to the see of Hereford in the 11th century; but in 1561–62 became crown property. As early as 1170–71 an episcopal castle existed in Ledbury. The town was early called a borough.

LEDGER, properly a book remaining regularly in one place, and so used of the copies of the Scriptures and service books kept in a church. The *New English Dictionary* quotes from Charles Wriothesley's *Chronicle,* 1538 (ed. *Camden Soc.,* 1875, by W. D. Hamilton), "the curates should provide a booke of the bible in Englishe, of the largest volume, to be a lidger in the same church for the parishioners to read on." It is an application of this original meaning that is found in the commercial usage of the term for the principal book of account in a business house. (*See* BOOK-KEEPING.) Apart from these applications to various forms of books, the word is used of the horizontal timbers in a scaffold (*q.v.*) lying parallel to the face of a building, which support the "put logs"; of a flat stone to cover a grave; and of a stationary form of tackle and bait in angling.

LEDOCHOWSKI, MIECISLAUS JOHANN, COUNT (1822–1902), Polish cardinal, was born on Oct. 29, 1822 in Gorki (Russian Poland). When archbishop of Gnesen (Posen) he issued (1873) a protest against the demand of the government that religious teaching should be given only in German, and was asked to resign. On his refusal he was arrested on Feb. 3, 1874, and taken to the military prison at Ostrowo.

The pope made him a cardinal on March 13, but it was not till Feb. 3, 1876 that he was released from prison. Having been expelled from the eastern provinces of Prussia, he went to Cracow, where his presence was made the pretext for anti-Prussian demonstrations. He was thereupon expelled from Austria, and went to Rome, whence, in spite of his removal from office, which was decreed on April 15, 1874, he continued to direct the affairs of his diocese, for which he was on several occasions from 1877 to 1879 condemned *in absentia* by the Prussian government. It was not till 1885 that Ledochowski resolved to resign his archbishopric, in which he was succeeded by Dinder. He died in Rome on July 13, 1902.

LEDRU-ROLLIN, ALEXANDRE AUGUSTE (1807–1874), French lawyer politician, was the grandson of Nicolas Philippe Ledru, the celebrated quack doctor known as "Comus" under Louis XIV., and was born in a house that was once Scarron's, at Fontenay-aux-Roses (Seine), on Feb. 2, 1807. He was called to the bar, and was retained for the Republican defence in most of the great political trials of the years 1830–40. He was elected deputy for Le Mans in 1841 with hardly a dissentient voice; but for the violence of his electoral speeches he was tried at Angers and sentenced to four months' imprisonment and a fine, against which he appealed successfully on a technical point. He made a rich and romantic marriage in 1843, and in 1846 disposed of his charge at the Court of Cassation to give his time entirely to politics. He was now the recognized leader of the workingmen of France. He had more authority in the country than in the Chamber, where the violence of his oratory diminished its effect. He asserted that the fortifications of Paris were directed against liberty, not against foreign invasion, and he stigmatized the law of regency (1842) as an audacious usurpation. He founded *La Réforme* in which to advance his propaganda. Between Ledru-Rollin and Odilon Barrot with the other chiefs of the "dynastic Left" there were acute differences, hardly dissimulated even during the temporary alliance which produced the campaign of the banquets in 1848. Ledru-Rollin and Lamartine then held the tribune in the Chamber of Deputies until the Parisian populace stopped serious discussion by invading the Chamber. He was minister of the interior in the provisional government, and was also a member of the executive committee appointed by the Constituent Assembly, from which Louis Blanc and the extremists were excluded. At the crisis of May 15 he definitely sided with Lamartine and the party of order against the proletariat.

After this he never regained his influence with the working classes, who considered they had been betrayed. At the presidential election in December he secured only 370,000 votes. His opposition to the policy of Louis Napoleon, especially his Roman policy, led to his moving the impeachment of the president and his ministers. The motion was defeated, and next day (June 13, 1849) he headed what he called a peaceful demonstration, and his enemies armed insurrection. He himself escaped to London where he joined the executive of the revolutionary committee of Europe, with Kossuth and Mazzini among his colleagues. He was accused of complicity in an obscure attempt (1857) against the life of Napoleon III., and condemned in his absence to deportation. Émile Ollivier removed the exceptions from the general amnesty in 1870, and Ledru-Rollin returned to France after twenty years of exile. Though elected in 1871 in three departments he refused to sit in the National Assembly, and took no serious part in politics until 1874, when he was returned to the Assembly as member for Vaucluse. He died on

Dec. 31, 1874.

Under Louis Philippe he made large contributions to French jurisprudence, editing the *Journal du palais, 1791–1837* (27 vols., 1837), and *1837–1847* (17 vols.), with a commentary *Répertoire général de la jurisprudence française* (8 vols., 1843–48), the introduction to which was written by himself. His later writings were political in character. See *Ledru-Rollin, ses discours et ses écrits politiques* (2 vols., Paris, 1879), edited by his widow; A. R. Calman, *Ledru-Rollin and the Second French Republic* (New York, 1922); A. R. Calman, *Ledru-Rollin après 1848 et les proscrits français en Angleterre* (1921).

LEE, ANN (1736–1784), English religious visionary, was born in Manchester, where she was first a factory hand and afterwards a cook. She is remembered by her connection with the sect known as Shakers (*q.v.*). She died at Watervliet, near Albany, New York.

LEE, ARTHUR (1740–1792), American diplomat, brother of Richard Henry Lee, was born at Stratford, Westmoreland county, Virginia, on Dec. 20, 1740. He was educated at Eton, and studied and practised medicine and law in Virginia and in England. In 1770–75 he served as London agent for Massachusetts. At that time he had shown great ability as a pamphleteer, having published in London *The Monitor* (1768), seven essays previously printed in Virginia, as well as various political tracts. In Dec. 1775 the committee of secret correspondence chose him as its European agent for the purpose of ascertaining the views of European countries regarding the war between the colonies and Great Britain. In Oct. 1776 he was appointed on the commission with Franklin and Silas Deane to negotiate a treaty of alliance, amity and commerce with France, and to negotiate with other European governments. His letters to Congress resulted in Deane's recall; and other letters impaired the confidence of Congress in Franklin, of whom Lee was especially jealous. Early in 1777 he went to Spain as American commissioner, but receiving no official recognition, accomplished nothing; until the appointment of Jay, however, he continued to act as commissioner to Spain, held conferences with the Spanish minister in Paris, and in Jan. 1778 secured a promise of a loan of 3,000,000 livres, only a small part of which (some 170,000 livres) was paid. In June 1777 he went to Berlin, but was not officially recognized. With Franklin and Deane in Feb. 1778 he signed the treaties between the United States and France. Lee was recalled in 1779, and returned to the United States in Sept. 1780. He was a member of the Virginia house of delegates in 1781 and a delegate to the Continental Congress in 1782–85. With Oliver Wolcott and Richard Butler he negotiated a treaty with the Six Nations, Oct. 22, 1784, and with George Clark and Richard Butler a treaty with the Wyandot, Delaware, Chippewa and Ottawa Indians, Jan. 21, 1785. He was a member of the treasury board in 1784–89. After the adoption of the constitution which he opposed, he retired to his estate at Urbana, Va., where he died on Dec. 12, 1792.

Bibliography.—*See* R. H. Lee, *Life of Arthur Lee* (1829), and C. H. Lee, *A Vindication of Arthur Lee* (1894); both partisan. Eight vols. of Lee's mss. in the Harvard university library are described and listed in *Library of Harvard University, Bibliographical Contributions* No. 8 (1882). Much of Lee's correspondence is to be found in Wharton's *Revolutionary Diplomatic Correspondence* (1889); *American Historical Review*, xxx. p. 280, and xxxi., pp. 33–39.

LEE, EDWARD (*c.* 1482–1544), archbishop of York, famous for his attack on Erasmus, who replied to him in his *Epistolae aliquot eruditorum virorum*. Lee was sent by the king on embassies to the emperor Charles V. and to Pope Clement VII. In 1531 he became archbishop of York. At Pontefract in 1536, during the Pilgrimage of Grace, the archbishop was compelled to join the rebels. He was the last archbishop of York to coin money. Lee died on Sept. 13, 1544.

LEE, FITZHUGH (1835–1905), American cavalry general, was born at Clermont, in Fairfax county, Virginia, on Nov. 19, 1835. He was the grandson of "Light Horse Harry" Lee, and the nephew of Robert E. Lee (*q.v.*). Graduating from West Point in 1856, he became a cavalry subaltern. On the secession of Virginia he joined the Confederate army and served with distinction through the Civil War. He was made brigadier-general in 1862, and major-general in 1863, commanding cavalry divisions under Stuart, Hampton and Lee. On April 9, 1865, at Farmville, Va., he led the last charge of the Confederates.

After the war he was conspicuous in his efforts to reconcile the Southern people to the issue of the war. From 1886 to 1890 he was governor of Virginia. In 1896 he was appointed by President Cleveland consul general at Havana. In this post (in which he was retained by President McKinley) he was from the first called upon to deal with a situation of great difficulty, which culminated with the destruction of the "Maine" (*see* Spanish-American War). Upon the declaration of war with Spain he re-entered the army. He was one of the three ex-Confederate general officers who were made major generals of U.S. Volunteers. He was military governor of Havana and Pinar del Rio in 1899, and retired as a brigadier-general U.S. Army in 1901. He died in Washington April 28, 1905. He wrote *General Lee* (1894) in the "Great Commanders" series, and *Cuba's Struggle Against Spain* (1899).

LEE, HENRY (1756–1818), American general, called "Light Horse Harry," was born near Dumfries (Va.), on Jan. 29, 1756. His father was first cousin to Richard Henry Lee. He graduated (1773) at Princeton, and on the outbreak of the War of Independence, became an officer in the patriot forces. He served with distinction under Washington, and in 1778 was promoted major and given the command of a small irregular corps, with which he won a great reputation as a leader of light troops, and the soubriquet of "Light Horse Harry."

His greatest exploit was the brilliant surprise of Paulus Hook (N.J.), on Aug. 19, 1779. He was promoted lieutenant-colonel 1780, and sent with a picked corps of dragoons to the southern theatre of war. Here he rendered valuable services, notably at Guildford Court House, Camden and Eutaw Springs. From 1786–88 he was a delegate to the Confederation Congress, and in the Virginia Convention of 1788 he favoured the adoption of the Federal Constitution.

From 1789–91 he served in the general assembly, and from 1791–94 was governor of Virginia. In 1794 Washington sent him to help in the suppression of the "Whisky Insurrection" in western Pennsylvania. He was a major-general in 1798–1800. From 1799–1801 he served in Congress. He delivered the address on the death of Washington which contained the famous phrase, "first in war, first in peace, and first in the hearts of his countrymen." Soon after the outbreak of the War of 1812, Lee, while helping to resist an attack on his friend, A. C. Hanson, editor of the Baltimore *Federal Republican*, received injuries, from which he never recovered. He was the father of Gen. Robert E. Lee. He died on Cumberland Island, on March 25, 1818.

Lee wrote valuable *Memoirs of the War in the Southern Department* (1812; 3rd ed. with memoir by Robert E. Lee, 1869).

LEE, NATHANIEL (*c.* 1653–1692), English dramatist, son of Dr. Richard Lee, a Presbyterian divine, was born probably in 1653. Lee was educated at Westminster school, and at Trinity college, Cambridge, taking his B.A. degree in 1668. Coming to London under the patronage, it is said, of the duke of Buckingham, he tried to earn his living as an actor, but his acute stage fright made acting impossible. His earliest play, *Nero, Emperor of Rome*, was acted in 1675 at Drury Lane. Lee made his reputation in 1677 with a blank verse tragedy, *The Rival Queens, or the Death of Alexander the Great*, which remained a favourite on the English stage down to the days of Edmund Kean. *Mithridates, King of Pontus* (acted 1678), *Theodosius, or the Force of Love* (acted 1680), *Caesar Borgia* (acted 1680)—an imitation of the worst blood and thunder Elizabethan tragedies—*Lucius Junius Brutus, Father of His Country* (acted 1681), and *Constantine the Great* (acted 1684) followed. *The Princess of Cleve* (1681) is a gross adaptation of Madame de La Fayette's exquisite novel of that name. *The Massacre of Paris* (published 1690) was written about this time. Lee had given offence at court by his *Lucius Junius Brutus;* he sought rehabilitation by collaborating with Dryden in *The Duke of Guise* (1683), a play which directly advocated the Tory point of view. In it part of the *Massacre of Paris* was incorporated. In 1684 his mind became completely unhinged. He recovered his health but died in a drunken fit in 1692, and was buried in St. Clement Danes, Strand, on May 6.

Lee's *Dramatic Works* were published in 1784. In spite of their

extravagance, they contain many passages of great beauty.

LEE, RICHARD HENRY (1732–1794), American statesman and orator, was born at Stratford, Westmoreland county (Va.), on Jan. 20, 1732, one of the six distinguished sons of Thomas Lee (d. 1750), a descendant of an old Cavalier family. Richard Henry Lee received an academic education in England, travelled, and returned to Virginia in 1752, having inherited a fine property from his father, and applied himself to varied studies. When 25 he was appointed justice of the peace of Westmoreland county, and in the same year was chosen a member of the Virginia house of burgesses, in which he served from 1758 to 1775. His first speech was in strong opposition to slavery, which he proposed eventually to abolish by imposing a heavy tax on all further importations. He early allied himself with the Whig element in Virginia, and in the years immediately preceding the War of Independence was a conspicuous opponent of the arbitrary measures of the British ministry. In 1768, in a letter to John Dickinson of Pennsylvania, he suggested a private correspondence among the friends of liberty in the different colonies, and in 1773 he became a member of the Virginia committee of correspondence.

Lee was a delegate to the First Continental Congress in Philadelphia in 1774, and prepared the address to the people of British America, and the second address to the people of Great Britain. He introduced in Congress on June 7, 1776, the famous resolutions: (1) "that these united Colonies are, and of right ought to be, free and independent States, that they are absolved from all allegiance to the British Crown, and that all political connection between them and the State of Great Britain is, and ought to be, totally dissolved"; (2) "that it is expedient to take the most effectual measures for forming foreign alliances"; and (3) "that a plan of confederation be prepared and transmitted to the respective Colonies for their consideration and approbation." His first resolution was adopted on July 2, and the Declaration of Independence was adopted two days later. Lee was in Congress from 1774 to 1780; a member of the Virginia house of delegates in 1777, 1780–84 and 1786–87; was in Congress again from 1784–87, having been president in 1784–86; and was one of the first U.S. senators chosen from Virginia. Though opposed to the Constitution because of what he regarded as its infringements upon the independent power of the States, he accepted the place of senator in hope of bringing about amendments, and proposed the Tenth Amendment in substantially the form in which it was adopted. He retired from public life in 1792, and died at Chantilly, in Westmoreland county, on June 19, 1794.

See the *Life* (1825), by his grandson, R H. Lee; and *Letters* (1910), edited by J. C. Ballagh.

His brother, WILLIAM LEE (1739–1795), accompanied another brother, Arthur Lee (*q.v.*), to England in 1766 to engage in mercantile pursuits, joined the Wilkes faction, and in 1775 was elected an alderman of London. In April 1777, however, he received notice of his appointment by the committee of secret correspondence in America to act as a commercial agent at Nantes. He went to Paris and became involved in his brother's opposition to Franklin and Deane. In May 1777 Congress chose him commissioner to the courts of Vienna and Berlin, but he gained recognition at neither. In Sept. 1778, at Aix-la-Chapelle, he negotiated a plan of a treaty with Jan de Neufville, who represented Van Berckel, pensionary of Amsterdam. A copy of this proposed treaty, falling into the hands of the British on the capture of Henry Laurens (*q.v.*), led to Great Britain's declaration of war against the Netherlands in Dec. 1780. Lee was recalled from his mission to Vienna and Berlin in June 1779. He resigned his post as an alderman of London in Jan. 1780, and returned to Virginia about 1784.

See *Letters of William Lee,* edited by W. C. Ford (1891).

LEE, ROBERT EDWARD (1807–1870), American general, was born at Stratford, Va., on Jan. 19, 1807. He came of a family with a great record of public service. His father, Henry Lee, was governor of Virginia and in the Revolutionary War made himself famous as a leader of Washington's cavalry, earning the sobriquet of "Light Horse Harry." Two Lees (Richard and Francis) signed the Declaration of Independence. A forbear, Thomas Lee, became president and commander-in-chief of Virginia, while the founder of the American branch of the family, Richard Lee, who migrated to Virginia in the reign of Charles I., became secretary of State and a member of the privy council of Virginia, and helped to hold the colony for Charles II.

Robert, the fourth son in Henry's second family, entered the United States military academy at West Point, where he graduated with great distinction, and was in 1829 commissioned as 2nd lieutenant in the Corps of Engineers. Two years later he married Mary Custis, great granddaughter of Martha Washington, heiress to the Arlington estate in the Virginian hills which overlook Washington, and of the White House on the Pamunkey. Thus by birth and marriage Robert was connected with the leading families of Virginia. In 1846, when war broke out between the United States and Mexico, Lee, then a captain, was already distinguished in the service for his ability, and was chosen by Gen. Scott to join the headquarters staff. He returned from this war with a reputation established at the age of 42, and was chosen successively to be superintendent of West Point, and to be colonel of cavalry, in which capacity he was employed for some years in the country of the Comanche Indians. In 1859 he was at his wife's home, Arlington, when John Brown's raid on Harper's Ferry took place, and he was employed in the unpleasant task of capturing the raiders. From this duty he returned to the Texas border to be summoned to Washington in February, 1861, to meet the crisis of his life.

Lee was no politician, but he had followed with an intelligent interest the development of the crisis which culminated in the Civil War. He regarded slavery as an evil, and in common with many of the landowners of Virginia, had liberated his slaves, but he considered that it would be a greater evil to attempt to eradicate slavery by force. He believed firmly in the advantages of the Union, but still more firmly that the authority of the Federal Government was conferred on it freely by the several States, which had the right to secede if they wished. His political creed may be summed up in the words which he wrote on the eve of the crisis:—"I can anticipate no greater calamity for the country than the dissolution of the Union. . . . Still a union that can only be maintained by swords and bayonets, and in which strife and civil war are to take the place of brotherly love and kindness, has no charms for me. If the Union is dissolved and the Government dispersed I shall return to my native State and share the miseries of my people and, save in defence, will draw my sword no more."

At the time when war became certain Lee's military reputation was so high that Scott advised Abraham Lincoln to offer him the command of the Federal forces in the field. That brilliant offer Lee declined with a heavy heart. He resigned his commission in the United States army and went to Richmond to place his services at the disposal of Virginia.

AS MILITARY ADVISER

In the first months of the war Lee was engaged in organizing the troops of his State. He was then for a time military adviser to the Confederate president, Jefferson Davis, and in that capacity watched the defeat of the first Federal invasion of Virginia at Bull Run. During part of that year, 1861, he was sent to command in western Virginia, where the Federals under the leadership of McClellan had won conspicuous successes. With untrained troops and inexperienced officers, in difficult mountainous country, his campaign there was a failure, and he returned to Richmond with his reputation under a cloud to be sent by Davis to organize the coast defences of the Carolinas. He was engaged on this work when he was again summoned, in March 1862, to Richmond to be military adviser to the President.

The Federals had then assembled armies for the invasion of Virginia numbering 180,000 men, to which the Confederates could immediately oppose 80,000, a number which might eventually be brought up to 100,000. McClellan, with the main Federal army, was preparing to disembark on the Yorktown peninsula and to advance on Richmond from the coast, while other Federal forces converged on Richmond from the north and west. How

in these circumstances was Richmond to be defended? J. E. Johnston, who commanded the Confederate main army in Virginia, proposed to concentrate all available troops about Richmond and to fight it out there. Lee saw that this was a counsel of despair, and that the one chance for the Confederates was to utilize their central position and to compensate by skilful manoeuvre for inferior numbers. He therefore persuaded the President to send Johnston, against the latter's wish, to oppose McClellan in the Yorktown peninsula, so that time might be gained. He turned to "Stonewall Jackson" (*see* JACKSON, THOMAS JONATHAN), whom he asked to unite some of the remaining detachments of the Confederates in Virginia, in order to attack the Federals in the Shenandoah valley, and so create alarm for the safety of Washington. This task Jackson brilliantly accomplished in his famous Valley campaign. The Federal forces intended to aid McClellan in his attack on Richmond were diverted or dispersed. In the meantime Johnston had fallen back on lines prepared around Richmond, and in the battle of Seven Pines attacked McClellan. The result was indecisive and Johnston fell wounded, Lee succeeding to the command of the army of northern Virginia.

Lee now proceeded to consummate his plan. McClellan, expecting reinforcements to his right flank, had advanced on Richmond with his forces divided by the Chickahominy. Jackson had prevented the arrival of these reinforcements and kept them in expectation of attack. Lee thereupon brought Jackson by rail and road towards Richmond, and on his arrival had 87,000 men opposed to McClellan's 109,000. Further he skilfully utilized the defences of Richmond to outbalance McClellan's superior numbers, leaving in them 28,000 men to hold 75,000 of McClellan's army south of the Chickahominy, while with 59,000 he attacked at the beginning of the battles of the "Seven Days" the 34,000 Federals on the north of the river. With his right overwhelmed McClellan was forced to retreat and fell back to the James river, eventually embarking his troops and returning to the Potomac. Generalship had neutralized superior numbers and the danger to Richmond was removed.

When McClellan's retreat was ended, Lee sent Jackson to the Rapidan to check the Federal force which, recovering from the latter's blows, was uniting under the command of Pope. As soon as McClellan's intention to evacuate the Yorktown peninsula was clear Lee joined Jackson with the main body of the army of northern Virginia. Before them Pope fell back behind the Rappahannock, and Lee, whose intention was to manoeuvre Pope out of Virginia, divided his forces, sending Jackson with half his force by a flank march to come down on Pope's rear, while he himself followed with the remainder under Longstreet. Jackson reached Manassas Junction and destroyed Pope's depots, and then fell back a short distance so as to cover the passes of the Blue Ridge and be in a position to unite with Longstreet. While so placed a Federal column, ignorant of his presence, marched across his front. Jackson, unable to resist the temptation, attacked and so brought on the second battle of Bull Run (Aug. 29–30), in which, Longstreet arriving in the nick of time on the field, Pope was completely defeated. Lee then decided to cross the Potomac and invade Maryland, not with the object of conquering any portion of Northern territory, but to keep the Federal forces out of Virginia by forcing them to defend Washington, and to strengthen the peace party in the North.

After crossing the Potomac Lee detached Jackson with half his force to reduce Harper's Ferry, which, held by a garrison of 11,000 Federals, interrupted his communications with Virginia. Jackson speedily accomplished his task, but while he was engaged in it, an order by Lee which disclosed the division of his forces fell into the hands of McClellan, who advanced and attacked the Confederates in position behind the Antietam (Sept. 17). Jackson arrived on the field in time to enable Lee to repulse McClellan's attacks, but this done the Confederates were compelled to retire into Virginia. It is more than doubtful whether Lee was justified in accepting this battle. He could have avoided it and returned to Virginia with the defeat of Pope and the surrender of Harper's Ferry to his credit and have avoided the heavy losses which the Confederates could ill afford. It would appear that at this time he was disposed to underrate unduly the fighting power of the Northern troops.

A long pause followed the battle of the Antietam, and it was not until Dec. 1862 that Burnside, who had displaced McClellan in command of the Army of the Potomac, attempted to meet Lee in the field. Lee's army was then disposed along the Rappahannock, and his service of information being admirable, he was able to concentrate in time to meet Burnside's attack upon his position at Fredericksburg. This attack, which was purely frontal against a strong position, was repulsed with great ease on Dec. 13. Lee had been criticized for not undertaking an immediate pursuit, but his justification is that he expected the Federals to renew the attack, and did not wish to expose his infantry to the fire of the superior Federal artillery on the opposite heights.

The experiences of a winter campaign in Virginia caused the Federals to await the spring to renew their efforts, and the two armies watched each other on the Rappahannock until towards the end of April 1863. Hooker, who had taken Burnside's place, then had 120,000 men opposed to Lee's 60,000, and he planned, while leaving part of his army on the river, to occupy Lee's front, to march the remainder round the Confederate left and come down on their rear through the woods of Chancellorsville. Lee was once more well informed of his opponents' movements. Leaving a detachment on the river he marched with the bulk of his troops, including Jackson's corps, towards Chancellorsville. On the outskirts of the wilderness of Chancellorsville Lee and Jackson made their plans on the night of May 1–2. Lee, with an understanding of the delaying power of entrenchments which no other soldier of his day possessed, proposed to repeat the manoeuvre which had opened the battles of the "Seven Days." Keeping only 10,000 men with himself entrenched opposite Hooker's front, he sent Jackson, under cover of the woods, round Hooker's right, which on the evening of May 2 was surprised and routed. Jackson fell mortally wounded, but Hooker was driven back over the Rappahannock.

Lee followed this victory by another invasion of Northern territory. He had been joined by Longstreet's corps, which brought his strength to 73,000 men, and early in June he began a brilliant series of manoeuvres across Hooker's front, which brought his army in the third week of that month into the northern end of the Shenandoah valley. There he detached Stuart with his cavalry to delay Hooker's crossing of the Potomac. It was Lee's intention that Stuart should return to cover his right flank, but by an unfortunate misunderstanding Stuart, who had made himself famous by a number of raids round the Federal army, crossed the Potomac to the east of the mountains and was separated from Lee for several days. Thus the Confederates entered Pennsylvania by way of the Cumberland valley deprived of their eyes, and in ignorance of the Federal movements. Hooker had crossed the Potomac to cover Washington, but Lincoln, realizing that he had been outmanoeuvred by Lee, replaced him by Meade.

It was not until June 29 that Lee learned that the Federal army was across the Potomac, and he at once began to concentrate his forces. The next day his flank guard came into collision with Federal cavalry near Gettysburg, and on July 1 both armies were converging on that place. That evening and on the morning of the 2nd the advantage was with the Confederates, for the Federal forces were arriving piecemeal, and there is little doubt but that if Longstreet had attacked on the morning of the 2nd, as Lee wished him to do, the Confederates would have been victorious. But Longstreet, though a fine tactician, was an obstinate subordinate, and found excuses for delay. By noon on July 2 the opportunity had passed, and Lee's attacks both on that day and on the 3rd were heavily repulsed. Lee thereupon skilfully retreated, and on July 14 was back in Virginia.

After Gettysburg both armies needed rest, and when Meade was once more ready to advance Lee had prepared strong defences along the Rapidan, which the Federals found too formidable for attack. So the winter passed with the two armies waiting for better weather to resume manoeuvre.

The result of Gettysburg was to change Lee's military policy.

Up to that battle he had hoped to force the North to make peace by winning a resounding victory in Northern territory. After Gettysburg he understood that the South's resources would no longer justify that policy, and his plan became to exhaust by delay the patience of the North. In March 1864 Lincoln took the decisive step of appointing Grant, the hero of Vicksburg, to the supreme command of the Federal armies. Grant, realizing that Lee and his army were the chief obstacle to the fulfilment of Federal aims and the superiority of the resources of the North, proposed to fasten on to Lee and compel him to fight on every possible occasion. By the beginning of May Grant had an army of 130,000 ready in northern Virginia, and on the night of May 3–4 he began to cross the Rappahannock near Fredericksburg, hoping to force Lee to leave his lines on the Rapidan in order to cover Richmond. Lee waited until Grant was across the river, and then attacked, with 60,000 men, Grant's flank as he was moving through the forest of the Wilderness. The forest country neutralized the effect of the superior Federal artillery, the Southerners were better acquainted with the intricate country and the advantage was with the Confederates. But Grant would not acknowledge defeat, and knowing that his army was much stronger than that of Lee, he, instead of retreating as Hooker had done, broke off the battle and continued to advance towards Richmond.

Lee at once divined Grant's intention, and when the Federal advanced guard reached Spotsylvania court house on May 9 it found its way barred by entrenchments. There followed a nine days' battle of trench warfare, in which the Federal assaults were heavily repulsed. Grant then abandoned his efforts to force Lee's front, and once more marched past his flank, only to find, on May 23, Lee once more barring his way behind the North Anna. Again Grant marched past Lee's flank, and again on June 1 found Lee in position at Cold Harbor. Grant, apparently losing patience, on June 3 made a frontal attack on Lee's lines which failed with heavy loss.

Despite this rebuff Grant's determination was not shaken. He continued his previous manoeuvre and crossing the James river compelled Lee to follow him towards Richmond, and began on June 16 the long siege of Petersburg. During his advance from the Rappahannock to Petersburg Grant had under him 180,000 men, including reinforcements. Lee commanded 80,000. It had taken the Federals a month of strenuous fighting to advance 70 miles, and their casualties had numbered close to 55,000. Confidence in the North was shaken, but both Lincoln and Grant remained firm, and as long as that was so the end was sure. Grant by confining Lee to the immediate defence of Richmond had deprived him of the one weapon which could compensate for his inferior numbers, his skill in manoeuvre.

The siege of Petersburg dragged on through the winter of 1864 and into the spring of the following year, Grant continually extending his lines and compelling Lee to stretch his exiguous resources until the breaking point was reached. On April 2, he abandoned his lines around Richmond in the hope of being able to unite with Johnston in North Carolina. This Grant prevented by a prompt and masterly pursuit, and Lee surrendered with his army at Appomattox court house on April 9, in an interview made noteworthy alike by Grant's noble generosity and by Lee's calm dignity in disaster.

After the war Lee set himself to heal the wounds of his people. Determined to take no part in any of the numerous controversies which the war aroused, he, though in financial straits like most Southerners, refused firmly to write his account of the great events in which he had taken a leading part. He was offered and accepted the post of president of Washington college (afterwards Washington and Lee university) and there he spent his last years teaching, by example and precept, the youth of Virginia to be good Americans. He died on Oct. 12, 1870.

As a general Lee's chief characteristics were his rapid grasp of the possibilities of a military situation, his skilful use of interior lines of communication, his capacity for guessing what was in the minds of his opponents, and his understanding of their weaknesses. Few commanders have excelled him in the power of arousing devotion in his men. Almost his only weakness was a tendency to trust his subordinates too much, and an unwillingness to force his decisions on them. It was this characteristic which made so grievous the loss of Jackson, who at once grasped what was in Lee's mind and devoted himself wholly and loyally to execute his chief's intentions.

Beyond and above all this, Lee's great contribution to the art of war was his understanding of the part field defences could play in aiding manoeuvre. In this he was years ahead of his time, and it was not until the beginning of the 20th century that his methods were really understood and applied by the military world. His high character, his moral courage, his noble nature, and his mastery of the art of war, made him a notable figure in history.

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LEE or **LEGH, ROWLAND** (d. 1543), English bishop, belonged to a Northumberland family and was educated at Cambridge. He obtained preferment through Cardinal Wolsey; after Wolsey's fall he rose high in the esteem of Henry VIII. and of Thomas Cromwell, serving both king and minister in the business of suppressing the monasteries, and he is said to have celebrated Henry's secret marriage with Anne Boleyn in January 1533. Lee took part in preparing the divorce proceedings against Catherine of Aragon, and in January 1534 he was elected bishop of Coventry and Lichfield, or Chester as the see was often called, taking at his consecration the new oath to the king as head of the English Church and not seeking confirmation from the pope. As bishop he remained in Henry's personal service, endeavouring to establish the legality of his marriage with Anne, until May 1534, when he was appointed lord president of the council in the marches of Wales. After some years of hard and successful work in this capacity, he died at Shrewsbury in June 1543. Lee's letters to Cromwell, preserved in the Record Office, London, throw light on the bishop's career and on the lawless condition of the Welsh marches in his time.

LEE, SIR SIDNEY (1859–1926), English man of letters, was born of Jewish parents in London on Dec. 5, 1859. He was educated at the City of London school, and at Balliol College, Oxford, where he graduated in modern history in 1882. In the next year he became assistant-editor of the *Dictionary of National Biography;* in 1890 joint-editor, and on the retirement of Sir Leslie Stephen in 1891 editor. He himself contributed to the work some 800 articles, mainly on Elizabethan authors or statesmen. His article on Shakespeare in the 51st volume (1897) of the *Dictionary* formed the basis of his *Life of William Shakespeare* (1898), which reached its sixth edition in 1907, 4th ed. of the revised version in 1925. Lee edited in 1902 the Oxford facsimile edition of the first folio of *Shakespeare's Comedies, Histories and Tragedies,* followed in 1902 and 1904 by supplementary volumes giving details of extant copies, and in 1906 by a complete edition of Shakespeare's *Works.* Besides editions of English classics his works include a *Life of Queen Victoria* (1902, 2nd ed. 1903), *Great Englishmen of the Sixteenth Century* (1904, 2nd ed. 1907), *Shakespeare and the Modern Stage* (1906), *The French Renaissance in England* (1910), *Principles of Biography* (1911) and *Shakespeare and the Italian Renaissance* (1915). At the time of his death, in London on Mar. 3, 1926, he was engaged on the second volume of his official biography of *King Edward VII.,* the first volume of which had appeared a year previously. Lee was knighted in 1911, and from 1913 to 1924 was professor of English literature in the East London college.

LEE, SOPHIA (1750–1824), English novelist and dramatist, daughter of John Lee (d. 1781), actor and theatrical manager, was born in London. Her first piece, *The Chapter of Accidents,* a one-act opera based on Diderot's *Père de famille,* was produced by George Colman at the Haymarket Theatre on Aug. 5, 1780. The proceeds were spent in establishing a school at Bath, where Miss Lee made a home for her sisters. Her subsequent productions included *The Recess, or a Tale of other Times* (1785), a historical romance; and *Almeyda, Queen of Grenada* (1796), a tragedy in blank verse; she also contributed to her sister's

Canterbury Tales (1797). She died at her house near Clifton on March 13, 1824.

LEE, STEPHEN DILL (1833–1908), Confederate general in the American Civil War, was born at Charleston (S.C.), on Sept. 12, 1833, of a distinguished South Carolina family. Graduating from West Point in 1854, he served in the U.S. army until 1861, resigning on the secession of South Carolina. He was aide-de-camp to Gen. Beauregard in the attack on Ft. Sumter, and captain of a light battery in Gen. Johnston's army later in the year 1861. Because of distinguished conduct on the fields of battle, he rose to the rank of brigadier-general in Nov. 1862, and took command of defences at Vicksburg. Until its surrender to Gen. Grant in July, 1863, he served with great credit, and on becoming a prisoner of war, was immediately exchanged, promoted major-general, and assigned to command the cavalry troops of that arm in the south-western theatre of war. After harassing the advance of Sherman's column on Meridian he took Gen. Polk's place as commander of the department of Mississippi. In June 1864, on Hood's promotion to command the army of Tennessee, he was made a lieutenant-general and assigned to command Hood's old corps in that army. He fought at Atlanta and Jonesboro, accompanied Hood in the bold advance to Nashville, and fought in the battles of Franklin and Nashville, after which, in the rout of the Confederate army, he kept his troops closed up, and for three consecutive days formed the fighting rearguard of the otherwise disintegrated army. Lee was himself wounded, but did not give up the command until an organized rearguard took over the post of danger. On recovery he joined Gen. J. E. Johnston in North Carolina, and he surrendered with Johnston in April 1865. After the war he settled in Mississippi and devoted himself to planting. He died at Vicksburg on May 28, 1908.

LEE, VERNON (pen-name of Violet Paget) (1856–1935), English essayist and novelist, was born in France of English parents on Oct. 14, 1856. She made her home in Italy, near Florence, and became one of the most sympathetic interpreters of the Italian scene, and of Italian art and letters. She was one of the most profound and imaginative essayists of her time, original in her judgments and her criticism; her books are witty and entertaining, and at the same time learned. Her first book, *Studies of the Eighteenth Century in Italy* (1880), contained admirable studies of Goldoni and Metastasio, and later volumes of essays, notably *Belcaro* (1881) and *Euphorion, Essays on the Renaissance* (1884), fulfilled the high promise of the first. Vernon Lee wrote some novels and stories, among them being *Miss Brown* (3 vols., 1884), which disturbed the coteries at the time of its publication, and *Pope Jacynth and other Fantastic Tales* (1905). The two volumes of essays, *Gospels of Anarchy* (1908) and *Vital Lies* (1912), show her as an independent thinker on social and philosophic questions. *Satan the Waster* (1920), described as "a philosophic war tragedy with notes and introduction," is a powerful indictment of war, and embodies her pacifist creed.

LEE, a town of Berkshire county, Massachusetts, U.S.A., on the Housatonic, beautifully situated in the Berkshire hills, near the western boundary of the state. It is served by the New York, New Haven and Hartford railroad. The population in 1940 was 4,222. The town is a summer resort, and has quarries of fine white marble, large paper mills and other manufacturing industries. The first settlement was made in 1760 and the town was incorporated in 1777. During Shays' Rebellion it was the scene of an encounter (1786) in which 250 followers of Shays routed a body of State troops with a bogus cannon. The first paper-mill in the town was built in 1806, and for a time more paper was made in Lee than anywhere else in the United States. The Housatonic mill was probably the first (1867) in the country to make paper from wood-pulp.

LEECH, JOHN (1817–1864), English caricaturist, was born in London on Aug. 29, 1817. His father, an Irishman, was the landlord of the London Coffee House on Ludgate Hill, "a man," on the testimony of those who knew him, "of fine culture, a profound Shakespearian, and a thorough gentleman." From his father Leech inherited his artistic bent, which was evident in his early childhood. He was educated at Charterhouse, where Thackeray, his lifelong friend, was his schoolfellow, and at sixteen he began to study medicine at St. Bartholomew's Hospital. He was then placed under a Mr. Whittle, an eccentric practitioner, the original of "Rawkins" in Albert Smith's *Adventures of Mr. Ledbury,* and afterwards under John Cockle; but he drifted into the artistic profession. He was eighteen when his first designs were published, a quarto of four pages, entitled *Etchings and Sketchings by A. Pen, Esq.,* comic character studies from the London streets. Then he drew some political lithographs, did rough sketches for *Bell's Life,* produced an exceedingly popular parody on Mulready's postal envelope, and, on the death of Seymour, applied unsuccessfully to illustrate the *Pickwick Papers.* In 1840 Leech began his contributions to the magazines with a series of etchings in *Bentley's Miscellany.* With Cruikshank he executed designs for the Ingoldsby Legends and Stanley Thorn, and much of his work at this time is reminiscent of Cruikshank.

In 1845 Leech illustrated *St. Giles and St. James* in Douglas Jerrold's newly started *Shilling Magazine,* with plates more vigorous and accomplished than those in *Bentley,* but it is in subjects of a somewhat later date, and especially in those lightly etched and meant to be printed with colour, that we see the artist's best powers with the needle and the acid. Among such of his designs are four charming plates to Dickens's *Christmas Carol* (1844), the broadly humorous etchings in the *Comic History of England* (1847–1848), and the still finer illustrations to the *Comic History of Rome* (1852)—which last, particularly in its minor woodcuts, shows some exquisitely graceful touches. Among other noteworthy etchings are those in *Young Master Troublesome or Master Jacky's Holidays,* and the frontispiece to *Hints on Life, or How to Rise in Society* (1845)—a series of minute subjects linked gracefully together by coils of smoke, illustrating the various ranks and conditions of men, one of them—the doctor by his patient's bedside—almost equalling in vivacity and precision the best of Cruikshank's similar scenes. Then in the 'fifties we have the numerous etchings of sporting scenes, contributed, together with woodcuts, to the *Handley Cross* novels.

Turning to Leech's lithographic work, we have in 1841, the *Portraits of the Children of the Mobility,* an important series dealing with the humorous and pathetic aspects of London street Arabs. The lining itself has not the freedom which we find in some of Leech's other lithographs, notably in the *Fly Leaves,* published at the *Punch* office, and in the subject of the nuptial couch of the Caudles, which also appeared, in woodcut form, as a political cartoon, with Mrs. Caudle, personated by Brougham, disturbing by untimely loquacity the slumbers of the lord chancellor, whose haggard cheek rests on the woolsack for pillow. Leech was most prolific and individual in his work for wood-engraving. Among the earlier of such designs are the illustrations to the *Comic English* and *Latin Grammars* (1840), to *Written Caricatures* (1841), to Hood's *Comic Annual* (1842), and to Albert Smith's *Wassail Bowl* (1843), subjects mainly of a small vignette size, transcribed with the best skill of such woodcutters as Orrin Smith, and not, like the larger and later *Punch* illustrations, cut at speed by several engravers working at once on the subdivided block. Leech's connection with *Punch* began in 1841, and lasted till his death on Oct. 29, 1864; it resulted in the production of the best-known and most admirable of his designs.

Leech's first contribution appeared in the issue of August 7, a full-page illustration—entitled "Foreign Affairs"—of character studies from the neighbourhood of Leicester Square. His cartoons deal at first mainly with social subjects, and are rough and imperfect in execution, but gradually their method gains in power and their subjects become more distinctly political, and by 1849 the artist is strong enough to produce the splendidly humorous national personification which appears in "Disraeli Measuring the British Lion." About 1845 we have the first of that long series of half-page and quarter-page pictures of life and manners, executed with a hand as gentle as it was skilful. In addition to his work for the weekly issue of *Punch,* Leech contributed largely to the *Punch* almanacks and pocket-books, to *Once a Week* from 1859 till 1862, to the *Illustrated London News,* where some of his

largest and best sporting scenes appeared, and to innumerable novels and miscellaneous volumes. Of these *A Little Tour in Ireland* (1859) is noticeable as showing the artist's treatment of pure landscape.

In 1862 Leech held an exhibition of some of his *Punch* drawings, enlarged by a mechanical process, and coloured in oils by himself, with the assistance of his friend, J. E. Millais.

Biographies of Leech have been written by John Brown (1882), and Frith (1891).

LEECH, a predatory or parasitic annelid with reduced body cavity and terminal suckers serving for attachment and locomotion; any of the Hirudinea, a class of the Annelida (*q.v.*). Within this group pattern, leeches present a variety of forms correlated with diverse modes of life; all possess great powers of extension and contraction. Dependence on water determines their distribution. On land this excludes them from the frozen polar regions, mountain tops much above 12,000 ft., and deserts. In the sea they abound as fish parasites in the Arctic and Antarctic. They inhabit nearly all types of fresh waters; and in wet, warm climates many are amphibious or terrestrial. Some are scavengers and some devour earthworms and insect larvae, but most are temporary or permanent external parasites which suck the blood and juices of their hosts.

Leeches affect human affairs in ways both helpful and harmful. Beneficently their once extensive use in phlebotomy declined steadily after the middle of the 19th century. In Europe and America, where many millions of the medicinal leech were required, only a relatively few continue to be used, mostly for minor affections of the eyes and gums. In the orient leeching continues to be practised with native species. Also in the United States, Mexico and South America native species have been employed. More important today is the use of hirudin, an anticoagulant extracted from the salivary glands, to prevent the formation of blood clots in certain surgical operations. Leeches are eaten freely by some fishes, notably yellow perch and lake trout, and are excellent bait. As scavengers and insect destroyers they may have some human value. Many leeches have beautiful colour patterns of varied browns, reds and greens, the aesthetic value of which was recognized in the early 19th century and copied on women's wear.

After the decline of phlebotomy, the harmful roles of leeches were emphasized. They attack both men and domestic animals, in temperate regions a trifling annoyance confined mostly to bathers, but in parts of the tropics a serious problem, as a few examples will show. In the near east the young of *Limnatis nilotica* live in springs and wells, enter the mouth or nostrils of drinking men and beasts, fasten to the walls of the air passages, grow rapidly, cause severe haemorrhage and obstruct respiration, sometimes with fatal results. In India, *Dinobdella ferox* has similar habits and takes a heavy toll of cattle, buffaloes, horses and dogs. But most notorious are the blood-sucking land leeches which also may enter the nostrils, temporarily blocking the nares but usually leaving after satisfying their blood lust. Most serious is their occasional entrance into the sinuses which they cannot leave by the narrow passages after becoming distended with blood. The death of the missionary-botanist Père Faurie, in 1915, has been attributed to this cause. Of all the pests of the humid jungles and rain forests of the east, these land leeches are generally the most feared and abhorred. Members of the Allied armed forces in New Guinea, the Philippines, Burma, etc., suffered from their attacks during World War II.

Land leeches are widely distributed on the Asiatic continent and the islands of the Pacific and Indian oceans from Japan to Australia, and the island of Chiloe, Chile and Hawaii to Madagascar. They must be distinguished from the quite different, predacious land leeches especially numerous in South America. Oriental land leeches are so alert and active, and gather so rapidly to the attack that their numbers have been over-estimated by harassed travellers. There is little chance to escape them as they are on the ground, herbage, bushes and trees along the trails, close in from all sides and enter the smallest opening in clothing. Except for the highly coloured "stinging" leeches, the bite is painless and is often first disclosed by the continued bleeding after the satiated leech has dropped off. Normally the insignificant incision heals quickly; but, if infected by scratching or otherwise, deep and persistent ulcers often result. There are many recorded cases of individuals lost in the jungles or helpless through injury, sickness or drunkenness who have lain unprotected in their haunts and drained of their blood with fatal results. No leeches are poisonous and none is known certainly to be an intermediate host of human parasites or pathogens, but their tendency to attack abrasions or sores makes them potential carriers of infective agents. There is evidence that in the Philippines the common buffalo leech may transmit rinderpest of cattle, and other leeches are known to be hosts for blood parasites of turtles and fishes. A species of *Theromyzon* attacks domestic waterfowl in Europe, and in the U. S. another species and the abundant *Glossiphonia complanata* are commonly present in the air passages of wild ducks dying primarily from botulism. Parasitic leeches also cause heavy mortality among fishes, reported especially for the Great Lakes and fish ponds.

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LEEDS, FRANCIS OSBORNE, 5TH DUKE OF (1751–99), was born on Jan. 29, 1751, and was educated at Westminster school and at Christ Church, Oxford. He was a member of parliament in 1774 and 1775; in 1776 he became a peer as Baron Osborne, and in 1777 lord chamberlain of the queen's household. In the House of Lords he was prominent as a determined foe of the prime minister, Lord North, who, after he had resigned his position as chamberlain, deprived him of the office of lord-lieutenant of the East Riding of Yorkshire in 1780. He regained this, however, two years later. Early in 1783 the marquess of Carmarthen, as he was called, was selected as ambassador to France, but he did not take up this appointment, becoming instead secretary for foreign affairs under William Pitt in December of the same year. As secretary he was little more than a cipher, and he left office in April 1791. Subsequently he took some slight part in politics, and he died in London on Jan. 31, 1799. His *Political Memoranda* were edited by Oscar Browning for the Camden Society in 1884, and there are eight volumes of his official correspondence in the British Museum.

LEEDS, THOMAS OSBORNE, 1ST DUKE OF (1631–1712), English statesman, known as earl of Danby, son of Sir Edward Osborne, Bart., of Kiveton, Yorkshire, was born in 1631, and succeeded to the baronetcy and estates in 1647. He was elected M.P. for York in 1665, and two years later, joined Buckingham in attacking Clarendon. He became successively joint treasurer of the navy with Sir Thomas Lyttelton (1668), commissioner for the State treasury (1669), sole treasurer of the navy (1671), and commissioner for the Admiralty (1673). In 1673 he was created Viscount Osborne in the Scottish peerage, and a privy councillor. After his appointment as lord-treasurer in June, he received an English peerage, and in 1674 was created earl of Danby. He was appointed the same year lord-lieutenant of the West Riding of Yorkshire, and in 1677 received the Garter.

A keen royalist and partisan of the Established Church, Danby opposed the Indulgence (1673), supported the Test Act, and spoke against the proposal for giving relief to the dissenters. In June 1675 he joined the bishops in advising the king strictly to enforce the laws against the Roman Catholics, their banishment from court and the suppression of conventicles; and a bill introduced by him increasing the penalties for recusants and priests was only thrown out as being too lenient, because it secured offenders from the charge of treason. He was foiled in his attempt to introduce a test oath for members of parliament, which declared resistance to the royal power to be a crime; and proposed other reactionary measures which were rejected.

In foreign affairs, though an enemy to France and Rome, Danby showed better sense. He terminated the war with Holland in 1674, became a correspondent of William, and was instrumental in effecting the marriage of William and Mary in 1677. But, in order to pursue this national policy, he found it necessary to acquiesce in the king's personal policy; although he was not a member of the Cabal ministry, he must have been cognisant of the terms agreed upon by Charles in the Treaty of Dover. In 1676, with Lauderdale, he consented to a treaty between Charles and Louis, ensuring agreement on foreign policy, Charles receiving an annual subsidy of £100,000. In 1678 Charles raised his price, and Danby demanded six million livres (£300,000) for three years. Simultaneously with these proceedings with Louis, Danby secured a bill for raising money for a war against France, for which some preparations were made, a league being concluded with Holland,

and troops actually sent there.

Fall of Danby.—Danby's fall was ensured when Montagu, disappointed of office, produced in the House of Commons (Dec. 20, 1678), two incriminating letters of Danby's, which were read by the speaker. Both at this time, and during the trial which followed, the fact that in both letters appeared the king's minutes, "I approve of this letter. C.R.," was ignored, thus emphasizing the constitutional principle that obedience to the sovereign can be no bar to an impeachment. Danby was charged with encroaching on the royal powers by treating of matters of peace and war without the knowledge of the council, with promoting the raising of a standing army on pretence of a war with France, with obstructing the assembly of parliament, with corruption and embezzlement in the treasury. He was found guilty by the Commons, but while his case was under discussion in the Lords, parliament was dissolved. The hostility of the new parliament forced Danby to resign his treasurership (1679), but he received a royal pardon, and a warrant for a marquessate. Proceedings against him were revived, however, and his banishment voted for by the Lords. This was rejected by the Commons, who passed an act of attainder, and on April 21, Danby was sent to the Tower, where he remained for nearly five years. In May 1681 he was actually indicted for Godfrey's murder on the accusation of Edward Fitz-Harris, but was released in 1684 on finding bail for £40,000.

After James's accession, Danby was discharged from his bail, and took his seat in the Lords as leader of the moderate Tory party. Driven into opposition by James's attacks on Protestantism, he became an agent of William of Orange, and as one of the seven leaders of the Revolution he occupied York in the prince's interest. For his services to William, he was created marquis of Carmarthen (1689) and lord-lieutenant of the three ridings of Yorkshire, but, greatly to his disappointment, he was not reinstated in the lord treasurership owing to his unpopularity with the Whigs. In 1690, however, he regained this post, which he retained till 1695 by bribery of members of parliament and the support of the king and queen. In 1690 he was appointed Mary's chief adviser during William's absence in Ireland, and in 1694 he was created duke of Leeds. In 1695 he was again impeached for receiving a bribe to procure a charter for the East India company, but, owing to insufficient evidence, the proceedings failed. He had for some time lost the real direction of affairs, when, in May 1699, he was compelled to retire from office. He died on July 26, 1712.

See the life, by Sidney Lee, in the *Dict. Nat. Biography* (1895); also *Add. MSS.*, 26,040–95 (56 vols., containing his papers); in the *Duke of Leeds MSS. at Hornby Castle*, calendared in *Hist. MSS. Comm.*, 11th Rep., pt. vii. pp. 1–43; *MSS. of Earl of Lindsay and J. Eliot Hodgkin; Add. MSS. 1894–1899*, Index and Calendar; *Hist. MSS. Comm.*, 11th Rep., pt. ii., *House of Lords MSS.*

LEEDS, a city and municipal county in the West Riding of Yorkshire, England, 185 mi. N.N.W. from London. Pop. (1938) 494,000. Area 59.8 sq.mi. The largest unit in the urban region of West Yorkshire, it is on the river Aire, and lies above the marshy lowland which is liable to flooding in winter. It early became a local market centre, attracting routes from all directions. To the northwest the Aire valley leads to the Craven gaps in the Pennine highland—the lowest ways through the Pennines in the whole length from Tyne to Trent. Southwest of Leeds lie the shortest ways through the highland, for here the Pennines are at their narrowest. Both road and rail routes have taken advantage of these physical conditions, with the result that Leeds has become an important nodal town. It occupies a central railway position and is served by the L.M.S.R. and L.N.E.R.; it is a half way station on the main route from London to Scotland via the Craven gap, and connects with Liverpool by the Leeds-Liverpool canal and Goole and the Humber by the Aire and Calder Navigation. It is the centre of an important coal and iron district, and, though regarded as the capital of the great manufacturing district of the West Riding, Leeds is not its centre, but on its border. East and north the country is agricultural; west and south lie the manufacturing towns of the woollen area.

History.—It is probable that pre-Roman routes and Roman roads crossed the Pennines near the present site of Leeds, but there is no evidence of them. Leeds (Loidis, Ledes) belonged to the kingdom or principality of Elmete, and was ruled by British chieftains until Edwin conquered Northumbria in the 7th century. At the time of the Norman conquest, the township consisted of seven estates, each held by a thane, but, by 1086, these had been united into a single manorial estate. Throughout the middle ages it retained its rural character long after it became commercially important. In 1207, the lord of the manor, Maurice Paganel, granted a charter to the inhabitants and in 1626 it was created a municipal borough by Charles I. The object of the charter was the regulation and protection of the woollen trade by local authority. During the Commonwealth, Leeds gained, temporarily, parliamentary representation, and a new charter was issued in 1661, giving Leeds its first mayor. This was superseded in 1684 by a charter which placed the corporation under the absolute power of the crown in certain contingencies, but the charter of 1661 was restored by William III and this still forms the basis of municipal constitution.

The town became a county borough in 1888 and was raised to the rank of a city in 1893. The title of lord mayor was conferred on the chief magistrate in 1897. In 1918 the borough was divided into six constituencies, each division returning one member to parliament.

The original city of Leeds contains no historical buildings. With the growth of the borough, the Cistercian abbey of Kirkstall, founded in 1147, and the 12th century parish church of Adel were included within the city boundary. The city also acquired the mansion and park (935 ac.) of Temple Newsam, once the property of the Knights Templars; it was probably built in the first quarter of the 17th century. New municipal offices, called the civic hall, were opened by King George V in 1933. There are 3,339 ac. of open spaces in the borough apart from common lands.

Industries.—Leeds lies in the "soft water" area of the Pennines and this was a factor in the introduction of woollen manufacture in the 14th century. The industry became established in the Aire and Calder valleys, but it was not until the middle of the 16th century that Leeds was able to challenge the supremacy of York and Beverley. Even in the 17th century, cloth was made in the neighbouring villages to the east and was only finished and sold in the town. In the early 18th century Halifax took the lead in worsted developments and during the 19th century, Bradford developed until it is now easily the largest wool textile centre in the country. With the industrial revolution the woollen industry of Leeds yielded pride of place to engineering. In the 18th and 19th centuries the city was, and still is, concerned mainly with industrial and agricultural equipment, and transport services. Transport by air is the latest type, parts for seaplanes and aeroplanes being produced at Leeds for erection at Brough. During the second half of the 19th century, engineering was, in turn, displaced by the wholesale clothing industry, which was really an outgrowth of the woollen and worsted manufactures. It was introduced in 1855 and is now the largest single industry in the town. About one-third of the "ready-made" clothes are exported. A later development was the establishment in Leeds of the Research Association for Woollen and Worsted Industries (incorporated 1918). During the second half of the 18th century, Leeds was famed for its pottery, but the industry lapsed in the 19th century and the potteries closed down in 1878. The linen trade arrived in 1788, and was soon a prosperous industry. Owing to competition with Belfast and Dundee, the mills were closed. Only two or three firms remain. Today, the most important industries are wholesale clothing, engineering, woollen and worsted manufactures, printing, coal mining, leather industries and furniture trades. Leeds has a reputation for colour-printing, and some of the most complicated and efficient printing machinery is produced. The development of transport has been an important factor in the concentration of industries. In 1659 the Aire was made navigable to Leeds, and in 1760 was linked with the Calder, forming the Aire and Calder Navigation. The Leeds and Liverpool canal was begun in 1770, but was not completed until 1816. By 1848, Leeds was connected by rail with all important neighbouring towns.

The University of Leeds originated with the foundation of the Medical school in 1831. In 1874, the Yorkshire College of Science

was established to supply instruction in the arts and sciences which are applicable to the manufactures, engineering, mining and agriculture of the county. In 1884, the college was amalgamated with the Medical school and in 1887 it became one of the constituent colleges of Victoria university, and so remained until its separate incorporation in 1904. In 1928 the foundation stone was laid of an extensive scheme of new buildings to meet growing requirements. Other educational establishments include a grammar school (founded in 1552), technical colleges, a Wesleyan Methodist theological college and the lecture hall and museum of the Philosophical and Literary society. In 1942 there were 133 elementary schools, 7 secondary schools, 6 evening institutes, and colleges of art, commerce and housecraft. During World War II the teachers' training college was transferred to Scarborough. Leeds is the seat of a Roman Catholic bishop with a pro-cathedral dedicated to St. Anne.

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LEE HIGHWAY, a United States highway starting at the Zero Milestone in Washington, D.C., and ending at San Diego, Calif., a distance of 3,141 miles. It is a national memorial to Gen. Robert Edward Lee. Lee highway is open and usable at all times. Its first thousand miles are through the Appalachian valleys from the vicinity of Washington to a point near Memphis, Tenn. Its second thousand miles rise gradually from the Mississippi river to the Rocky mountains, while the last third of it is a majestic mountain panorama. Among its many points of historic interest are the battlefield of Bull Run; Shenandoah National park; Luray caverns; Natural bridge, Va.; Wilson dam and bridge at Muscle Shoals, Ala.; Carlsbad caverns, Roswell, N.M.; Roosevelt dam and cliff dwellings, Arizona.

LEEK, market town, parliamentary division, Staffordshire, England, 157 mi. N.W. of London on L.M.S. railway. Pop. (1938) 19,300. The town lies 640 ft. high near the head of the river Churnet. The church of St. Edward the Confessor has an ornately-carved pillar of Danish work. An institute contains a free library, lecture hall, art gallery, and school of art. Sewing silk is the chief manufacture. In the vicinity are ruins of the Cistercian abbey of Dieulacres, erected in 1214 by the earl of Chester. Leek formed part of the estates of Aelfgar, earl of Mercia; it escheated to William the Conqueror. Later it passed to the earls Palatine of Chester, until given to Dieulacres abbey, which held it until its dissolution. In a charter given by the earl of Chester (temp. John) it is called a borough, but the town received no royal charter and failed to establish its burghal position. Area of urban district 6.7 sq.mi., after extension in 1934.

LEEK, the *Allium Porrum* of botanists, a plant now considered as produced only by cultivation. The plant is probably of eastern origin, since it was commonly cultivated in Egypt in the time of the Pharaohs, and is so to the present day; while as regards its first appearance in England both Tusser and Gerard—two of the earliest writers on this class of subject, the former of whom flourished in the early part and the latter in the later part of the 16th century—speak of it as being then commonly cultivated and used. It is more than probable that it was brought to England by the Romans. Italy was celebrated for leeks in the time of Pliny (*H.N.* xix, c. 6), according to whom they were brought into great esteem through the emperor Nero, derisively surnamed "Porrophagus," who used to eat them for several days in every month to clear his voice.

The leek is very generally cultivated in Great Britain as an esculent, but more especially in Scotland and in Wales, being esteemed as an excellent vegetable, with properties very similar to those of the onion, but of a milder character. The whole plant, with the exception of the fibrous roots, is used in soups and stews. The sheathing stalks of the leaves lap over each other and form a thickish stem-like base, which is blanched, and is the part chiefly preferred. These blanched stems are much employed in French cookery. They form an important ingredient in Scotch winter broth, and particularly in the national dish *cock-a-leekie,* and are also largely used boiled, and served with toasted bread and white sauce, as in the case of asparagus. Leeks are sown in the spring, earlier or later according to the soil and the season, and are planted out for the summer, being dropped into holes made with a stout dibble and left unfilled in order to allow the stems space to swell. When they are thus planted deeply the holes gradually fill up, and the base of the stem becomes blanched and prepared for use, a process aided by drawing up the earth round about the stems as they elongate. The leek is hardy, and presents no difficulty in its cultivation, but in the colder parts of the U.S. it should be dug and heeled-in during winter. Some prefer to winter them over in a cool, dark cellar. The plant is of biennial duration, flowering the second year.

The leek is the national symbol or badge of the Welsh, who wear it in their hats on St. David's Day. The origin of this custom has received various explanations, all of which are more or less speculative.

LEE OF FAREHAM, ARTHUR HAMILTON LEE, 1ST VISCOUNT, cr. 1922 (1868–), British politician, was born at Bridport, Dorsetshire on Nov. 8, 1868. Educated at Cheltenham and Woolwich, he entered the royal artillery in 1888, retiring with the rank of brevet-major in 1900. From 1893 until 1900 he was professor of strategy and tactics at the Royal Military College in Canada, during which period he organized the military survey of the frontier. In 1900 he entered the House of Commons as Conservative member for the Fareham division of Hampshire, which he represented for 18 years. He was civil lord of the admiralty from Oct. 1903 until the resignation of the Balfour ministry in 1905. In 1912 he carried through parliament an act aimed at the white slave traffic. On the outbreak of World War I he rejoined the army, and served as a colonel on the staff. In 1915–16 he was personal military secretary to the secretary for war (Lloyd George) and in 1917–18 director general of food supplies. He was created baron in 1918, and was sworn of the privy council in 1919. He joined Lloyd George's administration in 1919, first as minister of agriculture and then as first lord of the admiralty (Feb. 1921–Nov. 1922). He was a member of the Imperial cabinet in 1921, a delegate to the Washington Conference, Nov. 1921–Feb. 1922; and in 1923–24 chairman of the royal commission on the public services of India, for which he was created G.C.S.I. in 1925. In 1921 he presented to the nation, as a residence for the prime minister for the time being, the house and estate of Chequers. He was created G.C.B. in 1929.

LEER, a town and river port in the Prussian province of Hanover, Germany, on the right bank of the Leda near its confluence with the Ems, and at the junction of railways to Bremen, Emden and Münster. Pop. (1939) 15,181. Leer is a very old place, although it obtained municipal privileges only in 1823. Woollen fabrics, cigars, soap and earthenware are manufactured, and there are iron-foundries, distilleries and shipbuilding yards.

LEEUWARDEN, the capital of the province of Friesland, Holland, on the canal between Harlingen and Groningen, 33 m. by rail W. of Groningen; the seat of a superior court and a court of common appeals. Pop. (1939) 54,539. Leeuwarden grew up round the court of the Frisian stadtholders; and it is a very clean town. The Prince's Garden, laid out by William Frederick of Nassau in 1648, was given to the town by King William I. in 1819. The royal palace, seat of the Frisian court from 1603 to 1747, is now the residence of the royal commissioner for Friesland. The Kanselary was begun in 1502 as a residence for the chancellor of George of Saxony (1539), governor of Friesland, but was only completed in 1571 and served as a court house until 1811. It was restored at the end of the 19th century to contain the provincial library and national archives.

Other noteworthy buildings are the weigh-house (1595), the town hall (1715), and the great church of St. Jacob, once the church of the Jacobins, and the largest monastic church in the Netherlands. The unfinished tower of Oldehove dates from 1529–32. The museum of the Frisian Society contains a collection of provincial antiquities, including two rooms from Hindeloopen, an ancient village of Friesland, some Frisian works

in silver of the 17th and 18th centuries, and a collection of porcelain and faïence. Leeuwarden is easily accessible from all parts of the province by road, rail and canal. The chief business is in stock of every kind, dairy and agricultural produce and freshwater fish, a large quantity of which is exported. The industries include boat-building and timber yards, iron-foundries, copper and lead works, furniture, organ, tobacco and other factories, and the manufacture of gold and silver wares. The town is first mentioned in documents of the 13th century.

LEEUWENHOEK or **LEUWENHOEK, ANTHONY VAN** (1632–1723), Dutch microscopist, was born at Delft on Oct. 24, 1632, and died there on Aug. 26, 1723. For a time he was in a merchant's office in Amsterdam, but soon turned to the manufacture of microscopes and to the study of the minute structure of organized bodies by their aid. He found that single lenses of very short focus were preferable to the compound microscopes then in use, and though his researches were not conducted on any definite scientific plan, his powers of careful observation enabled him to make many interesting discoveries. He extended M. Malpighi's demonstration of the blood capillaries in 1668, and six years later gave the first accurate description of the red blood corpuscles. In 1677 he described and illustrated the spermatozoa in dogs and other animals, though in this discovery Stephen Hamm had anticipated him by a few months; and investigated the structure of the teeth, crystalline lens, muscle, etc. In 1680 he noticed that yeast consists of minute globular particles, and he described the different structure of the stem in monocotyledonous and dicotyledonous plants. The first representation of bacteria is to be found in a drawing by Leeuwenhoek in the *Philosophical Transactions* of the Royal Society in 1683.

Leeuwenhoek's contributions to the *Philosophical Transactions* amounted to 375, and those to the *Memoirs of the Paris Academy of Sciences* to 27. Two collections of his works appeared during his life, one in Dutch (Leiden and Delft, 1685–1718), and the other in Latin (1715–22); a selection was translated by S. Hoole (1798); *see* also W. A. Locey, *The Growth of Biology* (1925).

LEEWARD ISLANDS, a group in the West Indies. They derive their name from being further down the trade wind than the adjacent Windward Islands. They are the most northerly of the Lesser Antilles, and form a curved chain stretching S.W. from Puerto Rico to Martinique. Politically, they comprise the British-owned Leeward Islands colony and Dominica (which became a separate colony of the Windward Islands in 1940); the American Virgin Islands; the French possessions of Guadeloupe, Martinique, St. Bartholomew and part of St. Martin; and the Netherlands territories of St. Eustatius, Saba and the remainder of St. Martin. The British colony of the Leeward Islands (pop. 99,329 in 1942), under a single governor, is divided into four presidencies: Antigua (with Barbuda and Redonda), St. Kitts and Nevis (with Anguilla), Montserrat (*qq.v.*) and the British Virgin Islands (*see* VIRGIN ISLANDS); supervision of the lighthouse station on the island of Sombrero, 30 mi. N.W. of Anguilla, was taken over by the federal government of the colony in 1934. The United States acquired in 1940 a 99-year lease on a naval and air base on Antigua. The colony's executive and general legislative councils meet at St. John's, Antigua. In 1940 the judiciary and police services of the Leeward Islands and the Windward Islands (*q.v.*) were unified.

Leeward Islands is also the title of a group of French islands in the southwest Pacific.

LE FANU, JOSEPH SHERIDAN (1814–73), Irish journalist and author, was born of an old Huguenot family at Dublin, Aug. 28, 1814. He entered Trinity college, Dublin, in 1833. He was actively engaged in Irish journalism, both as editor and proprietor, 1839–58. In that year his wife died, and from that time he lived in retirement. He died in Dublin on Feb. 7, 1873. His best-known novels are *The House by the Churchyard* (1863) and *Uncle Silas, a Tale of Bartram Haugh* (1864). *The Purcell Papers,* Irish stories dating from his college days, were edited with a memoir of the author by A. P. Graves in 1880.

LEFEBVRE, PIERRE FRANÇOIS JOSEPH (1755–1820), duke of Danzig (1808), marshal of France, was born at Rouffach in Alsace on Oct. 20, 1755. At the outbreak of the Revolution he was a sergeant in the Gardes françaises, and took the popular side. He was made a general of division in 1794 for distinguished service, and took part in the Revolutionary Wars from Fleurus to Stokach. At Stokach (1799) he received a severe wound and had to return to France, where he assisted Napoleon during the *coup d'état* of 18 Brumaire. He was one of the first generals of division to be made marshal at the beginning of the First Empire. He fought at Jena, at the siege of Danzig (1806–7), in Spain (1808–9) and in 1807 commanded the Bavarian contingent. He commanded the Imperial Guard in Russia, 1812, fought through the last campaign of the Empire, and won fresh glory at Montmirail and Arcis-sur-Aube. He was made a peer of France by Louis XVIII. but joined Napoleon during the Hundred Days, and was only permitted to resume his seat in the upper chamber in 1819. He died in Paris on Sept. 14, 1820.

LEFEBVRE, TANNEGUY (TANAQUILLUS FABER) (1615–1672), French classical scholar, was born at Caen, and died on Sept. 12, 1672. For nearly 20 years he was professor at Saumur. One of his children was the famous Madame Dacier. Lefebvre, who was by no means a typical student in dress or manners, was a highly cultivated man and a thorough classical scholar. He brought out editions of various Greek and Latin authors—Longinus, Anacreon and Sappho, Virgil, Horace, Lucretius and many others. His most important original works are: *Les Vies des poètes Grecs* (1665); *Méthode pour commencer les humanités Grecques et Latines* (2nd ed., 1731), of which several English adaptations have appeared; *Epistolae Criticae* (1659).

In addition to the *Mémoires pour . . . la vie de Tanneguy Lefebvre,* by F. Graverol (1686), *see* the article in the *Nouvelle biographie générale,* based partly on the ms. registers of the Saumur Académie.

LEFROY, HAROLD MAXWELL (1877–1925), British entomologist, was born at Crondall, Hants, on Jan. 20, 1877, and was educated at Marlborough and King's College, Cambridge. In 1899 he became entomologist to the Imperial Department of Agriculture for the West Indies, a position which he held until he was made in 1903 imperial entomologist for India. In 1912 he was appointed to the newly created chair of entomology at the Imperial College of Science and Technology, South Kensington, and in 1913 he became honorary curator of the insect house of the Zoological Gardens, London. He devoted himself particularly to the study of the life history of insects of economic importance, and as imperial silk specialist for India in 1915 and 1916 did much valuable work for the silk and cotton industries. During the World War as temporary lieut.-colonel in Mesopotamia he conducted sanitary measures against flies, and in 1917 served as an expert on the royal commission on wheat supplies, dealing effectively with the problem of beetles in wheat. He subsequently devised means of combating the depredations of the death watch beetle in old buildings. He died in London on Oct. 14, 1925, poisoned by the fumes of a gas with which he was experimenting for insect destruction.

His publications include *Indian Insect Pests* (1906); *Indian Insect Life* (1909); *A Manual of Entomology* (1923); and articles in *The West Indian Bulletin,* the *Agricultural Journal of India,* and many official papers.

LEFT-HANDEDNESS: *see* HANDEDNESS.

LEG, the general name for those limbs in animals which support and move the body, and in man for the lower limbs of the body (*see* ANATOMY, *Superficial and Artistic;* MUSCULAR SYSTEM; SKELETON: *Appendicular*).

LEGACY, in common law, some particular bequest given or left by a testator in his will. The word is primarily applicable to gifts of personalty or gifts charged upon real estate. Legacies may be either specific, general or demonstrative. A *specific legacy* is "something which a testator, identifying it by a sufficient description and manifesting an intention that it should be enjoyed in the state and condition indicated by that description, separates in favour of a particular legatee from the general mass of his personal estate," *e.g.,* a gift of "my portrait by X," naming the artist. A *general legacy* is a gift not so distinguished from the general mass of the personal estate, *e.g.,* a gift of £100 or of a gold ring. A *demonstrative legacy* partakes of the nature of both

the preceding kinds of legacies, *e.g.*, a gift of £100 payable out of a named fund is a specific legacy so far as the fund named is available to pay the legacy; after the fund is exhausted the balance of the legacy is a general legacy and recourse must be had to the general estate to satisfy such balance. Sometimes a testator bequeaths two or more legacies to the same person; in such a case it is a question whether the later legacies are in substitution for, or in addition to, the earlier ones. In the latter case they are known as *cumulative*.

If the estate of the testator is insufficient to satisfy all the legacies these must abate, *i.e.*, be reduced rateably; as to this it should be noticed that specific and demonstrative legacies have a prior claim to be paid in full out of the specific fund before general legacies, and that general legacies abate rateably *inter se* in the absence of any provision to the contrary by the testator. As a general rule, legacies given to persons who predecease the testator do not take effect; they are said to lapse; but by the Wills Act 1837, gifts to a child or other issue of the testator will not lapse if any issue of the legatee survive the testator. In the absence of any indication to the contrary a legacy becomes due on the day of the death of the testator, though for the convenience of the executor it is not payable till a year after that date. It frequently happens, however, that a legacy is given payable at a future date; in such a case, if the legatee dies after the testator but prior to the date when the legacy is payable it is necessary to discover whether the legacy was vested or contingent, as in the former case it becomes payable to the legatee's representative; in the latter, it lapses. In this, as in other cases, the test is the intention of the testator as expressed in the will; generally it may be said that a gift "payable" or "to be paid" at a certain fixed time confers a vested interest on the legatee, while a gift to A "at" a fixed time, *e.g.*, 21 years of age, only confers on A an interest contingent on his attaining the age of 21.

United States.—The common law doctrines applicable to the nature of legacies and the order in which they are to be paid are generally in force in the United States. Courts are averse from construing legacies to be specific unless it is clear that the testator so intended. Statutes have commonly modified the rigid common law rule that a legacy lapsed by the death of the legatee during the lifetime of the testator and the share of the estate thus bequeathed went to the residuary legatee or those next of kin of the testator who were entitled to take under the intestate laws. They usually provide that the benefit of a lapsed legacy shall descend to the issue of the legatee, but commonly limit this rule to legatees who are descendants of the testator or the close collaterals. Such legislation is based upon the theory that it approximates more closely to the testator's intention than the common law doctrine. Legislation has also enabled legatees more readily to bring suit for their legacies.

LEGACY DUTY AND SUCCESSION DUTY. In the British fiscal system, gratuitous acquisitions of property taking place by reason of the death of an individual are charged to legacy duty or succession duty. These two duties, which are in reality complementary to one another—a fact which arises out of the history of their imposition (*see* ESTATE DUTIES)—together form that class of British death duties which is in the nature rather of an acquisition duty on a beneficiary than (as in the case of the estate duty) of a transfer duty on property.

All moveable property, wheresoever situate, devolving under the will or intestacy of an individual dying domiciled in some part of Great Britain is liable to legacy duty. The moveable property, wheresoever situate, of a testator or intestate dying domiciled out of Great Britain is not liable to that duty.

All settled moveable property, wheresoever situate, not liable to legacy duty, of which property the forum of administration is in some part of Great Britain, is liable to succession duty. Settled moveable property which is the subject of a non-British trust is not liable to that duty.

All immoveable property which is situate in Great Britain is liable to succession duty, regardless either of the domicile of the testator, intestate or settlor, or of the beneficiary. But immoveable property situate out of Great Britain, devolving as such, is not liable to succession duty in any circumstances.

Rates of Duty.—The current scale of rates of legacy duty and succession duty is as follows:—

Relationship of the beneficiary (or the person of nearer consanguinity whom he or she has married) to the author of the bounty.	Rate of duty per cent.
Husband or wife, child or lineal descendant of child, father or mother or any lineal ancestor	1
Brother or sister, lineal descendant of brother or sister	5
Any other person, including any related only by natural ties	10
	In certain cases supplementary rates to a maximum of 1½% are chargeable excepting as between spouses.

The rates both of legacy duty and succession duty are thus regulated according to the degree of relationship, or the absence of relationship, between the beneficiary and the deceased. Both duties are, speaking generally, payable when the beneficiary becomes entitled to the enjoyment of the benefit, or when the subject matter of the gift is appropriated to him, but in certain circumstances both duties may be paid by instalments extending, in the case of real property, to a maximum period of eight years. The precise manner in which the value of the benefit is to be determined is specified by the various acts imposing and governing the duties, these acts containing provisions for determining the value of annuities, of legacies to be enjoyed in succession, of interests for life, and of other benefits of a peculiar nature.

Certain exemptions and reliefs common to both legacy duty and succession duty are provided, of which the most important are as follow:—

(a) No legacy duty is chargeable when the gross value of the personal estate is under £100; and no succession duty is chargeable when the principal value of all the successions derived from the same predecessor and passing on any death is under £100.

(b) Neither duty is chargeable on benefits arising under the will or intestacy of an individual on whose death the net value of the property passing in respect of which estate duty is payable (exclusive of property settled otherwise than by that individual's will) does not exceed £1,000.

(c) Individuals chargeable at the 1% rate of duty (*see* table) are exempted from both duties when:—

(i.) The principal value of the property passing on the death of the deceased in respect of which estate duty is payable (exclusive of property in which the deceased never had an interest, or of property of which he was never competent to dispose and which on his death passed to individuals other than the spouse, or lineal ancestor or descendant, of the deceased) does not exceed £15,000: or

(ii.) The value of the benefit together with that of any other benefits derived by the same individual from the testator, intestate, or predecessor, does not exceed £1,000, whatever may be the principal value of the property passing on the death of the deceased; or

(iii.) The beneficiary is the widow or child under the age of 21 years of the testator, intestate, or predecessor, and the value of the benefit, together with that of any other benefits derived by the same individual from the same testator, intestate, or predecessor, does not exceed £2,000, whatever may be the principal value of the property passing on the death of the deceased.

(d) When the net value of the property in respect of which estate duty is payable (exclusive of property settled otherwise than by the will of the deceased) exceeds £1,000, the amount of legacy duty and succession duty payable in respect of the property is not to exceed the amount by which the net value of the property as estimated for the purpose of estate duty exceeds £1,000.

(e) Neither duty is chargeable in respect of objects not yielding any income (*e.g.*, furniture, jewellery, etc.) given so as to be enjoyed by different persons in succession, whilst the same are so enjoyed. Duty becomes payable, however, if and when the same are disposed of.

(f) The duties are only chargeable in the case of objects which are deemed to be of national, scientific, historic, or artistic interest when the objects are sold, and then only in connection with the last death on which they passed. But complete exemption is afforded when the sale is to a national institution.

(W. H. C.)

LEGAL AID, a phrase which has acquired by usage and court decision a specific meaning and is now the standard term employed to denote giving to poor persons, gratis or for nominal fees, legal advice and assistance in their legal matters and supplying counsel to represent them in court in civil and criminal cases. Legal aid work is generally carried on by incorporated or otherwise legally constituted societies or bureaux. They maintain offices to which poor persons may apply as clients, employ salaried lawyers who devote all their time to interviewing, advising and acting in behalf of such poor persons as are found to have meritorious legal cases, and defray the cost of clerical wages and other operating expenses. Their funds come from contributions by philanthropic people in the community, from public grants, or both. Where legal aid is supported by the public treasury it is commonly established by ordinances, as a bureau of the welfare department of the municipal government. Where privately supported, the legal aid organization is either a charitable corporation formed for this specific purpose, or is a department of a general charitable corporation. In both cases the contributors elect the officers and directors to supervise the work. Officers who are devoted primarily to helping poor persons in criminal cases are usually called "public defenders."

In all civilized nations the individual's right to life, liberty and property depends on law. He can obtain protection or redress only through legal proceedings. Governments maintain courts to determine and enforce rights; but the expenses of litigation, including counsel fees, are more than poor persons can pay. Legal history reveals a constant and not over successful struggle to make adequate provisions for the poor so that they will not be denied justice. As modern society became more complex through industrialization and urbanization, the problem was intensified because these factors engendered a mass of new litigation and the rapid growth of population augmented the number of persons near the poverty line.

Solutions have been attempted along two lines. The first consists of statutory provisions under which a poor person may appeal to a judge, satisfy him as to his poverty and the merit of his claim, and then be exempted from court costs and have a lawyer assigned to represent him. This plan is the backbone of the legal aid systems in Europe. Its structural defect is that it deals only with litigation and makes no provision for the multitude of cases in which the poor need counsel to advise them, to draw wills, contracts or other documents for them, or to conciliate, settle or otherwise adjust a controversy without a lawsuit, and in the aggregate such matters far outnumber the cases requiring resort to courts. Also this plan has broken down because overburdened courts and attorneys have been reluctant to assume the extra work it required of them. This has been felt in England, and in the United States it forced a general abandonment of the plan and the substitution of another. The second plan is exemplified by the legal aid societies and bureaux, which are intended to provide lawyers paid to act for the poor in all matters. Its defect lies in the fact that these organizations have developed independently, and not as integral parts of the administration of justice, and they are often forced to limit their service through lack of funds. A combination of the two plans would seem to provide an ideal solution, but this has been effectuated only in Sweden.

The United States.—Legal aid work is carried on most extensively in the United States. Beginning in 1876 in New York, where a group of public-spirited citizens of German origin formed a society and opened a legal aid office intended chiefly to serve German immigrants, followed in 1887–88 in Chicago, where two offices were opened, the movement steadily expanded until in 1917 there were 43 legal aid organizations operating in the larger cities and extending across the continent. After the World War growth was resumed and in 1928 there were about 70 well-established legal aid offices. These various societies and bureaux have given legal aid to approximately 2,500,000 poor applicants, have succeeded in collecting for them (mostly in small claims and wages) over $10,000,000, and have expended in the conduct of their work nearly $4,000,000. Statistics for 1927 showed 160,241 new cases received, $716,561 collected for clients, and $392,244 cost of operation.

All the societies and bureaux, having been formed in different cities by local groups, were independent of each other and autonomous until, in 1923, at a constitutional convention held in Cleveland, they organized the National Association of Legal Aid Organizations with power to co-ordinate their activities, especially in referring cases from one city to another, to guide the future development of the work, and to control legal aid in its national aspects. Under this last power arrangements were made with the U.S. Supreme Court whereby poor persons appealing to it could be given legal assistance. While these legal aid organizations are not an organic part of the American judicial structure, they play so important a part in the administration of justice that inevitably they are moving in that direction and more and more are deriving their support and leadership from the organized bar. A score of State bar associations have legal aid committees and the American Bar Association has, since 1921, maintained a standing committee on legal aid work. Through the National Association of Legal Aid Organizations co-operative relationships with other important groups have been established—with the Association of Governmental Labor Officials of the United States and Canada, with the Association of Industrial Accident Boards and Commissions and with the American Association for Organizing Family Social Work.

England and Scotland.—As early as the reign of Henry VII. a comprehensive statute was enacted establishing *in forma pauperis* procedure whereby the poor should have their writs for nothing and have counsel assigned to represent them. The procedure proved ineffective, it gradually fell into disuse, and its provisions were repealed in 1883. The problem, however, remained and grew. The establishment of the county courts with their summary procedure afforded partial relief; but court costs and the expense of counsel barred many just claims until in 1914 the Supreme Court of Judicature made effective new rules under which poor litigants in that court might be exempted from court costs and be represented by solicitors and barristers. This again proved inadequate, as it was impossible to secure the volunteer services of enough lawyers to meet the flood of applicants for relief, notably in divorce cases, and the rules were changed in 1926 so as to vest the major responsibility in the London Solicitors' Society, to which the Government made a grant for expenses. The general problem remains unsettled and continues a matter for inquiry by a special parliamentary commission.

The plan of establishing definite legal aid offices, analogous to those in the United States, has never taken root in England. Some university settlements and kindred charities have maintained evening office hours where volunteer solicitors are in attendance and can be consulted. But as these ventures have never been soundly financed and have continued only by virtue of the self-sacrificing labours of a few devoted persons, their activities have been severely restricted, and they are totally inadequate to cope with a problem of this magnitude.

The Scottish system is basically the same as the English, but has proved more effective in actual practice, perhaps because its procedure for legal aid has been in uninterrupted operation since 1574. The various solicitors' associations each year designate a number of their members to act as agents for the poor. After the applicant has produced satisfactory certificates from his parish proving his poverty, the agent files a petition to allow him to sue *in forma pauperis.* If this petition is approved by a tribunal of four attorneys, the applicant is admitted to the Poor Rolls and is exempted from paying the usual costs, and the court assigns him a counsel from a list prepared by the Faculty of Advocates. In this way almost 2,000 persons a year are given legal aid in litigation. This method proves more satisfactory in smaller cities and towns and invariably shows signs of strain when applied in large centres of population. In Edinburgh some additional service was found to be essential, and the Edinburgh Legal Dispensary was patterned after the Legal Aid Society in New York.

Continental Europe.—The French legal aid system of *l'assistance judiciaire gratuite* is closely analogous to the English

in forma pauperis and the Scottish poor rolls procedure. Its history traces back to the Code Napoléon, which probably represents the codification of earlier provisions, and it has always functioned with reasonable success. Attached to each court is a tribunal of representatives of the legal corporations (bar associations) which determines whether the applicant is indeed poor and has a proper claim. If so, the poor person is excused from the customary fees and is assigned a counsel who is helped in his work by law students, service in this capacity being required of them prior to admission to the bar. While this system makes the courts accessible to the poor, it fails to afford them legal aid in all non-litigious matters.

The other countries of continental Europe follow substantially the same plan and method, but there are some noteworthy variations. Denmark for over a century has had a splendid system of conciliation tribunals in which the small cases of the poor are given quick and inexpensive justice, and in Copenhagen there is a well-established legal aid office in which law students actively participate. Norway has a parallel system of conciliation tribunals but no legal aid organizations. In Sweden, the system of assigning counsel to act for poor persons works exceptionally well because it is based on the just principle that such counsel should be paid suitably for their work by order of the court. In addition a strong legal aid society exists in Stockholm under a law which provides that, if any municipality or district establishes a legal aid office, part of the expenses will be borne by the royal treasury. There have grown up in Germany a large number of legal aid bureaux, many of them affiliated with political parties or labour unions.

International Legal Aid.—The European nations concluded a Convention on Civil Procedure at The Hague in 1905, under which each nation extends to the citizens of every other the right to apply to its courts for the same legal aid as is afforded to its own poor. Thus, by reciprocity, a poor national of any European country may obtain legal aid from the courts of every other European country. Neither Great Britain nor the United States has become a signatory to this convention.

Under the auspices of the League of Nations there met at Geneva, in 1924, a committee of legal aid experts representing France, Great Britain, Italy, Japan, Norway, Spain and the United States, to devise plans for bringing all the legal aid agencies of the world into closer communication. On their recommendation the Assembly of the League authorized its secretary-general to collect and publish the laws of the various nations making provisions for the poor and a list of all ascertainable legal aid organizations. The volume containing this information was published in 1928.

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LEGAL ARTICLES. All aspects of legal practice receive individual treatment and should be sought under their own headings. Such subjects as ADMIRALTY; ADMIRALTY, HIGH COURT OF; JURISDICTION, are given detailed treatment by experts; this is apparent also in key articles such as APPEAL; ARREST; BANKRUPTCY; CHANCERY; COMMONS; COMPANY LAW; CONTRACT; COPYRIGHT; CRIMINAL LAW; DEPORTATION; DIVORCE; ECCLESIASTICAL JURISDICTION; ENGLISH LAW; EVIDENCE; HOMICIDE; INDIAN LAW; INSANITY IN LAW; INTERNATIONAL LAW, PUBLIC; INTERNATIONAL LAW, PRIVATE; JURISPRUDENCE, COMPARATIVE; JUVENILE OFFENDERS; LAW OF SUCCESSION; LAWS RELATING TO REAL PROPERTY AND CONVEYANCING; LEGITIMACY AND LEGITIMATION; LIBEL AND SLANDER; LIQUOR LAWS AND LIQUOR CONTROL; MANDATE; MARTIAL LAW; MEDICAL JURISPRUDENCE; OATH; PARLIAMENT; PARTNERSHIP; PATENTS; PEACE; PEERAGE; PERMANENT COURT OF INTERNATIONAL JUSTICE; POLICE; POST AND POSTAL SERVICES; PRACTICE AND PROCEDURE; PRESS LAWS; PRISON; REPRESENTATION; ROMAN LAW; SECURITY; SENATE; SOVEREIGNTY; STATUTE; TORTURE; TREASON; TREATIES; TRUST AND TRUSTEES; VOTING; WILL.

Many shorter articles define law terms or outline procedure and references to these will be found in the key articles.

LEGAL EDUCATION. The subject of this article is education in English and United States law; *i.e.*, the law as administered in English and United States courts of justice.

Early Usage.—It is noteworthy, though when the causes are understood it is not surprising, that until about the middle of the last century legal education was not academic but vocational. It was not offered to or demanded by students who were not proposing to qualify for the practice of the law. The universities taught the canon law and the civil law. The first teacher of the civil law seems to have been Vacarius who was introduced into England in Stephen's reign by Archbishop Theobald and according to Gervase of Canterbury taught at Oxford. From this period the universities taught the canon law and the civil law and gave degrees as bachelor and doctor in both subjects. Moreover for a degree in each subject the student had to show knowledge of the other; indeed at Oxford for the degree in the canon law the bachelor had to go through a five years' course in the civil law.

After the Reformation teaching of the canon law was discouraged and practically ceased; though, as some compensation, in 1548 Henry VIII. founded the regius professorships of civil law at Oxford and Cambridge. It is noteworthy that in the ecclesiastical courts and in the courts administering the civil law practice was confined to persons who were proficient in civil law. The association of doctors of law, which eventually had its seat at Doctors' Commons, was founded in 1511.

To be admitted an advocate the applicant had to hold a degree as doctor of civil law, must have attended the ecclesiastical courts for a year, and must possess the fiat of the archbishop of Canterbury. The advocates had the monopoly of practice in the ecclesiastical courts and in the admiralty court, the judges of the courts being drawn from their ranks. While the courts existed they practised in the Star Chamber, and in the courts of the constable and marshal. In this way there can be no doubt that the university teaching in canon and civil law influenced the development of English law.

But the universities did not, until a comparatively recent date, purport to teach English law as such. In fact, in the middle ages it can hardly be said that there was an English law that a university could teach. Principles had not developed; the substantive law was being generated in the interstices of procedure; the prospective lawyer had to master rules and enactments mainly concerned with real property and crime, disentangling tort from crime. To understand the law at all he had to master a language not his own. It is not surprising therefore that legal education was confined to those institutions founded by practising lawyers, which secured the sole power of regulating under the judges the entry to the profession, *i.e.*, the inns of court and of chancery.

The Inns of Court and of Chancery.—Here an elaborate system of training was developed. Teachers were appointed from practising members of the profession; they gave readings on legal subjects, often on particular statutes. Discussion took place between students and readers on the subject of lectures, and an organized system of moots, at which the younger barristers and students discussed a set question before their elders in hall, formed an important part of the training. The course for a student appears to have approximated to the traditional 7 years' apprenticeship, nor was he admitted to practise until he had taken part in such a course, though a test by examination had not then been devised. The system reached its zenith in the time of Henry VIII. We derive our detailed knowledge of it from a report made to that king in 1540 by commissioners who included Nicholas Bacon.

But this highly organized system of oral instruction broke down. Printed books began to record the rules of law and the decisions of the courts. The position of reader was encumbered with the heavy expenses of an elaborate feast; a sumptuary rule of one of the inns of court limited the charge to as much as £300. The cost

and the interference with practice made lawyers disinclined to undertake the duty. The days of the Commonwealth interrupted the collegiate system of the inns and though attempts were made after the Restoration by the judges and the benchers to restore the system, they failed.

By the beginning of the 18th century there may be said to have been no organized system of education. Students educated themselves from books, by attendance at the courts and by friendly discussion with one another and their elders. The dawn of a brighter day came with the lectures of Blackstone, first delivered at Oxford in 1753, and the publication of his *Commentaries* in 1765. He was created first Vinerian professor in 1758. The corresponding Cambridge chair, the Downing professorship in English law, was not founded till 1800. But his immediate successors did not make much contribution to legal education. Thus till well into the 19th century there was little or no organized teaching either at the universities or at the inns of court.

Maitland records that when Prof. Amos came to the Downing chair at Cambridge in 1850, the class in English law consisted of one M.A., one B.A. and two undergraduates. By this date the inns of court had begun to feel the necessity of putting legal education on a proper footing. Individual attempts were made by the inns to give instruction to their students. In 1833 the Inner Temple instituted two lectureships, one on common law and equity, and the other on jurisprudence and international law. Though the lecturers appointed were such lawyers as Starkie and John Austin the attendance was poor and the lectureships were discontinued. Other inns about this time instituted lectures for their own students with varying success; but no concerted action was taken until 1852 when the four inns, acting upon a report of a joint committee, founded a committee of the four inns, which is the present council of legal education.

The Council of Legal Education.—The council set up five readerships in jurisprudence and civil law, real property, common law, equity and constitutional law and legal history. No system of compulsory examination was at first instituted. Before call, students had either to attend the lectures of two readers for a year, or pass an examination held by the council. In 1868 a third alternative was provided of reading in chambers for a year.

In 1871, however, the old alternatives were swept away. From Jan. 1, 1872, it was made essential to a call to the bar that the student should have passed a satisfactory examination. Teaching was to be provided in jurisprudence, international law (public and private), Roman civil law, constitutional law, legal history, common law, real and personal property, and equity. Three examinations were held in each year. Papers were set on all the above subjects: the students had to pass in Roman law, real and personal property, common law and equity.

The system of education and examination set up in 1871 continues, with modifications, to-day. The inns of court by their council of legal education both teach and examine. To be called to the bar, the student must pass an examination in the specified subjects. It is not, however, a condition of call that he should have attended the lectures of the council, or indeed any lectures at any school of law or university. A certain number of men pass the examination without attending lectures either of the council or elsewhere; notably men who have begun life in some other occupation. But the great majority have had a university education, and if they have not read law at the university, attend the council's lectures under the guidance of the council's chief educational officer, the director of legal education. At present the council provide a reader and assistant reader in Roman law, jurisprudence, international law and the conflict of laws; a reader in constitutional law (English and colonial) and legal history; a reader in evidence, procedure (civil and criminal) and criminal law; a reader and assistant reader in the law of real property and conveyancing; a reader and assistant reader in the common law; a reader and assistant reader in equity, and a lecturer in Hindu and Mohammedan law. Lectures are given continuously during the day throughout the educational term, the attendance varying from 40 to 90, according to the subject.

The Bar Examination.—The examination for call to the bar consists of two parts. In part I. the subjects are Roman law, constitutional law (English and colonial) and legal history, criminal law and procedure, real property and conveyancing: for the latter subject, however, Mohammedan law or Roman-Dutch law may be substituted at the option of the student. The student can take any of these subjects separately. The second part consists of common law, equity, the law of evidence and civil procedure, and a general paper on those subjects. The student must take these subjects together, and, unless he receives special leave, cannot take them until he has kept six terms. A student who has passed an equivalent university examination in Roman law is excused that subject in the bar examination. There is an occasional request from universities to extend this relief to other subjects also taught and examined in at the universities. The view generally held at the inns of court appears to be that the vocational examinations which they control should be conducted by persons who have professional and practical experience of the subjects in which they examine; and that for this reason it would be inexpedient, in the public interest, to allow university examinations with perhaps a more academic bias, and with varying standards, to be substituted.

The bar student has the indirect but valuable educational advantage of being a member of an inn of court and of consequent association with his fellow students and younger barristers. He has to keep 12 terms by dining six or three evenings a term in hall. In addition, the inns have now revived the ancient system of mooting, and moots are held each term, presided over by a judge or senior member of the bar, at which set subjects are argued by two students or young barristers on each side, in accordance with the procedure of courts of law, and are decided by the president. Moreover, it is customary for every student who can afford it to read in chambers for a year with a practising barrister, whose papers he reads, and for whom he drafts pleadings and opinions, which receive the master's correction. This period is often postponed, with advantage, till after call. It forms the most valuable part of legal training; and there are few men who have achieved success at the bar who will not gratefully attribute a large share in it to the training of a former master.

The Solicitors' Examination.—Admission to the solicitors' branch of the profession is controlled by the Law Society, who possess statutory powers given them originally by the Solicitors' Act of 1877 and extended by subsequent acts. In 1833 the Incorporated Law Society inaugurated a system of lectures on common law equity and conveyancing; and about 1836 the common law judges, by rules, and the master of the rolls, by order, made it necessary for an attorney or solicitor to pass an examination before being admitted. The examinations were conducted by a committee of the Society, under the general control of the judiciary. The examination was made statutory by the Solicitors' Act 1843, and under the statute the examination was continued under the original control, until by the Solicitors' Act of 1877 it was placed under the sole control of the Incorporated Law Society. At present the examination in law consists of two parts, the intermediate and the final. The intermediate is an examination on Stephen's *Commentaries* and on trust accounts and bookkeeping. The subjects for the final are the law of real property and conveyancing, equity, common law and bankruptcy, probate, divorce and admiralty law, ecclesiastical and criminal law, and proceedings before justices of the peace. The Law Society provides an organized system of education under their director of studies. They have a principal, a reader, tutors and assistant tutors who lecture during the educational term on the subjects provided for the examination, both intermediate and final. The scheme of education is on the basis of four terms attendance for the intermediate, and six terms for the final, there being three terms in the year. The lectures are supplemented by classes for discussion and informal tuition. There is also a system of tuition by correspondence classes.

It is now provided by statute (Solicitors' Act 1922) that a student shall not be admitted a solicitor unless he has attended for a year at a law school approved or provided by the Law Society. Such approved schools exist at nearly all the English universi-

ties, in some cases controlled or assisted by boards of studies, on which local solicitors are largely represented. Special schools have also been provided by the Law Society, sometimes in connection with university extramural teaching. But the student's practical education is secured by the necessity of service under articles to a solicitor for a period of five years—reduced to four or three years in the case of persons possessing varying educational qualifications.

Teaching at the Universities.—Meantime, contemporaneously with the development of organized teaching by the inns of court and the Law Society for vocational purposes, the universities have proceeded to provide definite teaching in English law. From about the year 1850, the Universities of Oxford and Cambridge began to take the subject seriously. It is impossible to pursue the history of the subject in existing universities old and new. For this article it is sufficient to say that nearly all English universities have a faculty of English Law, giving instruction by university professors and readers, and college lecturers: and in most cases granting degrees in law, or making law, or some portion of law, a necessary or optional subject for a degree. Many of the university teachers are amongst the foremost authorities in the profession on the subjects which they expound. They, together with the lecturers of the inns of court and the Law Society, have formed a Society of the Public Teachers of Law, which meets annually to discuss subjects of common interest, and publishes a journal.

No one can doubt that present teaching, based on deep research and moved by real enthusiasm, is producing valuable results. There is in existence an extensive system of education, academic and vocational. It is distributed over England, the bulk of the vocational teaching having its seat in London. For the most part it is thorough and scientific. The results are in practice satisfactory. There is no reason to suppose that the administration of the law falls below the highest standards of other countries, either in professional argument or judicial exposition. The control of the teaching is, however, vested in various independent bodies, academic and professional. There is no direct co-ordination. There have always been persons, highly qualified to form an opinion, who have desired to see a great school of law arise in London, either affiliated to the existing University of London or forming an independent legal university, to which the lawyers of the empire and others might resort for instruction and research. Such a school, it is thought, might eventually regulate the admission to the profession in its various branches: and possibly give vocational teaching a more scientific bias. It is a fine ideal and may in the future be attained. One of the practical difficulties is to allay the natural suspicions of the professional bodies who now control entrance to their own profession, and are anxious not to have their own effective practical standards depreciated. Another difficulty is raised by the inevitable questions of money and site.

Probably a step in the direction of this ideal, which would meet with little opposition, would be improved co-ordination of the teaching faculties given by university and professional bodies, and an extension of existing faculties so as to assist oversea lawyers both in instruction and research. Should legal education be confined, as it practically is now, to students who intend in one form or another to practise the profession of the law? This is too large a subject to be discussed in this article. There are some who hold that it would be to the public advantage that some knowledge of legal principles should form part of a general liberal education as it did in England in the 14th and 15th centuries. The education of a citizen, it is thought, should include some knowledge of the law which holds the State together and governs all his relations with it. Suspicion of the law as a mysterious and unintelligible force would be dispelled. Elementary difficulties in the affairs of life: in dealing with servants, making contracts and disposing of property, might be avoided. Some steps in this direction are being taken by the University of London which has made elementary law an optional subject in some of its Arts courses. There appears to be a wide field for an extension of legal education in this direction.

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THE UNITED STATES

American legal education begins in 1784 (or perhaps 1782), when Judge Tapping Reeve of Litchfield, Conn., set up the first school for the teaching of the common law.

Early History.—There had been no legal profession in the colonies until the 18th century. Before the revolution a certain number of lawyers had received their training in England, in the inns of court. But a system of courts, manned by lawyers and requiring a trained profession to practise before them, was not called for by the economic condition of the colonies until toward the middle of that century; nor were the executive and legislative justice, characteristic of the colonial polity, wholly superseded by judicial justice until after the revolution. Legal education was at a low ebb in 18th century England. The universities had never taught the law of the land. The mediaeval system of the Inns of Court had decayed, and the system that now obtains had not been set up. Hence there were no good models at hand after the revolution, and American legal education had to develop its own methods. So far as the models were English, they were, first, the purely apprentice training of the lower branch of the profession in England (for in general the United States took the attorney or solicitor for its type, rather than the barrister), and, second, the academic lectures on the law of the land which began with Blackstone's lectures as Vinerian professor at Oxford. This example was followed eagerly in America. Wythe's lectures at William and Mary (1779), Wilson's at the College of Philadelphia, now the University of Pennsylvania (1790), Kent's at Columbia (1793) and Parker's at Harvard (1815) were of this type. They were not instruction in law to prospective lawyers so much as lectures to young gentlemen as part of their general cultural training. Later this plan of academic lectures upon law was grafted upon the apprentice training which was the first type of legal education in America.

After the Revolution, students ceased to go from America to the inns of court. Then education for the bar became distinctly American. Beginning from this point, three stages of development may be distinguished. These stages correspond to three periods in American legal history. The method of each stage is a response to the needs of the period in which it grew up.

Apprentice Training.—First, there is a stage of apprentice training, either in the office of a practising lawyer or in a law school organized as an expanded law office and applying office methods of instruction. This sort of training sufficed for the needs of the time immediately after the Revolution. The development of judicial justice administered in courts by trained judges called for practitioners who knew the lawyer's craft. When the United States took over English law as the law of its several commonwealths, in the first instance it took over English legal procedure. Except for land law, at the time of the Revolution the greater part of English law was expressed in terms of procedure. Thus there was need of lawyers who knew how to bring a lawsuit and how to conduct it through the courts. Apprentice training was adapted to this need. Judge Reeve's law school grew out of the practice of taking a number of students into a country law office where the press of business did not interfere with instruction. Just because it grew out of such a law office, the exact date of establishment of the school at Litchfield cannot be fixed.

The law schools of the period were modelled on that institution. In effect, they were but expanded law offices in which preceptors who were practising lawyers carried on the teaching side of the law office as their chief activity. Such was the Harvard law school, the oldest of the existing law schools in the United States, in its first stage (1817–29).

At this time there was little differentiation of local law. But the whole tendency of the apprentice training was to dwell upon the local and temporary rather than the universal and enduring

elements in the body of legal materials, and this unfortunate feature served to develop and entrench many provincialisms in the law of the several States, since, until, much later, the bulk of the profession was apprentice trained. In general the first stage prevailed until Joseph Story began to teach law at Harvard (1829). Also in many parts of the country the simpler needs of a rural or even pioneer society required nothing more than an apprentice-trained profession, so that the method of that stage has persisted in many localities into the present.

College Teaching.—A second stage begins with the appointment of Story as Dane professor at Harvard, and extends until the epoch-making work of Langdell after 1870. There was nothing in the way of a rule-of-thumb apprentice training, which, under 19th-century conditions, could be done better in a law school than in a law office. But with the growth of the law something more than a rule-of-thumb training in practice was required, and the second stage of legal education was a response. From Story to Langdell the law schools continually increased in influence. The accepted mode of training came to be study in a law school in which law was taught by lectures and from text-books with the teaching apparatus of the old-time college.

The era of expansion that followed the adoption of the Constitution called for creative juristic activity and creative legislation. Study of substantive law was called for. It was necessary to investigate each item of the common law of England with reference to its applicability to the conditions in the New World. The traditional materials of 17th-century English law had to be reshaped so as to make of them a common law for America. A mere apprentice training could not meet these demands. Text-books had to be written to guide the courts in the new departments of law, which were formative on every hand. These text-books came from the law schools and soon gained the upper hand as the bases of instruction, even where the whole spirit of instruction remained that of the first stage. The best examples of the second stage are the teaching of Story and Greenleaf, and later of Parsons, Washburn and Parker at Harvard, the teaching of Dwight at Columbia, and of Cooley and his colleagues at Michigan.

Scientific Study of Jurisprudence.—In a third stage there is scientific study of the legal system of English-speaking countries on the basis of the sources. An analytical and a historical method, as methods of a general science of law, are applied to the sources, and thus system is put into each branch and department of the law. By the time of the Civil War the formative period of American law and legal institutions was substantially at an end. With few exceptions, the great text-books that had guided the courts speak from before the Civil War. In the last quarter of the 19th century, law books tend more and more to be mere indexes to the decisions: they cease to be creative. The need of the time had come to be in another direction.

Now there was need of systematizing the law which had developed in the period of growth. In response to this demand, within less than a decade after the end of the Civil War, Langdell, who was appointed to Story's chair at Harvard in 1870, had inaugurated the method of study from adjudicated cases which has come to prevail in the majority of American law schools of high grade. This method seeks, through analytical and historical study of the sources, to give a grasp of the traditional art of deciding cases on the basis of reported judicial experience. It teaches the traditional art of developing grounds of decision from the authoritative legal materials. This is the enduring element in Anglo-American law. Conditions in many localities, in which requirements for admission to the bar are low, and candidates have insufficient preliminary training to enable them to study the sources directly, have led to persistence of the method of lectures and text-book instruction in schools in which the teachers are actively engaged in practice, and hence the spirit is that of apprentice training. In such schools local law and procedure are chiefly stressed. Probably 60% of those who come to the bar to-day are trained in such schools.

Perhaps it is too soon to speak with assurance, but there are signs of a fourth stage, called for by the economic unification of the country, if not of the world, the growing importance of comparative law, and the increasing need of creative lawmaking and consequent demand for something more than the analytical and historical methods of the last half of the 19th century. Research professorships and research institutes are being set up in a number of university law schools, and an institute established at Johns Hopkins in 1928 plans to train writers, legal thinkers and law-makers rather than practising lawyers. Meanwhile the American Bar Association is pushing steadily for the requirements as to preliminary education and the scientific training developed in the third stage. (R. Po.)

LE GALLIENNE, RICHARD (1866–), English poet and critic, was born in Liverpool on Jan. 20, 1866. In 1889, he published *Volumes in Folio, The Book Bills of Narcissus* and *George Meredith: some Characteristics* (new ed., 1900). He is best known by the fantastic prose essays and sketches of *Prose Fancies* (2 series, 1894–1896), *Sleeping Beauty and other Prose Fancies* (1900), *The Religion of a Literary Man* (1893), *The Quest of the Golden Girl* (1897), *The Life Romantic* (1901), etc. Among his more recent works are *Pieces of Eight* (1919), *The Junk Man and Other Poems* (1921), *The Romantic '90's* (1926), and *The Magic Seas* (1930). He resides in the United States.

LEGAL TENDER, a tender or offer, particularly of money, in satisfaction of a liability or debt and in accord with the proper legal requirements. *See* TENDER and PAYMENT.

LEGARÉ, HUGH SWINTON (1797–1843), American lawyer and statesman, was born in Charleston, S.C., on Jan. 2, 1797. Before he was five he developed a permanent deformity (by which the growth and development of his legs was arrested) due to vaccine poisoning. In 1814 he graduated at the College of South Carolina. He studied law for three years in South Carolina, and then spent two years abroad, studying French and Italian in Paris and jurisprudence at Edinburgh. In 1820–22 and in 1824–30 he was a member of the South Carolina legislature. In 1827, with Stephen Elliott (1771–1830), the naturalist, he founded the *Southern Review,* of which he was the sole editor after Elliott's death until 1834, when it was discontinued. In 1830–32 he was attorney-general of South Carolina, and, although a State's rights man, he strongly opposed nullification. At an appearance before the U.S. Supreme Court, his knowledge of civil law so strongly impressed Edward Livingston, the secretary of State, that he urged Legaré to devote himself to the study of this subject with the hope that he might influence American law toward the philosophy and even the forms and processes of Roman jurisprudence. Through Livingston, Legaré was appointed American chargé d'affaires at Brussels, where he perfected himself in civil law and the German commentaries on civil law. In 1837–39, as a Union Democrat, he was a member of the National House of Representatives, and there ably opposed Van Buren's financial policy in spite of the enthusiasm in South Carolina for the subtreasury project. He supported Harrison in the presidential campaign of 1840, and when the cabinet was reconstructed by Tyler in 1841, Legaré was appointed attorney-general of the United States. On May 9, 1843, he was appointed secretary of State *ad interim,* after the resignation of Daniel Webster. On June 20, 1843, he died suddenly at Boston. As attorney-general he argued the famous cases, *The United States* v. *Miranda, Wood* v. *The United States,* and *Jewell* v. *Jewell.* See *The Writings of Hugh Swinton Legaré* (2 vols., Charleston, S.C., 1846), edited by his sister, Mrs. Mary Bullen, with a biographical sketch; and two articles by B. J. Ramage in *The Sewanee Review,* vol. x. (1902).

LEGAS, a Shangalla tribe, of a pure type of the Galla race. They occupy the upper Yabus valley, south-west Abyssinia, near the Sudan frontier. They are of very light complexion, tall and thin, with narrow hollow-cheeked faces, small heads and high foreheads. The chiefs' families are often of mixed blood, with perceptible Negro strain. They are a peaceful race, kind to their women and slaves, and energetic agriculturists. Mohammedanism has gained many converts among them.

LEGASPI, Luzon, P.I.: *see* ALBAY.

LEGATE, BARTHOLOMEW (*c.* 1575–1612), English fanatic, was born in Essex and became a dealer in cloth. About the

beginning of the 17th century he became a preacher among a sect called the "Seekers," and appears to have held unorthodox opinions about the divinity of Jesus Christ. Together with his brother Thomas he was put in prison for heresy in 1611. Thomas died in Newgate gaol, London, but Bartholomew's imprisonment was not a rigorous one. James I. argued with him, and on several occasions he was brought before the Consistory Court of London, but without any definite result. Eventually Legate was tried before a full Consistory Court in Feb. 1612, and found guilty of heresy. He was burned to death at Smithfield on March 18, 1612. Legate was the last person burned in London for his religious opinions.

See T. Fuller, *Church History of Britain* (1655); and S. R. Gardiner, *History of England,* vol. ii. (1904).

LEGATE, a title now generally confined to the highest class of diplomatic representatives of the pope, though still occasionally used, in its original Latin sense, of any ambassador or diplomatic agent. According to the *Nova Compilatio Decretalium* of Gregory IX., under the title "De officio legati" the canon law recognizes two sorts of legate, the *legatus natus* and the *legatus datus* or *missus.* The *legatus datus* (*missus*) may be either (1) *delegatus,* or (2) *nuncius apostolicus,* or (3) *legatus a latere* (*lateralis, collateralis*). The rights of the *legatus natus* formerly included concurrent jurisdiction with that of all the bishops within his province. The commission of the *legatus delegatus* (generally a member of the local clergy) is of a limited nature, and relates only to some definite piece of work. The *legatus a latere* (almost invariably a cardinal, though the power can be conferred on other prelates) is in the fullest sense the plenipotentiary representative of the pope. He has the power of suspending all the bishops in his province, and no judicial cases are reserved from his judgment. Without special mandate, however, he cannot depose bishops or unite or separate bishoprics. At present *legati a latere* are not sent by the holy see, but diplomatic relations, where they exist, are maintained by means of nuncios, internuncios and other agents.

The history of the office of papal legate is closely involved with that of the papacy itself. If it were proved that papal legates exercised the prerogatives of the primacy in the early councils, it would be one of the strongest points of the Roman Catholic view of the papal history. Thus it is claimed that Hosius of Cordova presided over the council of Nicaea (325) in the name of the pope. But the claim rests on slender evidence, it is even open to dispute whether Hosius was president at Nicaea, and though he certainly presided over the council of Sardica in 343, it was probably as representative of the emperors Constans and Constantius, who had summoned the council. Instances of delegation of the papal authority in various degrees become numerous in the 5th century, especially during the pontificate of Leo I. Vicarial or legatine powers had been conferred in 418 by Zosimus upon Patroclus, bishop of Arles. In 449 Leo was represented at the "Robber Synod," from which his legates hardly escaped with life; at Chalcedon, in 451, they were treated with singular honour, though the imperial commissioners presided. Another sort of delegation is exemplified in Leo's letter to the African bishops (*Ep.* 12), in which he sends Potentius, with instructions to inquire in his name, and to report. Augustine of Canterbury is sometimes spoken of as legate, but it does not appear that in his case this title was used in any strictly technical sense, although the archbishop of Canterbury afterwards attained the permanent dignity of a *legatus natus.* Boniface, the apostle of Germany, was in like manner constituted, according to Hincmar (*Ep.* 30), a legate of the apostolic see by Popes Gregory II. and Gregory III. According to Hefele (*Conc.* iv. 239), Rodoald of Porto and Zecharias of Anagni, who were sent by Pope Nicholas to Constantinople in 860, were the first actually called *legati a latere.* The policy of Gregory VII. naturally led to a great development of the legatine as distinguished from the ordinary episcopal function. From the creation of the mediaeval papal monarchy until the close of the middle ages, the papal legate played a most important rôle in national as well as church history. The further definition of his powers proceeded throughout the 12th and 13th centuries. From the 16th century legates *a latere* give way almost entirely to nuncios (*q.v.*).

See P. Hinschius, *Kirchenrecht,* i., 498 ff.; G. Phillips, *Kirchenrecht,* vol. vi., 680 ff.

LEGATION, a diplomatic mission of the second rank. The term is also applied to the minister's residence and its precincts. (*See* AMBASSADOR; DIPLOMACY.)

LEGATO, a musical term signifying smoothness or evenness of performance, a passage so marked being intended to be played or sung in as connected a manner as possible.

LEGENDRE, ADRIEN MARIE (1752–1833), French mathematician, was born on Sept. 18, 1752. He was brought up at Paris, where he completed his studies at the *Collège Mazarin.* His first published writings consist of articles forming part of the *Traité de mécanique* (1774) of the Abbé Marie, who was his professor; Legendre's name, however, is not mentioned. Soon afterwards he was appointed professor of mathematics in the *École Militaire* at Paris, and he was afterwards professor in the *École Normale.* In 1782 he received the prize from the Berlin Academy for his "Dissertation sur la question de balistique," a memoir relating to the paths of projectiles in resisting media. He also, about this time, wrote his "Recherches sur la figure des planètes," published in the *Mémoires* of the French Academy, of which he was elected a member in succession to J. le Rond d'Alembert in 1783. He was a commissioner for connecting geodetically Paris and Greenwich, his colleagues being P. F. A. Méchain and C. F. Cassini de Thury; General William Roy conducted the operations on behalf of England. During the revolutionary period he served on various scientific commissions. He also collaborated in drawing up French tables of logarithms of numbers, sines and tangents, and natural sines, called the *Tables du Cadastre.* (*See* LOGARITHMS.) The subject with which Legendre's name is most closely connected is elliptic integrals, his researches extending over more than forty years. The last of the three supplements to his *Traité des fonctions elliptiques* was published in 1832. He died at Paris on Jan. 10, 1833, and the discourse at his grave was pronounced by Poisson.

Writings.—*Elliptic Functions.*—His first published writings upon the subject consist of two papers in the *Mémoires de l'Académie Française* for 1786 upon elliptic arcs. In 1792 he presented to the Academy a memoir on elliptic transcendents. The contents of these memoirs are included in the first volume of his *Exercices de calcul intégral* (1811). The third volume (1816) contains the very elaborate and now well-known tables of the elliptic integrals which were calculated by Legendre himself, with an account of the mode of their construction. In 1827 appeared the *Traité des fonctions elliptiques* (2 vols., 1825, 1826). Three supplements, relating to the researches of Abel and C. G. J. Jacobi, were published in 1828–1832, and form a third volume. Legendre had pursued the subject of elliptic integrals alone from 1786 to 1827, the results of his labours having been almost entirely neglected by his contemporaries, but his work had scarcely appeared in 1827 when the discoveries which were independently made by the two young and as yet unknown mathematicians Abel and Jacobi placed the subject on a new basis, and revolutionized it completely. The readiness with which Legendre, who was then seventy-six years of age, welcomed these important researches, that quite overshadowed his own, and included them in successive supplements to his work, does the highest honour to him. (*See* ELLIPTIC FUNCTIONS.) Legendre also made important researches in gamma functions.

Theory of Numbers.—Legendre's *Théorie des nombres* and Gauss's *Disquisitiones arithmeticae* (1801) are still standard works upon this subject. The first edition of the former appeared in 1798 under the title *Essai sur la théorie des nombres;* there was a second edition in 1808; a first supplement was published in 1816, and a second in 1825. The third edition, under the title *Théorie des nombres,* appeared in 1830 in two volumes. To Legendre is due the theorem known as the law of quadratic reciprocity, the most important general result in the science of numbers which has been discovered since the time of Fermat, and which was called by Gauss the "gem of arithmetic." It was first given by Legendre in the *Mémoires* of the Academy for 1785, but the accompanying demonstration was incomplete. (*See* NUMBER.)

Attractions of Ellipsoids.—Legendre was the author of four important memoirs on this subject. In the first of these, entitled "Recherches sur l'attraction des sphéroides homogènes," published in the *Mémoires* of the Academy for 1785, Legendre introduces the celebrated expressions which, though frequently called Laplace's coefficients, are more correctly named after Legendre. Legendre shows that Maclaurin's theorem with respect to confocal ellipsoids is true for any position of the external point when the ellipsoids are solids of revolution. (*See* Todhunter's *History of the Mathematical Theories of Attraction and the Figure of the Earth* [1873], the twentieth, twenty-second, twenty-fourth and twenty-fifth chapters of which contain a full and complete account of Legendre's four memoirs. *See* also SPHERICAL HARMONICS.)

Geodesy.—Besides the work upon the geodetical operations connecting Paris and Greenwich, of which Legendre was one of the authors, he published in the *Mémoires de l'Académie* for 1787 two papers on trigonometrical operations depending upon the figure of the earth, containing many theorems relating to this subject. The best known of these, which is called Legendre's theorem, is usually given in treatises on spherical trigonometry.

Method of Least Squares.—In 1806 appeared Legendre's *Nouvelles Méthodes pour la détermination des orbites des comètes,* which is memorable as containing the first published suggestion of the method of least squares. (*See* PROBABILITY.)

The Elements of Geometry.—Legendre's name is widely known on account of his *Eléments de géométrie.* It first appeared in 1794, and went through very many editions, and has been translated into almost all languages. An English translation, by Sir David Brewster, from the eleventh French edition, was published in 1823. In one of the notes Legendre gives a proof of the irrationality of π. This had been first proved by J. H. Lambert in the Berlin *Memoirs* for 1768. Legendre's proof is similar in principle to Lambert's, but much simpler. On account of the objections urged against the treatment of parallels in this work, Legendre was induced to publish in 1803 his *Nouvelle Théorie des parallèles.*

An account of the principal works of Legendre is given in the *Bibliothèque universelle de Genève* for 1833, pp. 45–82.

See Élie de Beaumont, "Memoir de Legendre," translated by C. A. Alexander, *Smithsonian Report* (1874).

LEGENDRE, LOUIS (1752–1797), French revolutionary, was born at Versailles on May 22, 1752. He kept a butcher's shop in Paris. He was an ardent supporter of the Revolution, a member of the Jacobin club, and one of the founders of the club of the Cordeliers. Though of uneducated speech, he was gifted with a genuine eloquence. He was prominent in the taking of the Bastille (July 14, 1789), the massacre of the Champ de Mars (July 1791) and the attack on the Tuileries (Aug. 10, 1792). In the Convention, he voted for the death of Louis XVI., and was sent on a mission to Lyons (Feb. 27, 1793) before the revolt of that town. He was a member of the *Comité de Sûreté Générale,* and contributed to the downfall of the Girondists. When Danton was arrested, Legendre at first defended him, but was intimidated by Robespierre. After the fall of Robespierre, Legendre took part in the reactionary movement, undertook the closing of the Jacobin club, was elected president of the Convention, and helped to bring about the impeachment of J. B. Carrier, the perpetrator of the *noyades* of Nantes. He was subsequently elected a member of the Council of Ancients, and died on Dec. 13, 1797.

LEGENDRE COEFFICIENT AND FUNCTION: *see* SPHERICAL HARMONICS.

LEGERDEMAIN: *see* CONJURING.

LEGGE (afterwards BILSON-LEGGE), **HENRY** (1708–1764), English statesman, son of William Legge, 1st earl of Dartmouth (1672–1750), was born on May 29, 1708. He became private secretary to Sir Robert Walpole, and in 1739 was appointed secretary of Ireland, and subsequently held other offices. Although his conduct as envoy extraordinary to Frederick the Great (1748) earned the king's displeasure, he was made treasurer of the Navy on his return to England, and in 1754 he became chancellor of the Exchequer in the Newcastle ministry. His adherence to Pitt's policy secured his dismissal in Nov. 1756, but 12 months later he returned to his post, which he held till April 1757. On Pitt's return to office in the following July, Legge again became chancellor of the Exchequer, in which position he imposed new taxes on houses and windows. He was dismissed in March 1761 but continued to take part in parliamentary debates until his death on Aug. 23, 1764.

See John Butler, Bishop of Hereford, *Some account of the character of the late Rt. Hon. H. Bilson Legge* (1785).

LEGGE, JAMES (1815–1897), British Chinese scholar, born at Huntly, Aberdeenshire, was educated at King's college, Aberdeen, and at Highbury Theological college, London. In 1839 he started for China, where he was to undertake missionary work, but, as the country was not yet open to Europeans, he remained for three years teaching in the Anglo-Chinese college at Malacca, until it was removed to Hongkong. There he lived for 30 years, and began his monumental edition of the *Chinese Classics* with translation, prolegomena and notes (1861–86; new ed., 1893). In 1876 a chair of Chinese languages and literature was constituted at Oxford for his occupation. He died at Oxford on Nov. 29, 1897.

LEGHORN, city of Tuscany, Italy (Ital. *Livorno,* Fr. *Livourne*), chief town of the province of the same name, which consists of the commune of Leghorn and the islands of Elba and Gorgona. The town is the seat of a bishopric and of a large naval academy—the only one in Italy—and the third largest commercial port in the kingdom, situated on the west coast, 12 mi. southwest of Pisa by rail, 10 ft. above sea level. Pop. (1936) 109,188 (town), 124,963 (commune). It is built along the seashore upon a healthy and fertile tract of land, an oasis in a zone of Maremma. Behind is a range of hills, the most conspicuous of which, the Monte Nero, is crowned by a frequented pilgrimage church and also by villas and hotels, to which a funicular railway runs. The town itself is almost entirely modern (an extension of the older pentagonal town, entirely surrounded by canals). The Fortezza Vecchia (1521–34), guarding the harbour, is picturesque. Incorporated in it is a massive round tower, attributed to Matilda of Tuscany (*q.v.*), but by others thought to be of the 9th or 10th century. The Fortezza Nuova (1590) on the east side of the old town was erected under Ferdinand I., whose fine bronze statue, with four barbarian slaves round the pedestal, stands near the old harbour. The lofty Torre del Marzocco, erected in 1421 by the Florentines, is fine. The façade of the cathedral was designed by Inigo Jones. The old Protestant cemetery contains the tombs of Tobias Smollett (d. 1771) and Francis Horner (d. 1817), and a large number of other British graves, the trading community having formerly been of considerable importance: but the "factory" was closed in 1825. At the Villa Valsovano Shelley wrote the greater part of the *Cenci* in 1819. There is also a large synagogue founded in 1581. The exchange, the chamber of commerce and the clearing-house (one of the oldest in the world, dating from 1764) are united under one roof in the Palazzo del Commercio, opened in 1907. Many streets have been widened, and the road along the shore has been transformed into a shady promenade. Leghorn is the principal sea-bathing resort in this part of Italy, the season lasting from the end of June to the end of August. A spa for the use of the saline waters known as Acque della Salute has been constructed. Leghorn is on the main line from Pisa to Rome; a branch line runs to Colle Salvetti. The harbour is protected by a breakwater nearly $\frac{3}{4}$ m. long. The imports consist principally of machinery, coal, grain, dried fish, tobacco, wool and hides, and the exports of hemp, hides, olive oil, soap, coral, candied fruit, wine, straw hats, boracic acid, mercury and marble and alabaster.

In 1938, 3,895 ships (3,408 Italian) of 4,085,000 tons entered the port, and 3,896 ships (3,409 Italian) of 4,090,000 tons cleared. The older shipyards have been extended, and shipbuilding is carried on, especially by the Orlando yard which builds large ships for the Italian navy, while new industries—namely, glassmaking and copper and brass founding, electric power works, a cement factory, soap works, porcelain factories, flour mills, oil mills, a cotton yarn spinning factory, electric plant works, a shipbreaking yard, a motorboat yard, etc.—have been established. Other important firms, Tuscan winegrowers, oil growers, timber

traders, colour manufacturers, etc., have head offices and stores at Leghorn, with a view to export. Coral is also worked here.

The earliest mention of Leghorn occurs in a document of 891, relating to the first church here; in 1017 it is called a castle. In the 13th century the Pisans tried to attract a population to the spot and built the lighthouse (1303–05); in the 14th Leghorn became a rival of Porto Pisano at the mouth of the Arno, which it was destined ultimately to supplant. Urban V and Gregory XI landed at Leghorn on their return from Avignon. Charles VI of France sold it for 26,000 ducats to the Genoese (1407) from whom the Florentines purchased it in 1421. In 1496 the city made a successful defense against Maximilian and his allies, but was still small; in 1551 there were only 749 inhabitants. With the rise of the Medici came a rapid increase of prosperity; Cosmo, Francis and Ferdinand erected fortifications and harbour works, warehouses and churches with equal liberality, and the last especially gave a stimulus to trade by inviting "men of the East and the West, Spaniards and Portuguese, Greeks, Germans, Italians, Hebrews, Turks, Moors, Armenians, Persians and others," to settle and traffic in the city, as it became in 1606. Declared free and neutral in 1691, Leghorn was permanently invested with these privileges by the Quadruple Alliance in 1718; but in 1796 Napoleon seized all the hostile vessels in its port. It ceased to be a free city by the law of 1868.

After the axis defeat in north Africa in June 1943, Leghorn was subjected to heavy Allied air raids. (T. A.; X.)

See Pietro Vigo, *Livorno* (Bergamo, n.d.).

LEGIEN, CARL (1861–1920), German labour leader, was born on Dec. 1, 1861, in Marienburg, West Prussia. A turner by trade, he became in 1887 president of the turners' trade union, and from 1891 onwards was chairman of the general committee of the German federation of trade unions and editor of their *Korrespondenzblatt.* He took a prominent part in 1901 at the Copenhagen Congress which led to the foundation of the International Federation of Trade Unions. He was secretary of this body from 1903 till 1919. He was a strong supporter of the German Government during the World War, and after the war, in conjunction with Liepart, aided in founding the *Arbeitsgemeinschaft,* an organization intended to rebuild German industry in co-operation with the employers. He died in Berlin on Dec. 26, 1920. Legien wrote many works on trade-union questions, including *Die deutsche Gewerkschaftsbewegung* (1911).

LEGION, in early Rome, the levy of citizens marching out *en masse* to war (Lat. *legio*), like the citizen-army of any other primitive state. As Rome came to need more than one army at once and warfare grew more complex, *legio* came to denote a unit of 4,000–6,000 heavy infantry (including, however, at first some light infantry and at various times a handful of cavalry) who were by political status Roman citizens and were distinct from the "allies," *auxilia,* and other troops of the second class. The legionaries were regarded as the best and most characteristic Roman soldiers, the most trustworthy and truly Roman; they enjoyed better pay and conditions of service than the "auxiliaries." In A.D. 14 (death of Augustus) there were 25 such legions; later the number was slightly increased; finally about A.D. 290 Diocletian reduced the size and greatly increased the number of the legions. Throughout, the dominant features of the legions were heavy infantry and Roman citizenship. They lost their importance when the Barbarian invasions altered the character of ancient warfare and made cavalry a more important arm than infantry, in the late 3rd and 4th centuries A.D. (*see* further ROMAN ARMY). In the middle ages the word "legion" seems not to have been used as a technical term. In modern times it has been employed for organizations of an unusual or exceptional character, such as a corps of foreign volunteers or mercenaries. Perhaps the earliest example of this was the Provincial Legions formed in France by Francis I. (*see* INFANTRY). Napoleon, in accordance with this precedent, employed the word to designate the second-line formations which he maintained in France and which supplied the Grande Armée with drafts. The term "foreign legion" is often used for irregular volunteer corps of foreign sympathizers raised by states at war, often by smaller states fighting for independence. Unlike most foreign legions the "British Legion" which, raised in Great Britain and commanded by Sir de Lacy Evans (*q.v.*), fought in the Carlist wars, was a regularly enlisted and paid force. The term "Foreign Legion" is colloquially but incorrectly applied to-day to the *Régiments étrangers* in the French service, which are composed of adventurous spirits of all nationalities and have been employed in many arduous colonial campaigns.

The most famous of the corps that have borne the name of legion in modern times was the King's German Legion (see *Beamish's* history of the corps). The electorate of Hanover being in 1803 threatened by Napoleon, and no effective resistance being considered possible, the British government wished to take the greater part of the Hanoverian army into its service. But the acceptance by the Hanoverian government of this offer was delayed until too late, and it was only after the French had entered the country and the army as a unit had been disbanded that the formation of the "King's German Regiment," as it was at first called, was begun in England. This enlisted not only ex-Hanoverian soldiers, but other Germans as well. In January 1805 it had become a corps of all arms with the title of King's German Legion. It served in many of the campaigns of the Napoleonic wars but its title to fame is its part in the Peninsular War, in which it was an acknowledged *corps d'élite.*

LEGISLATURE, the name given to that portion of the Government of a country or State which is charged with the making, modification or repealing of the laws, and with the raising and appropriation of the revenues. In nearly all modern States the bicameral system has been adopted. Generally speaking, the so-called "lower-house" is most directly representative of the people, being elected on a wide franchise; the "upper house," second chamber or senate is either elected on a restricted or derivative franchise, or may contain nominated or hereditary elements, or direct representatives of certain classes or interests, or of certain divisions of the nation, as in the United States. The two houses may or may not be of equal authority. The power of initiating legislation usually belongs to both chambers, but may, as in the case of the British parliament, be restricted by confining the right of bringing forward financial measures to the lower house. The House of Representatives in the United States Congress initiates revenue bills, but the Senate may amend them as it sees fit. The general adoption of a second chamber in addition to the popular chamber is due to the belief that it is desirable to have a body, less directly controlled by popular opinion, which may exercise supervisory and delaying functions. Various devices have been adopted for securing an issue from a possible deadlock between the two houses of a legislature, from the device of joint sessions to the limitation to a given period of the delaying action of an upper house. The Senate of the United States has unusual powers with regard to the ratification of treaties, the ratification of appointments to office and trial for impeachment. In general, the legislatures of the different American States are similar to the national Congress. (*See* UNITED STATES: *Constitution.*) Great Britain is the only country which retains an hereditary upper house, the House of Lords, though even in this case its hereditary character is modified by the creation of life peerages. The hereditary element in the parliaments of central Europe was swept away by the World War. Even in elective upper houses the qualifications for members are usually more stringent than for members of the lower house, and the duration of their appointment is generally longer.

The legislature bears different names in different countries; parliament, congress, legislature, diet, etc. The commonest name for the upper house is senate; in most countries other than the English-speaking countries the lower house is a chamber of deputies. For details see the information given under the headings of the different countries; also CONSTITUTION AND CONSTITUTIONAL LAW; PARLIAMENT.

In most of the legislatures of the various States in the United States, the lower branch of the house is known as the "house of representatives," in a few it is styled the "assembly" and in three the "house of delegates." The upper house is officially termed the "senate" for all of the States. In about two-thirds of the States

the term of office for Senators is four years; in most of the others it is two years (*see* various States).

LEGITIMACY AND LEGITIMATION. Legitimacy is the status of children whose parents are lawfully married. Legitimation is the mode in which such status is acquired by those whose parents were not lawfully married at the time when the children were born. It may be effected either by some special act of the Sovereign, as for example by a private act of parliament, or by the subsequent marriage of the parents after the birth of the children. Legitimation *per subsequens matrimonium* was regularly recognized by the Roman law and, in this respect as in so many others, the canon law, subject to some exceptions and variations, followed the Roman civil law in principle. The rule that the subsequent marriage of the parents of illegitimate children gives such children the status of legitimacy was also adopted in most countries which had legal systems based on the civil law. On the continent, in Scotland and in some States of America it was recognized but it might be subject to the exception that if when a child was born the parents could not have married, *e.g.*, if one of them had a husband or wife then living, that child was not legitimated by the subsequent marriage. In some cases it was considered that if such impediment to marriage existed even when the child was conceived, it could not become legitimate.

In England, on the other hand, legitimation by subsequent marriage was not allowed by the common law. So far back as the parliament of Merton in 1236 a controversy arose on the subject between the church and the barons. The authorities of the church then declared unanimously that by their law the children of parents born out of wedlock had always been considered as legitimate when the parents married afterwards. The lay barons, on the other hand, declared that this was not the law of England and used the often quoted phrase "nolumus leges Angliae mutari." The controversy went on in England for nearly 700 years, until the passing of the Legitimacy Act of 1926, which came into operation on Jan. 1, 1927. By that act, "where the parents of an illegitimate person marry or have married before or after the commencement of this act the marriage shall, if the father of the illegitimate person was or is at the date of the marriage domiciled in England or Wales, render that person, if living, legitimate from the commencement of the act or from the date of the marriage, whichever last happens." This general enactment, however, is subject to the proviso that "nothing therein shall operate to legitimate a person whose father or mother was married to a third person when the illegitimate person was born."

As regards property, the legitimation does not, except as expressly provided by the act, give the legitimated persons any rights, but among the express provisions on the subject are contained statements that such persons shall be entitled to take any interest in the estate of an intestate dying after the date of legitimation, or under any disposition coming into operation after that date. On the other hand, nothing in the act is to affect the succession to any dignity or title of honour. Prior to this act, many of the British colonies or dominions, including New Zealand (1894), South Australia (1898), Queensland (1899), New South Wales (1902) and Victoria (1903), had recognized the principle by special legislation, but generally registration was necessary to make the legitimation effective.

Now that the general principle of legitimation *per subsequens matrimonium,* which had been maintained by the Church for centuries, has been almost universally adopted it is highly desirable that an attempt should be made to put an end to the conflict of laws on matters of detail which still exists between different States. These differences may cause much dispute and hardship, especially as they appear in comparing the laws of different parts of the British empire and also of different States in America.

As regards children born in wedlock, the presumption is that at whatever time after the marriage a child is born that child is to be regarded as lawfully begotten by the husband. "Pater est quem nuptiae demonstrant." This rule, however, may be rebutted by evidence proving that access had been impossible at any time when in the course of nature the child could have been begotten. If, however, intercourse could have taken place, the evidence of neither the husband nor wife is admissible to bastardize a child born in wedlock on the ground that intercourse had not in fact taken place. (*See* the decision of the House of Lords in the case of *Russell* v. *Russell,* 1924, A.C. 687, in which the rule was fully discussed.) (A. H.)

United States.—To the general rule that legitimacy is the status of children whose parents are *lawfully married,* there are several notable exceptions in the American law. The laws of 16 States legitimate the issue of void marriages. In the case of bigamous marriages, the children may, nevertheless, be legitimate if one or both of the parties to the bigamous union were without knowledge of its illegality. This is the law in Maine, Massachusetts, District of Columbia, Indiana, Kentucky, Wisconsin, Nebraska, Michigan and New York. However, in Michigan, Nebraska and New York the children are legitimate only in relation to that parent, in the bigamous union, who was legally capable of contracting marriage. Subsequent marriage of the parents of children born out of wedlock is generally recognized in the American law as legitimating such children. This legal rule assumes that both parties to the marriage acknowledge the offspring as their own. However, there are other methods by which the status of legitimacy may be attained. Alabama, Georgia, Mississippi, North Carolina and Tennessee authorize legitimation by judicial decree, while in Michigan it can be effected by a written instrument recorded like a deed and in Louisiana by a notarial act. In California, public acknowledgment of an illegitimate child as his own, by the father, and the receiving of it into his family, with the consent of his wife if he is married, establishes the child as legitimate. Similar provisions will be found in the laws of Arizona, Maine, Montana, Oklahoma, North and South Dakota, Nevada and Utah. A statute passed in North Dakota in 1917 declared every child to be the legitimate child of its natural parents with rights of support and education and of inheritance from the parents and their kindred. Another method of legitimating in some States is through the process of legal adoption. One or both parents may legally adopt illegitimate offspring and thus establish full legitimacy.

Several States give, without express legitimation, a right of inheritance to a child in case of acknowledgment by the father. Kansas so provides when the father's acknowledgment has been general and notorious, or else in writing. New Mexico has the same provision. Other States permit inheritance where the paternity of the father has been proved during his lifetime. While legitimacy and inheritance are separate and distinct from legal procedures aimed merely at establishing support and maintenance for children born out of wedlock, it is important to note that there is a growing body of American legislation which enlarges the father's duties and responsibilities in the care and upbringing of his illegitimate offspring. The law in Minnesota, for example, provides that upon a legal adjudication of paternity, the father is subject to all the obligations for the care, maintenance and education of the child and to all the penalties for failure to discharge those obligations which would be imposed upon him if the child was his legitimate offspring. The Minnesota statute further provides extensive administrative aids in the enforcement of this law through the State and county public welfare machinery. North Dakota, among other States, has a somewhat similar law. The tendency of modern legislation in this field has been to enlarge the rights of the child born out of wedlock as against the father, and to impose upon the State a definite obligation to assist in the enforcement of those rights, in addition to a general duty of public guardianship and protection for such children.

See Ernst Freund, "Illegitimate Laws of the United States." in *U.S. Children's Publication No. 42.* (W. Ho.)

LEGITIMISTS, the name of the party in France which after the revolution of 1830 continued to support the claims of the elder line of the house of Bourbon as the legitimate sovereigns "by divine right." The death of the comte de Chambord in 1883 dissolved the party, only an insignificant remnant, known as the Spanish Whites (*Blancs d'Espagne*), repudiating the act of renun-

ciation of Philip V. of Spain and upholding the rights of the Bourbons of the line of Anjou. The word *légitimiste* (from *légitime,* lawful) was not admitted by the French Academy until 1878; but meanwhile it had spread beyond France, and the English word legitimist is now applied to any supporter of monarchy by hereditary right as against a parliamentary or other title.

LEGNAGO, fortified town of Venetia, Italy, province of Verona, on the Adige, 29 mi. by rail E. of Mantua, 52 ft. above sea-level. Pop. (1936) 4,528 (town), 21,771 (commune). Legnago is one of the famous Quadrilateral fortresses. The present fortifications (now largely dismantled) were made in 1815, older defences having been destroyed by Napoleon in 1801. The territory is fertile, rice, cereals and sugar being grown. A branch line runs hence to Rovigo and another to Monselice.

LEGNANO, a town of Lombardy, Italy, province of Milan, 17 mi. N.W. of it by rail, 682 ft. above sea-level. Pop. (1936) 31,959. The church of S. Magno, built in the style of Bramante by G. Lampugnano (1504–1529), contains an altar-piece by Luini. There are also remains of a castle of the Visconti. Legnano is the seat of important cotton (especially cotton finishing) and silk industries, with machine-shops, boiler-works, and dyeing.

Close by, the Lombard League defeated Frederick Barbarossa in 1176. A monument to commemorate the battle was erected on the field in 1876; another by Butti erected in 1900 is in the Piazza Frederico Barbarossa. The battle is of significance in military history as foreshadowing the end of the great era of cavalry supremacy. Frederick, in the spring of 1176, sending for reinforcements from south Germany, planned a determined effort to crush the league of the Guelph cities. With a small body of knights he marched to Como to meet these reinforcements and then sought to regain his headquarters at Pavia by a circuit round the enemy stronghold of Milan. Meanwhile, however, the Milanese had rallied to them large contingents of their allies and, quitting Milan, placed themselves astride Frederick's route. He attacked at once, despite his inferiority of numbers, and his cavalry scattered the Lombard cavalry, then pressing on to attack the infantry mass which lay in rear. But their charge was brought to a standstill by the close-knit ranks of the Milanese pikemen. Their resistance allowed their own cavalry to rally, and these, reinforced by the arrival of a fresh body from Brescia, charged the flank of Frederick's cavalry. Frederick himself was unhorsed, and his troops thereupon broke and fled. The small body of infantry—furnished by the citizen militia of Como—were slaughtered or captured without difficulty. Frederick, however, managed to escape and reach Pavia. On the Lombard side, the battle had given an illustration of the possibilities of a staunch infantry body as a stable pivot to the mobile arm.

LEGOUIS, EMILE (1861–1937), French scholar, was born at Honfleur on Oct. 31, 1861. Educated at Honfleur and in Paris, after teaching for a year at the Collège d'Avranches, he was made *agrégé d'anglais* in 1885. He was next appointed lecturer at Lyons; and after passing his doctorate in 1896, he became professor at Lyons. In 1904 Legouis was appointed special lecturer in English at the Sorbonne. He is the author of many important critical works on English literature, notably, with L. Cazamian, of the excellent *Histoire de la littérature anglaise* (1924).

Among his publications are *Le Général Michel Beaupuy,* with G. Bussière (1891); *La jeunesse de Wordsworth; Étude sur "Le Prélude,"* crowned by the Académie française (1896); *Shakespeare* (1899); *Morceaux choisis de la littérature anglaise,* with M. Beljame (1905); *Chaucer* (1910), and *Edmund Spenser* (1923). He also collaborated in the translation of Chaucer's *Canterbury Tales,* crowned by the Académie française, 1908.

LEGOUVÉ, GABRIEL JEAN BAPTISTE ERNEST WILFRID (1807–1903), French dramatist, born in Paris on Feb. 5, 1807. Legouvé collaborated with A. E. Scribe in *Adrienne Lecouvreur* (1849), in which the title part was created by Rachel. Of the plays which he wrote alone the most famous is *Médée* (1855), which gave Ristori a great part, and led to Legouvé's election to the French Academy. As time passed on, however, he devoted more and more of his energy to lecturing and propaganda on woman's rights and the education of children, in both of which directions he was a pioneer in French society. His *La Femme en France au XIXme siècle* (1864), reissued, much enlarged, in 1878, and his other works, exercised great influence. He was for many years inspector-general of female education.

See his *Soixante ans de Souvenirs* (2 vols., 1886–87).

LEGROS, ALPHONSE (1837–1911), painter and etcher, was born at Dijon on May 8, 1837. In 1851 Legros left for Paris and, passing through Lyons, worked for six months as wall-painter under the decorator Beuchot, who was painting the chapel of Cardinal Bonald in the cathedral. In Paris he studied with Cambon, with Lecoq de Boisbaudran, and at the evening classes of the École des Beaux Arts. He sent two portraits to the Salon of 1857; one was rejected and formed part of the exhibition of protest organized by Bonvin in his studio; the other, which was accepted, was a profile portrait of his father, now in the museum at Tours. In 1859 Legros's "Angelus" was exhibited, the first of those quiet church interiors, with kneeling figures of women, by which he is best known as a painter. "Ex Voto," a work of great power and insight, painted in 1861, is now in the museum at Dijon.

Legros came to England in 1863. He became teacher of etching at the South Kensington school of art, and in 1876 Slade professor at University college, London. He was naturalized as an Englishman in 1881, and remained at University college 17 years. His influence there was exerted to encourage a certain distinction, severity and truth of character in the work of his pupils, with a simple technique and a respect for the traditions of the old masters, until then somewhat foreign to English art. Experiments in all varieties of art work were practised; whenever the professor saw a fine example in the museum, or when a process interested him in a workshop, he never rested until he had mastered the technique and his students were trying their 'prentice hands at it. Legros considered the traditional journey to Italy a very important part of artistic training, and he devoted a part of his salary to augment the income available for a traveling studentship. By his influence on such students of the Slade school as C. W. Furse, William Strang, William Rothenstein and Harrington Mann, English art was again brought into closer touch with the main European tradition, and he contributed not a little to the revival of draughtsmanship in England at the close of the 19th century. His later works, after he resigned his professorship in 1892, were more in the free and ardent manner of his early days—imaginative landscapes, castles in Spain, and farms in Burgundy, etchings like the series of "The Triumph of Death," and the sculptured fountains for the gardens of the duke of Portland at Welbeck. He died at Watford on Dec. 8, 1911.

Pictures and drawings by Legros, besides those already mentioned, may be seen in the following museums: "Amende Honorable," "Dead Christ," bronzes, medals and 22 drawings in the Luxembourg, Paris; "Landscape," "Study of a Head," and portraits of Browning, Burne-Jones, Cassel, Huxley and Marshall, also "The Tinker" and six other works from the Ionides collection, at the Victoria and Albert museum, Kensington; "Femmes en prière," National Gallery of British Art; 35 drawings and etchings, the Print Room, British Museum; "Jacob's Dream" and twelve drawings of the antique, Cambridge; "Saint Jerome," two studies of heads and some drawings, Manchester; "The Pilgrimage" and "Study made before the Class," Walker art gallery, Liverpool; "Study of Heads," Peel Park museum, Salford. (C. Ho.; X.)

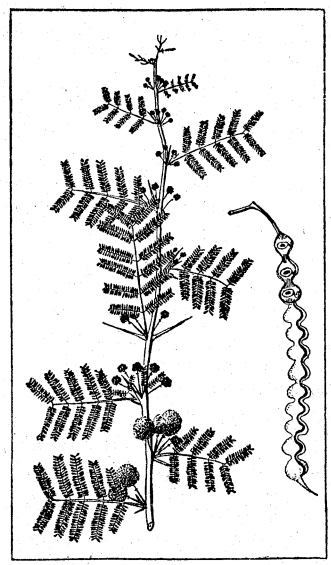
LEGUÍA, AUGUSTO B. (1863–1932), Peruvian man of affairs, statesman and executive, was born in the department of Lambayeque in 1863. He received his early education in Chile, and served with the Peruvian forces during the War of the Pacific (1879–81). At the end **of the** war he entered upon a business career, became head of the Latin-American department of the New York Life Insurance Company, and later was intimately connected with other business enterprises and industries. Turning his attention to politics in 1903 he was appointed secretary of the treasury, and in 1908 was elected president of the republic. In May 1909, a revolution in the capital very nearly cost him his life, and foreign complications throughout his term made it a stormy one. After his retirement he was the object of political

persecution and in 1913 was driven into exile. He returned to Peru in 1919 and was again elected president, but before the end of his predecessor's term, being warned that he would be prevented from taking office, he headed a revolt and seized the Government by a *coup d'état.* The following year he secured the passage of a new Constitution embodying several of the principles of the Mexican Constitution of 1917. In 1923 and again in 1927 the Constitution was amended to permit his re-elections. Under Leguía's administration Peru has experienced an era of prosperity. His Government has procured the investment of large sums of foreign capital in the country, and has made notable progress in public works and education, in stimulating industries and exploiting natural resources, in the construction of roads and railways, in the organization of a navy and naval defence (under United States guidance), and especially in reclaiming large tracts of desert land by means of irrigation.

See Graham H. Stuart, *The Governmental System of Peru* (Washington, 1925). (W. B. P.)

LEGUME, a dry pod formed from one carpel, splitting by both the front and the back suture into two similar pieces or valves. It characterizes such leguminous plants as the bean, etc. In an extended sense, but usually in the plural, as legumes, the term is applied to any vegetable used for food. (*See* FRUIT; LEGUMINOSAE; PULSE.)

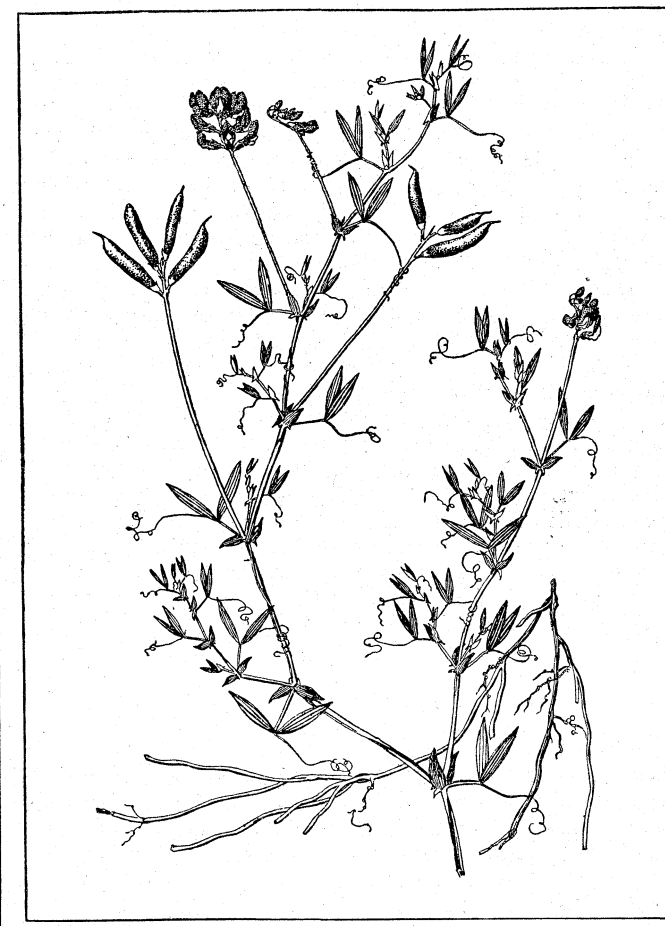
LEGUMINOSAE, the second largest family of seed plants, containing about 600 genera with 12,000 species. It belongs to the series Rosales of the Dicotyledons, and contains three well-marked subfamilies, Papilionatae, Mimosoideae and Caesalpinioideae. The plants are trees, shrubs or herbs of very various habit. The British representatives, all of which belong to the suborder Papilionatae, include a few shrubs, such as *Ulex* (gorse, furze), *Cytisus* (broom) and *Genista,* but the majority, and this applies to the suborder as a whole, are herbs, such as the clovers, *Medicago, Melilotus,* etc., sometimes climbing by aid of tendrils which are modified leaf-structures, as in *Lathyrus* and the vetches (*Vicia*). Scarlet runner (*Phaseolus multiflorus*) has a herbaceous twining stem. Woody climbers (lianes) are represented by species of *Bauhinia* (Caesalpinioideae), which with their curiously flattened, twisted stems are characteristic features of tropical forests, and *Entada scandens* (Mimosoideae) also common in the tropics. These two suborders, which are confined to the warmer parts of the earth, consist chiefly of trees and shrubs such as *Acacia* and *Mimosa* belonging to the Mimosoideae, and the Judas tree of southern Europe (*Cercis*) and tamarind belonging to the Caesalpinioideae. The so-called acacia of European gardens (*Robinia Pseudacacia*) and laburnum are examples of the tree habit in the Papilionatae. Water plants are rare, but are represented by *Aeschynomene* and *Neptunia,* tropical genera. The roots of many species bear nodular swellings (tubercles), the cells of which contain bacterium-like bodies which have the power of fixing the nitrogen of the atmosphere. Hence the value of these plants as a crop on poor soil or as a member of a series of rotation of crops, since they enrich the soil by the nitrogen liberated by the decay of their roots.



AFTER DR. FLEMING, BY COURTESY OF THE TRUSTEES OF THE BRITISH MUSEUM (NATURAL HISTORY)

FIG. 1.—BABUL (ACACIA ARABICA)

Leaf Forms.—The leaves are alternate in arrangement and generally compound and stipulate. A common form is shown by the clovers, which have three leaflets springing from a common point (digitately trifoliate); pinnate leaves are also frequent as in laburnum and *Robinia.* In Mimosoideae the leaves are generally bipinnate. Rarely are the leaves simple as in *Bauhinia.* Various departures from the usual leaf-type occur in association with adaptations to different functions or environments. In leaf-climbers, such as pea or vetch, the end of the rachis and one or more pairs of leaflets are changed into tendrils. In gorse the leaf is reduced to a slender, spine-like structure, though the leaves of the seedling have one to three leaflets. In many Australian acacias the leaf surface in the adult plant is much reduced, the petiole be-



FROM CURTIS, "FLORA LONDINIENSIS"

FIG. 2.—MEADOW VETCHLING (LATHYRUS PRATENSIS)

ing at the same time flattened and enlarged, and frequently the leaf is reduced to a petiole flattened in the vertical plane; by this means a minimum surface is exposed to the intense sunlight. In the garden pea the stipules are large and foliaceous, replacing the leaflets, which are tendrils; in *Robinia* the stipules are spiny and persist after leaf-fall. In some acacias (*q.v.*) the thorns are hollow, and inhabited by ants as in *A. sphaerocephala,* a Central American plant, and various others. In some species of *Astragalus, Onobrychis* and others, the leaf-stalk persists after the fall of the leaf and becomes hard and spiny.

Leaf-movements occur in many of the genera. Such are the sleep-movement in the clovers, runner bean (*Phaseolus*), *Robinia* and *Acacia,* where the leaflets assume a vertical position at night-fall. Spontaneous movements are exemplified in the telegraph-plant (*Desmodium motorium*), native of tropical Asia, where the small lateral leaflets move up and down every few minutes. The sensitive plant (*Mimosa pudica*) is an example of movement in response to contact, the leaves immediately assuming a sleep-position if touched. The seat of the movement is the swollen base of the leaf-stalk, the so-called pulvinus.

Flowers and Fruit.—The flowers occur in simple clusters, such as the simple raceme (*Laburnum, Robinia*), which is condensed to a head in *Trifolium;* in *Acacia* and *Mimosa* the flowers are densely crowded. The flower is characterized by a hypogynous or slightly perigynous arrangement of parts, the anterior position of the odd sepal, the free petals, and the single median carpel with a terminal style, simple stigma and two alternating rows of ovules

on the ventral suture of the ovary which faces the back of the flower.

The arrangement of the petals and the number and cohesion of the stamens vary in the three suborders. In Mimosoideae, the smallest of the three, the flower is regular, and the sepals and petals have a valvate aestivation, and are generally pentamerous, but 3-6-merous flowers also occur. The sepals are more or less united into a cup, and the petals sometimes cohere at the base. The stamens vary widely in number and cohesion; in *Acacia* they are indefinite and free, in the tribe *Ingeae,* indefinite and monadelphous, in other tribes as many or twice as many as the petals. Frequently, as in *Mimosa,* the long yellow stamens are the most conspicuous feature of the flower. In Caesalpinioideae the flowers are zygomorphic in a median plane and generally pentamerous. The sepals are free, or the two upper ones united as in tamarind, and imbricate in aestivation, rarely as in the Judas tree, valvate. The corolla shows great variety in form; it is imbricate in aestivation, the posterior petal being innermost.

The stamens, generally ten in number, are free, as in *Cercis,* or more or less united, as in *Amherstia,* where the posterior one is free and the rest are united. In tamarind only three stamens are fertile. The largest suborder, Papilionatae, has a flower zygomorphic in the median plane. The five sepals are generally united, and have an ascending imbricate arrangement; the calyx is often two-lipped. The corolla has five unequal petals with a descending imbricate arrangement; the upper and largest, the standard (*vexillum*), stands erect, the lateral pair, the wings or *alae,* are long-clawed, while the anterior pair cohere to form the keel or *carina,* in which are enclosed the stamens and pistil. The ten stamens are monadelphous, as in gorse or broom, or diadelphous, as in sweet pea (the posterior one being free), or almost or quite free; these differences are associated with differences in the methods of pollination. The ten stamens here, as in the last suborder, though arranged in a single whorl, arise in two series, the five opposite the sepals arising first. The carpel is sometimes stalked and often surrounded at the base by a honey-secreting disk; the style is terminal and in the zygomorphic flowers is often curved and somewhat flattened with a definite back and front. Sometimes as in species of *Trifolium* and *Medicago* the ovules are reduced to one. The pod or legume splits along both sutures into a pair of membranous, leathery or sometimes fleshy valves, bearing the seeds on the ventral suture. Dehiscence is often explosive, the valves separating elastically and twisting spirally, thus shooting out the seeds, as in gorse, broom and others. In *Desmodium, Entada* and others the pod is constricted between each seed, and breaks up into indehiscent one-seeded parts; it is then called a lomentum; in *Astragalus* it is divided by a longitudinal septum.

Pods show great variety in form and size; in the clovers they are very small, while in the common tropical climber *Entada scandens* they are more than a yard long and several inches wide. They are somewhat flattened, but sometimes round and rod-like, as in species of *Cassia,* or spirally coiled as in *Medicago.* In *Colutea,* the bladder-senna of gardens, the pod forms an inflated bladder which bursts under pressure; it often becomes detached and is blown some distance before bursting. In some cases the hard seed-coat itself is bright-coloured as in the black and scarlet seeds of *Abrus precatorius,* the so-called weather-plant, the scarlet seeds of *Adenanthera* and the red or red and black seeds of *Ormosia.* In the ground-nut (*Arachis hypogaea*), *Trifolium subterraneum* and others, the flower-stalks grow downwards after fertilization of the ovules and bury the fruit in the earth. In the suborders Mimosoideae and Papilionatae the embryo fills the seed or a small quantity of endosperm occurs, chiefly round the radicle. In Caesalpinioideae endosperm is absent, or present forming a thin layer round the embryo as in the tribe *Bauhinieae,* or copious and cartilaginous as in the *Cassieae.* The embryo has generally flat leaf-like or fleshy cotyledons with a short radicle.

Insects play an important part in the pollination of the flowers. In the two smaller suborders the stamens and stigma are freely exposed and the conspicuous coloured stamens serve as well as the petals to attract insects; in *Mimosa* and *Acacia* the flowers are crowded in conspicuous heads or spikes. The relation of insects to the flower has been carefully studied in the Papilionatae, chiefly in European species. Where honey is present it is secreted on the inside of the base of the stamens and accumulated in the base of the tube formed by the united filaments round the ovary. It is accessible only to insects with long proboscises, such as bees. In these cases the posterior stamen is free, allowing access to the honey. The flowers stand more or less horizontally; the large, erect, white or coloured standard renders them conspicuous, the wings form a platform on which the insect rests and the keel encloses the stamens and pistil, protecting them from rain and the attacks of unbidden pollen-eating insects. In his book on the fertilization of flowers, Hermann Müller distinguishes four types of papilionaceous flowers according to the way in which the pollen is applied to the bee (*see* POLLINATION).

Distribution.—The family is cosmopolitan, and often forms a characteristic feature of the vegetation. Mimosoideae and Caesalpinioideae are richly developed in the tropical rain forests, where Papilionoideae are less conspicuous and mostly herbaceous; in sub-tropical forests arborescent forms of all three suborders occur. In the temperate regions, tree-forms are rare—thus Mimosoideae are unrepresented in Europe; Caesalpinioideae are represented by species of *Cercis, Gymnocladus* and *Gleditschia;* Papilionoideae by *Robinia;* but herbaceous Papilionatae abound and penetrate to the limit of growth of seed-plants in arctic and high alpine regions. Shrubs and under-shrubs, such as *Ulex, Genista, Cytisus,* are a characteristic feature in Europe and the Mediterranean area. Acacias are an important component of the evergreen bush-vegetation of Australia, together with genera of the tribe *Podalyrieae* of Papilionatae (*Chorizema, Oxylobium,* etc.). *Astragalus, Oxytropis, Hedysarum, Onobrychis* and others are characteristic of the steppe-formations of eastern Europe and western Asia.

The suborder Papilionatae of the family is well represented in Great Britain. Thus *Genista tinctoria* is dyers' greenweed, yielding a yellow dye; *G. anglica* is needle furze; other shrubs are *Ulex* (*U. europaeus,* gorse, furze or whin, *U. nanus,* a dwarf species) and *Cytisus scoparius,* broom. Herbaceous plants are *Ononis spinosa* (rest-harrow), *Medicago* (medick), *Melilotus* (melilot), *Trifolium* (the clovers), *Anthyllis Vulneraria* (kidney-vetch), *Lotus corniculatus* (bird's-foot trefoil), *Astragalus* (milk-vetch), *Vicia* (vetch, tare) and *Lathyrus.* The most representative genera in the United States are as follows: *Baptisia* (false indigo), *Crotalaria* (rattle-box), *Lupinus* (lupine), *Trifolium* (clover), *Petalostemon* (prairie clover), *Robinia* (locust), *Astragalus* (milk vetch), *Desmodium* (tick trefoil), *Lespedeza* (bush clover), *Vicia* (vetch), *Lathyrus* (everlasting pea), *Gymnocladus* (Kentucky coffeetree), *Gleditsia* (honey locust), *Cassia* (senna), *Cercis* (redbud), *Mimosa* and *Acacia.* The conspicuous genus in the western United States is *Astragalus,* represented by about 275 species.

Economic Importance.—The family is of great economic value, containing many plants that are widely cultivated. The seeds, which are rich in starch and proteins, form valuable foods, as in pea, the various beans, vetch, lentil, ground-nut (*Arachis*) and others; seeds of *Arachis* and others yield oils; those of *Physostigma venenosum,* the Calabar ordeal bean, contain a strong poison. Many are useful fodder-plants, as the clovers (*q.v.*) (*Trifolium*), *Medicago* (e.g., *M. sativa,* lucerne, or alfalfa [*q.v.*]); *Melilotus, Vicia, Onobrychis* (*O. sativa* is sainfoin, *q.v.*); and species of *Lespedeza,* species of *Trifolium,* lupine and others are used as green manure. Many of the tropical trees afford useful timber; *Crotalaria, Sesbania, Aeschynomene* and others yield fibre; species of *Acacia* and *Astragalus* yield gum; *Copaifera, Hymenaea* and others balsams and resins; dyes are obtained from *Genista* (yellow), *Indigofera* (blue) and others (*Haematoxylon campechianum* is logwood); of medicinal value are species of *Cassia* (senna leaves) and *Astragalus; Tamarindus indica* is tamarind, *Glycyrrhiza glabra* yields liquorice root. Well-known ornamental trees and shrubs are *Cercis* (*C. siliquastrum* is the Judas tree), *Gleditschia, Genista, Cytisus* (broom), *Colutea* (*C. arborescens* is bladder-senna), *Robinia* and *Acacia; Wistaria sinensis,* a native of China, is a well-known climbing shrub; *Phaseolus multiflorus* is the scarlet runner; *Lathyrus* (sweet and everlasting peas), *Lupi-*

nus, Galega (goat's-rue) and others are herbaceous garden plants; *Phaseolus lunatus* is the lima bean, and *P. vulgaris* the common garden bean. *Ceratonia siliqua* is the carob-tree of the Mediterranean, the pods of which (algarroba or St. John's bread) contain a sweet juicy pulp and are largely used for feeding livestock.

LEH, the capital of Ladakh and Baltistan, India, situated 4 mi. from the right bank of the upper Indus 11,500 ft. above the sea, 243 mi. from Srinagar and 482 mi. from Yarkand. It is the great emporium of the trade which passes between India, Chinese Turkestan and Tibet. Here meet the routes leading from the central Asian khanates, Kashgar, Yarkand, Khotan and Lhasa. The two chief roads from Leh to India pass via Srinagar and through the Kulu valley respectively. Under a commercial treaty with the maharaja of Kashmir, a British officer is deputed to Leh to regulate and control the traders and the traffic, conjointly with the governor appointed by the Kashmir state. Leh has formed the starting-point of many an adventurous journey into Tibet, the best-known route being that called the Janglam, the great trade route to Lhasa and China, passing by the Manasarowar lakes and the Mariam La pass into the valley of the Tsanpo. Pop. (1931) 3,093. A Moravian mission has long been established here, with an efficient little hospital. There is also a meteorological observatory, the most elevated in Asia. (*See* LADAKH AND BALTISTAN.)

Considerable alarm was felt in August 1928 following an accidental block in the Shyok river in 1926, about 80 m. N. of Leh and 35 m. S. of the Karakorum pass. A glacier in 1926 pushed its snout across the gorge and thus made an ice dam said to be 480 ft. in height. The river-lake behind the dam was, by July 1928, 9 m. long, 25 ft. deep and 1,000 yd. wide, on the average. In early August (1928), the level of the lake rose steadily and a crack developed in the ice-dam. Apparently for the rest of the 1928 season the lake leaked slowly through the crack, so postponing the danger.

LEHAR, FRANZ (1870–), Hungarian operetta composer, was born at Komárom, Hungary, April 30, 1870. After studying at Vienna and Prague, he became a conductor. His opera *Kukuska,* afterwards called *Tatiana,* was performed in 1896, and since then he has written about 30 operettas. The popularity of his music is due to the charm of its melodies; and especially to the orchestration of his waltz themes, which, with their sensuous grace, are typical of 20th century light opera. His most famous musical comedies are *The Merry Widow* (1905) and *The Count of Luxemburg* (1909). He also wrote *The Man with the Three Wives; Gipsy Love; Eva;* and *Paganini* (1925).

LEHIGHTON, a borough of Carbon county, Pennsylvania, U.S.A., on the west bank of the Lehigh river, 26m. N.W. of Allentown. It is served by the Central of New Jersey and the Lehigh Valley railways. The population was 6,102 in 1920 (96% native white) and was 6,615 in 1940 by the federal census. The mining of anthracite is the principal occupation. There are also railroad shops, brick yards, machine shops, a meat-packing house and sundry other manufacturing industries. The borough was settled about 1746 and incorporated in 1866.

LEHIGH VALLEY RAILROAD, THE, constructed in 1855 between Easton and Mauch Chunk, Pa., by Asa Packer, a transportation pioneer, now extends from New York city to Buffalo and Niagara Falls, N.Y. The total mileage, including branch lines, some of which date back to 1836, is 1,267 miles. The main line is double tracked and the standard rail used weighs 136 lb. to the yard, the heaviest in use. In New York and Newark, its passenger trains use the Pennsylvania station, while in Buffalo it has its own terminal. Through sleeping cars are operated by the Lehigh Valley between New York and Philadelphia, and Toronto and Chicago.

The Lehigh Valley railroad plays an important part in the Eastern business situation. In New York it operates pier and yard stations. Through subsidiary it owns the Starrett-Lehigh Bldg. and the Bronx-Lehigh Bldg.—important industrial structures in New York. It has three rail-head terminals situated on New York bay at Jersey City, National Docks and Claremont. The latter is a modern rail and water development with facilities for loading ocean going vessels direct from cars. Terminals are also maintained at Bayonne, Newark, Perth Amboy, South Plainfield, Easton, Bethlehem, Allentown, Wilkes-Barre, Hazleton, Geneva, Ithaca, Rochester, etc. Lehigh Valley investment in transportation property on Dec. 31, 1938, was $207,876,546. (D. J. K.)

LEHMANN, PETER MARTIN ORLA (1810–1870), Danish statesman, was born at Copenhagen on May 19, 1810. Although of German extraction his sympathies were with the Danish national party and he contributed to the liberal journal the *Kjöbenhavnsposten* while a student of law at the university of Copenhagen. From 1839 to 1842 he edited, with Christian N. David, the *Fädrelandet.* In 1848 he became leader of the "Eiderdänen," that is, of the party which regarded the Eider as the boundary of Denmark, and the duchy of Schleswig as an integral part of the kingdom, and a member of the cabinet of Count A. W. Moltke. He was employed on diplomatic missions to London and Berlin in connection with the Schleswig-Holstein question, and was for some months in 1849 a prisoner of the Schleswig-Holsteiners at Gottorp. A member of the Folkething from 1851 to 1853, of the Landsthing from 1854 to 1870, and from 1856 to 1866 of the Reichsrat, he became minister of the interior in 1861 in the cabinet of K. C. Hall, retiring with him in 1863. He died at Copenhagen on Sept. 13, 1870.

His book *On the Causes of the Misfortunes of Denmark* (1864) went through many editions, and his posthumous works were published in 1872–1874.

See Reinhardt, *Orla Lehmann og hans samtid* (1871); J. Clausen, *Af O. Lehmanns Papirer* (1903).

LEHMBRUCK, WILHELM (1881–1919), German sculptor, was born Jan. 4, 1881, at Meiderich near Duisburg, the son of a miner. He studied at the Düsseldorf academy, lived from 1910 to 1914 in Paris, and afterwards resided in Zürich and Berlin. Lehmbruck was a sculptor of great sensibility, and his art, especially in the last phase, is moving in its spirituality and tenderness. His best known works are: "Weibliche Figur," in Duisburg; "Weiblicher Torso," at The Hague; "Frau Lehmbruck," at Essen; "Knieende" at Mannheim; "Grosse Sinnende"; "Grosse Rückblickende"; "Sterbender Krieger"; "Sitzender Jüngling"; "Emporsteigender Jüngling," and a portrait of Fritz von Unruh in Frankfurt. He also produced numerous etchings of high merit. He died by his own hand in Berlin on March 25, 1919.

See Paul Westheim, *W. Lehmbruck* (1919).

LEHNIN, a village in the Prussian province of Brandenburg, Germany, between two lakes, which are connected by the navigable Emster with the Havel, 12 mi. S.W. from Potsdam. Pop. (1933) 2,794. It contains the ruins of a Cistercian monastery called Himmelpfort am See, founded in 1180 and dissolved in 1542; and a parish church, formerly the monasterial chapel, restored in 1872–77. Brick-making and saw-milling are the chief industries.

The Lehnin Prophecy (*Lehninsche Weissagung, Vaticinium Lehninense*), a poem in 100 Leonine verses, made its appearance about 1690 and caused much controversy. It came to be regarded as a compilation and the date of its authorship placed about the year 1684; it had been thought to date from about 1350.

LEHRS, KARL (1802–1878), German classical scholar, was born at Königsberg on June 2, 1802. He was of Jewish extraction, but in 1822 he embraced Christianity. In 1845 he was appointed professor of ancient Greek philology in Königsberg university, and he died on June 9, 1878. His most important works are: *De Aristarchi Studiis Homericis* (1833, 2nd ed. by A. Ludwich, 1882), which laid a new foundation for Homeric exegesis (on the Aristarchean lines of explaining Homer from the text itself) and textual criticism; *Quaestiones Epicae* (1837); *De Asclepiade Myrleano* (1845); *Herodiani Scripta Tria emendatiora* (1848); *Populäre Aufsätze aus dem Altertum* (1856, 2nd much enlarged ed., 1875), his best-known work; *Horatius Flaccus* (1869), in which, on aesthetic grounds, he rejected many of the odes as spurious; *Die Pindarscholien* (1873). Lehrs was a man of very decided opinions, "one of the most masculine of German scholars"; he believed in a single authorship of the *Iliad,* and comparative mythology and the symbolical interpretation of myths he regarded as a species of sacrilege.

A. Ludwich edited Lehrs' correspondence (1894) and his *Kleine Schriften* (1902).

LEIBL, WILHELM (1844–1900), German subject painter, was born in Cologne, where his father was Musikdirektor of the cathedral, on Oct. 23, 1844. He studied at the Munich Academy, working chiefly under von Ramberg, and in 1869 exhibited his first painting at the Munich exhibition. In the following year he gained the Paris gold medal with his "Portrait of Frau Gedon," painted in the manner of Rembrandt. Coming under the influence of Courbet, he then went to work in Paris, but the outbreak of the Franco-German war sent him home after nine months. From 1870 to 1873 he lived in Munich and afterwards worked at small country places in Bavaria, settling eventually at Aibling, where he led the life of a peasant and painted the scenes around him. As he grew older he ceased to imitate the Dutch masters and followed his own strong instinct for colour, reproducing what he saw with a bold, sure touch. His superb technique enabled him to paint liquidly and broadly, and yet to do detail work of the utmost delicacy. Leibl has been called the first modern German realist. He died at Würzburg on Dec. 4, 1900.

"The Village Politicians" (1879), "In Church," a picture of three peasant women (1883), and "In a Provincial Town" (1894) are typical subject pictures. The portraits include "The artist Sättler with his dog" (1870), "Frau Gentz," and "Fräulein Kirchhoffer." He is well represented at Munich and in the Wallraf-Richartz Museum at Cologne.

A monograph on Leibl is included in Knackfuss's *Künstlerbiographien* (Leipzig, 1901).

LEIBNITZ or **LEIBNIZ, GOTTFRIED WILHELM** (1646–1716), philosopher, mathematician and man of affairs, was born on July 1, 1646 at Leipzig, where his father was professor of moral philosophy. Though the name Leibniz, Leibnitz or Lubeniecz was originally Slavonic, his ancestors were German, and for three generations had been in the employment of the Saxon Government. Young Leibnitz was sent to the Nicolai school at Leipzig, but, from 1652 when his father died, seems to have been for the most part his own teacher. From his father he had acquired a love of historical study. The German books at his command were soon read through, and with the help of two Latin books—the *Thesaurus Chronologicus* of Calvisius and an illustrated edition of Livy—he learned Latin at the age of eight. His father's library was now thrown open to him, to his great joy, with the permission, "Tolle, lege." Before he was 12 he could read Latin easily and had begun Greek; he had also remarkable facility in writing Latin verse. He next turned to the study of logic, attempting already to reform its doctrines, and zealously reading the scholastics and some of the Protestant theologians.

At the age of 15, he entered the University of Leipzig as a law student. His first two years were devoted to philosophy under Jakob Thomasius, a Neo-Aristotelian, who is looked upon as having founded the scientific study of the history of philosophy in Germany. It was at this time probably that he first made acquaintance with the modern thinkers who had already revolutionized science and philosophy, Francis Bacon, Cardan and Campanella, Kepler, Galileo and Descartes; and he began to consider the difference between the old and new ways of regarding nature. He resolved to study mathematics. It was not, however, till the summer of 1663, which he spent at Jena under E. Weigel, that he obtained the instruction of a mathematician of repute; nor was the deeper study of mathematics entered upon till his visit to Paris and acquaintance with Huygens many years later. The next three years he devoted to legal studies, and in 1666 applied for the degree of doctor of law, with a view to obtaining the post of assessor. Being refused on the ground of his youth he left his native town for ever. The doctor's degree refused him there was at once (Nov. 5, 1666) conferred on him at Altdorf—the university town of the free city of Nuremberg—where his brilliant dissertation procured him the immediate offer of a professor's chair. This, however, he declined, having, as he said, "very different things in view."

Leibnitz, not yet 21 years of age, was already the author of several remarkable essays. In his bachelor's dissertation *De principio individui* (1663), he defended the nominalistic doctrine that individuality is constituted by the whole entity or essence of a thing; his arithmetical tract *De complexionibus,* published in an extended form under the title *De arte combinatoria* (1666), is an essay towards his life-long project of a reformed symbolism and method of thought; and besides these there are juridical essays, including the *Nova methodus docendi discendique juris,* written in the intervals of his journey from Leipzig to Altdorf. This last essay is remarkable, not only for the reconstruction it attempted of the *Corpus Juris,* but as containing the first clear recognition of the importance of the historical method in law. Nuremberg was a centre of the Rosicrucians, and Leibnitz, busying himself with writings of the alchemists, soon gained such a knowledge of their tenets that he was supposed to be one of the secret brotherhood, and was even elected their secretary. A more important result of his visit to Nuremberg was his acquaintance with Johann Christian von Boyneburg (1622–72), formerly first minister to the elector of Mainz, and one of the most distinguished German statesmen of the day. By his advice Leibnitz printed his *Nova methodus* in 1667, dedicated it to the elector, and, going to Mainz, presented it to him in person. It was thus that Leibnitz entered the service of the elector of Mainz, at first as an assistant in the revision of the statute-book, afterwards on more important work.

Political Writings.—The policy of the elector, which the pen of Leibnitz was now called upon to promote, was to maintain the security of the German empire, threatened on the west by the aggressive power of France, on the east by Turkey and Russia. Thus when in 1669 the crown of Poland became vacant, it fell to Leibnitz to support the claims of the German candidate, which he did in his first political writing, *Specimen demonstrationum politicarum pro rege Polonorum eligendo,* attempting, under the guise of a Catholic Polish nobleman, to show by mathematical demonstration that it was necessary in the interest of Poland that it should have the count palatine of Neuburg as its king. But neither the diplomatic skill of Boyneburg, who had been sent as plenipotentiary to the election at Warsaw, nor the arguments of Leibnitz were successful and a Polish prince was elected to fill the vacant throne.

A greater danger threatened Germany in the aggressions of Louis XIV. (*see* FRANCE: *History*). Though Holland was in most immediate danger, the seizure of Lorraine in 1670 showed that Germany too was threatened. It was in this year that Leibnitz wrote his *Thoughts on Public Safety,* in which he urged the formation of a new "Rheinbund" for the protection of Germany, and contended that the States of Europe should employ their power, not against one another, but in the conquest of the non-Christian world, in which Egypt, "one of the best situated lands in the world," would fall to France. The plan thus proposed of averting the threatened attack on Germany by a French expedition to Egypt was discussed with Boyneburg, and obtained the approval of the elector. French relations with Turkey were at the time so strained as to make a breach imminent, and at the close of 1671, about the time when the war with Holland broke out, Louis himself was approached by a letter from Boyneburg and a short memorial from the pen of Leibnitz, who attempted to show that Holland itself, as a mercantile power trading with the East, might be best attacked through Egypt, while nothing would be easier for France or would more largely increase her power than the conquest of Egypt. On Feb. 12, 1672, a request came from the French secretary of State, Simon Arnauld de Pomponne (1618–99), that Leibnitz should go to Paris. Louis seems still to have kept the matter in view, but never granted Leibnitz the personal interview he desired, while Pomponne wrote, "I have nothing against the plan of a holy war, but such plans, you know, since the days of St. Louis, have ceased to be the fashion." Not yet discouraged, Leibnitz wrote a full account of his project for the king, and a summary of the same (*Consilium Aegyptiacum*) evidently intended for Boyneburg. But Boyneburg died in Dec. 1672, before the latter could be sent to him. Nor did the former ever reach its destination. The French quarrel with the Porte was made up, and the plan of a French expedition to Egypt disappeared from practical politics till the time of Napoleon. The history of this scheme, and the reason of Leibnitz's journey to Paris,

long remained hidden in the archives of the Hanoverian library. It was on his taking possession of Hanover in 1803 that Napoleon learned, through the *Consilium Aegyptiacum,* that the idea of a French conquest of Egypt had been first put forward by a German philosopher. In the same year there was published in London an account of the *Justa dissertatio* (*A Summary Account of Leibnitz's Memoir addressed to Lewis the Fourteenth,* ed. Granville Penn, 1803) of which the British Government had procured a copy in 1799. But it was only with the appearance of the edition of Leibnitz's works begun by Onno Klopp in 1864 that the full history of the scheme was made known.

Leibnitz had other than political ends in view in his visit to France. It was as the centre of literature and science that Paris chiefly attracted him. Political duties never made him lose sight of his philosophical and scientific interests. At Mainz he was still busied with the question of the relation between the old and new methods in philosophy. In a letter to Jakob Thomasius (1669) he contends that the mechanical explanation of nature by magnitude, figure and motion alone is not inconsistent with the doctrines of Aristotle's *Physics,* in which he finds more truth than in the *Meditations* of Descartes. Yet these qualities of bodies, he argues in 1668 (in an essay published without his knowledge under the title *Confessio naturae contra atheistas*), require an incorporeal principle, or God, for their ultimate explanation. He also wrote at this time a defence of the doctrine of the Trinity against Wissowatius (1669), and an essay on philosophic style, introductory to an edition of the *Anti-barbarus* of Nizolius (1670). Clearness and distinctness alone, he says, are what makes a philosophic style, and no language is better suited for this popular exposition than the German. In 1671 he issued a *Hypothesis physica nova,* in which, agreeing with Descartes that corporeal phenomena should be explained from motion, he carried out the mechanical explanation of nature by contending that the original of this motion is a fine aether, similar to light, or rather constituting it, which, penetrating all bodies in the direction of the earth's axis, produces the phenomena of gravity, elasticity, etc. The first part of the essay, on concrete motion, was dedicated to the Royal Society of London, the second, on abstract motion, to the French academy.

Mathematical Writings.—At Paris Leibnitz met with Arnauld, Malebranche and Christian Huygens. This was preeminently the period of his mathematical and physical activity. Before leaving Mainz he was able to announce (in a letter to the duke of Brunswick-Lüneburg, 1671) an imposing list of discoveries, and plans for discoveries, arrived at by means of his new logical art, in natural philosophy, mathematics, mechanics, optics, hydrostatics, pneumatics and nautical science, not to speak of new ideas in law, theology and politics. Chief among these discoveries was that of a calculating machine for performing more complicated operations than that of Pascal—multiplying, dividing and extracting roots, as well as adding and subtracting. This machine was exhibited to the Academy of Paris and to the Royal Society of London, and Leibnitz was elected a fellow of the latter society in April 1673. He was made a foreign member of the French academy in 1700. In Jan. 1673 he had gone to London as an attaché on a political mission from the elector of Mainz, returning in March to Paris, and while in London had become personally acquainted with Oldenburg, the secretary of the Royal Society, with whom he had already corresponded, with Boyle the chemist and Pell the mathematician. It is from this period that we must date the impulse that directed him anew to mathematics. By Pell he had been referred to Mercator's *Logarithmotechnica* as already containing some numerical observations which Leibnitz had thought original on his own part; and, on his return to Paris, he devoted himself to the study of higher geometry under Huygens entering almost at once upon the series of investigations which culminated in his discovery of the differential and integral calculus (*see* CALCULUS, DIFFERENTIAL AND INTEGRAL).

Shortly after his return to Paris in 1673, Leibnitz ceased to be in the Mainz service any more than in name, but in the same year entered the employment of Duke John Frederick of Brunswick-Lüneburg, with whom he had corresponded for some time. In 1676 he removed at the duke's request to Hanover, travelling thither by way of London and Amsterdam. At Amsterdam he had many discussions with Spinoza, read his unpublished *Ethica,* and copied various passages from it.

For the next 40 years, and under three successive princes, Leibnitz was in the service of the Brunswick family, and his headquarters were at Hanover, where he had charge of the ducal library. About 1686 his thoughts and energies were partly taken up with the scheme for the reunion of the Catholic and Protestant Churches. In that year he wrote his *Systema theologicum* (not published until 1819), in which he strove to find common ground for Protestants and Catholics in the details of their creeds. But it was soon found that the religious difficulties were greater than had at one time appeared. A further scheme of church union in which Leibnitz was engaged, that between the Reformed and Lutheran Churches, met with no better success.

Returning from Italy in 1690, Leibnitz was appointed librarian at Wolfenbüttel by Duke Anton of Brunswick-Wolfenbüttel. Some years afterwards began his connection with Berlin through his friendship with the electress Sophie Charlotte of Brandenburg and her mother the princess Sophie of Hanover. He was invited to Berlin in 1700, and on July 11 of that year the academy he had planned (*Akademie der Wissenschaften*) was founded, with himself as its president for life. His genealogical researches in Germany and Italy (1687–90)—through which he established the common origin of the families of Brunswick and Este—were not only preceded by an immense collection of historical sources, but enabled him to publish materials for a code of international law. The history of Brunswick itself was the last work of his life, and had covered the period from 768 to 1005 when death ended his labours.

It was in the years between 1690 and 1716 that Leibnitz's chief philosophical works were composed, and during the first ten of these years the accounts of his system were, for the most part, preliminary sketches. Indeed, he never gave a full and systematic account of his doctrines. His views have to be gathered from letters to friends, from occasional articles in the *Acta Eruditorum,* the *Journal des Savants,* and other journals, and from one or two more extensive works. In 1710 appeared the only complete philosophical work of his life-time, *Essais de Théodicée sur la bonté de Dieu, la liberté de l'homme, et l'origine du mal,* originally undertaken at the request of the late queen of Prussia, who had desired a reply to Bayle's opposition of faith and reason. In 1714 he wrote, for Prince Eugene of Savoy, a sketch of his system under the title of *La Monadologie,* and in the same year appeared his *Principes de la nature et de la grâce.* The last few years of his life were perhaps more occupied with correspondence than any others, and, in a philosophical regard, were chiefly notable for the letters, which, through the desire of the new queen of England, he interchanged with Clarke, *sur Dieu, l'âme, l'espace, la durée.*

Leibnitz died on Nov. 14, 1716, his closing years enfeebled by disease, harassed by controversy, embittered by neglect; but to the last he preserved the indomitable energy and power of work to which is largely due the position he holds as a man of almost universal attainments and almost universal genius. Neither at Berlin, in the academy which he had founded, nor in London, whither his sovereign had gone to rule, was any notice taken of his death. At Hanover, Eckhart, his secretary, was his only mourner; "he was buried," says an eyewitness, "more like a robber than what he really was, the ornament of his country" (*Memoirs of John Ker of Kersland,* by himself, 1726, i. 118). Only in the French academy was the loss recognized, and a worthy eulogium devoted to his memory (Nov. 13, 1717). The 200th anniversary of his birth was celebrated in 1846, and in the same year were opened the *Königlichsächsische Gesellschaft der Wissenschaften* and the *Kaiserliche Akademie der Wissenschaften* in Leipzig and Vienna respectively. In 1883 a statue was erected to him at Leipzig.

Leibnitz possessed a wonderful power of rapid and continuous work. Even when travelling his time was employed in solving mathematical problems. He is described as moderate in his habits, quick of temper but easily appeased, charitable in his judgments

of others, and tolerant of differences of opinion, though impatient of contradiction on small matters. He is also said to have been fond of money to the point of covetousness; he was certainly desirous of honour, and felt keenly the neglect in which his last years were passed.

PHILOSOPHY OF LEIBNITZ

Doctrine of Substance.—The central point in the philosophy of Leibnitz was only arrived at after many advances and corrections in his opinions. This point is his new doctrine of substance (p. 702)[1], and it is through it that unity is given to the succession of occasional writings, scattered over 50 years, in which he explained his views.

More inclined to agree than to differ with what he read (p. 425), and borrowing from almost every philosophical system, his own standpoint is yet most closely related to that of Descartes, partly as consequence, partly by way of opposition. Cartesianism, Leibnitz often asserted, is the ante-room of truth, but the ante-room only. Descartes' separation of things into two heterogeneous substances only connected by the omnipotence of God, and the more logical absorption of both by Spinoza into the one divine substance, followed from an erroneous conception of what the true nature of substance is. Substance, the ultimate reality, can only be conceived as force. Hence Leibnitz's metaphysical view of the monads as simple, percipient, self-active beings, the constituent elements of all things, his physical doctrines of the reality and constancy of force at the same time that space, matter and motion are merely phenomenal, and his psychological conception of the continuity and development of consciousness. In the closest connection with the same stand his logical principles of consistency and sufficient reason, and the method he developed from them, his ethical end of perfection, and his crowning theological conception of the universe as the best possible world, and of God both as its efficient cause and its final harmony.

The ultimate elements of the universe are, according to Leibnitz, individual centres of force or monads. Why they should be individual, and not manifestations of one world-force, he never clearly proves[2]. His doctrine of individuality seems to have been arrived at, not by strict deduction from the nature of force, but rather from the empirical observation that it is by the manifestation of its activity that the separate existence of the individual becomes evident; for his system individuality is as fundamental as activity. "The monads," he says, "are the very atoms of nature—in a word, the elements of things," but, as centres of force, they have neither parts, extension nor figure (p. 705). Hence their distinction from the atoms of Democritus and the materialists. They are metaphysical points or rather spiritual beings whose very nature it is to act. As the bent bow springs back of itself, so the monads naturally pass and are always passing into action, without any aid but the absence of opposition (p. 122). Nor do they, like the atoms, act upon one another (p. 680); the action of each excludes that of every other. The activity of each is the result of its own past state, the determinator of its own future (pp. 706, 722). "The monads have no windows by which anything may go in or out" (p. 705).

Further, since all substances are of the nature of force, it follows that—"in imitation of the notion which we have of souls"—they must contain something analogous to feeling and appetite. Every monad is a microcosm, the universe in little[3], and according to the degree of its activity is the distinctness of its representation of the universe (p. 709). By the proportion of activity to passivity in it one monad is differentiated from another. There is neither vacuum nor break in nature, but "everything takes place by degrees" (p. 392), the different species of creatures rising by insensible steps from the lowest to the most perfect form (p. 312).

As in every monad each succeeding state is the consequence of the preceding, and as it is of the nature of every monad to mirror or represent the universe, it follows (p. 774) that the perceptive content of each monad is in "accord" or correspondence with that of every other (*cf.* p. 127), though this content is represented with infinitely varying degrees of perfection. This is Leibnitz's famous doctrine of pre-established harmony, in virtue of which the infinitely numerous independent substances of which the world is composed are related to each other and form one universe. It is essential to notice that it proceeds from the very nature of the monads as percipient, self-acting beings, and not from an arbitrary determination of the Deity. From this harmony of self-determining percipient units Leibnitz has to explain the world of nature and mind. Space and time are merely relative, the former an order of coexistences, the latter of successions (pp. 682, 752). Hence not only the secondary qualities of Descartes and Locke, but their so-called primary qualities as well, are merely phenomenal (p. 445). The monads are really without position or distance from each other; but, as we perceive several simple substances, there is for us an aggregate or extended mass. Body is thus active extension (pp. 110, 111). The unity of the aggregate depends entirely on our perceiving the monads composing it together. There is no such thing as an absolute vacuum or empty space, any more than there are indivisible material units or atoms from which all things are built up (pp. 126, 186, 277).

From Leibnitz's doctrine of force as the ultimate reality it follows that his view of nature must be throughout dynamical. And though his project of a *dynamic,* or theory of natural philosophy, was never carried out, the outlines of his own theory and his criticism of the mechanical physics of Descartes are known to us. The whole distinction between the two lies in the difference between the mechanical and dynamical views of nature. Descartes's principle is now enunciated as the conservation of momentum, that of Leibnitz as the conservation of energy. Like the monad, body, which is its analogue, has a passive and an active element. The former is the capacity of resistance, and includes impenetrability and inertia; the latter is active force (pp. 250, 687). Bodies, too, like the monads, are self-contained activities, receiving no impulse from without—it is only by an accommodation to ordinary language that we speak of them as doing so—but moving themselves in harmony with each other (p. 250).

Psychology.—The psychology of Leibnitz is developed in *Nouveaux essais sur l'entendement humain,* written in answer to Locke's famous *Essay,* and criticizing it chapter by chapter. In these essays he worked out a theory of the origin and development of knowledge in harmony with his metaphysical views, and thus without Locke's implied assumption of the mutual influence of soul and body. When one monad in an aggregate perceives the others so clearly that they are in comparison with it bare monads (*monades nues*), it is said to be the ruling monad of the aggregate, not because it actually does exert an influence over the rest, but because, being in close correspondence with them, and yet having so much clearer perception, it seems to do so (p. 683). This monad is called the entelechy or soul of the aggregate or body, and as such mirrors the aggregate in the first place and the universe through it (p. 710). Each soul or entelechy is surrounded by an infinite number of monads forming its body (p. 714); soul and body together make a living being, and, as their laws are in perfect harmony—a harmony established between the whole realm of final causes and that of efficient causes (p. 714)—we have the same result as if one influenced the other. Thus the body does not act on the soul in the production of cognition, nor the soul on the body in the production of motion. The body acts just as if it had no soul, the soul as if it had no body (p. 711). Instead, therefore, of all knowledge coming to us directly or indirectly through the bodily senses, it is all developed by the soul's own activity, and sensuous perception is itself but a confused kind of thought. Not a certain select class of our ideas only (as Descartes held), but all our ideas, are innate, though only worked up into actual thought in the development of knowledge (p. 212). To the aphorism made use of by Locke, "Nihil est in intellectu quod non prius fuerit in sensu," must be added the clause, "nisi intellectus ipse" (p. 223). The soul at birth is not comparable to a *tabula rasa,* but rather to an unworked block of marble, the hidden veins of which already determine the form it is to assume

[1]When not otherwise stated, the references are to Erdmann's edition of the *Opera philosophica.*

[2]See *Considérations sur la doctrine d'un esprit universel* (1702).

[3]Cf. *Opera,* ed. Dutens, II. ii. 20.

in the hands of the sculptor (p. 196). Nor, again, can the soul ever be without perception; for it has no other nature than that of a percipient active being (p. 246). Apparently dreamless sleep is to be accounted for by unconscious perception (p. 223); and it is by such unconscious perceptions that Leibnitz explains his doctrine of pre-established harmony (p. 197).

In the human soul perception is developed into self-conscious thought, and there is, therefore, a vast difference between it and the mere monad (p. 464). As all knowledge is implicit in the soul, it follows that its perfection depends on the efficiency of the instrument by which it is developed. Hence the importance, in Leibnitz's system, of the logical principles and method, the consideration of which occupied him at intervals throughout his whole career. There are two kinds of truths—(1) truths of reason, and (2) truths of fact (pp. 83, 99, 707). The former rest on the principle of identity (or contradiction) or of possibility, in virtue of which that is false which contains a contradiction, and that true which is contradictory to the false. The latter rest on the principle of sufficient reason or of reality (*compossibilité*), according to which no fact is true unless there be a sufficient reason why it should be so and not otherwise (agreeing thus with the *principium melioris* or final cause). God alone, the purely active monad, has an *a priori* knowledge of the latter class of truths; they have their source in the human mind, only in so far as it mirrors the outer world, *i.e.*, in its passivity, whereas the truths of reason have their source in our mind in itself or in its activity.

Both kinds of truths fall into two classes, primitive and derivative. The primitive truths of fact are, as Descartes held, those of internal experience, and the derivative truths are inferred from them in accordance with the principle of sufficient reason, by their agreement with our perception of the world as a whole. They are thus reached by probable reasoning—a department of logic which Leibnitz was the first to bring into prominence (pp. 84, 164, 168, 169, 343). The primitive truths of reasoning are identical (in later terminology, analytical) propositions, the derivative truths being deduced from them by the principle of contradiction. The part of his logic on which Leibnitz laid the greatest stress was the analysis of these rational cognitions into their simplest elements—for he held that the root-notions (*cogitationes primae*) would be found to be few in number (pp. 92, 93) —and the designation of them by universal characters or symbols,[1] composite notions being denoted by the formulae formed by the union of several definite characters, and judgments by the relation of aequipollence among these formulae, so as to reduce the syllogism to a calculus. This is the main idea of Leibnitz's "universal characteristic," never fully worked out by him, which he regarded as one of the greatest discoveries of the age. An incidental result of its adoption would be the introduction of a universal symbolism of thought comparable to the symbolism of mathematics and intelligible to all thinkers (*cf.* p. 356). But the great revolution it would effect would chiefly consist in this, that truth and falsehood would be no longer matters of opinion but of correctness or error in calculation[2] (pp. 83, 84, 89, 93). The old Aristotelian analytic is not to be superseded; but it is to be supplemented by this new method, for of itself it is but the ABC of logic.

As the perception of the monad when clarified becomes thought, so the appetite of which all monads partake is raised to will, their spontaneity to freedom, in man (p. 669). The will is an effort or tendency to that which one finds good (p. 251), and is free only in the sense of being exempt from external control (pp. 262, 513, 521), for it must always have a sufficient reason for its action determined by what seems good to it. The end determining the will is pleasure (p. 269), and pleasure is the sense of an increase of perfection (p. 670). A will guided by reason will sacrifice transitory and pursue constant pleasures or happiness, and in this weighing of pleasures consists true wisdom. Leibnitz, like Spinoza, says that freedom consists in following reason, servitude in following the passions (p. 669), and that the passions proceed from confused perceptions (pp. 188, 269). In love one finds joy in the happiness of another; and from love follow justice and law.

Theology.—Leibnitz makes the existence of God a postulate of morality as well as necessary for the realization of the monads. His theology is worked out in the *Theodicée* and his view of the universe as the best possible world defended. He contends that faith and reason are essentially harmonious (pp. 402, 479), and that nothing can be received as an article of faith which contradicts an eternal truth, though the ordinary physical order may be superseded by a higher. The ordinary arguments for the being of God are retained by Leibnitz in a modified form (p. 375). Descartes's ontological proof is supplemented by the clause that God as the *ens a se* must either exist or be impossible (pp. 80, 177, 708); in the cosmological proof he passes from the infinite series of finite causes to their sufficient reason which contains all changes in the series necessarily in itself (pp. 147, 708); and he argues teleologically from the existence of harmony among the monads without any mutual influence to God as the author of this harmony (p. 430). In these proofs Leibnitz seems to have in view an extramundane power to whom the monads owe their reality, though such a conception evidently breaks the continuity and harmony of his system, and can only be externally connected with it. But he also speaks in one place at any rate[1] of God as the "universal harmony"; and the historians Erdmann and Zeller are of opinion that this is the only sense in which his system can be consistently theistic. Yet it would seem that to assume a purely active and therefore perfect monad as the source of all things is in accordance with the principle of continuity and with Leibnitz's conception of the gradation of existences. In this sense he sometimes speaks of God as the first or highest of the monads (p. 678), and of created substances proceeding from Him continually by "fulgurations" (p. 708) or by "a sort of emanation as we produce our thoughts."[2]

With his thoroughgoing optimism Leibnitz has to reconcile the existence of evil in the best of all possible worlds.[3] With this end in view he distinguishes (p. 655) between (1) metaphysical evil or imperfection, which is unconditionally willed by God as essential to created beings; (2) physical evil, such as pain, which is conditionally willed by God as punishment or as a means to greater good (*cf.* p. 510); and (3) moral evil, in which the great difficulty lies, and which Leibnitz makes various attempts to explain. He says that it was merely permitted, not willed, by God (p. 655), and, that being obviously no explanation, adds that it was permitted because it was foreseen that the world with evil would nevertheless be better than any other possible world (p. 350). He also speaks of the evil as a mere set-off to the good in the world, which it increases by contrast (p. 149), and at other times reduces moral to metaphysical evil by giving it a merely negative character, or says that their evil actions are to be referred to men alone, while it is only the power of action that comes from God, and the power of action is good (p. 658).

The great problem of Leibnitz's *Théodicée* thus remains unsolved. The suggestion that evil consists in a mere imperfection, like his idea of the monads proceeding from God by a continual emanation, was too bold and too inconsistent with his immediate apologetic aim to be carried out by him. Had he done so his theory would have transcended the independence of the monads with which it started, and found a deeper unity in the world than that resulting from the somewhat arbitrary assertion that the monads reflect the universe.

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[1]Different symbolic systems were proposed by Leibnitz at different periods; *cf.* Kvêt, *Leibnitzens Logik* (1857), p. 37.

[2]The places at which Leibnitz anticipated the modern theory of logic mainly due to Boole are pointed out in Mr. Venn's *Symbolic Logic* (1881).

[1]*Werke*, ed. Klopp, iii. 259; cf. *Op. phil.*, p. 716.

[2]*Werke*, ed. Pertz, 2nd ser. vol. i., p. 167.

[3]"Si c'est ici le meilleur des mondes possibles, que sont donc les autres?"—Voltaire, *Candide*, ch. vi.

Handschriftlichen Nachlasse in der Königlichen Bibliothek zu Hannover (1st series, Historico-Political and Political, 10 vols., 1864–77). The *Oeuvres de Leibnitz*, by A. Jacques (2 vols., 1846) also deserves mention. The philosophical writings had been published by Raspe. (Amsterdam and Leipzig, 1765), by J. E. Erdmann, *Leibnitii opera philos. quae extant Latina, Gallica, Germanica, omnia* (Berlin, 1840), by P. Janet (2 vols., Paris, 1866, 2nd ed., 1900), and the fullest by C. J. Gerhardt, *Die Philosophischen Schriften von G. W. Leibniz* (7 vols., 1875–90); *cf.* also *Die kleineren philos. wichtigeren Schriften* (trans. with commentary, J. H. von Kirchmann, 1879). The German works had also been partly published separately; G. E. Guhrauer (Berlin, 1838–40). Of the letters various collections had been published up to 1900, *e.g.*: C. J. Gerhardt (Halle, 1860) and *Der Briefwechsel von G. W. Leibnitz mit Mathematikern* (1899); *Corrispondenza tra L. A. Muratori e G. Leibnitz* (1899); and cf. *Neue Beiträge zum Briefwechsel zwischen D. E. Jablonsky und G. W. Leibnitz* (1899).

In 1900 it was decided by scholars in Berlin and Paris that a really complete edition should be published, and with this object four German and four French critics were entrusted with the preliminary task of correlating the mss. in the royal library at Hanover. This process resulted in the preparation of the *Kritischer Katalog der Leibnitz-Handschriften zur Vorbereitung der interakademischen Leibniz-Ausgabe* (1908), and certain other preliminary publications also were the outcome of it, *e.g.*, L. Couturat, *Opuscules et fragments inédits* (1903); E. Gerland, *Leibnizens nachgelassene Schriften physikalischen, mechanischen und technischen Inhalts* (1906); Jean Baruzi, *Leibniz* (1909), containing unedited mss. and a sketch-biography; *cf.* the same author's *Leibniz et l'organisation religieuse de la terre* (1907).

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(W. R. So.)

LEICESTER, EARLS OF. The first holder of this English earldom belonged to the family of Beaumont, although a certain Saxon named Edgar has been described as the 1st earl of Leicester. Robert de Beaumont (d. 1118) is frequently but erroneously considered to have received the earldom from Henry I., about 1107; his son Robert was undoubtedly earl of Leicester in 1131. The 3rd Beaumont earl, another Robert, was also steward of England, a dignity attached to the earldom of Leicester from this time until 1399. The earldom reverted to the crown when Robert de Beaumont, the 4th earl, died in 1204.

In 1207 Simon IV., count of Montfort (*q.v.*), nephew and heir of Earl Robert, was confirmed in the possession of the earldom by King John, but it was forfeited when his son, the famous Simon de Montfort, was attainted and was killed at Evesham in 1265. Henry III.'s son Edmund, earl of Lancaster, was also earl of Leicester and steward of England, obtaining these offices a few months after Earl Simon's death, and the title remained with his heirs until it was merged in the crown on the accession of Henry IV.

In 1564 Queen Elizabeth created her favourite, Lord Robert Dudley, earl of Leicester (*q.v.*). At his death the title became extinct. In 1618 the earldom of Leicester was revived in favour of Robert Sidney, Viscount Lisle, a nephew of the late earl and a brother of Sir Philip Sidney; it remained in this family until the death of Jocelyn (1682–1743), the 7th earl of this line, in 1743. Jocelyn left no legitimate children, but a certain John Sidney claimed to be his son and consequently to be 8th earl of Leicester.

In 1744, the year after Jocelyn's death, Thomas Coke, Baron Lovel (*c.* 1695–1759), was made earl of Leicester, but the title became extinct on his death in 1759. The next family to hold the earldom was that of Townshend, George Townshend (1755–1811) being created earl of Leicester in 1784. When his son George Ferrars Townshend, the 3rd marquess (1778–1855), died the earldom again became extinct. Before this date, however, another earldom of Leicester was in existence. This was created in 1837 in favour of Thomas William Coke, who had inherited the estates of his relative Thomas Coke, earl of Leicester. To distinguish his earldom from that held by the Townshends Coke was ennobled as earl of Leicester of Holkham.

See G. E. C(okayne), *Complete Peerage*, vol. v. (1893).

LEICESTER, ROBERT DUDLEY, EARL OF (*c.* 1531–1588), English statesman, was the son of John Dudley, duke of Northumberland (*q.v.*), and brother of Guildford Dudley, the husband of Lady Jane Grey. After his brother's execution he shared in the disgrace of his family. He was sent to the Tower, and was sentenced to death; but the queen not only pardoned and restored him to liberty, but appointed him master of the ordnance. On the accession of Elizabeth he was also made master of the horse. He was then, perhaps, about seven-and-twenty, and rose rapidly in the queen's favour. At an early age he had been married to Amy, daughter of Sir John Robsart. Amy visited her husband in the Tower during his imprisonment; but afterwards when, under the new queen, he was much at court, she lived a good deal apart from him. He visited her, however, at times, in different parts of the country, and his expenses show that he treated her liberally. In Sept. 1560 she was staying at Cumnor Hall in Berkshire, the house of one Anthony Forster, when she died from a fall downstairs, under circumstances which aroused suspicions of foul play. Her death had been surmised some time before as a thing that would remove an obstacle to Dudley's marriage with the queen, with whom he stood high in favour. The story of Amy Robsart is famous through Sir Walter Scott's treatment of it in *Kenilworth*. Her husband continued to rise in the queen's favour. She made him a knight of the Garter, and bestowed on him the castle of Kenilworth, the lordship of Denbigh and other lands in Warwickshire and in Wales. In Sept. 1564 she created him baron of Denbigh, and immediately afterwards earl of Leicester. In the preceding month, when she visited Cambridge, she at his request addressed the university in Latin. The honours shown him

excited jealousy, especially as he was known to entertain still more ambitious hopes, which the queen apparently did not discourage. The earl of Sussex, in opposition to him, strongly favoured a match with the archduke Charles of Austria. Meanwhile Elizabeth, in 1564, recommended Leicester as a husband for Mary Queen of Scots. It may be doubted how far the proposal was serious. A few years later he formed an ambiguous connection with the baroness dowager of Sheffield, claimed by the lady to have been a valid marriage, though it was concealed from the queen. But she married again during Leicester's life, when he, too, had found a new partner. Long afterwards, her son, Sir Robert Dudley, sought to establish his legitimacy; but his suit was stopped, and the documents connected with it sealed up by an order of the Star Chamber.

In 1575 Queen Elizabeth visited the earl at Kenilworth, where she was entertained for some days with great magnificence. Next year Walter, earl of Essex, died in Ireland, and Leicester's subsequent marriage with his widow again gave rise to very serious imputations. Report said that he had had two children by her during her husband's absence in Ireland, and, as the feud between the two earls was notorious, Leicester's enemies easily suggested that he had poisoned his rival. The marriage tended to Leicester's discredit and was kept secret at first; but it was revealed to the queen in 1579 by Simier, an emissary of the duke of Alençon, to whose projected match with Elizabeth the earl seemed to be the principal obstacle. The queen had some thought, it is said, of committing Leicester to the Tower, but was dissuaded from doing so by his rival the earl of Sussex. Leicester had not, indeed, favoured the Alençon marriage, but otherwise he had sought to promote a league with France against Spain. He and Burleigh had listened to proposals from France for the conquest and division of Flanders, and they were in the secret about the capture of Brill. When Alençon actually arrived, indeed, in August 1579, Dudley being in disgrace, showed himself for a time anti-French; but he soon returned to his former policy. He encouraged Drake's piratical expeditions against the Spaniards and had a share in the booty brought home. In Feb. 1582 he, with a number of other noblemen and gentlemen, escorted the duke of Alençon on his return to Antwerp to be invested with the government of the Low Countries. In 1584 he inaugurated an association for the protection of Queen Elizabeth against conspirators. About this time there issued from the press the famous pamphlet, supposed to have been the work of Parsons the Jesuit, entitled *Leicester's Commonwealth* (sometimes known as *Father Parsons' Green Coat*), which was suppressed by letters from the privy council, in which it was declared that the charges against the earl were to the queen's certain knowledge untrue; nevertheless they were believed in by some who had no sympathy with the Jesuits long after Leicester's death.

In 1585 Leicester was appointed commander of an expedition to the Low Countries in aid of the revolted provinces, and sailed with a fleet of 50 ships to Flushing. In January 1586 he was invested with the government of the provinces, but received a strong reprimand from the queen for acting without her authorization. Leicester was allowed to retain his dignity; but affairs did not prosper under his management. The most brilliant achievement of the war was the action at Zutphen, in which his nephew Sir Philip Sidney was slain. Disagreements increasing between him and the States, he was recalled by the queen; and in 1588 he was appointed lieutenant-general of the army mustered at Tilbury to resist Spanish invasion. After the crisis was past he was returning home to Kenilworth, when he was attacked by sudden illness and died at his house at Cornbury in Oxfordshire, on Sept. 4.

Such are the main facts of Leicester's life. Of his character it is more difficult to speak with confidence. Being in person tall and remarkably handsome, he improved these advantages by a very ingratiating manner. A man of ability and ambition, he was vain, and presumed at times upon his influence with the queen to a degree that brought upon him a sharp rebuff. Yet Elizabeth stood by him. He was a man of princely tastes, especially in architecture. At court he became latterly the leader of the Puritan party, and his letters were pervaded by expressions of religious feeling which it is hard to believe were insincere. Of the darker suspicions against him it is enough to say that much was certainly reported beyond the truth; but there remain some facts sufficiently disagreeable, and others, perhaps, sufficiently mysterious, to make a just estimate of the man a rather perplexing problem.

BIBLIOGRAPHY.—A general account of Leicester will be found in the Memoirs of the Sidneys prefixed to Collins's *Letters and Memorials of State;* but the fullest yet published is Sidney Lee's article in the *Dictionary of National Biography* (1888) where the sources are given. Leicester's career has to be made out from documents and state papers, especially from the Hatfield mss. and Major Hume's *Calendar* of documents from the Spanish archives bearing on the history of Queen Elizabeth. Of others the principal are Digges's *Compleat Ambassador* (1655), John Nichols's *Progresses of Queen Elizabeth* and the *Leycester Correspondence* edited by J. Bruce for the Camden Society. For Amy Robsart's death *see* the *English Historical Review,* xiii. 83, giving the full text (in English) of De Quadra's letter of Sept. 11, 1560, on which so much has been built.

LEICESTER, ROBERT SIDNEY, EARL OF (1563–1626), second son of Sir Henry Sidney (*q.v.*), was born on Nov. 19, 1563, and was educated at Christ Church, Oxford, afterwards travelling on the Continent for some years between 1578 and 1583. In 1585 he was elected member of parliament for Glamorganshire; and in the same year he went with his elder brother Sir Philip Sidney (*q.v.*) to the Netherlands, where he served in the war against Spain under his uncle Robert Dudley, earl of Leicester. After visiting Scotland on a diplomatic mission in 1588, and France on a similar errand in 1593, he returned to the Netherlands in 1596, where he rendered distinguished service in the war for the next two years. He had been appointed governor of Flushing in 1588, and he spent much time there till 1603, when, on the accession of James I., he returned to England. James raised him at once to the peerage as Baron Sidney of Penshurst, and he was appointed chamberlain to the queen consort. In 1605 he was created Viscount Lisle, and in 1618 earl of Leicester, the latter title having become extinct in 1588 on the death of his uncle, whose property he had inherited. (*See* LEICESTER, EARLS OF.) Leicester was a man of taste and a patron of literature, whose cultured mode of life at his country seat, Penshurst, was celebrated in verse by Ben Jonson. The earl died at Penshurst on July 13, 1626.

ROBERT SIDNEY, 2nd earl of Leicester of the 1618 creation (1595–1677), born on Dec. 1, 1595, was educated at Christ Church, Oxford; he was called to the bar in 1618, having already served in the army in the Netherlands during his father's governorship of Flushing, and having entered parliament as member for Wilton in 1614. In 1616 he was given command of an English regiment in the Dutch service; and having succeeded his father as earl of Leicester in 1626, he was employed on diplomatic business in Denmark in 1632, and in France from 1636 to 1641. He was then appointed lord-lieutenant of Ireland in place of the earl of Strafford, but he waited in vain for instructions from the king, and in 1643 he was compelled to resign the office without having set foot in Ireland. After his resignation of the lord-lieutenancy of Ireland, he retired into private life. In 1649 the younger children of the king were for a time committed to his care at Penshurst. He died at Penshurst on Nov. 2, 1677.

Leicester's eldest son, PHILIP, 3rd earl (1619–1698), known for the greater part of his life as Lord Lisle, became lieutenant-general of Ireland under Ormonde; he strongly favoured the parliamentary cause and in 1647 he was appointed lord-lieutenant of Ireland by the parliament. Named one of Charles I.'s judges, he refused to take part in the trial; but he afterwards served in Cromwell's council of state, and sat in the Protector's House of Lords. Lisle stood high in Cromwell's favour, but nevertheless obtained a pardon at the Restoration.

See *Sydney Papers,* ed. A. Collins (2 vols., 1746); *Sydney Papers,* edited by R. W. Blencowe (1825) containing the 2nd earl of Leicester's journal; Clarendon, *History of the Rebellion and Civil Wars in England* (8 vols., Oxford, 1826); S. R. Gardiner, *History of the Great Civil War* (3 vols., London, 1886–91).

LEICESTER, a city, county and municipal borough and the county town of Leicestershire, England; on the river Soar, a southern tributary of the Trent, 97 mi. N.N.W. from London by the L.M.S. railway. It is served also by the L.N.E. railway and by the Leicester canal. Pop. (est. 1938) 263,300. Area 26.5 sq.mi. Leicester was created a city in 1919 and the boundaries

were extended and revised in 1935 and 1936.

The Romano-British town of *Ratae Coritanorum*, on the Fosse Way, was a municipality in A.D. 120–121. Leicester was called a "burh" in 918, and a city in Domesday. Until 874 it was the seat of a bishopric. In 1086 the king and Hugh de Grantmesnil had much land there; by 1101 the latter's share had passed to Robert of Meulan, to whom the rest of the town belonged. Leicester thus became the largest mesne borough. In the 13th century the town developed its own form of government by a mayor and 24 jurats. In 1464 Edward IV made the mayor and four of the council justices of the peace. In 1489 Henry VII added 48 burgesses to the council and made it a close corporation. In 1589 Elizabeth incorporated the town. James I granted charters in 1605 and 1610, and Charles I in 1630. In 1684 the charters were surrendered; a new one granted by James II was rescinded by proclamation in 1688. Leicester became a county borough in 1888 and the bounds were extended and constituted a civil parish in 1892.

Leicester was represented in parliament by two members from 1295 to 1918, when the number was increased to three. It has had a prescriptive market held on Wednesday and Saturday since the 13th century. Leicester has been a centre for brewing and the manufacture of woollen goods since the 13th century. Knitting frames for hosiery were introduced about 1680, and hosiery is the staple trade. The manufacture of footwear is important, and the city is the largest distribution centre for boot and shoe multiple firms. Other industries are elastic fabrics, sewing cotton, yarns, typewriters and brickmaking.

Roman remains include a portion of Roman masonry known as the Jewry Wall, parts of the forum, and a large public bath; several pavements have been unearthed; among other remains is a milestone from the Fosse Way, marking a distance of 2 mi. from Ratae. St. Nicholas is early Norman with Roman material and St. Mary de Castro church and All Saints church have Norman remains, while St. Martin's and St. Margaret's are Early English. North of the town are remains of an abbey of Black Canons founded in 1143. The ruins of the castle include parts of the Norman hall, two gateways, and the artificial Mount on which the keep stood. The old town hall (14th century) was formerly the guildhall of Corpus Christi. There is a valuable library founded in the 17th century. The Trinity hospital was founded in 1331 by Henry Plantagenet, earl of Lancaster and of Leicester, and Wyggeston's hospital in 1513. In 1919 a university college was founded. To relieve traffic congestion a system of ring roads—inner, central and outer, averaging 100 ft. wide—was planned. The first section was opened in 1933, and the work was in progress during World War II. A municipal aerodrome was opened in 1935. The diocese of Leicester, created in 1926, embraces the whole county, and St. Martin's church is the cathedral.

LEICESTER OF HOLKHAM, THOMAS WILLIAM COKE, Earl of (1752–1842), English agriculturist, known as Coke of Norfolk, was the eldest son of Wenman Roberts, who assumed the name of Coke in 1750. He was born on May 4, 1752 and succeeded to his father's estates at Holkham and elsewhere. From 1776 to 1784, from 1790 to 1806, and again from 1807 to 1832 Coke was member of parliament for Norfolk; he was a friend and supporter of Charles James Fox and a sturdy and aggressive Whig, acting upon the maxim taught him by his father "never to trust a Tory." Coke's chief interests, however, were in the country, and his fame is that of an agriculturist. His land around Holkham in Norfolk was poor and neglected, but he introduced many improvements, obtained the best expert advice, and in a few years wheat was grown upon his farms, and the breed of cattle, sheep and pigs greatly improved. It has been said that "his practice is really the basis of every treatise on modern agriculture." Under his direction the rental of the Holkham estate is said to have increased from £2,200 to over £20,000 a year. In 1837 Coke was created earl of Leicester of Holkham. Leicester, who was a strong and handsome man and a fine sportsman, died at Longford Hall in Derbyshire on June 30, 1842. He was twice married, and Thomas William, his son by his second marriage, succeeded to his earldom.

See A. M. W. Stirling, *Coke of Norfolk and his Friends* (1907).

LEICESTERSHIRE, a midland county of England, bounded north by Nottinghamshire, east by Lincolnshire and Rutland, south-east by Northamptonshire, south-west by Warwickshire, and north-west by Derbyshire, also touching Staffordshire on the west. The area is 832 sq. miles. Pop. (1938) 565,900.

The main topographical feature of Leicestershire is the broad valley of the Soar, running south to north and separating the Charnwood forest from the uplands of the east. The river also divides the county geologically, the Jurassic forming the higher land of the east, and the Triassic the plain of the west with masses of older rocks protruding in places forming higher land. North-west of Leicester is the Charnwood forest, composed of pre-Cambrian volcanic ashes, grits and slates into which igneous rocks of granitic and dioritic composition were intruded in later pre-Cambrian times. These emerge from the Trias plain of Keuper-Marls and form a series of barren ridges which contrast with the deep fertile valleys of red marl between them. There are intrusions of igneous rocks south-west of Leicester at Sapscot, Croft, etc. West of the Charnwood forest are the outcrops of the Carboniferous limestones and coal measures of the Leicester coalfield which represents the southward projection of the Pennine system below the Trias. These are faulted in places. The region was heavily glaciated in the Pleistocene and the older beds have been covered with boulder clay, whilst the gravel and sand beds in the valleys, which have yielded remains of mammoths, represent a late phase of the Ice age.

History and Early Settlement.—Leicestershire is poor in pre-historic remains, the earliest being "Neolithic" implements of flint and other stone found on the north of the Charnwood forest, around Leicester and Mount Sorrel, and at Osbaston in the south-west in the unforested patches. There is some evidence of Bronze age settlements in south Leicestershire, and also on Beacon hill in the Charnwood forest which seems to have been in early times an important place for defensive purposes. At the time of the Roman invasion the region was sparsely populated by the Coritani. Even in Roman times there is little evidence of settlement apart from Leicester itself, and Venonae at the crossing of the Fosse way and Watling street. Leicester (Ratae) also was a cross-roads on the Fosse way. There are a few minor settlements along these two routes, on Watling street, which runs along the south-western boundary, and Fosse way, traversing the county northwards through Leicester to Lincoln.

The district which is now Leicestershire was reached in the 6th century by Anglian invaders who, making their way across the Trent, penetrated as far as Leicester, the fall of which may be dated at about 556. In 679 the district formed the kingdom of the Middle Angles within the kingdom of Mercia, and on the subdivision of the Mercian see in that year was formed into a separate bishopric having its see at Leicester. In the 9th century the district was subjugated by the Danes, and Leicester became one of the five Danish boroughs. It was recovered by Aethelflaed in 918, but the Northmen regained their supremacy shortly after, and the prevalence of Scandinavian place-names in the county bears evidence of the extent of their settlement. Leicestershire was a shire in the 10th century, and at the time of the Domesday survey was divided into the four wapentakes of Guthlaxton, Framland, Goscote and Gartree. The Leicestershire survey of the 12th century shows an additional grouping of the vills into small hundreds, which have completely disappeared. In the reign of Edward I. the divisions appear as hundreds, and in the reign of Edward III. the additional hundred of Sparkenhoe was formed out of Guthlaxton. Before the 17th century Goscote was divided into East and West Goscote. Until 1566 Leicestershire and Warwickshire had a common sheriff, the shire-court for the former being held at Leicester. Leicestershire constituted an archdeaconry within the diocese of Lincoln from 1092 until its transference to Peterborough in 1837. In 1143 the Benedictine monks founded an abbey near Leicester; a nunnery was founded at Gracedieu in 1240, and an Augustinian priory in Charnwood in the 12th century.

The main historical events connected with the county were the siege and capture of Leicester by Henry II. in 1173 on the

rebellion of the earl of Leicester, and the surrender of Leicester to Prince Edward in 1264. Parliament was held at Leicester in 1414. The battle of Bosworth was fought in the county in 1485. In the Civil War the greater part of the county favoured the parliament, though the mayor and some members of the corporation of Leicester sided with the king, and in 1642 the citizens of Leicester on a summons from Prince Rupert lent Charles £500. In 1645 Leicester was twice captured by the Royalist forces. Before the Conquest large estates in Leicestershire were held by Earls Ralf, Morcar, Waltheof and Harold, but the Domesday survey of 1086 reveals an almost total displacement of English by Norman landholders, only a few estates being retained by Englishmen as under-tenants. The first lay-tenant mentioned in the survey is Robert, count of Meulan, ancestor of the Beaumont family and afterwards earl of Leicester, to whose fief was annexed the holding of Hugh de Grantmesnil. Robert de Toeni, another Domesday tenant, founded Belvoir castle (the seat of the dukes of Rutland) and priory. The fief of Robert de Buci was bestowed on Richard Basset, founder of Laund abbey, in the reign of Henry I. Loughborough was an ancient seat of the Despenser family, and Brookesby was the seat of the Villiers and the birthplace of George Villiers, the famous duke of Buckingham. Melton Mowbray was named from its former lords, the Mowbrays, descendants of Nigel de Albini, the founder of Axholme priory.

The woollen industry flourished in Leicestershire in Norman times, and in 1343 Leicestershire wool was rated at a high value. Coal was worked at Coleorton in the early 15th century and at Measham in the 17th century. The famous blue slate of Swithland has been quarried from time immemorial, and the limestone quarry at Barrow-on-Soar is also very old; the monks of the abbey of St. Mary de Pré formerly enjoyed the tithe of its produce. The staple manufacture of the county, that of hosiery, originated in the 17th century, the chief centres being Leicester, Hinckley and Loughborough, and before the development of steam-driven frames in the 19th century hand framework knitting of hose and gloves was carried on in about a hundred villages. Wool-carding was an extensive industry before 1840.

In 1290 Leicestershire returned two members to parliament. Under the Reform Act of 1832 the county returned four members in two divisions until the Redistribution of Seats Act of 1885, under which it returned four members in four divisions.

The most noteworthy churches are found in the towns, as at Ashby-de-la-Zouch, Hinckley, Leicester, Loughborough, Lutterworth, Market Bosworth, Market Harborough and Melton Mowbray. The principal old castle is that of Ashby-de-la-Zouch, while at Kirby Muxloe there is a picturesque fortified mansion of Tudor date. There are several good Elizabethan mansions, as that at Laund, in the east of the county.

Industries.—The soil is loamy and affords rich pasture for cattle and sheep, especially east of the Soar, while the corn crops are grown chiefly on the lighter soil of the west. The proportion of pasture land is considerable—about 60% in 1939. Dairy farming is extensively carried on, Stilton cheese is manufactured near Melton Mowbray on the Melton ridge and is said to be localized because of the flavour which the soil gives to the milk. Cattle are reared in large numbers (164,641 in 1939), while of sheep the New Leicester breed is well known. It was introduced by Robert Bakewell the agriculturist, who was born near Loughborough in 1725. He also improved the breed of horses by the importation of mares from Flanders. The county specializes in the fattening of two-year-old cattle in the summer; these are sold in autumn, leaving large areas free for hunting.

The county is specially famed for fox-hunting, Leicester and Melton Mowbray being favourite centres, while the kennels of the Quorn hunt are located at Quorndon near Mount Sorrel. For this reason Leicestershire is rich in good riding horses.

Coal is worked in the Leicester coalfield around Coalville, Coleorton and Moira, which is of a quality suited for household use. Most of it is consumed in other districts owing to lack of large industries in the county. Iron of a low grade is worked around Tilton, Corby and Besborough, and there are iron furnaces at Holwell and Asfordby Limestone is worked in various parts, and in the Soar valley there are large limeworks manufacturing hydraulic cement. Granites are quarried near Mount Sorrel, Bardon and Groby for road making, and also at Sapscot and Stoney Stanton. Apart from the mining industries, the staple manufacture of Leicestershire is hosiery centred at Leicester, with minor centres at Hinckley, Barwell and East Stilton, for which the long staple wool is obtained from home-bred sheep. Cotton hose are also manufactured. Loughborough also has hosiery factories and in addition is an engineering and bell founding centre. Leicester is the centre of the leather industry and the towns of the Soar and the Wreake valleys are also engaged in this industry. There are rubber works at Leicester and Melton Mowbray.

The L.M.S. railway serves Market Harborough, Leicester and Loughborough, having an important junction at Trent (on that river) for Derby and Nottingham. Branches radiate from Leicester to Melton Mowbray, to Coalville, Ashby-de-la-Zouch, Moira and Burton-upon-Trent, with others through the mining district of the northwest which is also served by a branch of the L.M.S. railway from Nuneaton to Market Bosworth, Coalville and Loughborough. This company serves Market Harborough from Rugby, and branches of the L.N.E. railway serve Market Harborough, Leicester and Melton Mowbray. The L.N.E. railway passes through Lutterworth, Leicester and Loughborough. The principal canals are the Union and Grand Union, which with various branches are connected with the Grand Junction, and the Ashby-de-la-Zouch canal, which joins the Coventry canal at Nuneaton. The Loughborough canal serves that town, connecting with the river Soar. There were 1,800 mi. of roads in 1943.

Administration.—Area of administrative county 805.3 sq.mi.; pop. (est. 1938) 302,600. An increase of 4% between Sept. 1939 and Feb. 1941 was caused by wartime industrial development and evacuation from the eastern counties. The county contains six hundreds and 227 civil parishes. There is one county borough, Leicester, and one municipal borough, Loughborough. The county is in the Midland circuit and has one court of quarter sessions. The county borough of Leicester has a separate court of quarter sessions and a separate commission of the peace. The county is divided into four parliamentary divisions (Melton, Loughborough, Bosworth, Harborough), each returning one member; and the parliamentary borough of Leicester returns three members. Since 1926 the county has formed the diocese of Leicester. It was formerly in that of Peterborough.

See *Victoria County History, Leicestershire;* W. Burton, *Description of Leicestershire* (1622); John Nicholls, *History and Antiquities of the County of Leicester* (London, 1795–1815).

LEIDY, JOSEPH (1823–1891), American scientist, was born at Philadelphia, Pa., on Sept. 9, 1823. After receiving an early education in private schools he entered the University of Pennsylvania and in 1844 graduated in medicine. He soon after became librarian and a curator at the Academy of Natural Sciences of Philadelphia, and in 1847 was made chairman of the board of curators, which position he held for a period of 44 years. In 1853 he was appointed professor of anatomy at the University of Pennsylvania, which position he held until his death, becoming director of the biological department in 1884. In addition to these duties he was professor of natural history at Swarthmore college from 1871 also until his death. He won distinction as an anatomist, especially in the field of comparative anatomy. His *Elementary Treatise on Human Anatomy* (1861; rev. and enl., 1889) was for many years the classic American text-book on the subject. His *Researches into the Comparative Anatomy of the Liver* (1848) was the first thorough study of that organ. Leidy spent much time in microscopical study of the lower forms of life. His book *A Flora and Fauna Within Living Animals* (1853) was the first important study of the parasites of the alimentary canal. Leidy's discovery of *Trichina spiralis* in pork led to Leuckart's discovery of the cause and mode of preventing trichinosis in man. In 1886 Leidy expressed his opinion that hookworm was the cause of pernicious anemia in the United States. He also became the chief American authority of his time on protozoa. His *Fresh Water Rhizopods of North America* (1879) is still a standard work. This, and many others of his books are illustrated by his own

drawings, noted for their delicate accuracy, especially in microscopical studies. His *Synopsis of Entozoa,* described and named more than 100 new species.

It was as a vertebrate palaeontologist, however, that Leidy won his chief fame. Before his time there were but a few scattered papers on the subject in America, and the discovery of new fossil deposits in the western States offered him an unparalleled opportunity to lay the foundation of American palaeontology, his knowledge of comparative anatomy being his chief aid in the work. His *Ancient Fauna of Nebraska* (1853) was the most important contribution to the subject in America up to that time. He followed this with monographs on the extinct sloth tribe, the extinct ox, horse, etc., and in 1865 published *Cretaceous Reptiles of the United States.* All the fossils of the F. V. Hayden Expedition in the Rocky Mountains (1853–66) were given to Leidy for determination, the results appearing in *Extinct Mammalian Fauna of Dakota and Nebraska* (1869), which contained many species and genera unknown to science, and others hitherto not known to have existed on the American continent. The book is described by H. F. Osborn as "with the possible exception of Cope's *Tertiary Vertebrates,* the most important palaeontological work which America has produced." The discovery of Eocene material in Wyoming and Oregon beds, geologically older than the Nebraska and Dakota beds, provided the material for Leidy's last major palaeontological work, *Contributions to the Extinct Vertebrate Fauna of the Western Territories* (1873). His death occurred at Philadelphia on April 30, 1891.

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LEIF ERICSSON (*fl.* 999–1000), Scandinavian discoverer of America, of Icelandic family, the first known European discoverer of "Vinland," "Vineland" or "Wineland, the Good," in North America. He was a son of Eric the Red (*Eirikr hinn raudi Thorvaldsson*), the founder of the earliest Scandinavian settlements—from Iceland—in Greenland (985). In 999 he went from Greenland to the court of King Olaf Tryggvason in Norway, and was commissioned by him to proclaim Christianity in Greenland. Leif was driven far out of his course by contrary weather—this time to lands (in America) "of which he had previously had no knowledge," where "self-sown" wheat grew, and vines, and "mösur" wood. Leif took specimens of all these, and returned to his father's home in Brattahlid on Ericsfiord in Greenland.

Such is the account of the *Saga of Eric the Red,* supported by a number of briefer references in early Icelandic and other literature. The less trustworthy history of the *Flatey Book* makes Biarni Heriulfsson in 985 discover Helluland (Labrador?) as well as other western lands which he does not explore, not even permitting his men to land; while Leif Ericsson follows up Biarni's discoveries, begins the exploration of Helluland, Markland and Vinland, and realizes some of the charms of the last named, where he winters. But this secondary authority (the *Flatey Book* narrative) which till lately formed the basis of all general knowledge as to Vinland, abounds in contradictions and difficulties from which *Eric the Red Saga* is comparatively free. Looking at the record in *Eric the Red Saga,* it would seem probable that Leif's Vinland answers to some part of southern Nova Scotia. *See* VINLAND. (As to Helluland and Markland *see* THORFINN KARLSEFNI.)

The MSS. of *Eric the Red's Saga* are Nos. 544 and 557 of the Arne-Magnaean collection in Copenhagen; the MS. of the *Flatey Book,* was presented in 1662 to the Royal Library of Denmark, of which it is still one of the chief treasures. These leading narratives are supplemented by Adam of Bremen, *Gesta Hammaburgensis ecclesiae pontificum,* chap. 38 (247 Lappenberg) of book iv. (often separately entitled *Descriptio Insularum Aquilonis;* Adam's is the earliest extant reference to Vinland, *c.* 1070); we have also notices of Vinland in the *Libellus Islandorum* of Ari Frodi (*c.* 1120), the oldest Icelandic historian; in the *Kristni Saga* (repeated in Snorri Sturlason's *Heimskringla*); in *Eyrbyggia Saga* (*c.* 1250); in *Gretti Saga* (*c.* 1290); and in an Icelandic chorography of the 14th century, or earlier, partly derived from the famous traveller Abbot Nicolas of Thing-eyrar (†1159). (C. R. B.)

LEIGH, EDWARD (1602–1671), English Puritan and theologian, born at Shawell, Leicestershire, was educated at Magdalen hall, Oxford, from 1616, and subsequently became a member of the Middle Temple. In 1636 he entered parliament as member for Stafford, and during the Civil War held a colonelcy in the parliamentary army. The public career of Leigh terminated with his expulsion from parliament with the rest of the Presbyterian party in 1648. His works include: *Critica Sacra, containing Observations on all the Radices of the Hebrew Words of the Old and the Greek of the New Testament* (1639–44; new ed., with supp. 1662).

LEIGH, market town, municipal and parliamentary borough of Lancashire, England, 13 mi. W. of Manchester and 21 mi. N.E. of Liverpool, on the L.M.S. and L.N.E. railways. Pop. (1938) 46,200. Area 9.94 sq.mi. The ancient parish church of St. Mary the Virgin was, with the exception of the tower, rebuilt in 1873 in the Perpendicular style. The grammar school, date of foundation unknown, is well endowed. The chief industries are manufacture of silk, artificial silk and cotton, glass making, iron foundries, brewing, flour milling and extensive coal mining. Several fine old houses are still left near Leigh. Leigh was incorporated in 1899 and returns one member to parliament.

LEIGHTON, FREDERICK LEIGHTON, BARON (1830–1896), English painter and sculptor, the son of a physician, was born at Scarborough on Dec. 3, 1830. He was taken abroad at a very early age, and studied in many different centres, as his family were constantly moving from place to place. He himself declared that he owed most to the teaching of Edward Steinle.

Earlier Work.—The picture which made his reputation in England was "Cimabue's Madonna carried in procession through the Streets of Florence," which appeared at the Royal Academy in 1855, and was purchased by Queen Victoria. Although, since his infancy, he had only visited England once (in 1851, when he came to see the Great Exhibition), he was not quite unknown in the cultured and artistic world of London, as he had made many friends during a residence in Rome of some two years or more after he left Frankfort in 1852. Amongst these were Giovanni Costa, Robert Browning, James Knowles, George Mason and Sir Edward Poynter, then a youth, whom he allowed to work in his studio. He also met Thackeray, who wrote from Rome to the young Millais: "Here is a very versatile young dog, who will run you close for the presidentship one of these days." During these years he painted several Florentine subjects—"Tybalt and Romeo," "The Death of Brunelleschi," a cartoon of "The Pest in Florence according to Boccaccio," and "The Reconciliation of the Montagues and the Capulets." In 1858 he visited London and made the acquaintance of the leading Pre-Raphaelites—Rossetti, Holman Hunt and Millais. In the spring of 1859 he was at Capri, always a favourite resort of his, and made many studies from nature, including a very famous drawing of a lemon tree. It was not till 1860 that he settled in London and in 1866 he took up his quarters at his celebrated house in Holland Park Road, with its Arab hall decorated with Damascus tiles. There he lived till his death.

Classical Pictures.—Amongst the finest of his classical pictures were—"Syracusan Bride leading Wild Beasts in Procession to the Temple of Diana" (1866), "Venus disrobing for the Bath" (1867), "Electra at the Tomb of Agamemnon," and "Helios and Rhodos" (1869), "Hercules wrestling with Death for the Body of Alcestis" (1871), "Clytemnestra" (1874), "The Daphnephoria" (1876), "Nausicaa" (1878), "An Idyll" (1881), two lovers under a spreading oak listening to the piping of a shepherd and gazing on the rich plain below; "Phryne" (1882), a nude figure standing in the sun; "Cymon and Iphigenia" (1884), "Captive Andromache" (1888), now in the Manchester Art Gallery; with the "Last Watch of Hero" (1887), "The Bath of Psyche" (1890), now in the Tate Gallery, "The Garden of the Hesperides" (1892), "Perseus and Andromeda" and "The Return of Persephone," now in the Leeds Gallery (1891); and "Clytie," his last work (1896).

Leighton was one of the most thorough draughtsmen of his day. His sketches and studies for his pictures contain the essence of his conceptions, and much of their beauty was often lost in the elaboration of the finished picture. He seldom succeeded in retaining the freshness of his first idea more completely than in his last picture—"Clytie"—which was left unfinished on his easel. He rarely painted sacred subjects. The most beautiful of his few pictures of this kind was the "David musing on the Housetop" (1865). Others were "And the Sea gave up the Dead which were in it" (1892), now in the Tate gallery, and the terrible "Rizpah" of 1893. His diploma picture was "St. Jerome," exhibited in 1869. Among the most individual and beautiful of his pictures are "The Summer Moon," two Greek girls sleeping on a marble bench, and "The Music Lesson."

Leighton also painted a few portraits, and executed a few pieces of sculpture.

As president of the Royal Academy, Leighton was punctilious in the discharge of his duties, ready to give help and encouragement to artists, and his tenure of the office was marked by some wise and liberal reforms. His death occurred on Jan. 25, 1896, and he was buried in the crypt of St. Paul's cathedral. The contents of his studio were sold at Christie's in the same year; but a large number of his drawings has been secured for exhibition at Leighton House, now a museum.

Leighton was elected an academician in 1868, and succeeded Sir Francis Grant as president in 1878, when he was knighted. He was created a baronet in 1886, and was raised to the peerage in 1896, immediately before his death. He had numerous honorary degrees, foreign distinctions, decorations and prizes. (C. Mon.)

See the Royal Academy Catalogue, Winter Exhibition, 1897; C. Monkhouse, *British Contemporary Artists* (1899); Ernest Rhys, *Frederick, Lord Leighton* (1898, 1900); Mrs. Russell Barrington, *The Life, Letters and Work of Frederick Leighton* (1906).

LEIGHTON, ROBERT (1611–1684), archbishop of Glasgow, was born, probably in London (others say at Ulishaven, Forfarshire), the eldest son of Dr. Alexander Leighton, the author of *Zion's Plea against the Prelacie,* and one of the victims of the Laudian persecution. Robert was educated at the university of Edinburgh, where he took his M.A. in 1631. He then spent several years in France. Either at this time or later he came into contact with the Jansenists. In 1641 he was ordained Presbyterian minister of Newbattle, Midlothian, and in 1643 signed the Covenant. In 1652 he resigned his charge and went to Edinburgh, where early in 1653 he was appointed principal of the university, and primarius professor of divinity.

In 1661, when Charles II. had resolved to force Episcopacy once more upon Scotland, he fixed upon Leighton for one of his bishops (*see* Scotland, Church of). The Episcopacy which he contemplated was that modified form which had been suggested by Archbishop Ussher, and to which Baxter and many of the best of the English Nonconformists would have readily given their adherence. Leighton travelled with the new bishops in the same coach from London towards Scotland, but having become, as he told Burnet, very weary of their company (as he doubted not they were of his), and having found that they intended to make a kind of triumphal entrance into Edinburgh, he left them at Morpeth and retired to the earl of Lothian's at Newbattle. He very soon lost all hope of being able to build up the church by the means which the government had set on foot, and his work, as he confessed to Burnet, "seemed to him a fighting against God." He did, however, what he could, governing his diocese (that of Dunblane) with the utmost mildness, and endeavouring to persuade the Presbyterian clergy to come to an accommodation with their Episcopal brethren. After a hopeless struggle of three or four years to induce the government to cease the persecution of the Covenanters, he went up to London in 1665 to resign his bishopric, but was induced by Charles to remain. In 1669 Leighton again went to London and made fresh representations on the persecution of the Covenanters, and in 1670 he reluctantly agreed to accept the archbishopric of Glasgow. He now redoubled his efforts for conciliation between Presbyterians and the Episcopacy, but had no success. He resigned the archbishopric in 1674 and retired to Broadhurst, Sussex, where he spent the happiest years of his life. He died suddenly in a London inn in 1684.

Leighton was little suited to the part he had to play in Scotland. He was made for the meditative life, and his aloofness from every day life brought on him the dislike of both the conflicting parties in the church. It is stated that he left orders that all his mss. should be destroyed after his death. But fortunately for the world this charge was disregarded. His writing seems to flow without effort; it is the easy unaffected outcome of his saintly nature. It was a common reproach against Leighton that he had leanings towards Roman Catholicism, and perhaps this is so far true that he had formed himself in some degree upon Pascal and Thomas à Kempis.

The best account of Leighton's character is that of Bishop Burnet in *Hist. of his Own Times* (1723–34). *See* the editions of his *Works* published by W. West (7 vols., 1869–75), selections (with biography) by Dr. Blair of Dunblane (1883); Andrew Lang, *History of Scotland* (1902).

LEIGHTON BUZZARD, a town in Bedfordshire, England, 40 mi. N.W. of London by the L.M.S. railway. Pop. (1938) 6,989. It lies in the valley of the Ouzel, a tributary of the Ouse. The Grand Junction canal follows its course, and gives the town extensive water-communications. The church of All Saints is cruciform, with central tower and spire. It is mainly Early English. On one of the tower-arch pillars are some early carvings of jocular character. The market cross dates from 1330. Leighton carries on a large business in silica, silver and building sand, and there is a considerable agricultural trade. Area of urban district, 3.9 sq.mi.

LEININGEN, the name of an old German family, whose lands lay principally in Alsace and Lorraine. The first count of Leiningen about whom anything certain is known was a certain Emicho (d. 1117), whose family became extinct in the male line when Count Frederick, a Minnesinger, died about 1220. Frederick's sister, Liutgarde, married Simon, count of Saarbrücken, and Frederick, one of their sons, inheriting the lands of the counts of Leiningen, took their arms and their name. Having increased its possessions the Leiningen family was divided about 1317 into two branches; the elder of these, whose head was a landgrave, died out in 1467. On this event its lands fell to a female, the last landgrave's sister Margaret, wife of Reinhard, lord of Westerburg, and their descendants were known as the family of Leiningen-Westerburg. Later this family was divided into two branches, those of Alt-Leiningen-Westerburg and Neu-Leiningen-Westerburg, both of which are represented today.

Meanwhile the younger branch of the Leiningens, known as the family of Leiningen-Dagsburg, was flourishing, and in 1560 this was divided into the lines of Leiningen-Dagsburg-Hartenburg, founded by Count John Philip (d. 1562), and Leiningen-Dagsburg-Heidesheim or Falkenburg, founded by Count Emicho (d. 1593). In 1779 the head of the former line was raised to the rank of a prince of the Empire. In 1801 this family was deprived of its lands on the left bank of the Rhine by France, but in 1803 it received ample compensation for these losses. A few years later its possessions were mediatized, and they are now included mainly in Baden, but partly in Bavaria and in Hesse.

See Brinckmeier, *Genealogische Geschichte des Hauses Leiningen* (Brunswick, 1890–91).

LEINSTER, a province of Eire, occupying the middle and south-eastern portion of the island, and extending to the left bank of the Shannon. It includes the following counties: Longford, Westmeath, Meath, Louth, Offaly, Leix, Kildare, Dublin, Carlow, Wicklow, Kilkenny and Wexford (*qq.v.* for topography, etc.). Leinster (*Laighen*) was one of the early Gaelic provinces of Ireland. Meath, the modern county of which is included in Leinster, was the name of a separate province created in the 2nd century A.D. The MacMurroughs, kings of Leinster retained their position until 1171, and their descendants maintained independence in Carlow and Wexford as late as the 16th century. In 1170 Richard Strongbow married Aoife, daughter of the last king Diarmid, and thus acquired a claim to the kingdom but accepted Leinster instead from Henry II. as a fief of the Crown. His daughter Isabel married William Marshal,

earl of Pembroke, and when the family died out in the male line (1243), heiresses shared the territory of Leinster, which was now divided into five liberties, namely, Carlow, Kilkenny, Wexford, Kildare and Leix. The history of Leinster thereafter passes to the several divisions which were gradually organized into the present counties. Population (1936) 1,220,411.

LEIPER, ROBERT THOMPSON (1881–), British biologist, was born at Kilmarnock on April 17, 1881, and educated at Warwick school, and Birmingham and Glasgow universities. In 1904 he was awarded a Carnegie research scholarship in biology. In 1907 he was appointed on the Egyptian government survey in Uganda; he also accompanied research expeditions to the Gold Coast (1905), Nigeria (1912), China (1914) and British Guiana (1921). In 1915–16, during World War I, he was attached as consultant parasitologist to the R.A.M.C. bilharzia mission in Egypt. From 1919–21 he was director of the prosectorium at the Zoological gardens, London. He edited the *Journal of Helminthology,* and became professor of helminthology in the University of London, and director of the department of parasitology of the London School of Hygiene and Tropical Medicine.

His works include: *Researches on Egyptian Bilharziosis* and numerous papers on medical, veterinary and general helminthology.

LEIPZIG, city of Germany, the first town of the *Land* of Saxony in size and commercial importance, 70 m. N.W. of Dresden and 111 m. S.W. of Berlin by rail, and 6 m. from the Prussian frontier. It lies 350 ft. above sea-level in a plain, just above the junction of three small rivers, the Pleisse, the Parthe and the Elster, which flow in various branches through or round the town. Leipzig in point of trade and industries ranks among German cities immediately after Berlin and Hamburg. It possesses a large university, and is seat of the supreme tribunal of the German republic. It consists of the old, or inner city, and of the inner and outer suburbs. Many villages have been incorporated with the city, and with these accretions the population in 1939 amounted to 701,606.

Antiquities.—The old town has narrow streets and numerous houses of the 16th and 17th centuries, with high-pitched roofs. Upon the market square the four main business streets converge, and its east side is occupied by the old Rathaus, a Gothic edifice built in 1558. Behind the market square and the main street lies a labyrinth of narrow streets interconnected by covered courtyards and alleys, with extensive warehouses and cellars. The whole, in the time of the great fairs, is packed with merchandise and thronged with a motley crowd. Close to the old Rathaus is Auerbach's *Hof,* built about 1530 and immortalized in Goethe's *Faust.* It has a curious old wine vault (Keller) which contains a series of mural paintings of the 16th century, representing the legend on which the play is based. Near by is the picturesque Königshaus, for several centuries the palace of the Saxon monarchs in Leipzig. In the south-west corner of the inner town lay the Pleissenburg, or citadel, modelled, according to tradition, on that of Milan, and built early in the 13th century. Here Luther in 1519 held his momentous disputation. The round tower was long used as an observatory and the building as a barrack. With the exception of the tower, the citadel has been removed and its site is occupied by the new Rathaus. The business of Leipzig is chiefly concentrated in the inner city, but the headquarters of the book trade lie in the eastern suburb. Upon the Augustusplatz is the main building of the university. The oldest church, in its present form, is the Paulinerkirche, built in 1229–40, and restored in 1900, with a curiously grooved cloister; the largest in the inner town is the Thomaskirche, with a high-pitched roof dating from 1496, and memorable for its association with J. Sebastian Bach, who was organist here. On the east is the Johanneskirche, round which raged the last conflict in the battle of 1813, when it suffered severely from cannon shot. In it is the tomb of Bach, and opposite its main entrance is the Reformation monument, with bronze statues of Luther and Melanchthon. Here is the new Gewandhaus, or Konzerthaus, built in 1880–84, the old Gewandhaus, or Drapers' hall, in the inner town having again been devoted to commercial use as a market hall during the fairs. Immediately opposite to it is the university library. Between the university library and the Gewandhaus stands a monument of Mendelssohn. Immediately to the east of the school of arts is the building of the supreme tribunal of the German republic, the Reichsgericht, which was built in 1888–95, and bears a dome crowned by a bronze figure of Truth. In the centre of the book-trade quarter stand close together the modern Buchhändlerhaus (booksellers' exchange), the great hall decorated with allegorical pictures by Sascha Schneider, and the Buchgewerbehaus, a museum of the book trade. The city also has an astronomical observatory.

Education, etc.—The university of Leipzig, founded in 1409 by a secession of 400 German students from Prague, is one of the largest in Germany. It has ample revenues derived to a great extent from house property in Leipzig and estates in Saxony. To the several faculties also belong various collegiate buildings, notably, to the legal, that of the *Collegium beatae Virginis* in the Petersstrasse, and to the philosophical the *Rothe Haus* on the promenade facing the theatre.

As a musical centre Leipzig is known all over the world for its associations with J. S. Bach, its excellent conservatorium, and for the series of concerts given annually in the Gewandhaus. The prominence of the publishing interest has attracted to Leipzig a large number of authors, and made it a literary centre of considerable importance. Hundreds of newspapers and periodicals are published here, and the city has always been distinguished for its cosmopolitan spirit.

Commerce.—The outstanding importance of Leipzig as a commercial town is mainly derived from its great fairs, which annually attract merchants from all parts of Europe, and from Iran Armenia and other Asiatic countries. The most important fairs are held at Easter and in September, and are said to have been founded as markets about 1170. The smaller New Year's fair was established in 1458 and there are still others. Under the fostering care of the margraves of Meissen, and then of the electors of Saxony they attained great popularity. In 1268 the margrave of Meissen granted a safe-conduct to all frequenters of the fairs, and in 1497 and 1507 the emperor Maximilian I. greatly increased their importance by prohibiting the holding of annual markets at any town within a wide radius of Leipzig. During the following centuries on account of the wars the trade of the Leipzig fairs considerably decreased, but it recovered after the accession of Saxony to the German Customs Union (*Zollverein*) in 1834. Since then wares that can be safely purchased by sample appear at the fairs in steadily diminishing quantities, while others, such as hides, furs and leather, which require to be actually examined, show as marked an increase. The principal commodity is furs (chiefly American and Russian); other articles disposed of are leather, hides, wool, cloth, linen and glass.

In the trades of bookselling and publishing Leipzig occupies a unique position being said to take the first place in the world for the number and total value of its sales. Leipzig contains about 200 printing-works, some of great extent, and a corresponding number of type-foundries, binding-shops and other kindred industries.

Other industries include the manufacture of artificial flowers, wax-cloth, chemicals, various oils and essences, beer, mineral waters, tobacco and cigars, paints, cardboard, musical and surgical instruments, textiles (cotton and hosiery), machinery, lace, india-rubber wares, rush-work and paper, the preparation of furs, and ironfounding. These industries are mostly carried on in the suburbs.

Leipzig possesses one of the largest railway stations in the world and from it radiate lines to all the great German cities—to Berlin, Frankfort on the Oder, Breslau, Dresden, Regensburg, Cassel and Magdeburg.

History.—Leipzig owes its origin to a Slav settlement between the Elster and the Pleisse, which was in existence before the year 1000, and its name to the Slav word *lipa,* a lime tree. There was also a German settlement near this spot, probably round a castle erected early in the 10th century by the German king, Henry the Fowler. The district was part of the mark of Merseburg, and the bishops of Merseburg were the lords of extensive areas around the settlements. In the 11th century Leipzig is mentioned as a fortified

place and in the 12th it came into the possession of the margrave of Meissen, being granted some municipal privileges by the margrave, Otto the Rich, before 1190. Its favourable situation in the midst of a plain intersected by the principal highways of central Europe, together with the fostering care of its rulers, cooperated toward raising Leipzig to the position of a very important commercial town. Powers of self-government were acquired by the council (*Rat*) of the town, the importance of which was enhanced during the 15th century by several grants of privileges from the emperors. When Saxony was divided in 1485 Leipzig fell to the Albertine, or ducal branch of the family, whose head, Duke George, gave new rights to the burghers.

During the Thirty Years' War Leipzig suffered six sieges and on four occasions was occupied by hostile troops, being retained by the Swedes as security for the payment of an indemnity from 1648 to 1650. After 1650 its fortifications were strengthened; its finances were put on a better footing; and its trade, especially with England, began again to prosper, important steps being taken with regard to its organization. Towards the end of the 17th century the publishing trade began to increase very rapidly, partly because the severity of the censorship at Frankfurt-on-Main caused many booksellers to remove to Leipzig. After 1825 it became the general headquarters of the German book-trade; and its annual fair, ordinarily attended by booksellers of all nations, attained a world-wide importance.

The immediate neighbourhood of Leipzig has been the scene of several battles, two of which are of more than ordinary importance. These are the battles of Breitenfeld, fought on Sept. 17, 1631, between the Swedes under Gustavus Adolphus and the imperialists, and the great battle of Leipzig, known in Germany as the *Völkerschlacht* (Battle of the Nations) (*see* below).

In the German Revolution which followed the end of World War I, Leipzig was the scene of much bloodshed. Further disturbances continued for several days during the revolutionary agitation which recurred in the Spring of 1920. Because of its importance as a railway centre, it was bombed in World War II.

Towards the middle of the 18th century Leipzig was the seat of the most influential body of literary men in Germany, over whom Johann Christoph Gottsched, like his contemporary, Samuel Johnson, in England, exercised a kind of literary dictatorship. Then, if ever, Leipzig deserved the epithet of a "Paris in miniature" (*Klein Paris*) assigned to it by Goethe in his *Faust*. The young Lessing produced his first play in the Leipzig theatre, and the university counts Goethe, Klopstock, Jean Paul Richter, Fichte and Schelling among its alumni. Schiller and Gellert also resided for a time in Leipzig, and Sebastian Bach and Mendelssohn filled musical posts there. Among the celebrated natives of the town are the philosopher Leibnitz and the composer Wagner.

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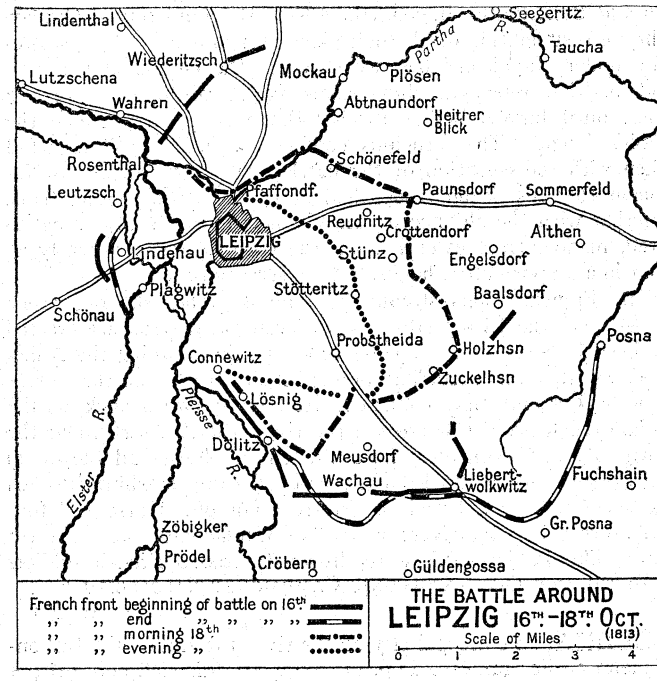
LEIPZIG, BATTLE OF, or more grandiloquently BATTLE OF THE NATIONS, the engagements of Oct. 16, 18 and 19, 1813, which ended in the defeat of Napoleon and the destruction of what remained of the *grande armée*. That Napoleon fought at Leipzig at all was due to the Allied threat to concentrate at that city and cut him off from his base, marked on Oct. 3 by Blücher's defeat of Bertrand, and advance to Kemberg, Bernadotte's passage of the Elbe at Acken and Rosslau, and Schwarzenberg's advance south of Leipzig. The initiative, as throughout the war of 1813, had passed to his opponents: moreover, in pursuance of diplomatic rather than strategic ends, he left St. Cyr and Lobau with three corps in Dresden even after he had decided to move westwards (Oct. 8).

On Oct. 14–15 the first conflict took place at Wachau, where Murat threw back the van of Schwarzenberg's army advancing from the south. Napoleon's dispositions were complete by the night of Oct. 15 and the battle began next morning (*see* plan). The Allies were in two armies, the Prussian Blücher attacking from the north, the Austrian Schwarzenberg from the south Bernadotte with his Swedes was, probably of intention, hanging



back. He had no wish, entertaining the hopes he did of a French crown, to become famous for a victory over French troops and he probably shared in an unusual degree the general fear of Napoleon's abilities. Blücher's main strength lay on the eastern side of the river Elster, before Möckern, where he faced Marmont. West of the Elster Bertrand covered the sole French line of retreat, the Frankfort highway, his opponent being Gyulay. The main attack was made by Schwarzenberg from the south, and against him Napoleon launched his heaviest blows. The allies had 325,000 effective troops to the French 214,000.

Schwarzenberg, a commander of second-rate abilities, nearly gave the victory to the French early in the day. He adopted the plan of attempting to outflank Napoleon's forces by extending his army to the left, beyond Connewitz. Such a movement was perfectly possible on paper, but in fact the low-lying meadows of the Pleisse and Elster were an almost impassable swamp. The Austrian forces were before long helplessly entangled: they were in fact mired. Meanwhile, the French troops had withstood the general assault and by midday Napoleon judged that the time was ripe for his grand stroke, which was to be to smash through the enemy's centre as far as Guldengossa and roll up his right. It is stated that the artillery attack at this time was so severe that the French cannon was no longer heard in separate shots but as one continuous roll. By two o'clock Victor, Oudinot, Mortier and MacDonald were beyond Guldengossa, but the village itself still held out, until the cavalry, directed by Murat, Kellerman and Latour Maubourg, were launched upon it in a magnificent charge. The allied forces were driven out in apparent disaster, but ruin was averted by the tsar Alexander, who overruled Schwarzenberg, withdrawing from him the Russo-Austrian reserves, which he sent with the Cossack guard against Murat, who was forced to retreat. Marmont meanwhile had been forced to withdraw before Blücher, while Bertrand had driven back Gyulay.

The day had thus ended indecisively, but victory might yet have gone to the French. On the next day, however, when the allies did not attack, Napoleon was overcome by the curious lassitude which reappears so frequently in this campaign, "a carelessness" wrote Marmont, "which it is impossible to explain."

He amused himself by sending a useless message to the emperor of Austria suggesting negotiations and on the 18th, when the Allies renewed the attack, the French position was unimproved, while the Allies had at last received the assistance of Bernadotte. The battle of the 18th, as may be seen from the plan, was fought on a somewhat different field. In the north, as before, Marmont slowly withdrew before Blücher, Ney (around Paunsdorf) before Bennigsen and Bernadotte. Beyond the Elster Bertrand routed Gyulay. The fiercest fighting of all took place at Probstheida and Stötteritz, under Napoleon's own eyes, where the combined Russians and Austrians repeatedly flung themselves in vain upon the French lines, until human bodies formed the ground upon which the armies fought. The ferocious conflict continued until nightfall when with the cessation of the battle news was brought to Napoleon that his Saxon troops had deserted to the enemy. This, together with the absence of the victory on which he had calculated, made retreat essential, but the emperor sat for nearly an hour in a stupor before he gave the necessary orders.

The French troops streamed all night across the one stone bridge over the Elster (the temporary wooden structure erected by French engineers early collapsed). In the morning the Allies, realizing what was occurring, pressed their attack, and the retreat grew hastier and more confused. At last, at two o'clock, as the main French army had crossed the river, the Allies stormed the town. By an idiotic mistake a French subaltern had blown up the bridge, and as the French rearguard came crashing through the town they found their last retreat cut off. Horse and foot were forced into the river; some, like MacDonald, swam across; many, like Poniatowski, were drowned; 20,000 French soldiers were captured (*see* NAPOLEONIC CAMPAIGNS; NAPOLEON I.)

(R. W. P.)

LEIRIA, an episcopal city on the river Liz and on the Lisbon-Figueira da Foz railway. Pop. (1940) 7,208; district, pop. (1940) 353,675; area 1,326 sq.mi. The principal buildings of Leiria are the ruined citadel, which dates from the 13th century and the cathedral, a small Renaissance building erected in 1571 but modernized in the 18th century. The main square of the city is named after the poet Francisco Rodrigues Lobo, who was born here about 1580. Between Leiria and the Atlantic there are extensive pine woods known as the Pinhal de Leiria, which were planted by King Dinis (1279–1325) with trees imported from the Landes in France, in order to give firmness to the sandy soil. In the neighbourhood there are glass and iron foundries, oil wells and mineral springs. Leiria, the Roman Colippo, was taken from the Moors in 1135 by Alphonso I. King Dinis made it his capital. In 1466 the first Portuguese printing-press was established here; in 1545 the city was made an episcopal see.

LEISLER, JACOB (*c.* 1635–1691), American political agitator, was born probably in Frankfurt-on-Main, Germany, about 1635. He went to New Netherland in 1660 as a soldier in the service of the Dutch West India company, married a wealthy widow and successfully engaged in trade. When news of the imprisonment of Governor Andros in Massachusetts was received, a group of rebels under Leisler's command, fired largely by anti-Papist sentiment, took possession of Ft. James, and announced their determination to hold it until the arrival of a Protestant governor commissioned by the new sovereigns. After Lieut.-Governor Francis Nicholson sailed for England, a committee of safety was organized by the popular party, and Leisler was appointed commander-in-chief. Under authority of a letter from the home Government addressed to Nicholson, or in his absence to "such as for the time being take care for preserving the peace and administering the laws in His Majesty's province of New York," he assumed the title of lieutenant-governor in Dec. 1689, appointed a council and took charge of the Government of the entire province. He summoned the first intercolonial congress in America, which met in New York on May 1, 1690, to plan concerted action against the French and Indians. Leisler refused to surrender the fort to Maj. Richard Ingoldsby, who landed with his soldiers in Jan. 1691, and after some controversy an attack was made on March 17 in which two soldiers were killed and several wounded. When Col. Henry Sloughter, who had been commissioned governor of the province, arrived two days later Leisler hastened to give over to him the fort and other evidences of authority. He and his son-in-law, Jacob Milborne, who had many powerful colonial opponents, were charged with treason for refusing to submit to Ingoldsby, were convicted, and executed on May 16, 1691. Their estates were, however, later restored to their families and the attainder reversed. There has been much controversy among historians with regard both to the facts and to the significance of Leisler's brief career as ruler in New York.

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LEISNIG, a town in the *Land* of Saxony, Germany, on the Freiberger Mulde, 7 mi. S.E. of Grimma by rail from Leipzig to Dresden. Pop. (1933) 8,108. About 1080 it passed into the possession of the counts of Groitzsch, but was purchased in 1157 by the emperor Frederick I., who committed it to the charge of counts. It fell to Meissen in 1365, and later to Saxony. High above the town lies the old castle of Mildenstein, now used as administrative offices. Industries include the manufacture of cloth, furniture, boots, cigars, toys, beer, machinery and chemicals.

LEITH or **PORT OF LEITH,** incorporated with Edinburgh, Scotland, in 1920, had a population of 80,488 in 1911. It is situated on the south shore of the Firth of Forth. It has stations on the L.N.E. and L.M.S. railways, and a branch line (L.N.E.) to Portobello. It is the largest port in east Scotland, the second port of the country, and a thriving centre of commerce.

St. Mary's in Kirkgate, the parish church of South Leith, was founded in 1483 and restored in 1852. Here David Lindsay (1531–1613), its minister, James VI's chaplain and afterwards bishop of Ross, preached before the king the thanksgiving sermon on the Gowrie conspiracy (1600). John Logan, the hymn-writer and reputed author of "The Ode to the Cuckoo," was minister for 13 years; and in its graveyard lies the Rev. John Home, author of *Douglas,* a native of Leith. Trinity House (1817), which contains some interesting portraits, was founded in 1555 as a home for old and disabled sailors, but on the decline of its revenues it became the licensing authority for pilots. There is a fine academy and a nautical college whose object is to provide an education suitable for modern ships. A new wing for marine engineering was opened in 1927. The east and west piers are favourite promenades, and the waterway between them is the entrance to the harbour.

The oldest industry is shipbuilding, which dates from 1313. Here in 1511 James IV built the "St. Michael." Other important industries are engineering, sugar-refining, meat-preserving, flour-milling, sailcloth-making, soap-boiling, rope, sail, soap and paint making, tanning, chemical manure-making, wood-sawing, brewing, distilling and fish-curing. The chief imports are grain, timber, hemp, sugar and fruit, and the chief exports, coal, iron, spirits and paper. Leith is the headquarters of the whisky business in Great Britain, and stores also large quantities of wine from Spain, Portugal and France. There are excellent docks with a total area of 105½ ac., 8 dry docks and capacious warehouses. A new dock is planned to extend northward into the Forth. Apart from coasting trade there are normally constant sailings to the leading European ports, the United States, Canada, Japan, etc. Leith fort, built in North Leith in 1779 for the defense of the harbour, is now the headquarters of the Royal Artillery in Scotland. Leith is the head of a fishery district. The parliamentary burgh was created in 1832 and returns one member.

Leith figures as Inverleith in the foundation charter of Holyrood abbey (1128). In 1329 Robert I granted the harbour to the magistrates of Edinburgh, who did not always use their power wisely. They forbade, for example, the building of streets wide enough to admit a cart, a regulation that accounted for the number of narrow wynds and alleys in the town. Had the overlords been more considerate, incorporation with Edinburgh would not have been so bitterly resisted. Several quaint bits of ancient Leith remain. At least twice (in 1313 and 1410) its shipping was burned by the English, who also sacked the town in 1544—when

the 1st earl of Hertford destroyed the first wooden pier—and 1547. After the death of James V., Leith became the stronghold of the Roman Catholic and French party from 1548 to 1560, Mary of Guise, queen regent, not deeming herself secure in Edinburgh. In 1549 the town was walled and fortified by Montalembert, sieur d'Essé, the commander of the French troops, and endured an ineffectual siege in 1560 by the Scots and their English allies. A house in Coalhill is thought to be the "handsome and spacious edifice" erected for her privy council by Mary of Guise.

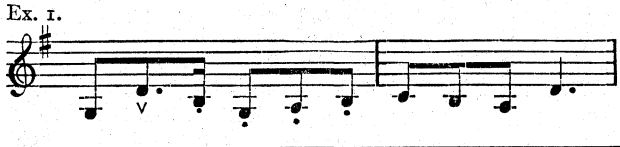
LEITMERITZ: *see* LITOMĚŘICE.

LEITMOTIV (leading motive), term invented by Hans von Wolzogen (1848–1938), well-known Wagnerian analyst and commentator, as a convenient designation for the characteristic and constantly-recurring musical motives, also known sometimes as "representative themes," which play such an all-important part in Wagnerian opera and the development of which as a musical device constitutes one of Wagner's most important contributions to the technique of opera. For though, as has often been pointed out, Wagner did not actually invent the principle of representative themes, which had been employed earlier in a rudimentary manner by Mozart, Weber and others, he developed it so enormously and utilized its possibilities with such consummate resourcefulness and skill as to make it practically a new thing and to produce in the result a kind of opera utterly different from any which had been known before.

And yet the principle in itself is so simple and, as it now seems, so obvious, that it might be thought surprising that it had never been turned to better account previously. But the average composer might certainly well despair of employing the system with the amazing skill and resourcefulness displayed by Wagner. A whole treatise might indeed be written on the wonders of the leading motive system as it was developed by Wagner and in the case of which one knows not whether most to admire the felicity and expressiveness of the themes themselves or the wonderful manner in which they are subsequently developed.

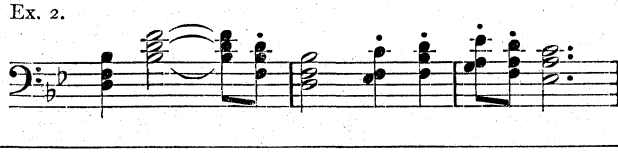
Especially remarkable is the way in which they are modified and metamorphosed in correspondence with the varying requirements of the action and the development of the drama. An oft-quoted instance from the "Ring" is the transformation which the simple joyous motive of "Siegfried's Horn Call"—ex. 1:

Ex. 1.



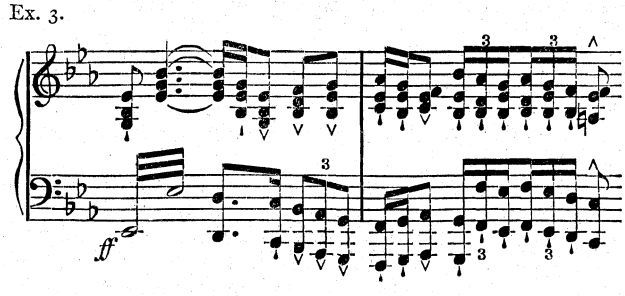
undergoes when later, in *Götterdämmerung,* it is employed, richly harmonized, to characterize the more matured Siegfried—ex. 2:

Ex. 2.



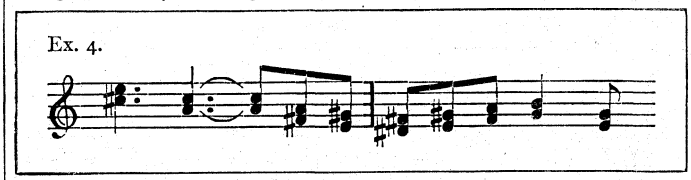
and finally, in the sublime Trauermarsch, is still further enriched and ennobled to express the emotions associated with his death and apotheosis—ex. 3:

Ex. 3.



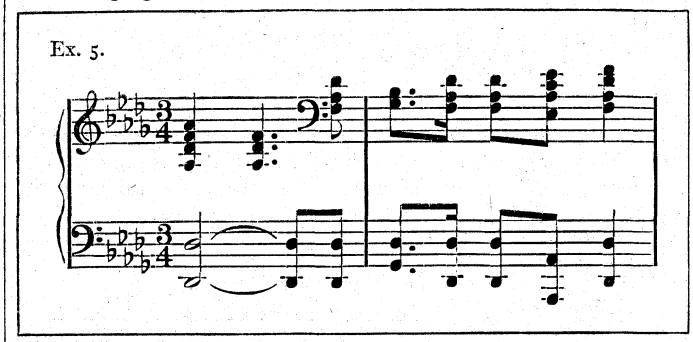
But this is only one of countless examples which might be cited. Such an elementally simple theme, for instance, as that of the so-called "Bondage" motive from the *Ring,* consisting of two notes only, is made to undergo the most astonishing transformations as the drama proceeds, while as one of innumerable other examples one may take the transformation of the bare and not particularly alluring theme of the "ring" itself—ex. 4:

Ex. 4.



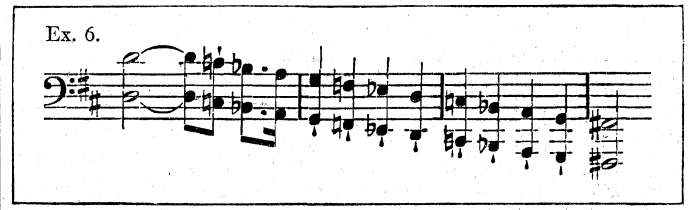
into the gorgeous strains of the noble "Walhall" motive—ex. 5:

Ex. 5.



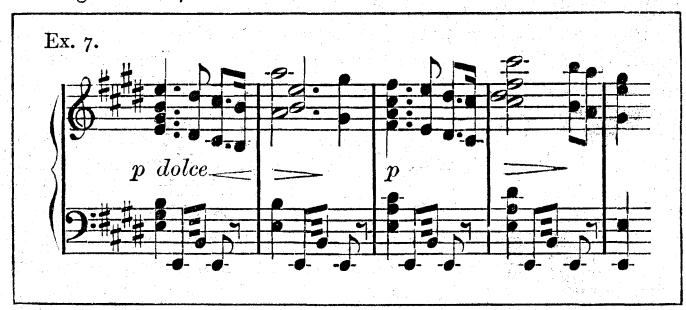
Another typical instance, not so well known, of the ingenuity with which one theme is sometimes converted into another of a totally different character is afforded by the transformation of the simple and severe motive known variously as that of the "Spear" or the "Treaty"—ex. 6:

Ex. 6.



into the heroic and richly-expressive theme of the "World's Heritage"—ex. 7:

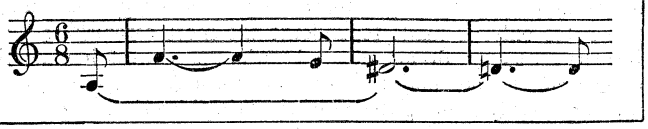
Ex. 7.



the actual notes of the melodic outline being precisely the same but changed out of all recognition by the successive leaps to the octave, the alteration of the rhythm and the addition of the splendid harmonization.

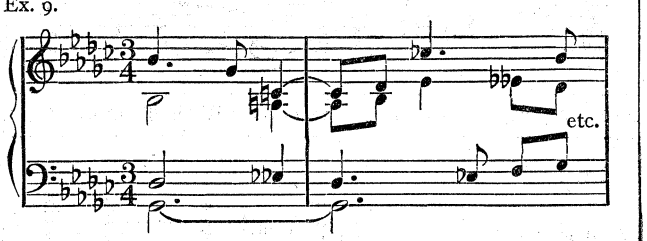
All of the foregoing examples have been chosen from the *Ring* but it hardly needs saying that *Tristan und Isolde* and *Die Meistersinger* supply others in plenty no less striking. Take for instance a beautiful one from the third act of *Tristan und Isolde,* in the case of which the psychological situation is one of exceptional complexity since it combines in equal measure the emotions of both the utmost grief and the highest joy. In other words the stricken Tristan lies actually dying but in his delirium fancies that Isolde has come to him and is consequently filled with ecstasy. How then does Wagner solve the problem? In the simplest and at the same time the most extremely effective manner imaginable. That is to say he *combines* the "Grief" motive—ex. 8:

Ex. 8.



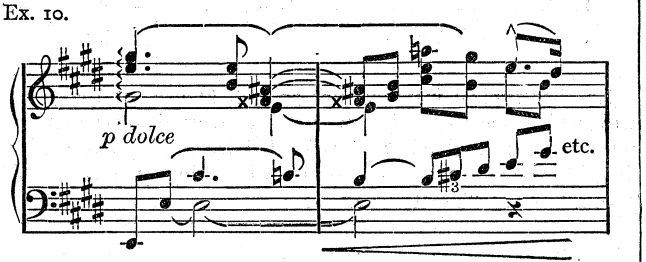
with the "Rapture" motive—ex. 9:

Ex. 9.



and thereby obtains the following indescribably expressive and poignant result, conveying at one and the same time all the rapture and all the pathos of the situation—ex. 10:

Ex. 10.



A more striking instance of the subtle possibilities of the leading motive principle when employed by a master it would not be easy to find, though it could be paralleled again and again in Wagner's scores, and in the light of such examples one may well wonder how Debussy could ever have brought himself to perpetrate his foolish gibe at what he called the "visiting card" principle.

The leading motive method is invaluable moreover not merely in the more obvious way, as a means of providing the kind of music most in keeping with the ever-varying requirements of the dramatic situation, but also as a means of providing the best kind of material for the construction of the entire musical fabric. In the case of Wagner's later works the instrumental portion of the score consists more often than not of nothing but one continuous network of interwoven motives, thereby affording in place of the mere "accompaniment" of the older composers a feast of never-ending interest and delight to the ear—and this, be it noted, whatever may be the character of the vocal part at any given moment.

Invaluable indeed are the uses of the leading motive principle in this respect inasmuch as it permits of the voice parts being kept quite restrained and unemotional in character when the dramatic situation requires this without any diminution of the musical interest, which is maintained by the instrumental foundation in a manner which would otherwise be almost impossible. Take as illustration the scene from the first act of *Die Meistersinger* in which Pogner is unfolding to the assembled mastersingers his scheme for the singing contest. His remarks being purely expository and quite unemotional in character naturally call for vocal expression to correspond and so it is in quite level and conversational tones, as it were, that Pogner expounds his plan. But this entails no sacrifice whatever of the musical interest since this is maintained at the highest level by the uninterrupted flow of lovely motives—the "St. John's Day" motive, the "Guild" motive, the "Art Union" motive, and so on—of which the instrumental accompaniment is made up.

Since Wagner showed the way nearly all subsequent operatic composers have followed his example and adopted the same procedure, although there have been some notable exceptions. Puccini, for instance, adopted the leading motive principle only to the most limited extent and Debussy, in his only opera, *Pelléas et Mélisande,* did not employ it at all. Richard Strauss on the other hand has pushed it to its extremest limits, displaying therein, alike in his symphonic poems and in his operas, an amount of ingenuity which is sometimes more apparent than the inspiration. And this is of course the danger of the leading motive system, especially when it is carried out by inferior practitioners, namely the risk of its becoming a purely mechanical exercise in theme-juggling. But even in this event the result is likely to be at least more interesting than when the older method is employed.

(H. A. Sc.)

LEITRIM, a county of Eire in the province of Connaught, bounded north-west by Donegal bay, north-east by Fermanagh, east by Cavan, south-east by Longford, south-west by Roscommon and west by Sligo. Area 376,764 ac. or about 588 sq.mi. Pop. (1936) 50,908.

The county has a floor of Carboniferous Limestone, which forms scarped hills near Donegal bay. The northern part of the county is a tableland, of which the highest summits belong to the Truskmore hills, reaching 1,712 ft.; with Benbo, 1,365 ft. and Lackagh 1,446 feet. The underlying sandstone appears at Lough Melvin, and again on the margin of a Silurian area in the extreme south. The Upper Carboniferous series, dipping southward, form mountainous country round Lough Allen, where the name of Slieve Anierin records the abundance of clay-ironstone beneath the coal seams. The sandstones and shales of this series scarp boldly towards the valley of the Bonnet, across which rises the ridge of ancient gneiss which forms, in Benbo, the north-east end of the Ox mountains. The ironstone was smelted in the upland at Creevelea down to 1859, and the coal is worked in a few thin seams.

The principal river is the Shannon, which, issuing from Lough Allen, forms the south-western boundary of the county with Roscommon. The Bonnet rises in the north-west and flows to Lough Gill, and the streams of Drones and Duff separate Leitrim from Donegal and Sligo. Besides Lough Allen, which has an area of 8,900 ac., the principal lakes are Lough Macnean, Lough Scur, Lough Garadice and Lough Melvin. Lough Melvin and the coast rivers afford rod fishing, the lough being noted for its trout.

Co. Leitrim, under the name of Hy Bruin-Brenny, formed the western part of Brenny or Breffny. It was for a long time held by the O'Rourkes, a family which long maintained its independence. Leitrim was not created a county until 1583. Large confiscations were made in the reigns of Elizabeth and James I., in the Cromwellian period, and after the Revolution of 1688.

There are "druidical" remains near Fenagh and at Letterfyan, and monastic ruins at Creevelea near the Bonnet, and in the parish of Fenagh. There was a Franciscan friary at Jamestown. The abbeys of Mohill, Annaduff and Drumlease have been converted into parish churches. Among the more notable old castles are Manor Hamilton now in ruins, and Castle John on an island in Lough Scur. A village named Leitrim about 4 m. N. of Carrick-on-Shannon is said to have been the seat of an early bishopric.

The climate is moist and unsuitable for grain crops. On the higher districts the soil is stiff and cold, and retentive of moisture, but some valleys are fertile. Lime, marl and similar manures are abundant. Potatoes are grown, but oats, the principal grain crop, are scanty. The live stock consists chiefly of cattle, pigs and poultry.

Coarse linens for domestic purposes are manufactured and coarse pottery is also made. The Sligo, Leitrim and Northern Counties railway, connecting Sligo with Enniskillen, crosses the north of the county, by way of Manor Hamilton; the Mullingar and Sligo line of the Great Southern has a station at Carrick-on-Shannon; while connecting with this line at Dromod is the line to Ballinamore and Arigna, and to Belturbet in Co. Cavan. Leitrim returns three members to Dáil Eireann.

LEIX (or LAOIGHIS) COUNTY (formerly Queen's County), a county of Eire, in the province of Leinster, bounded

northwest and north by Offaly county, east by Kildare, south by Carlow and Kilkenny, and west by Tipperary; area, 424,892 ac., or about 664 sq.mi. Pop. (1936) 50,109. The limestone plain prevails in the county, but the high coalfield, shared with Kilkenny and Carlow, rises from it in the south; while the Slieve Bloom mountains (Arderin, 1,733 ft.), a round-backed Old Red Sandstone mass with Silurian inliers, dominate the lowland west of Maryborough. The limestone itself produces a range of hills near Stradbally, on which stands the fortress of Dunamase. Esker gravels provide sandy soils in many places. Clay ironstone was formerly raised in connection with the anthracite from the coalfield. The Barrow which has its source in the Slieve Bloom mountains, and which forms at various points the boundary with Offaly County, Kildare and Carlow, and the Nore, which enters the county from Tipperary near Borris-in-Ossory, are the principal rivers. The largest lake is Lough Anaghmore on the north-western boundary. The Grand canal enters the county at Portarlington, and runs southwards to the Barrow in Kildare, a branch passing westwards 12 m. to Mountmellick.

The territory now included in Co. Leix covered the districts of Leix, Slewmargy, Irry and part of Glenmaliry, until in 1556 it was made shire ground. Three miles south of Stradbally is Dun of Clopook, an ancient dun or fort occupying the whole extent of the hill. Aghaboe, where there are the ruins of the abbey, was formerly the seat of the bishopric of Ossory. There are no remains of the abbey of Timahoe founded by St. Mochua in the 6th century, but in the neighbourhood there is a round tower, 96 ft. high. Abbeyleix, a small market town south of Maryborough, had a famous 12th century Cistercian foundation. The church of Killeshin, in the south-east of the county, exhibits Norman carving. Among the principal old castles are the ruined fortress of the O'Mores occupying the precipitous rock of Dunamase, 3 m. E. of Maryborough, Borris-in-Ossory on the Nore, and Lea Castle on the Barrow, near Portarlington, erected by the Fitzgeralds about 1260, burnt by Edward Bruce in 1315, again rebuilt, and in 1650 laid in ruins by the soldiers of Cromwell.

Originally a great extent of the surface was occupied with bog, but much was recovered by draining. It is generally fertile except in the hilly districts towards the north, and there is some remarkably rich land in the southeast. From 1930 to 1940 Leix with Cork and Galway grew great quantities of sugar beets and contributed to making Eire self-sufficient in sugar. Dairy farming is extensively practised. Agriculture forms the chief occupation, but the manufacture of woollen and cotton goods is carried on to a small extent. The main line of the Great Southern railway traverses the county from northeast to southwest by way of Portarlington and Maryborough. The administrative counties of Leix and Offaly together return five members to Dáil Eireann. The county town is Maryborough (Port Laoighise) with a population of 3,396.

LEIXÕES, a seaport and harbour of refuge of northern Portugal; in 41° 9′ 10″ N., 8° 40′ 35″ W., 3 m. N. of the mouth of the Douro. Leixões is included in the parish of Matozinhos (pop. 1940, 21,024) and constitutes the main port of the city of Oporto (*q.v.*), with which it is connected by an electric tramway. The harbour, of artificial construction, has an area of over 220 acres, and admits vessels of any size, the depth at the entrance being nearly 50 ft. The trade of the port is mainly in British hands, and large numbers of British ships call at Leixões between Lisbon and Liverpool, London or Southampton.

LEJEUNE, LOUIS FRANÇOIS, BARON (1770–1848), French general, painter, and lithographer, was born at Versailles. As aide-de-camp to General Berthier he took an active part in many of the Napoleonic campaigns and his vigorous battle-pictures executed mainly from sketches and studies made on the field, enjoyed a great vogue. The German campaign of 1806 brought him to Munich, where he visited the workshop of Senefelder, the inventor of lithography. Lejeune was so fascinated by the possibilities of the new method that he then and there made the drawing on stone of his famous "Cossack" (printed by C. and T. Senefelder, 1806). While he was dining, one hundred proofs were printed, one of which he subsequently submitted to Napoleon. The introduction of lithography into France was greatly due to the efforts of Lejeune. Many of his battle-pictures were engraved by Coiny and Bovinet.

See Fournier-Sarlovèze, *Le Général Lejeune* (Paris, *Libraire de l'art*).

LEKAIN, the stage name of Henri Louis Cain (1728–1778), French actor, who was born in Paris on April 14, 1728, the son of a silversmith. He was educated at the collège Mazarin, and joined an amateur company of players against which the Comédie Française obtained an injunction. Voltaire supported him for a time and enabled him to act in his private theatre and also before the duchess of Maine. After a struggle of seventeen months he was received, by order of Louis XV., at the Comédie Française. Among his best parts were Herod in *Mariamne,* Nero in *Britannicus* and similar tragic rôles. Lekain had the benches removed on which privileged spectators formerly sat encumbering the stage. He also protested against the method of sing-song declamation prevalent and against the practice of dressing all parts in contemporary costumes. He died in Paris on Feb. 8, 1778.

See *Mémoires* (1801) with his correspondence with Voltaire, Garrick and others. They were reprinted with a preface by Talma in *Mémoires sur l'art dramatique* (1825).

LEKEU, GUILLAUME (1870–1894), Belgian composer, was born at Heusy in the province of Liége on Jan. 20, 1870. He studied at the conservatoire of Verviers and afterwards became a pupil of César Franck and D'Indy in Paris. A lyric scene *Andromeda* gained for him the second Prix de Rome in Belgium. His early death from typhoid on Jan. 31, 1894, at Angers cut short a very promising career. He is best known by his sonata for violin and piano in G, dedicated to Ysaye and much played by him. It contains a very striking slow movement, written in $\frac{7}{8}$ alternating with $\frac{4}{8}$ and $\frac{8}{8}$ time, with a middle section based on a quasi-traditional air of great beauty. In treatment and feeling this work was far ahead of its time.

See A. Pissier, *Guillaume Lekeu* 1906; O. Séré, *Musiciens français d'aujourd'hui* 1922; M. Lorrain, *Guillaume Lekeu, sa correspondance, sa vie, son oeuvre,* Liége, 1923.

LELAND, CHARLES GODFREY (1824–1903), American author, was born at Philadelphia Aug. 15, 1824, and graduated at Princeton in 1845. For the three following years he travelled abroad for his health and studied at Heidelberg, Munich and Paris. He was in Paris during the revolution of 1848, and took an active part in it. He then returned to Philadelphia, and after being admitted to the bar in 1851, devoted himself to writing and to editorial work on various papers and magazines in Philadelphia, New York and Boston. He served in the Union Army for a brief time, prospected for oil, and then returned to journalism. In 1868 he became known as the humorous author of *Hans Breitmann's Party,* which was followed by other volumes of the same kind, collected in 1871, with the title of *Hans Breitmann's Ballads.* These pioneer dialect poems, burlesquing the German American, at once became popular and resulted in his being given a master's degree from Harvard, largely at the instance of James Russell Lowell. In 1869 he went to Europe, and till 1880 was occupied with literary work. After returning to Philadelphia for six years, where he made an ardent struggle for the introduction of hand-work in the schools, he again lived in Europe, generally at Florence, where he died March 20, 1903. Though his humorous verses were most attractive to the public, Leland was a serious student of folk-lore, particularly of the gypsies, his writings on the latter, *The English Gypsies and their Language* (1873); *The Gypsies* (1882); *Gypsy Sorcery and Fortune-telling . . .* (1891), being recognized as valuable contributions to the literature of the subject. His numerous other publications include *Poetry and Mystery of Dreams* (1855), *Meister Karl's Sketch-book* (1855), *Sunshine in Thought* (1863), *Egyptian Sketch-book* (1873), *Abraham Lincoln* (1879), *The Minor Arts* (1880), *Algonquin Legends of New England* (1884), *Hans Breitmann in Tyrol* (1894).

See his *Memoirs* (1893), and *Charles Godfrey Leland* by his niece Elizabeth R. Pennell (1906), who also wrote a memoir for the 1914 edition of the *Hans Breitmann Ballads.*

LELAND, JOHN (1691–1766), English Nonconformist

divine, born at Wigan, Lancashire, and educated in Dublin, was appointed first assistant and afterwards sole pastor of a congregation of Presbyterians in New Row. This office he continued to fill until his death on Jan. 16, 1766. He received the degree of D.D. from Aberdeen in 1739. His first publication was *A Defence of Christianity* (1733), in reply to Matthew Tindal's *Christianity as old as the Creation;* it was succeeded by his *Divine Authority of the Old and New Testaments asserted* (1738), in answer to *The Moral Philosopher* of Thomas Morgan. His chief work, the *View of the Principal Deistical Writers that have appeared in England* (1754–56), throws light on the deistic movement of the 18th century.

His *Discourses on various Subjects,* with a *Life* prefixed, was published posthumously (4 vols., 1768–89).

LELAND (LEYLAND or LAYLONDE), **JOHN** (*c.* 1506–1552), English antiquary, born in London, was educated at St. Paul's school under William Lilly, and at Christ's College, Cambridge. He graduated at Cambridge in 1521, and subsequently studied at All Souls College, Oxford, and in Paris under François Dubois (Sylvius). On his return to England he took holy orders. He had been tutor to Lord Thomas Howard, son of the 3rd duke of Norfolk, and to Francis Hastings, afterwards earl of Huntingdon. Meanwhile Henry VIII. presented him to the rectory of Peuplingues in the marches of Calais in 1530. He was librarian and chaplain to the king, and in 1533 he received a novel commission under the great seal as king's antiquary, with power to search for records, manuscripts and relics of antiquity in all the cathedrals, colleges and religious houses of England. Probably from 1534, and definitely from 1536 onwards to 1542, he was engaged on an antiquarian tour through England and Wales. He sought to preserve the mss. scattered at the dissolution of the monasteries, but his powers did not extend to the actual collection of mss. Some valuable additions, however, he did procure for the king's library, chiefly from the abbey of St. Augustine at Canterbury. He received the rectory of Haseley in Oxfordshire; his support of the church policy of Henry and Cranmer being further rewarded by a canonry and prebend of King's College (now Christ Church), Oxford, and a prebend of Salisbury. In a *Strena Henrico* (pr. 1546), addressed to Henry VIII. in 1545, he proposed to execute from the materials which he had collected in his journeys a topography of England, an account of the adjacent islands, an account of the British nobility, and a great history of the antiquities of the British Isles. He did not complete these great undertakings, for he was certified insane in March 1550, and died on April 18, 1552.

The bulk of Leland's work remained in ms. at the time of his death, and various copies were made, one by John Stowe in 1576. After passing through various hands the greater part of Leland's mss. were deposited by William Burton, the historian of Leicestershire, in the Bodleian at Oxford. They had in the meantime been freely used by other antiquaries, notably by Bale, Camden and Dugdale. The account of his journey in England and Wales received its name *The Itinerary of John Leland* from Thomas Burton and was edited by Thomas Hearne (9 vols., Oxford, 1710–12; other editions in 1745 and 1770). The scattered portions dealing with Wales were re-edited by Miss L. Toulmin Smith in 1907. His other most important work, the *Collectanea,* in four folio ms. volumes was also published by Hearne (6 vols., Oxford, 1715). His *Commentarii de scriptoribus Britannicis,* which had been used and distorted by his friend John Bale, was edited by Anthony Hall (2 vols., Oxford, 1709). Some of Leland's mss., which formerly belonged to Sir Robert Cotton, passed into the possession of the British Museum.

For accounts of Leland *see* John Bale, *Catalogus* (1557); Anthony à Wood, *Athenae Oxonienses;* W. Huddesford, *Lives of those eminent Antiquaries John Leland, Thomas Hearne and Anthony à Wood* (Oxford, 1772). A life of Leland, attributed to Edward Burton (*c.* 1750), from the library of Sir Thomas Phillipps, printed in 1896 contains a bibliography. *See* also the biography by Sidney Lee, in the *Dict. Nat. Biog.* The *Strena Henrico* was re-edited in 1549 by John Bale as *The Laboryeuse Journey and Serche of J. Leylande for Englandes Antiquitees geven of him for a Neu Yeares Gifte,* etc., modern ed. by W. A. Copinger (Manchester, 1895).

LELAND STANFORD JR. UNIVERSITY (STANFORD UNIVERSITY), near Palo Alto (Calif.), U.S.A., in the beautiful Santa Clara valley, was founded in 1885 by Leland Stanford (1824–93), and by his wife, Jane Lathrop Stanford (1825–1905), as a memorial to their only child, Leland Stanford jr., who died in 1884 in his 17th year. The founder was governor of California in 1862–63 and United States senator from 1885 till his death. The doors were opened in 1891 to 559 students. The university campus consists of Stanford's former Palo Alto farm, comprising about 9,000ac. From it there are views of San Francisco bay, of the Coast Range, particularly of Mt. Hamilton some 30m. E., with the Lick observatory on its summit, of mountain foothills and of the redwood forests towards Santa Cruz.

The buildings, designed originally by H. H. Richardson and completed by his successors, Shepley, Rutan and Coolidge, are of soft buff sandstone in a style adapted from the old California mission (Moorish-Romanesque) architecture, being long and low with wide colonnades, open arches and red-tiled roofs.

The building plans of the university contemplate the addition of a quadrangle on either side of the original group. The Thomas Welton Stanford art gallery, the university library and the Cubberley School of Education building have already been constructed in the East quadrangle, in which the Hoover war library, the law library and the departments of journalism and education are to be placed. Outside the quadrangles are other buildings, a museum of art and archaeology, based on collections made by Leland Stanford, Jr., chemical and engineering laboratories, a memorial hall, service buildings, gymnasia and the H. J. Ryan high voltage laboratory. Some fifteen hundred students are housed in university dormitories. There is an arboretum of some 300ac. This arboretum is to be made the centre of a plant research station. The Hopkins marine station, which is maintained at Pacific Grove on the Bay of Monterey, has two good buildings, one of them, the Jacques Loeb laboratory, a gift of the Rockefeller Foundation. The university maintains the Stanford medical school, the Lane and Stanford hospitals, the Stanford school for nursing and the Lane medical library in San Francisco.

The founders wished the university "to qualify students for personal success and direct usefulness in life; to promote the public welfare by exercising an influence on behalf of humanity and civilization, teaching the blessings of liberty regulated by law, and inculcating love and reverence for the great principles of government as derived from the inalienable rights of man to life, liberty and the pursuit of happiness." The entrance requirements of the university are flexible, no subject except English composition being required. The minimum preparation is that of the ordinary four-year high school course which must be completed with recommended units in 15 subjects. An aptitude test is also required. Recently the work of the university has been so reorganized that the first two years constitute a so-called lower division with certain specified subject requirements, including biology, a course in the history of Western Civilization, etc. The number of men students received in this lower division is at present 450 each October. Degrees are granted upon the recommendation of the departments and schools of the university. It is anticipated that with the development of the junior college the main emphasis of the work of the university will be upon the advanced and graduate years. The departments of the university are organized into schools. At present schools of law, medicine, education, biology, social science, engineering, business, letters, and physical science are in existence and the work of students seeking advanced degrees is in charge of a graduate school which embraces representatives of all parts of the university. The influence of sectarianism and politics is barred from the university by its charter, and by its private origin and private support. Nevertheless its policy is that of State service of the most liberal type. The president of the university has the initiative in all appointments and in all matters of general policy. Within the university the faculty power lies in an academic council. An advisory board of seven professors, elected by the academic council without nomination, accords its approval or disapproval to all appointments and all major policies before they are presented to the board of trustees by the president. In 1921 the Food Research Institute of Stanford university was organized, with the help of the Carnegie Corporation. In 1926 the Harris J. Ryan high voltage laboratory was established. It contains a generating set for experimental purposes capable of discharging over 2,000,000 volts. Through the generosity of

the Daniel Guggenheim Fund for the Promotion of Aeronautics, Inc., an experimental laboratory in aeronautics, known as the Daniel Guggenheim Aeronautic Laboratory was established in 1926.

The university received from its founders securities and land worth about $30,000,000. Most of the large ranch holdings of the university were sold in 1919. In 1936 the university had $31,399,477.82 of productive funds. The value of lands, buildings, and equipment is $14,041,206.42. In 1936 the volumes in the university libraries numbered 659,659, of which 84,225 were in the Lane medical library, 44,364 in the law library and 84,219 in the Hoover war library which comprises materials covering the history of the World War and subsequent international relations. In the autumn quarter of 1936 the students numbered 4,050, of whom 1,184 were women and 963 were graduates. Limitation in funds and equipment are responsible for restrictions in the student body to something around 4,000. Although originally instruction was practically free, there is now a tuition fee of $115 a quarter. A tuition note system enables needy students to postpone payment till three or more years after graduation. Military training is not required, but there is a field artillery unit and an ordnance unit of the reserve officers training corps. During the World War, Stanford was represented by 3,000 of its members, graduates, and undergraduates. The university campus has been zoned and space reserved for an extension of the residence hall system for men and for women, together with their athletic fields. The large extent of the campus has made it possible to develop athletic fields of large size and of considerable diversity, together with open-air swimming pools and other facilities possible because of the mild climate. Dr. David Starr Jordan was the first president of the university. He was succeeded in 1913 by Dr. John Casper Branner, upon whose retirement, January 1, 1916, Dr. Ray Lyman Wilbur became president.

(R. L. W.)

LELEGES. Various traditions were current among the Greeks respecting earlier inhabitants of their country. They were inclined to assign the comprehensive name of Pelasgians to all such peoples, but among them distinguished Carians and Leleges whom they regarded as akin. The Carians existed as a people in South-western Anatolia in historical times, and the earliest extant mention of the Leleges is the record in the Iliad (x. 429, xx. 96) of their presence at Troy as allies of the Trojans. They were from Asia Minor. Herodotus records their former presence in the Greek islands, while both Strabo and Pausanias place them in various regions of the Peloponnese and Central Greece. There is evidence that they were settled also in parts of Thrace, Macedonia and Illyria.

A large class of Greek place-names, notably those in *-ισσος* and *-ινθος*, testifies to the presence on the mainland of a people closely associated with Asia Minor. A view now widely held is that Greek-speaking peoples first came to Greece from the north about the 17th century B.C., subduing the population, who had been in contact with the Minoan civilization, and attacking the Cretans themselves. It was these people, according to this view, who set up the Mycenean civilization. Of the language of the early inhabitants nothing is known and it would be rash to assert that they did not speak Greek. This in no way means that the Minoans did so. The Carian language is now definitely regarded as non-Indo-European. Moreover, though the conquest of Greece by northern tribes is an undoubted fact, the question of the Greek-speaking peoples' occupation of Greece is not so simple as to be solved by the mere postulation that northern conquerors brought the language. The Achaeans were a great power in the eastern Aegean in the 14th century, and the view is gaining ground that there were early Greek migrations from east to west across the Aegean. It is, however, certain that there were Asianic peoples occupying the islands and the Greek mainland in a period that the historical Greeks regarded as ancient, and that the name of one of these tribes was Leleges.

See E. Meyer, *Geschichte d. Altert. I.*; A. Fick, *Vorgriechische Ortsnamen*, p. 107 ff. (1905); and *Hattiden und Danubier*, p. 24 (1909); W. Aly, *Karer und Leleger* in Philol. lxviii., p. 428 ff. (1909). (B. F. C. A.)

LELEWEL, JOACHIM (1786–1861), Polish historian, geographer and numismatist, born at Warsaw on March 22, 1786. was educated at the university of Vilna, and became in 1807 a teacher in a school at Krzemieniec in Volhynia, in 1814 teacher of history at Vilna, and in 1818 professor and librarian at the university of Warsaw. He returned to Vilna in 1821. His popularity with the students made him obnoxious to the Russian government, and at Vilna Novosiltsev was then all-powerful. Lelewel was removed from his professorship in 1824, and returned to Warsaw, where he was elected a deputy to the diet in 1829 and joined the revolutionary movement. On the suppression of the rebellion he escaped to Germany, and went on to Paris in 1831. The government of Louis Philippe, at the request of the Russian ambassador, ordered him to quit French territory in 1833. He went to Brussels, where for nearly thirty years he earned a scanty livelihood by his writings. He died on May 29, 1861, in Paris.

Lelewel, a man of austere character, simple tastes and the loftiest conception of honour, was a lover of learning for its own sake. His literary activity was enormous, extending from his *Edda Skandinawska* (1807) to his *Géographie des Arabes* (2 vols., Paris, 1851). One of his most important publications was *La Géographie du moyen âge* (5 vols., Brussels, 1852–1857), with an atlas (1849) of fifty plates entirely engraved by himself. His works on Polish history are based on minute and critical study of the documents; they were collected under the title *Polska, dzieje i rzeczy jej rozpatrzywane* (*Poland, her History and Affairs surveyed*), in 20 vols. (Posen, 1853–1876).

See autobiography (*Adventures while Prosecuting Researches and Inquiries on Polish Matters*) printed in his *Polska*.

LELY, SIR PETER (1618–1680), English painter, was born at Soest, Westphalia. His father, a military captain, was called van der Faes; the nickname of Lely, by which he was generally known, was adopted by his son as a surname. After studying under Peter de Grebber at Haarlem, Lely removed to England in 1641. There he at first painted historical subjects and landscape; he soon became so eminent in his profession as to be employed by Charles to paint his portrait shortly after the death of Van Dyck. He afterwards portrayed Cromwell. At the Restoration he won the favour of Charles II., who made him his state-painter, and knighted him. He formed a famous collection, containing drawings, prints and paintings by the best masters. His great example was Van Dyck. Lely's paintings are carefully finished, warm and clear in colouring, and animated in design. The graceful posture of the heads, the delicate rounding of the hands, and the broad folds of the draperies are admired in many of his portraits. The eyes of the ladies are drowsy with languid sentiment, and allegory of a commonplace sort is too freely introduced.

His most famous work is a collection of portraits of the ladies of the court of Charles II., known as "the Beauties," formerly at Windsor castle, and now at Hampton Court palace. Of his few historical pictures, the best is "Susannah and the Elders," at Burleigh house. He died in London, and was buried in Covent Garden church, where a monument was erected to his memory. Pepys characterized Lely as "a mighty proud man and full of state." His only disciples were J. Greenhill and J. Buckshorn.

LE MAÇON (or LE MASSON), **ROBERT** (*c.* 1365–1443), chancellor of France, was born at Château du Loir, Sarthe. He was ennobled in March 1401, and became six years later a councillor of Louis II., duke of Anjou and king of Sicily. A partisan of the house of Orleans, he was appointed chancellor to Isabella of Bavaria and to the count of Ponthieu, afterwards Charles VII. When Paris was surprised by the Burgundians on the night of May 29, 1418, he assisted Tanguy Duchâtel in saving the dauphin. By the influence of John the Fearless, duke of Burgundy, he was excluded from the political amnesty known as the peace of Saint Maur des Fossés, though he retained his seat on the king's council. He was by the dauphin's side when John the Fearless was murdered at the bridge of Montereau on Sept. 10, 1419. He resigned the seals at the beginning of 1422; but he continued to exercise great influence, and in 1426 he effected a reconciliation between the king and the duke of Brittany. He supported Joan of Arc at court; and he signed the patent of

nobility for the Arc family in December 1429. In 1430 he was once more entrusted with an embassy to Brittany. He died on Jan. 28, 1443.

See C. Bourcier, "Robert le Masson," in the *Revue historique de l'Anjou* (1873); and the *Nouvelle biographie générale,* vol. xxx.

LE MAIRE DE BELGES, JEAN (1473–*c.* 1525), French poet and historiographer, nephew of Jean Molinet, was born at Bavai in Hainault. In his first poems he calls himself a disciple of Molinet. In certain aspects he does belong to the school of the *grands rhétoriqueurs,* but he was emancipated from their affectations by his studies in Paris and at Lyons, a centre of the French Renaissance. In 1503 he was attached to the court of Margaret of Austria, duchess of Savoy, afterwards regent of the Netherlands, and became her librarian and a canon of Valenciennes. To her were addressed his most original poems, *Epistres de l'amand verd,* the *amant vert* being a green parrot belonging to his patroness. Le Maire gradually become more French in his sympathies, eventually entering the service of Anne of Brittany. His prose *Illustrations des Gaules et singularitez de Troye* (1510–12) is largely adapted from Benoît de Sainte More. Le Maire probably died before 1525. Etienne Pasquier, Ronsard and Du Bellay all acknowledged their indebtedness to him. In his love for antiquity, his sense of rhythm, and even the peculiarities of his vocabulary he anticipated the *Pléiade.*

His works were edited in 1882–85 by J. Stecher, who wrote the article on him in the *Biographie nationale de Belgique. See* also P. A. Becker, *Jean le Maire, der erste humanistische Dichter Frankreichs* (1893).

LEMAÎTRE, JULES (1853–1914), French critic and dramatist, was born at Vennecy (Loiret) on April 27, 1853. His early years were spent in university teaching, but from 1884 onwards he devoted himself entirely to literature. He succeeded J. J. Weiss as dramatic critic of the *Journal des Débats,* and subsequently filled the same office on the *Revue des Deux Mondes.* His volumes of *contes* include *Myrrha* (1903) and *En marge des vieux livres* (1905). His plays include: *Révoltée* (1889), *Le député Leveau,* and *Le Mariage blanc* (1891), *Les Rois* (1893), *Le Pardon* and *L'Age difficile* (1895), *La Massière* (1905) and *Bertrade* (1906). He was admitted to the French Academy on Jan. 16, 1896. His political views were defined in *La Campagne nationaliste* (1902), lectures delivered in the provinces by him and by G. Cavaignac. He conducted a nationalist campaign in the *Echo de Paris,* and was for some time president of the Ligue de la Patrie Française, but resigned in 1904, and again devoted himself to literature. He died at Tavers (Loiret) on Aug. 5, 1914.

LE MANS, a town of north-western France, capital of the department of Sarthe, 77 m. S.W. of Chartres on the railway from Paris to Brest. Pop. (1936) 79,874. As the capital of Aulerci Cenomanni, Le Mans was called Suindinum or Vindinum. The Romans built walls round it in the 3rd century, and traces are still to be seen. In the same century the town was evangelized by St. Julian, its first bishop. Ruled at first by his successors—notably St. Aldric—Le Mans became in the middle ages the capital of the counts of Maine. About the middle of the 11th century the citizens secured a communal charter, but in 1063 the town was seized by William the Conqueror, who deprived them of their liberties, which were recovered when the countship of Maine had passed to the Plantagenet kings of England. Le Mans was taken by Philip Augustus in 1189, recaptured by John, subsequently confiscated and later ceded to Queen Berengaria, who did much for its prosperity. It was several times besieged in the 15th and 16th centuries. In 1793 it was seized by the Vendéens, who were expelled by the Republicans. In 1799 it was again occupied by the Chouans. It stands just above the confluence of the Sarthe and the Huisne. Several bridges connect with the quarter of Pré on the right bank. The cathedral was originally founded by St. Julian, to whom it is dedicated. The nave dates from the 11th and 12th centuries. Some stained glass in the nave, from the first half of the 12th century, is the oldest in France; the west window represents the legend of St. Julian. The south lateral portal (12th century) and the choir are richly decorated. The cathedral also has curious tapestries and some remarkable tombs, including that of Berengaria, queen of Richard Coeur de Lion. Close to the western wall is a megalithic monument nearly 15 ft. in height. The church of La Couture, part of an old abbey founded in the 7th century by St. Bertrand, has a porch of the 13th century with fine statuary. The hôtel de ville was built in 1756 on the site of the former castle of the counts of Maine; the prefecture (1760) occupies the site of the monastery of La Couture, and contains an archaeological museum. Among the old houses are the Hôtel du Grabatoire of the Renaissance, once a hospital for the canons and the so-called house of Queen Berengaria (16th century). Le Mans is the seat of a bishopric dating from the 3rd century, of a prefect, and of a court of assizes. The more important industries are the state manufacture of tobacco, tanning, hemp-spinning, bell-founding, flour-milling, the founding of copper and other metals, and the manufacture of railway wagons, machinery and agricultural implements, motors, rope, cloth and stained glass. The fattening of poultry is an important industry, and there is trade in cattle, cloth, farm-produce as well as in wines. The town is an important railway centre.

Battle of Le Mans.—Le Mans (Jan. 10–12, 1871) was the culmination of General Chanzy's retreat into western France after the winter campaign in Beauce and Perche (*see* FRANCO-GERMAN WAR). The Germans advanced with three army corps in first line and one in reserve. On Jan. 9 the centre corps (III) drove an advanced division of the French from Ardenay (13 mi. E. of Le Mans). On the next day Chanzy's main defensive position was approached and there was a severe struggle for the villages along the front of the French centre. On the 11th Chanzy attempted a counteroffensive from many points, but the Germans were able to drive him back; and as their cavalry now began to appear beyond his extreme left flank, he retreated in the night of the 11th on Laval, the Germans occupying Le Mans after a brief rearguard fight on the 12th.

LE MARCHANT, JOHN GASPARD (1766–1812), English major-general, was the son of an officer of dragoons, John Le Marchant, a member of an old Guernsey family. Le Marchant entered the army in 1781, and attained the rank of lieutenant-colonel in 1797. In 1801 his scheme for establishing at High Wycombe and Great Marlow schools for the military instruction of officers was sanctioned by parliament, and a grant of £30,000 was voted for the "royal military college," the two original departments being afterwards combined and removed to Sandhurst. Le Marchant was its lieutenant-governor for nine years, and he trained many officers who served under Wellington in the Peninsula. Le Marchant was given the command of a cavalry brigade in 1810, and distinguished himself in several actions; he was killed at the battle of Salamanca on July 22, 1812.

See Sir D. Le Marchant, *Memoirs of General Le Marchant* (1841).

LE MARS, a city of northwestern Iowa, U.S.A., on the Floyd river, 25 mi. N.N.E. of Sioux City; the county seat of Plymouth county. Le Mars is the seat of Western Union college, established in 1900 by five conferences of the United Evangelical church. The city was incorporated in 1881. Pop. 1930, 4,788; 1940, 5,353.

LEMBERG (Polish, *Lwow*), a province of Poland bounded on the west by Cracow, on the north by Lublin, on the east by Tarnopol provinces and on the south by the province of Stanislawów and the Carpathians, the ancient frontier of Poland and Slovakia. Area, 28,391 sq.km. The province comprises the hilly country leading up to the Low Beskids, the valley of the San, and the highlands of Roztocze in the north-east linking the plateau of Lublin with that of Podolia. It is drained by the San and its tributaries and the upper waters of the Dniester. Pop. (1931) 3,127,138; in 1921 56.6% were Poles, 35.8% Ruthenians and 7% Jews. By religion 46.5% were Roman Catholics, 41.3% Orthodox and Uniates, and 11.5% Jews. Ethnographically, the province is the meeting place of Poles and Ukrainians. Originally part of the principality of Halicz, it was annexed to Poland in 1349 and remained part of Poland till the first partition when it was annexed to Austria as the province of Galicia.

The chief occupation of the people is agriculture. Wheat, rye, barley and oats are grown. Very important is the production of beetroot for sugar, while maize is grown in some districts. The export of agricultural products to western Europe was very

important after the occupation of Dantzig, the centre of the trade being Jaroslaw on the San. Industry is mainly based on agricultural products, but the main economic importance of the province rests on the oilfields of Boryslaw. The town of Lemberg formerly held a leading position in the trade of Europe with the East. As the capital of Galicia under Austria it continued to flourish, but the artificial severance of relations with the rest of Poland through the connection with Austria made trade stagnate in the 19th century. The most important cities are Lemberg (Lwów), Przemysl, Drohobycz, Rzeszow, Jaroslaw, Sambor and Sanok. The province was one of the chief military areas during World War I and suffered greatly. The battle of Rawa Ruska and the siege of Przemysl were the most important military operations in the province. In the first month of World War II, Lemberg was occupied by both German and Russian troops. By the partition agreement of Sept. 28, 1939, Germany took the portion west of the San river, the eastern section falling to the U.S.S.R. In 1941 Germany conquered the whole.

LEMBERG, BATTLES OF. Lemberg (Polish, Lwów), the capital town of Galicia, was twice during the World War the centre of a series of battles. The first series constituted the opening campaign between Russia and Austro-Hungary in Aug. and Sept. 1914; it resulted in the defeat of the Austrians and the occupation by the Russians of the whole of Eastern Galicia. The second series was fought some ten months later during the great Russian retreat which was started by Mackensen's offensive on the Dunajec in May 1915. It gave Austria re-possession of Lemberg and of practically the whole of Eastern Galicia.

The main concentration of the Austro-Hungarian forces for action against Russia at the opening of war in Aug. 1914 was made in Central and Eastern Galicia. In the general plan of the Central Powers the rôle of the Austro-Hungarian army was to engage the main Russian forces till the German army had overwhelmed France and was free to transfer its principal weight to the Eastern theatre. Two main alternatives were open to the Austrians, to await attack or themselves to take the offensive. If the former course were chosen, the line of the river San, between the Carpathians and the Vistula, was indicated as the strongest available position. On this they might well hope by an active defence to hold up the maximum Russian effort for some time and to win local successes by counter-attack. But defence entailed not only the abandonment of Eastern Galicia but also the surrender of the passes over the Eastern Carpathians and the opening of a road into Hungary. This might have serious political consequences. Moreover, in the years preceding the War, the military opinion of almost every country in Europe had proclaimed insistently that offensive action was the solution of all major difficulties in war. Certainly Conrad von Hötzendorf, the chief of the Austrian general staff, optimistic by temperament, was not the man to adopt a defensive attitude willingly. He determined to attack, though the advantages hoped for from a speedier mobilization were not secured owing to errors made during the preliminary deployment against Serbia.

The chosen line of attack was northwards against one flank of the Polish salient; probably Conrad hoped that a German offensive might eventually be made from East Prussia against the other flank of the salient. The problem of supply was not easy, since the terrain between the Vistula and Bug rivers, where the advance was to be made, had been left, at the instance of the Russian general staff, without good communications in anticipation of the Austrian plan. It was indeed the obvious direction of any invasion of Russia from Galicia, since an advance eastwards would leave the lines of communication exposed, while to the north-east lay the trackless marshes of the Pripet.

The Rival Forces.—The Austrian main forces were divided into four armies, of which two, the I. (Dankl) and IV. (Auffenberg), were to carry out the offensive directed on Chelm (Kholm) and Lublin respectively; the II. (Bohn-Ermolli) and III. (Brudermann) were to be deployed east of Lemberg to hold off the Russian armies advancing from the Kiev district. The II. Army had, however, been originally dispatched to the Serbian frontier, and was at first represented by one corps only, the XII. (Kövess). North of the Vistula, Kummer's group of Austrian Landsturm and Woyrsch's corps of German Landwehr were to advance on Sandomierz and Doblin (Iwangorod) respectively, to protect the left flank of the I. Army and to foster a Polish rising in favour of Austria.

The Russians also deployed four armies on their south-western front. Their plan was almost the exact counterpart of the Austrian. They purposed to hold the Austrian offensive wing by a defensive force of two armies on the line Lublin-Chelm, and to smash the Austrian defensive wing by an offensive group of two armies advancing west from the Kiev military district on Lemberg. Each of the opponents was thus dependent on the power of his defensive wing to resist the shock of the other's striking force long enough to enable him to gain a decision by his main effort.

Both armies had large masses of cavalry, but there was a pronounced difference in their tactics. The Austrian cavalry seldom practised dismounted fire action and were singularly ineffective on foot; the Russian cavalry, on the other hand, fought largely as mounted infantry. The Russian artillery shot well and was far more effective than the Austrian, but the musketry of the Austrian infantryman was better than that of his rival; he was also handier in manoeuvre. The morale on both sides was excellent at the beginning, although that of the Austrian was to deteriorate rapidly under defeat. In the higher command the Russians held the advantage. Ivanov, the generalissimo of the south-western front, was no strategist, though an experienced and well-loved commander; but his chief of staff, Alexeyev, was one of the best brains of the army; and in Ruzski (III. Army), Plehve (V. Army), Brusilov (VIII. Army), and Ewarth (IV. Army) he had under him probably the four ablest army commanders in Russia—certainly the four most successful. Conrad, the virtual commander-in-chief of the Austrian armies—the Archduke Friedrich was the nominal head—was a man of determined and obstinate character, but a better strategist in the office than in the field; nor were the Austrian army commanders the equals of the Russian.

Numerically, the Russians had a slight advantage. The Austrian striking wing, which comprised 350 battalions, 150 squadrons and 150 batteries, was superior in strength to the Russian IV. and V. Armies which had each four corps and two cavalry divisions; but their defensive wing (200 battalions, 170 squadrons, 130 batteries) was considerably inferior to the Russian III. and VIII. Armies, especially before the arrival of the two corps of the II. Army which had been left opposite Serbia.

On Aug. 15, before concentration was complete, the Austrian cavalry pushed forward to ascertain the Russian movements, but gathered little information. On Aug. 20 the I. and IV. Armies began their offensive. The first engagements in the neighbourhood of Krasnik were favourable to the Austrians, the advanced troops of the Russian IV. Army being driven back on Lublin. The Austrian I. Army was strengthened by Kummer's Landsturm Corps, which crossed the Vistula to join it, while Woyrsch's Corps of German Landwehr was in close touch on the left bank of the Vistula. The mission of these two formations to foment an insurrection in Russian Poland had proved fruitless.

The Battles of 1914.—The Austrian IV. Army now became engaged in a battle with the Russian V. Army, which lasted from Aug. 26 to Sept. 1. Assisted by the Archduke Joseph Ferdinand's group, which had been formed from troops of the III. Army to manoeuvre between its left and right of the IV. Army, Auffenberg attempted a double envelopment of the Russian force. This manoeuvre gained a considerable initial success, but before the Austrians could exploit it, events in Eastern Galicia occasioned their recall.

Meanwhile the Austrian covering force (II. and III. Armies) had met with disaster. Although the II. Army consisted of one corps only and the III. Army was weakened by the absorption of the Archduke Joseph Ferdinand's group in the Kómarow battle, yet the High Command sent the two armies forward to the attack. They joined battle with the Russian III. and VIII. Armies on Aug. 26 on the line of the Złota Lipa about Złoczów. On the evening of Aug. 27 they were forced to retreat. Reinforced by the VII. Corps from Serbia, they again gave battle on the Gnila

Lipa on Aug. 29 and 30, and again suffered defeat. They now fell back through Lemberg, which was evacuated on Sept. 2, and took up a defensive position west of the city on the line of the Wereszyca and the Gródek lakes.

The rear of the advancing Austrian I. and IV. Armies was seriously threatened by the failure of the eastern wing. The question now arose of withdrawing the whole of the Austrian forces to the line of the San, or of continuing the battle round Lemberg on a different plan. Conrad chose the bolder course and determined to seek an immediate victory. He ordered the IV. Army to break off pursuit of the Russians and to change front from north to south. The plan was that this army should strike towards Lemberg at the right flank of the advancing Russians, while the II. and III. Armies held them frontally. The complicated wheel of the IV. Army had been executed by Sept. 5. On Sept. 6 it commenced its march southwards, leaving behind a group under the Archduke Joseph Ferdinand to protect its rear. As it advanced south, its left column became engaged with the right of the Russian III. Army and was pinned to the east of Rawa-Ruska, while the centre and right columns, meeting no resistance, continued southwards, and eventually wheeled into line with the Austrian III. and II. Armies, facing east.

Conrad changed his plan again; he had missed with his left, so now, like an obstinate but unskilful boxer, swung his right at the enemy, viciously but ineffectively. On Sept. 7 he ordered the IV. Army to stand fast and hold the Russians to their ground, while the II. and III. Armies left their prepared defensive positions and struck northward at the Russian left wing. A radical change of plan so hurriedly evolved was hardly likely to succeed. The II. and III. Armies could make little ground, while the position of the IV. Army rapidly became untenable. In its rear the I. Army was being forced back from Lublin by the reinforced Russian IV. Army, while the Russian V. Army had rallied and was again advancing, driving before it the Archduke Joseph Ferdinand's weak group. Finally the left wing of the IV. Army itself was being outflanked north of Rawa-Ruska by the Russian III. Army. On Sept. 11 Conrad issued orders for a general retreat to the line of the San.

Austrian Retreat.—The withdrawal was successfully carried out without serious interference by the Russians. The II. Army retired in the direction of Sambor, and the III. towards Przemyśl, the IV. on Jarosław, and the I., together with Kummer's and Woyrsch's forces, to the lower San. The detachments farther east, along the Dniester, retired to the Carpathians. The line of the San was not held for long. The Russian IV. Army had been reinforced by the IX. Army from Warsaw and forced a passage of the lower San on Sept. 14. The Austrians were too shaken and disorganized to enter on a new battle, and resumed their retreat, leaving the fortress of Przemyśl to stand siege. They finally halted on Sept. 26 some 50 m. E. of Cracow on the line of the Dunajec by Tarnow and Gorlice to the Carpathians. The Russians, who also required a pause for reorganization—since the losses had been very heavy on the Russian as well as on the Austrian side—made no serious attempt to follow up beyond the San.

The advantage of "interior lines" which the Austrians enjoyed in this campaign had been partly discounted by the great size of modern armies and the time required to obtain the decision in a battle. It is true that the Germans were at this very period gaining brilliant successes by action on interior lines against Samsonov and Rennenkampf in East Prussia, but their achievements were only rendered possible by the inertia of Rennenkampf. In Galicia, the continued pressure of Ruzski's and Brusilov's armies on the Austrian detaining wing denied to Conrad the time required to complete his successes in Poland. But the Austrian High Command appear to have depended too much on opportunist strategy. It is difficult to trace in their original organization for the campaign any recognition of the need for that "mass of manoeuvre," capable of being transferred from one wing to the other, which is the essence of action on interior lines. Also, the ineffectiveness for delaying action of their masses of cavalry deprived the Austrians of a powerful weapon. The Russian scheme of operations was straightforward and demanded only driving power by the higher commanders and hard fighting and marching by the troops. An opportunity of turning the Austrian retreat into a rout seems, however, to have been missed, when the IX. Army from Warsaw directly reinforced the IV. Army instead of being directed west of the Vistula on the Austrian line of retreat.

The Battles of 1915.—The fighting which led up to the second series of battles round Lemberg in the summer of 1915 is described under the heading DUNAJEC-SAN. After being driven from the San, the Russian III. Army (now under Lesh instead of Radko Dimitriev) and VIII. Army (Brusilov) took up a position to the north-west and west of Lemberg. Their line ran from the Vistula along the heights north of the Tanew river, thence west of Rawa-Ruska by Magierów and Janów to the Wereszyca river and Gródek lakes. The XI. and IX. Armies continued the line south-east along the Dniester.

Mackensen's pursuing force consisted of the Austrian IV., German XI. and Austrian II. Armies, in that order from north to south. On the Dniester were Linsingen's Southern Army and Pflanzer-Baltin's VII. Army. In the number of available formations there was no great disparity between Mackensen's group of armies and the Russian III. and VIII. Armies; on each side there were about 40 infantry divisions, and the Russians had five or six cavalry divisions to Mackensen's two. But the two Russian armies now embraced an improvised assembly of formations and units taken from all parts of the line; even so their losses had not been made good and they were much under strength; there was a shortage of ammunition, both for guns and rifles; and morale had suffered under two and a half months of continual defeat.

As usual, the main thrust at the Russian position was delivered by the German XI. Army. It was directed through Magierów against the line Zólkiew-Rawa-Ruska, approximately at the joint between the Russian III. and VIII. Armies. The assault was made on June 19, after the Russian position had been battered by the German guns, and the attackers broke right through to the Rawa-Ruska-Lemberg railway. Brusilov held on to a fortified position west of Lemberg till the 22nd, and then evacuated it under the threat that came from the north and the direct pressure from the Austrian II. Army.

The Russian armies were now split apart; the VIII. Army retired fighting to the line of the Upper Bug and Gniła Lipa; at the same time the XI. and IX. Armies gave up the Dniester line below Halicz. The III. Army meanwhile, to protect the left flank of the Warsaw salient, was forced to retire north towards Lublin and Chełm. To fill the gap between the III. and VIII. Armies, a new army, the XIII. under Gorbatovski, was formed of troops drawn from the right of the III. Army and left of the VIII. The Austrian armies were also re-grouped; the II. Army, the Southern Army and VII. Army were to continue the pursuit eastwards; Mackensen with the IV., XI. and a new "Army of the Bug," to be formed under Linsingen, was to strike northwards between the Bug and Vistula; while the I. Army, withdrawn from the west of the Vistula, was to fill the gap between the two army groups.

The Eastern group drove the Russians back at the beginning of July from the Gniła Lipa to the Zlota Lipa; no further fighting took place here till the end of August. Farther east, Pflanzer-Baltin's VII. Army and Lechitski's IX. were engaged in an indecisive conflict along the Dniester between July 14 and 19. Meanwhile on Mackensen's front the Austrian IV. Army had been heavily counter-attacked near Krasnik by the Russian IV. Army and had been driven back some distance, losing 17,000 prisoners. The check was only temporary, and so soon as the re-grouping was completed, Mackensen again advanced. For further operations of this force, *see* BREST-LITOVSK, BATTLES OF.

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(A. P. W.)

LEMERCIER, NÉPOMUCÈNE (1771–1840), French poet and dramatist, was born in Paris on April 21, 1771. His father had been intendant successively to the duc de Penthièvre, the comte de Toulouse and the unfortunate princesse de Lamballe, who was the boy's godmother. Lemercier wrote his tragedy of *Méléagre,* produced at the Théâtre Français, before he was 16. *Le Tartufe révolutionnaire,* a parody full of the most audacious political allusions, was suppressed after the fifth representation. In 1795 appeared Lemercier's masterpiece *Agamemnon,* called by Charles Labitte the last great antique tragedy in French literature. It was violently attacked later by Geoffroy, who stigmatized it as a bad caricature of Crébillon. *Quatre métamorphoses* (1799) was written to prove that the most indecent subjects might be treated without offense. The *Pinto* (1800) was the result of a wager that no further dramatic innovations were possible after the comedies of Beaumarchais. It is a historical comedy on the subject of the Portuguese revolution of 1640. This play was construed as casting reflections on the first consul, who had hitherto been a firm friend of Lemercier. His extreme freedom of speech finally offended Napoleon, and the quarrel proved disastrous to Lemercier's fortune for the time. None of his subsequent work fulfilled the expectations raised by *Agamemnon,* with the exception perhaps of *Frédégonde et Brunehaut* (1821). In 1810 he was elected to the academy, where he consistently opposed the romanticists, refusing to give his vote to Victor Hugo. In spite of this, he has some pretensions to be considered the earliest of the romantic school. Indeed his *Christophe Colomb* (1809), advertised on the playbill as a *comédie shakespirienne* (*sic*), showed no respect for the unities. Its numerous innovations provoked such violent disturbances in the audience that one person was killed and future representations had to be guarded by the police. Lemercier wrote four long and ambitious epic poems: *Homère, Alexandre* (1801), *L'Atlantiade, ou la théogonie newtonienne* (1812) and *Moïse* (1823), as well as an extraordinary *Panhypocrisiade,* a romantic production in 20 cantos, which has the sub-title *Spectacle infernal du XVIe du siècle.* The first 16 cantos appeared in 1819; the last 4 in 1832. In it 16th century history, with Charles V and Francis I as principal personages, is played out on an imaginary stage by demons in the intervals of their sufferings. Lemercier died on June 7, 1840, in Paris.

LEMERY, NICOLAS (1645–1715), French chemist, was born at Rouen on Nov. 17, 1645. After learning pharmacy in his native town he became a pupil of C. Glaser's in Paris, and then went to Montpellier, to lecture on chemistry. He next established a pharmacy in Paris, still continuing his lectures, but in 1683, being a Calvinist, he was obliged to retire to England. In the following year he returned to France, and turning Catholic in 1686 was able to reopen his shop and resume his lectures. He died in Paris on June 19, 1715. Lemery held chemistry to be a demonstrative science and so confined himself to the straightforward exposition of facts and experiments. Of his *Cours de chymie* (1675) he lived to see 13 editions, and for a century it maintained its reputation as a standard work. His other publications included *Pharmacopée universelle* (1697), *Traité universel des drogues simples* (1698), *Traité de l'antimoine* (1707), together with a number of papers contributed to the French academy.

LEMERY, a municipality (with administrative centre and 30 *barrios* or districts) of the province of Batangas, Luzon, Philippine Islands, on Balayan bay and the Pansipit river, opposite Taal (with which it is connected by a bridge) and about 50 mi. S. of Manila. Pop. (1939) 19,207 (a gain of 3,560 since 1918), of whom 9,414 were males and 2 white. It is in the midst of a fertile agricultural region which produces palay (rice), maize (corn), sugar and cotton. Horses and cattle are bred for export, and the town is a port of entry for coastwise shipping, with much commerce. It has suffered from eruptions of Taal volcano, notably that of 1911. Tagalog is the vernacular. Of the inhabitants aged 6 to 19, inclusive, 33% attended school in 1939; of the total population 10 yrs. old and over, 44.5% were literate.

LEMGO, a town of Germany, in the *Land* of Lippe, 9 mi. N. from Detmold and on the railway Hameln-Lage. Pop. (1939) 14,052. Its somewhat gloomy aspect, and narrow lanes flanked by 15th century gabled houses, has gained for it the sobriquet of the "Witches' nest" (*Hexen-Nest*). The town was a member of the Hanseatic league. Its industries are spinning, weaving, brewing and the manufacture of leather, furniture and cigars.

LEMIERRE, ANTOINE MARIN (1733–1793), French dramatist and poet, was born in Paris, Jan. 12, 1733. His parents were poor, but Lemierre found a patron in the collector-general of taxes, Dupin, whose secretary he became. Lemierre gained his first success on the stage with *Hypermnestre* (1758). *Térée* (1761) and *Idoménée* (1764) failed on account of the subjects. *Artaxerce,* modelled on Metastasio, and *Guillaume Tell* were produced in 1766; other successful tragedies were *La Veuve de Malabar* (1770) and *Barnavelt* (1784). Lemierre revived *Guillaume Tell* in 1786 with enormous success. After the Revolution he professed great remorse for the production of a play inculcating revolutionary principles; and there is no doubt that the horror of the excesses he witnessed hastened his death, which took place July 4, 1793. He had been admitted to the academy in 1781.

In addition to his plays, Lemierre published "La Peinture" (1769), based on a Latin poem by the abbé de Marsy, and a poem in six cantos, "Les Fastes, ou les usages de l'année" (1779), an unsatisfactory imitation of Ovid's "Fasti."

His *Oeuvres* (1810) contains a notice of Lemierre by R. Perrin and his *Oeuvres choisies* (1811) one by F. Fayolle.

LEMIRE, JULES AUGUSTE (1853–1928), French priest and social reformer, was born at Vieux-Berquin (Nord) on April 23, 1853. He was educated at the college of St. Francis of Assisi, Hazebrouck (1878–93), where he was professor of philosophy and rhetoric. In 1897 he was elected deputy for Hazebrouck and was returned unopposed at the elections of 1898, 1902 and 1906. He organized a society called *La Ligue du coin de terre et du foyer,* to secure, at the expense of the state, a piece of land for every French family desirous of possessing one. The abbé Lemire sat in the chamber of deputies as a conservative republican and Christian Socialist. In Dec. 1893 he was seriously injured by the bomb thrown by the anarchist Vaillant from the gallery of the chamber. He wrote *Le Cardinal Manning et son action sociale* (1892) and *Le coin de terre et le foyer* (1897).

LEMMENS, NICOLAS JACQUES (1823–1881), Belgian organist and composer, was born at Zoerle-Parwys, Belgium, Jan. 3, 1823. He studied under his father, who was also an organist, at the Brussels conservatory and at Breslau, where the Belgian government sent him to study under Adolf Hesse. The story is that Hesse sent him away after a year, saying that there was nothing more he could teach him. Lemmens was made professor of organ at the Brussels conservatory in 1849 and in 1879 was responsible for opening the School of Church Music at Malines, Belgium, to train Catholic church musicians in choir and organ music. He died at Castle Linterport near Malines, Jan. 30, 1881.

Lemmens had great influence on both organ pedagogy and on methods of performing on the organ, especially through his *École d'orgue.* He also wrote *Method for Accompanying the Gregorian Chant* and a number of compositions for organ.

His wife, HELEN LEMMENS-SHERRINGTON (1834–1906), was an English singer, born at Preston, England, Oct. 4, 1834. She studied singing at Rotterdam and at the Brussels conservatory and in 1856 returned to England, where she met with almost immediate success, soon becoming the most noted soprano in the country. In 1857 she married Lemmens and after his death became teacher of singing at the Brussels conservatory, a position she held until 1891. After her return from Belgium, she taught at both the Royal Academy of Music and the Royal College of Music in England. She died in Brussels, May 9, 1906. Madame Lemmens-Sherrington was proficient in opera, oratorio and concert singing. During nearly the entire last half of the 19th century, she was England's leading soprano.

LEMMING, a small arctic mouselike rodent, *Lemmus lemmus,* belonging to the subfamily Microtinae and nearly related to the voles or meadow mice. About five inches long,

the lemming's prevailing colour is tawny yellow, shading to reddish-brown, with a dark back stripe running from head to tail. The head is short and rounded, the eyes bead-like and the short, rounded ears are almost concealed by the fur. The tail is short and the feet small, each with five claws adapted to digging. The usual habitat of lemmings is the highlands or fells of the great central mountain chain of Norway and Sweden, from the southern branches of the Langfjeldene in Christiansand *stift* to the North Cape and the Varangerfjord. South of the Arctic circle they are, under ordinary circumstances, confined to the plateaus covered with dwarf birch and juniper above the conifer region, though north of the Arctic circle, in Lapland, they occur in all suitable localities down to the level of the sea. The nest, under a tussock of grass or a stone, is constructed of short dry straws and usually lined with hair. The number of young in each nest is generally five, sometimes only three, occasionally seven or eight; and at least two broods are produced annually. Their food is entirely vegetable, especially grass roots and stalks, shoots of dwarf birch, reindeer lichens and mosses, in search of which they form, in winter, long galleries through the turf or under the snow. They are restless, courageous and pugnacious little animals. When a lemming is suddenly disturbed, instead of trying to escape it sits upright, with its back against a stone, hissing and showing fight in a determined manner.

The circumstance which has given popular interest to the lemming is that certain districts of the cultivated lands of Norway and Sweden, where under ordinary conditions they are unknown, are at uncertain intervals overrun by an army of lemmings. These emigrations, which usually occur every three or four years, although occasionally the interval between them is longer, are always downhill toward the sea—hence westward in central Norway, northward in Lapland, eastward in central Sweden and southward in southern Norway and Sweden. The lemmings advance steadily and slowly, regardless of all obstacles, swimming streams and even lakes of several miles in breadth and committing considerable devastation on their line of march by the quantity of food they consume. In their turn they are pursued and harassed by crowds of beasts and birds of prey, as well as by man, and even domestic animals such as cattle, goats and reindeer join in the destruction, stamping them to the ground with their feet and even eating their bodies. Numbers also die from an epidemic disease known as "lemming fever" (apparently tularemia), seemingly epidemic from overcrowding. None returns and the onward march of the survivors never ceases until they reach the sea, into which they plunge and are drowned.

These sudden appearances of vast bodies of lemmings and their singular habit of persistently pursuing the same onward course of migration have given rise to various speculations, from the ancient belief of the Norwegian peasants that they fall down from the clouds, to the hypothesis that they are responding to an inherited instinct and travelling to the place where their ancestors of the Miocene period, at a time when there was dry land over the Baltic and North seas, emigrated when driven from their ordinary dwelling-places by crowding or scarcity of food.

The principal facts of these emigrations seem to be that when any combination of circumstances has occasioned an increase in the number of lemmings in their ordinary habitats, impelled by a migratory instinct they begin to move toward lower-lying land. The whole body moves forward slowly, always advancing in the same general direction in which they originally started, but following more or less the course of the great valleys. They march largely by night, usually feeding and sleeping by day, although they have often been seen moving through brush and woods in the daytime and when swarming on the lowlands, they commonly appear by day, moving through towns, swimming rivers, climbing ships' hawsers and devouring all vegetable matter that comes in their way. The emigration may last from one to three years, according to the route taken and the distance to be traversed before they reach the seacoast, and notwithstanding the destructive influences to which they are exposed, lemmings breed with such prodigality as actually to increase their numbers during the journey. Their ultimate goal is either the Atlantic ocean or the Gulf of Bothnia, depending on whether their emigration began from the west or the east side of the central elevated plateau. Those that finally perish in the sea, committing what appears to be a voluntary suicide, are only acting under the same blind impulse which had led them previously to cross shallower pieces of water with safety.

Lemmings are divided by naturalists into two genera, *Lemmus* and *Dicrostonyx,* each with a number of species and races. The genus *Dicrostonyx,* which is largely American, turns white in winter and is popularly known as the pied or collared lemming. The American lemmings live like the Scandinavian variety. They inhabit the tundra and have been found emigrating even on Arctic ice, 30 mi. from land.

See Charles Elton, *Voles, Mice and Lemmings: Problems in Population Dynamics,* chaps. X and XXI (Oxford, 1942).

LEMNISCATE: *see* CURVES, SPECIAL.

LEMNOS, an island in the north of the Aegean sea; area about 150 sq. mi. Population 3,808. Lemnos is mountainous, with sheep pasture and very fertile valleys. No forests remain and all wood is brought from Thasos or the mainland. There are mulberries and other fruit crops but no olives. The population is Greek, formerly with a Turkish minority.

The chief towns are Kastro, on the west coast, with excellent harbour, foreign consulates and the archbishoprics of Lemnos and the neighbouring island of Ai-Strati (St. Eustratius): Mudros on the south coast, at the head of a spacious landlocked bay of high naval value.

The most famous product of Lemnos is the medicinal earth, *terra sigillata,* formerly popular over western Europe, and still used locally. The name (=Gr. Λημνία σφραγίς) is derived from the stamp impressed on each piece; in ancient times the stamp was the head of Artemis. The earth was considered in ancient times a cure for old festering wounds and for the bite of poisonous snakes. The Turks now believe that a vase of this earth destroys the effect of any poison drunk from it—a belief which the ancients attached to the earth from Cape Kolias in Attica. Galen went to see the digging of this earth; on one day in each year a priestess performed the due ceremonies, and a wagonload was dug out. At the present time the day is Aug. 6, the feast of Christ the Saviour. Till recently the Turkish *hodja* as well as the Greek priest were present to perform the ceremonies, which take place before daybreak. The earth is sold by apothecaries in stamped cubical blocks. The hill from which the earth is dug is a dry mound, void of vegetation, beside the village of Kotchinos and about two hours from the site of Hephaestia (*Palaiokastro*) on the east coast. In ancient times the island was sacred to Hephaestus, who fell when Zeus hurled him out of Olympus. This tale and the name Aethallia were supported by stories of volcanic activity and subsidence of islets. But all such disturbance has ceased. The name Lemnos is said to be Thracian, and the earliest inhabitants, the Sinties, have a Thracian tribe-name. The proverbial "Lemnian deeds" were the murder of all the men by the island women on two traditional occasions. The Argonauts found only women on the island, ruled over by Hypsipyle, daughter of the old king Thoas. From the Argonauts and the Lemnian women were descended the race called Minyae, whose king Euneus, son of Jason and Hypsipyle, sent wine and provisions to the Greeks at Troy. The Minyae were expelled by a Pelasgian tribe who came from Attica, and survivors found refuge in Sparta and colonized Thera later. The historical element underlying these traditions is probably that the original Thracian people were gradually brought into communication with the Greeks as navigation began to unite the scattered islands of the Aegean; the Thracian inhabitants were barbarians in comparison with the Greek mariners. The worship of Cybele was characteristic of Thrace, whither it spread from Asia Minor at a very early period, and it deserves notice that Hypsipyle and Myrina (the name of one of the chief towns) are Amazon names.

Lemnos was conquered by Otanes, one of the generals of Darius Hystaspis, but was soon reconquered by Miltiades, the tyrant of the Thracian Chersonese. Miltiades afterwards returned to Athens, and Lemnos continued an Athenian possession (secured

by a cleruchy [*q.v.*]) until Macedon acquired it. The Romans declared it free in 197 B.C. but gave it over in 166 to Athens, which retained nominal possession of it till the whole of Greece was made a Roman province. A colony of Attic cleruchs was established by Pericles, and many inscriptions on the island relate to Athenians. After the division of the empire, Lemnos passed under the Byzantine emperors; it shared in the vicissitudes of the eastern provinces, being alternately in the power of Greeks, Italians and Turks, till finally the Turkish sultans became supreme in the Aegean. In 1476 the Venetians successfully defended Kotschinos against a Turkish siege, but in 1657 Kastro was captured by the Turks from the Venetians after a siege of 63 days. Kastro was again besieged by the Russians in 1770. All these changes reflected its great naval importance.

Homer speaks as if there were one town in the island called Lemnos, but in historical times there was no such place. There were two towns, Myrina, now Kastro, and Hephaestia. The latter was the chief town; its coins are found in considerable number, the types being sometimes the Athenian goddess and her owl, sometimes native religious symbols, the caps of the Dioscuri, Apollo, etc. Few coins of Myrina are known. They belong to the period of Attic occupation and bear Athenian types. A few coins are also known which bear the name not of either city but of the whole island. Conze was the first to discover the site of Hephaestia, at a deserted place named Palaeokastro on the east coast. It once had a splendid harbour which later filled up. Its situation on the east explains why Miltiades attacked it first when he came from the Chersonese. It surrendered at once, whereas Myrina, with its very strong citadel built on a perpendicular rock, sustained a siege. It is said that the shadow of Mount Athos fell at sunset on a bronze cow in the agora of Myrina. Pliny says that Athos was 87 mi. to the northwest, but the real distance is about 40 English mi.

One legend about Lemnos is that Philoctetes was left there by the Greeks on their way to Troy during the Trojan War and there suffered 10 yrs.' agony from his wounded foot until Ulysses and Neoptolemus induced him to accompany them to Troy. This story is the subject of Sophocles' *Philoctetes*. He is said by Sophocles to have lived beside Mount Hermaeus, which Aeschylus in *Agamemnon* makes one of the beacon points to flash the news of Troy's downfall home to Argos.

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LEMOINE, ÉMILE-MICHEL-HYACINTHE (1840–1912), French mathematician and engineer, was born at Quimper, France, Nov. 22, 1840. He was educated at the École Polytechnique (1860–62), the École des Mines and several other technical schools, where he sometimes served as an instructor. After he abandoned teaching, he held a number of engineering positions and in 1886 became chief of the Paris gas inspection service, where he remained until 1896. He died in 1912.

Lemoine's particular interests were always mathematics and music, however, and it is in those fields that he made his principal contributions. He was instrumental in the founding of the mathematical and physical societies of France, as well as of the *Journal de Physique* and that of the French Association for the Advancement of the Sciences. In 1894 he was co-founder of *l'Intermédiaire des mathématiciens,* a scientific periodical. He was the author of important studies on the geometry of the triangle; and the point in the plane of a triangle on the properties and position of which these studies are based is known to geometricians as Lemoine's point.

Lemoine was also the founder of La Trompette, a chamber music society which performed in private sessions solely for the amusement of its members. Some of the most distinguished musicians in Europe played with the group, and many noted composers wrote music especially for it. A septet by Camille Saint-Saëns for pianoforte, five stringed instruments and trumpet was perhaps the most famous.

LEMOINE or **LEMOYNE, FRANÇOIS** (1688–1737), French painter, was born in Paris. He studied under Louis Galloche and in 1711 won the Grand Prix de Rome, of which he was, however, not able to take advantage for financial reasons. He was elected to the Royal academy in 1718 and five years later became professor of painting of the academy.

His principal work, "The Apotheosis of Hercules," is an oil painting which decorates the ceiling of the salon of Hercules in the palace of Versailles. Lemoine spent four years on the painting, which contains more than 100 figures and is one of the largest oils in the world, measuring 54 ft. by 64 ft. In the year of its completion (1736), because of its excellence, Louis XV made Lemoine principal painter to the court. After the death of his wife, however, Lemoine suffered from melancholy and in 1737 he killed himself.

In addition to "The Apotheosis of Hercules," Lemoine's works include "Hercules and Cacus"; "Hercules and Omphale"; "Venus and Adonis"; "The Education of Cupid" and numerous others.

LE MOINE, JAMES MacPHERSON (1825–1912), Canadian author, was born in Quebec, Jan. 24, 1825. He was educated at the Petit séminaire de Quebec (1838–45) and then studied law in the office of one of Quebec's leading lawyers. He was admitted to the bar in 1850. He served for many years as superintendent of inland revenue for Quebec and was chosen president of the Quebec Literary and Historical society five times. Le Moine's interests lay particularly in Canadian ornithology and history, and he was the author of numerous books on these subjects in both English and French. His best-known work is *Maple Leaves* (6 vols., 1863–94). He was knighted in 1897 and died Feb. 5, 1912.

LEMOINNE, JOHN ÉMILE (1815–1892), French journalist, was born of French parents, in London, Oct. 17, 1815. He was educated first at an English school and then in France. In 1840 he began writing for the *Journal des Débats,* on English and other foreign topics, and under the empire he held up to admiration the free institutions of England by contrast with imperial methods. After 1871 he supported Thiers, but his sympathies rather tended towards a liberalized monarchy, until the comte de Chambord's policy made such a development an impossibility, and he then ranged himself with the moderate Republicans. In 1875 Lemoinne was elected to the French academy, and in 1880 he was nominated a life senator. Distinguished though he was for a real knowledge of England among the French journalists who wrote on foreign affairs, his tone towards English policy greatly changed in later days. Though he never shared the extreme French bitterness against England as regards Egypt, he maintained a critical attitude which served to stimulate French Anglophobia. He was a frequent contributor to the *Revue des Deux Mondes* and published several books, the best known of which was his *Études critiques et biographiques* (1862). He died in Paris, Dec. 14, 1892.

LEMON, MARK (1809–1870), British playwright and editor of *Punch,* was born in London, Nov. 30, 1809. He had a natural talent for journalism and the stage, and, at 26, retired from less congenial business to devote himself to the writing of plays. More than 60 of his melodramas, operettas and comedies were produced in London. At the same time he contributed to a variety of magazines and newspapers and founded and edited the *Field.* In 1841 Lemon and Henry Mayhew conceived the idea of a humorous weekly paper to be called *Punch,* and when the first number was issued, in July 1841, were joint-editors and with the printer and engraver, equal owners. The paper was for some time unsuccessful, Lemon keeping it alive out of the profits of his plays. On the sale of *Punch* Lemon became sole editor for the new proprietors, and it remained under his control until his death, achieving remarkable popularity and influence. Lemon was an actor of ability, a pleasing lecturer and a successful impersonator of Shakespearean characters. He also wrote a host of novelettes and lyrics, more than 100 songs, a few three-volume novels, several Christmas fairy tales and a volume of jests. He died at Crawley, Sussex, May 23, 1870.

LEMON, the fruit of *Citrus limon* (Linn.) Burman, considered

by Linnaeus as a variety of *Citrus medica,* the citron. The origin of the lemon is not certain. It should probably be considered as a "satellite" species of the citron, though it may ultimately prove to be of hybrid origin, perhaps having the citron and lime for parent species (W. T. Swingle, 1943).

The lemon seems to have been unknown to the ancient Greeks and Romans, and to have been introduced into Spain and the north African countries some time between the year 1000 and the year 1200. It was further distributed, about this same time, through Europe, by the Crusaders, after they found the fruit growing in Palestine (Swingle, 1943; H. J. Webber, 1943). In 1494, the fruit was being cultivated in the Azores and shipped largely to England. In China the lemon is found only as a plant of relatively recent introduction and is very rare even in the southern provinces, where other citrus is grown. It is also rare in India. As a cultivated tree, the lemon is now grown throughout the Mediterranean countries. It is extensively grown in the southwestern United States, and is grown to a limited extent in almost all tropical and subtropical countries.

The lemon tree is more tender than the orange or grapefruit and is more susceptible to injury by extreme cold, although all of these citrus species are injured by temperatures ranging from 25° to 20° F., or below. Unlike the orange, which forms a close head of deep-green foliage, the lemon forms a spreading bush or a small tree 10 to 15 ft. high, if not pruned. The leaves of the lemon are paler and more scattered than those of the orange; the young leaves, when one-eighth to one-quarter grown, have a decidedly reddish tint, later turning green. The foregoing description is typical of the Eureka lemon variety and others similar to it, such as the Villafranca; the various selections of the Lisbon lemon varieties grow more like an orange or grapefruit, so far as size of leaves and density of foliage are concerned. The young branches of the lemon are angular, and in some varieties, such as the Lisbon, there are sharp thorns at the axils of the leaves. The flowers possess a sweet odour comparable to that of the orange; they are rather large, solitary or in small clusters in the axils of the leaves, reddish-tinted in the bud; petals white above, reddish purple below. The fruit is oval with a broad, low, apical nipple, 8 to 10 segments; peel yellow when ripe, rather thick in some varieties, prominently glandular-dotted; seeds small, ovoid, pointed, sometimes few or none; pulp decidedly acid. The white spongy inner part of the peel, called the mesocarp or albedo, is nearly tasteless and is the source of much of the vitamin P factor of the fruit.

Webber (1943) enumerates 21 varieties of lemons, and there are many others cultivated in the Mediterranean countries. The numerous varieties include those with pink pulp, those with variegated foliage and those so low in acid that they have a sweet or insipid flavour; otherwise, the varieties are typical of the species *Citrus Limon.*

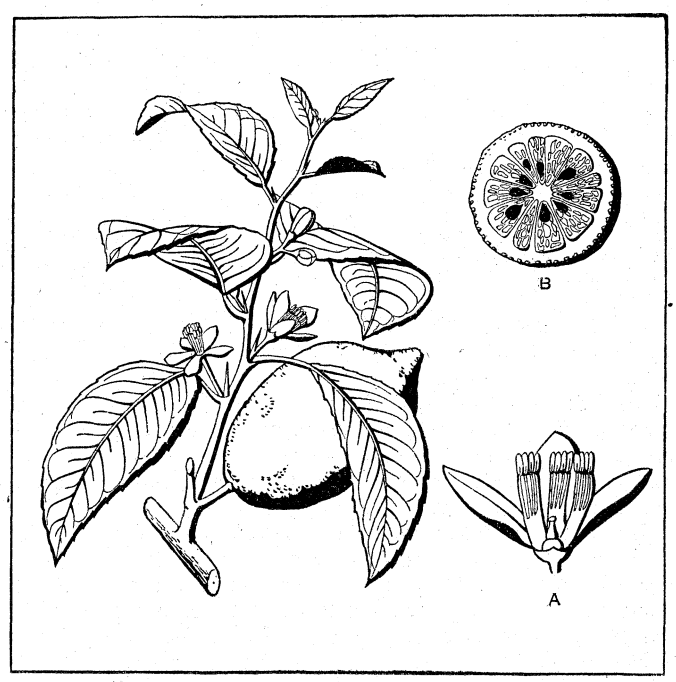
The total heat requirement of the lemon is lower than that of the orange, and the relatively cool, equitable climatic zones of the coastal portions of Italy and California are therefore especially favourable for successful cultivation of this fruit.

The cultivated lemon varieties are of mixed parentage and do not come true to seed. Lemon trees for commercial planting are therefore usually propagated by budding the desired variety on seedlings of other citrus species, such as the sweet orange (*Citrus sinensis*), grapefruit (*C. paradisi*), mandarin orange (*C. reticulata*), sour orange (*C. aurantium*) or the intrageneric hybrid Sampson tangelo (*C. paradisi* × *C. reticulata*). Seedlings of any of these species are superior to lemon seedlings as rootstocks because they are more uniform, and the ultimate orchard trees are less susceptible to the various crown- and root-rot diseases. The first four rootstock species are listed in the order of their increasing relative resistance to crown-rot diseases; the Sampson tangelo is nearly as resistant as the sour orange.

Lemon trees are commonly grown in orchard form, with the trees 15 to 25 ft. apart, the spacing depending upon the varieties and the cultural conditions. Areas relatively free from frost are desirable for lemon orchards; and even in such areas it is sometimes necessary to provide orchard heaters for use during occasional cold winter nights (*see* ORANGE). Lemon trees are grown on soils which are relatively fertile; in order to produce large commercial crops of lemons, greater applications of fertilizers are made than are customary with many agricultural crops.

The trees bloom throughout the year, unless unfavourable extremes of temperature delay the blossoms. Fruit is picked from six to ten times a year, the number of pickings depending upon the marketable size of fruit or state of maturity. Full-sized fruit, for commercial purposes, is from 1.9 to 2.3 in. in diameter. The best-keeping and best-quality fruit is that which reaches a desirable size while still green and is then picked and cured at 57° to 60° F. until the peel is clear yellow. Good sound fruit may be kept three months or more in storage without loss of quality or intrinsic commercial value. Great care is taken in picking and handling the fruit to prevent bruising or breaking of the peel by thorn pricks, stem punctures, fingernail cuts or by other careless handling. The pickers commonly wear cloth gloves and clip the lemon stems very close to the fruit by means of small clippers. Careful handling is essential to prevent loss of fruit in storage and transit by fungus diseases, such as brown rot, green mould, etc. Such fungus organisms enter the fruit more readily if the peel is even slightly punctured, bruised or cut. Young lemon trees reach a bearing age very quickly; some fruit is usually produced during the third year after planting of trees in the orchard, and commercial crops may be expected during the fifth year. The mature lemon tree produces a remarkably large number of fruits; an extraordinary tree may produce as many as 7,000 fruits in one year, but the average, satisfactory orchard yield is about 20% of this amount.

Insect pests common to other species of citrus are also troublesome on lemons. In California, among the most important of these pests are the following: four species of common scale insects, red scale (*Aonidiella aurantii*), black scale (*Saissetia oleae*), yellow scale (*Aonidiella citrina*) and purple scale (*Lepidosaphes beckii*); four species of mealybugs (*Pseudococcus gahani, P. citri, P. longispinus* and *P. maritimus*); the citrus thrips (*Scirtothrips citri*); and two species of mites, the citrus red mite, or red spider (*Paratetranychus citri*) and the citrus bud mite (*Eriophyes sheldoni*). Some of these pests may be reasonably well controlled, at least below the level of economic harm, by their natural enemies. The citrophilus mealybug (*P. gahani*), for example, has been well controlled in California, since 1931, by parasites introduced from Australia. Most of these insect pests, however, are



FLOWERING BRANCH OF THE LEMON TREE (CITRUS LIMON)
A. Flower with two petals and two bundles of stamens removed; slightly enlarged. B. Fruit cut across to show structure and seeds

controlled by means of fumigation with hydrocyanic acid gas, or by spraying or dusting with toxic materials (H. J. Quayle, 1938). Some of these pests, or related species, and certain others are generally distributed throughout the lemon-growing districts of the world; their control is one of the largest items in the cost of producing lemons. (For more details on control of pests, *see* ORANGE.)

Numerous fungus diseases are troublesome to the growth of the lemon tree and in the production and storage of the fruit. Of these diseases, most serious to the tree is brown-rot gummosis caused by any of a number of fungi (*Phytophthora* spp.). This disease affects the crown of the tree just below the surface of the ground and a few inches above it. Dark, water-soaked-appearing areas, from which gum sometimes exudes, and beneath which the cambium layer is brown and dead, are characteristic of this disease. If the spread is not prevented by tree surgery, the tree may be killed. The same organisms cause decay of the fruit before it is picked and when it is in storage, unless proper precautions are taken. Such decay is characterized by a dull-brown appearance of the fruit, which soon becomes soft and worthless. Spray mixtures in which copper is the lethal element are commonly used to control brown rot in the orchard. The spread of this disease, and of such diseases as green mould (*Penicillium digitatum*) and blue mould (*P. italicum*) and others, also, in the fruit in the packing-house, is prevented by thoroughly cleaning the fruit with soap and hot water and then dipping it in cool or warm solutions containing copper, sodium carbonate or other fungicides (H. S. Fawcett, 1936).

In the United States, lemons are commonly packed in wooden boxes holding 76 lb. of fruit each. The fruit is graded in the packing-house for size, quality and degree of maturity. The grades which depend on maturity are based on the colour of the fruit: green, light green, silver and tree-ripe (yellow). Fruit of the last-mentioned grade is fully ripe and must be packed and sold at once or used for by-products. The other grades are held in storage until they become a uniform lemon-yellow colour. In packing, each fruit is wrapped in tissue paper and placed in a box containing the same-sized fruit throughout. The number of lemons packed per box may range from 240 to 490; the medium-sized commercial lemon is 2.1 in. in diameter and packs 300 per box. Lemons of the most desirable sizes and of the best quality are sold in the fresh-fruit market; the remainder of the crop is used in the manufacture of such by-products as citric acid and pectin. The proportion of the crop sold in the fresh-fruit market depends upon supply and demand. During years of very large production, a smaller percentage of the crop can be readily consumed in its fresh state than is the case when the production is more nearly normal.

The two chief varieties of lemons grown in California are the Lisbon, a variety introduced from Australia, and the Eureka, a variety originated from a seedling tree grown in California. Most of the orchards planted during the two decades 1922–42 are of selected strains of the Eureka, a precocious, practically thornless tree, smaller and less vigorous than the Lisbon. The fruit is almost seedless and keeps especially well under average storage conditions.

The total world production of lemons for the year ending Oct. 31, 1941, was estimated at the equivalent of 30,784,000 packed boxes (76 lb. each); of this amount the United States produced 56%. Other lemon-producing countries are Italy, Spain, Australia, Greece and Algeria. Production in the United States is centred in seven counties of southern California. The lemon districts are mainly within from 1 to 40 mi. of the ocean. Lemons do not thrive so well as oranges and grapefruit in inland desert regions, where extremes of temperature and wide daily ranges of temperature are commonly experienced. Florida has not developed an important lemon-producing area, apparently because of the presence of certain diseases which thrive there and because of the difficulty of curing the fruit properly in the very humid climate.

Lemon production in California increased nearly threefold during the 25-year period 1915–40. The total lemon acreage in California in 1940 was 69,000. The average annual production in California for the four 5-year periods 1915–20 to 1935–40 increased from 3,554,000 to 9,552,000 packed boxes; the record crop of 17,236,000 boxes was produced during the year ending Oct. 31, 1941.

Since 1920 a considerable portion of the fruit provided by this increase in production has been used for by-products. The percentage of fruit shipped to the fresh-fruit market during the two decades 1920–40 ranged from 66 to 97%, the amount depending on volume of crop and marketing conditions. The per capita consumption of lemons has not increased so greatly during the past two decades as has that of oranges and grapefruit. The average annual per capita consumption for the four 5-year periods beginning 1920–25 and ending 1935–40 was 16.4, 16.4, 16.9 and 19.4 lemons, respectively. The principal factors influencing lemon consumption are price, maximum summer temperatures, the prevalence of colds and the buying power of the public. The influence of summer temperatures upon the use of lemons is brought out by the fact that 50% or more of the lemons shipped from California are picked in the late winter and early spring and then forwarded during the four months May to August, inclusive. The ultimate use of most of this fruit is in lemonade and other beverages.

The most important components of lemons are as follows. Volatile oils contained in the outer cells of the lemon peel are used for flavouring and, to a lesser extent, in perfumes. These oils consist largely of limonene (terpene), in amounts ranging from 85 to 95%, with corresponding percentages (15 to 5) of aldehydes and esters. The aldehydes and esters are largely responsible for the flavour and odour of the citrus oils. The white spongy inner part of the peel, the mesocarp (albedo), consists of cellulose, hemicellulose, lignin, pectin, pentosans, sugars, glycoside, bitter substances and mineral matter. The glycoside is hesperidin.

The pulp of the lemon is made up of soluble solids, in solution in the juice, and of insoluble solids consisting of segment and juice-cell walls. Soluble solids are largely sugars or acids. The predominant acid is citric, which may amount to 5% or more of the dissolved solids, but small quantities of malic acid have been reported. The juice of lemons is rich in vitamin C, and contains some vitamins A, B and G (E. M. Chace *et al.*, 1940).

The commonest method of preserving lemon juice for medicinal or domestic use is to concentrate the juice at a ratio of 5:1 to 6:1, depending upon the total solids present in the original juice. Every care should be taken to see that the finished product is a pure, sterile juice. Defective fruits that do not come up to high standards of soundness, are not usable for juice purposes but are used for making by-products such as pectin, citric acid, etc. The washing of the fruit is the first step in the extraction of the juice. The fruit then enters the automatic reaming machines, where it is cut in halves, which are picked up by rubber caps for extraction of the juice by reaming. Such reaming machines may have a capacity of as much as 100 gal. of juice an hour. The yield of juice under factory conditions may be from 70 to 95 gal. per 2,000 lb. of fruit. The juice is repeatedly screened to remove all seeds, remaining segment walls and pulp. The high vitamin C content is preserved by quickly passing the juice into a tank maintained under a 28-in. vacuum. The juice is left in the tank for about 30 min., and the rapid loss of vitamin C by oxidation is thus prevented. The juice is then flash-pasteurized at 200° F., for 1 min., to kill microorganisms present; it is immediately chilled and temporarily held in a tank, until passed to the vacuum concentrating tank, where the water is cooked off. The important constituent, as regards final concentration, is the acid. Normal California lemon juice contains more natural acid than sugar. The total soluble solids (degrees Brix), including the acids, sugars and other constituents, compose, on the average, 9% of the juice. The concentrated juice is from 40 to 50% soluble solids. The final step, before the concentrated juice is poured into 50-gal., paraffine-lined barrels, is the addition of some preservative. To the juice exported to the British empire, sulphur dioxide is added (500 parts

per million). To illustrate the saving in shipping space, an average carload of 120 barrels of concentrated juice would be equivalent to about 28 carloads of fresh fruit of 462 boxes each.

Lemon juice and also lime juice were for many years the most important food materials used on shipboard as a preventive of scurvy; their value is now known to be due to their high content of vitamin C. As early as 1867, by the Merchant Shipping act of that year, every British ship going to countries where lemon or lime juice could not be obtained, was required to take enough to give 1 oz. to every member of the crew daily.

Lemon juice is also processed into powdered form. This powdered juice is not pure lemon juice but is a combination of dried lemon juice and corn-sugar syrup. The mixed juice and syrup are sprayed into a desiccating chamber containing hot dehumidified air, and are dried to a powder almost instantly. Other constituents are added; these include ascorbic acid or vitamin C, citric acid and sugar. This combination powder sometimes constitutes a part of the rations of the army and navy of the United States.

Among the important by-products resulting from the processing of lemons, after removal of the juice, are citric acid, citrate of lime, lemon oil and pectin. Citric acid is used in beverage manufacturing, and lemon juice concentrated to 30% citric acid is considered by many to be a superior substitute (J. L. Heid, 1943). Pectin has long been an important material for making fruit jellies. During the decade 1933–43, pectin was found to be very important for medicinal purposes; it was used, for example, in the treatment of intestinal disorders, as a hemostatic, as an antigen and for other purposes in the field of surgery and medicine.

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(L. D. B.)

LEMONADE. A beverage consisting of lemon-juice mixed with water and sweetened. The word is sometimes used to designate what is merely flavoured aerated water (*see* AERATED WATERS), in which case the true lemonade is called lemon squash (a name originally applied to the pulp of lemons drunk with sugar and soda water). Lemonade of excellent quality is made by squeezing the juice of lemons, to which is added boiling water, white sugar (to taste, but plentifully) and the rinds of the squeezed lemons. The mixture is covered and left to grow cold. If it is to be kept for any length of time, it is strained and usually a very small amount of tartaric or citric acid is added.

LEMONNIER, ANTOINE LOUIS CAMILLE (1844–1913), Belgian poet, was born at Ixelles, Brussels, on March 24, 1844, and died at Brussels on June 13, 1913. He studied law and then took a clerkship in a government office, which he resigned after three years. He retired to Namur and developed the intimate sympathy with nature which informs his best work. *Nos Flamands* (1869) and *Croquis d'automne* (1870) date from this time. *Paris-Berlin* (1870), a pamphlet pleading the cause of France, and full of the author's horror of war, had a great success. His capacity as a novelist, in the fresh, humorous description of peasant life, was revealed in *Un Coin de village* (1879). In *Un Mâle* (1881) he achieved a different kind of success. It deals with the amours of a poacher and a farmer's daughter, with the forest as a background. Cachaprès, the poacher, seems the very embodiment of the wild life around him. The rejection of *Un Mâle* by the judges for the quinquennial prize of literature in 1883 made Lemonnier the centre of a school, inaugurated at a banquet given in his honour on May 27, 1883. *Le Mort* (1882), which describes the remorse of two peasants for a murder they have committed, is a masterpiece in its vivid representation of terror. It was remodelled as a tragedy in five acts by its author in 1899. *Ceux de la glèbe* (1889), dedicated to the "children of the soil," was written in 1885. After that year he turned aside from local subjects for some time to produce a series of psychological novels, books of art criticism, etc., of considerable value but assimilating more closely to French contemporary literature.

The most striking of Lemonnier's later novels are: *L'Hystérique* (1885); *Happe-chair* (1886), often compared with Zola's *Germinal; Le Possédé* (1890); *La Fin des bourgeois* (1892); *L'Arche, journal d'une maman* (1894), a quiet book, quite different from his usual work; *La Faute de Mme. Charvet* (1895); *L'Homme en amour* (1897); and, with a return to Flemish subjects, *Le Vent dans les moulins* (1901); *Petit Homme de Dieu* (1902) and *Comme va le ruisseau* (1903). In 1888 Lemonnier was prosecuted in Paris for offending against public morals by a story in *Gil Blas*, and was condemned to a fine. In a later prosecution at Brussels he was defended by Edmond Picard and acquitted; and he was arraigned for a third time, at Bruges, for his *L'Homme en amour*, but again acquitted. He represents his own case in *Les Deux consciences* (1902). *L'Ile vierge* (1897) was the first of a trilogy to be called *La Légende de la vie*, which was to trace, under the fortunes of the hero, the pilgrimage of man through sorrow and sacrifice to the conception of the divinity within him. In *Adam et Ève* (1899) and *Au Coeur frais de la forêt* (1900), he preached the return to nature as the salvation not only of the individual but of the community. Among his other more important works are *G. Courbet, et ses oeuvres* (1878); *L'Histoire des Beaux-Arts en Belgique 1830–1887* (1887); *En Allemagne* (1888), dealing especially with the Pinakothek at Munich; *La Belgique* (1888), an elaborate descriptive work with many illustrations; *La Vie belge* (1905); *Alfred Stevens et son oeuvre* (1906); *L'Ecole belge de la peinture* (1906).

Lemonnier spent much time in Paris, and was one of the early contributors to the *Mercure de France*. He began to write at a time when Belgian letters lacked style; and with much toil, and some initial extravagances, he created a medium for the expression of his ideas. He explained something of the process in a preface contributed to Gustave Abel's *Labeur de la prose* (1902). His prose is magnificent and sonorous but abounds in neologisms and strange metaphors.

See L. Bazalgette, *Camille Lemonnier* (1904); Rency, *Camille Lemonnier* (1922).

LEMONNIER, PIERRE CHARLES (1715–1799), French astronomer, was born on Nov. 23, 1715, in Paris, where his father was professor of philosophy at the collège d'Harcourt. His first recorded observation was made before he was 16, and the presentation of an elaborate lunar map procured for him admission to the academy at the early age of 20. He was chosen in the same year to accompany P. L. Maupertuis and Alexis Clairault on their geodetical expedition to Lapland. In 1738, shortly after his return, he explained, in a memoir read before the academy, the advantages of J. Flamsteed's mode of determining right ascensions. His persistent recommendation of English methods and instruments contributed effectively to the reform of French practical astronomy, and constituted the most eminent of his services to science. He corresponded with J. Bradley, was the first to represent the effects of nutation in the solar tables and introduced, in 1741, the use of the transit-instrument at the Paris observatory. He visited England in 1748, and, in company with the earl of Morton and James Short, the optician, continued his journey to Scotland, where he observed the annular eclipse of July 25. The liberality of Louis XV, in whose favour he stood high, furnished him with the means of procuring the best instruments, many of them by English makers.

Among the fruits of his industry may be mentioned a laborious investigation of the disturbances of Jupiter by Saturn, the results of which were employed and confirmed by L. Euler in his prize essay of 1748; a series of lunar observations extending over 50 yrs.; some interesting researches in terrestrial magnetism and atmospheric electricity, in the latter of which he detected a regular diurnal period; and the determination of the places of a great number of stars, including 12 separate observations of Uranus, between 1765 and its discovery as a

planet. In his lectures at the collège de France he first publicly expounded the analytical theory of gravitation, and his timely patronage secured the services of J. J. Lalande for astronomy. He died at Héril near Bayeux on May 31, 1799.

He wrote *Histoire céleste* (1741); *Théorie des comètes* (1743), a translation, with additions of Halley's *Synopsis; Institutions astronomiques* (1746), an improved translation of J. Keill's textbook *Nouveau zodiaque* (1755); *Observations de la lune, du soleil, et des étoiles fixes* (1751–75); *Lois du magnétisme* (1776–78), etc.

See J. J. Lalande, *Bibl. astr.*, p. 819 (also in the *Journal des savants* for 1801); F. X. von Zach, *Allgemeine geog. Ephemeriden* iii. 625; J. S. Bailly, *Hist. de l'astr. moderne*, iii.; J. B. J. Delambre, *Hist. de l'astr. au XVIIIe siècle*, p. 179; J. Mädler, *Geschichte der Himmelskunde*, ii. 6; R. Wolf, *Geschichte der Astronomie*, p. 480.

LEMOYNE, JEAN BAPTISTE (1704–1778), French sculptor, was the pupil of his father, Jean Louis Lemoyne, and of Robert le Lorrain. He was a great figure in his day, around whose modest and kindly personality there waged opposing storms of denunciation and applause. Lemoyne's more important works have for the most part been destroyed or have disappeared. We have still a remarkable series of important busts, of which those of women are perhaps the best. Among these are "Fontenelle" (at Versailles), "Duc de la Vallière" (Versailles), "Comte de St. Florentin," and "Crébillon" (Dijon Museum), "Mlle. Chiron" and "Mlle. Dangeville," both produced in 1761 and both at the Théâtre Français in Paris.

LEMPRIERE, JOHN (*c.* 1765–1824), English classical scholar, was born in Jersey, and educated at Winchester and Pembroke college, Oxford. He is chiefly known for his *Bibliotheca Classica* or *Classical Dictionary* (1788), which, edited by various later scholars, long remained a readable reference book in mythology and classical history. He was headmaster of Abingdon and Exeter grammar schools, and later held a living in Devonshire. He died in London on Feb. 1, 1824. He also published *Universal Biography* (1808).

LEMUR, the name applied to the more primitive members of the PRIMATES (*q.v.*), which do not come under the designation of either monkeys or apes, and constitute the sub-orders *Lemuroidea* and *Tarsioidea*, the latter including only the Malayan genus *Tarsius*. The other sub-order includes the true lemurs of Madagascar and the Comoro Islands, the galagos (*q.v.*) of tropical East Africa, the lorises (*q.v.*) of eastern Asia and the aye-aye (*q.v.*) from Madagascar. In the true lemurs, the tail is long and imperfectly prehensile. With the exception of the second toe of the hind-foot, the digits have well-formed, flattened nails as in the majority of monkeys. In the members of the typical genus *Lemur*, as well as in the allied *Hapalemur* and *Lepilemur*, none of the toes or fingers are connected by webs, and all have the hind-limbs of moderate length, and the tail long. The maximum number of teeth is 36. Some of the species are nocturnal and others diurnal; all subsist on a mixed diet, which includes birds, reptiles, eggs, insects and fruit. Most are arboreal, but the ring-tailed lemur (*L. catta*) often dwells among rocks. The species of the genus *Lemur* are diurnal, and may be recognized by the length of the muzzle, and the large tufted ears. In some cases, as in the black lemur (*L. macaco*) the two sexes are differently coloured. The gentle lemurs (*Hapalemur*) have a rounder head, with smaller ears and a shorter muzzle and a bare spiny patch on the fore-arm. The sportive lemurs (*Lepilemur*) are smaller and the adults generally lose their upper incisors. The head is short and conical, the ears large, round and mostly bare, and the tail shorter than the body. Like the gentle lemurs they are nocturnal. (*See* AVAHI, AYE-AYE, GALAGO, INDRI, LORIS, POTTO, SIFAKA and TARSIER.)

LENA, THE, river of Asiatic Russia, which flows from the western slopes of the Baikal mountains to the Arctic Ocean and has a length of about 3,000 m. and a drainage area of roughly 1,000,000 sq.m. Its tributaries probably number 1,000 and the volume of its water entering the Arctic is calculated to be 11,000 cubic yds. per second. It rises in 54° 10′ N. and 107° 55′ E. as a clear mountain torrent and, until it is joined by the Vitim on its right bank, flows through forest-clad cliffs of red sandstone. The Vitim rises in a small lake in the Barguzinsk mountains at 5,530 ft. above sea level, 80 m. from the east coast of Lake Baikal. After a semicircular course of 1,200 m. through a little-explored tundra and forest plateau region, it joins the Lena at the town of Vitim in 59° 55′ N., 112° 23′ E., and altitude 670 ft. The Lena then flows through thickly wooded plains until it receives its right bank tributary the Olekma, whose head-waters are on the eastern slopes of the Vitim plateau. The Olekma flows for 800 to 1,000 m. through an almost uninhabited valley, in a forested and mountainous country and enters the Lena near Olekminsk, at an altitude of 375 ft. above sea level; its strong current affects the Lena for 20 m. below the confluence. Some distance further down, the Botama joins the Lena on the right, and in this neighbourhood are the famous Lena *Stolbi* or columns of perpendicular limestone cliffs, rising in places to 2,000 ft. and having remarkably even green and red strata, each about 20 in. thick. Yakutsk in 62° 5′ N., 129° 40′ E., is a nodal trading point, where the river widens and trails branch off on the west to the Vilui river and its short portage to the Lower Tunguska, and on the east through Allakh to Okhotsk, and also northward to the Kolyma river. A hundred miles below Yakutsk, on the right bank, the Lena is joined by the Aldan, 1,500 m. in length and navigable for 800 m. The headwaters of this stream rise near those of the Zeya and Olekma on the Aldan plateau; its eastern branches are but 40 to 50 m. from the Sea of Okhotsk, and of its tributaries, the Uchur is 350 m. long, the Amga 800 m. and the Maya 400 m. Below the mouth of the Aldan, the Lena flows for 1,200 m. with an average fall of 2 in. per mile; throughout this part of its course it is a majestic stream varying from 4 to 20 m. in breadth, with unstable alluvial islands interrupting its course and with sandy banks stretching inland on either side. About lat. 64° N. it is joined on the left bank by the Vilui, rising south of the Vilui mountains, and flowing for 1,500 m. to its delta on the Lena. It is navigable for 900 m., and has a drainage area of about 2,000 sq.m., the north-east of which is mainly marsh. From lat. 66° N. it becomes narrower, and from Bulun to the delta flows between the Khara-Ulakh mountains on the east and the Lower Chekanovsk mountains on the west. It discharges in a delta which begins 100 m. inland and is 250 m. wide on the coast line. This delta is a vast sandbank, intersected in every direction by numberless channels of all sizes, which change their direction from year to year and render navigation difficult. The many low flat islands are covered with moss and grass during the short summer, when fish is abundant. In winter the natives rely entirely on dried or frozen fish, but their stock often gives out with disastrous results. Upon the breaking up of the ice in the upper portions of the river, great blocks are carried down by the floods and piled up on the delta, still frozen to a depth of several feet; these blocks tear away huge portions of the bank and alter the navigable channels completely. The delta ice, as a rule, begins to break up about July 10 and freezing over is usually complete by Oct. 15. At Yakutsk the respective dates are June 10 and Oct. 12, while at Kirensk in 57° 56′ N. they are May 24 and Nov. 4. Steamer traffic on the Lena has a total annual freightage of about 15,000 tons and consists mainly of stores for the Vitim mining districts, and to a small extent of trade from Okhotsk via the Aldan and other routes. Furs, fossil ivory and small quantities of fish are brought from the north. The delta was discovered in 1637 by the Cossack Elisei Busa, who sailed down the Lena and through the western arm of the delta to the Olenek river where he wintered. In 1737 Prontschischev and his young wife attempted to sail from the Lena delta to the Yenisei, but both died of scurvy. Laptev made further attempts in 1739. Dezhnev's voyage from the Lena through the straits later named after their re-discoverer Bering, took place in 1648. A tragedy of the Lena delta was the loss of many of de Long's party in 1881. He was an American whose steamer the *Jeannette* was wrecked in June, 1881, north-east of the New Siberian islands in 77° 15′ N. and 154° 59′ E. His party broke up into three groups; one boat, under Chipp, was lost and the other two boats, under Melville and de Long were separated. Melville and his party reached the Lena delta safely and at Bulun met two of de Long's party sent on to search for food and help. Melville arrived too late and found de Long

and his party dead from starvation, under circumstances showing that his last act had been to try to place the results of his observations in safety. A wooden cross is erected on Monument Cape in memory of de Long and the eleven others who perished. In 1878 Nordenskiöld on the Vega expedition was accompanied by a vessel, the *"Lena,"* which, under the command of Johansen successfully sailed from the Arctic up the Lena to Yakutsk, and this vessel later continued to make three voyages per annum from Yakutsk to Bulun, a distance of 800 m. The Lena and its tributaries are rich in minerals; the Vitim and Aldan gold mines and the salt of the Vilui are successfully exploited. For further details *see* under YAKUTSK, as also for the sulphur springs and iron and aluminium mud cures.

See A. E. Nordenskiöld, *The Voyage of the Vega* (1881); G. W. Melville, *In the Lena Delta* (1885) and *Handbook of Siberia and Arctic Russia* I.D. 1207 (1920).

LENA GOLDFIELDS LIMITED. This company was originally formed in July, 1908, for the purpose of acquiring a 70% interest in the Lena Gold Mining Company in Russia (the *Lenskoie*) established in 1863, which worked large gold mining properties in the Lena Vitim district. The properties were nationalised in 1917.

An agreement was entered into in November, 1925, between the Lena Goldfields Limited and the Government of the Union of Soviet Socialist Republics whereby a concession was granted comprising the gold mines in the Lena Vitim district for 30 years, in which the Lena Goldmining District Company was formerly interested; the iron and copper mines and works, including the well-known Degtiarka deposit, in the Urals for 50 years, in which the Sissert Company was formerly interested; in addition to which the Revda Iron and Steel Works, formerly owned by the Government, was included; the large mining area in the Altai for 50 years containing lead, zinc, copper, gold and silver, and in which the Altai Mines Limited was formerly interested.

Since taking over the concession, work has been continued on the gold mines in Siberia and at present a 17½ cubic ft. dredge has been erected for the purpose of dredging the large area containing 110,000,000 cu. yards of gold-bearing gravel sufficient to keep four large dredges at work for 15 years.

In December 1934, following prolonged negotiations, the Soviet Government offered the company £3,000,000, payable over a period of 20 years, in full settlement of the company's claims upon that government; and this offer was accepted. (F.W.W.G.; X.)

LE NAIN, the name of three brothers, LOUIS, ANTOINE and MATHIEU, who occupy a peculiar position in the history of French art. Although they figure amongst the original members of the French Academy, their works show no trace of the influences which prevailed when that body was founded. Their sober execution and choice of colour recall characteristics of the Spanish school, and when the world of Paris was busy with mythological allegories, and the "heroic deeds" of the king, the three Le Nains devoted themselves chiefly to subjects of humble life such as "Boys Playing Cards," "The Forge," or "The Peasants' Meal," (Louvre). The Le Nain signature is rare, and is never accompanied by initials which might enable us to distinguish the work of the brothers. Their lives are lost in obscurity; all that can be affirmed is that they were born at Laon in Picardy towards the close of the 16th century. About 1629 they went to Paris; in 1648 the three brothers were received into the Academy, and in the same year both Antoine and Louis died. Mathieu lived on till August 1677; he bore the title of chevalier, and painted many portraits. The National Gallery, London, has a small "Portrait group" signed Le Nain. The British museum has some fine drawings.

See Champfleury, *Essai sur la vie et l'oeuvre des Le Nain* (1850), and *Catalogue des tableaux des Le Nain* (1861); and A. Valabrègue, *Les frères Le Nain* (1904).

LENAU, NIKOLAUS, the pseudonym of NIKOLAUS FRANZ NIEMBSCH VON STREHLENAU (1802–1850), Austrian poet, who was born at Csatád near Temesvar in Hungary, on Aug. 15, 1802. In 1819 the boy went to the University of Vienna; he subsequently studied Hungarian law at Pressburg and then spent the best part of four years in qualifying himself in medicine. But he was unable to settle down to any profession. He had early begun to write verses; and a disposition to sentimental melancholy, stimulated by love disappointments and by the prevailing fashion of the romantic school of poetry, settled into gloom after his mother's death in 1829. Soon afterwards a legacy from his grandmother enabled him to devote himself wholly to poetry. His first published poems appeared in 1827, in J. G. Seidl's *Aurora.* In 1831 he went to Stuttgart, where he published a volume of *Gedichte* (1832) dedicated to the Swabian poet Gustav Schwab. Here he also made the acquaintance of Uhland, Justinus Kerner, Karl Mayer and others; but his restless spirit longed for change, and he determined to seek for peace and freedom in America. In Oct. 1832 he landed at Baltimore and settled on a homestead in Ohio.

But the reality of life in "the primeval forest" fell lamentably short of the ideal he had pictured, and in 1833 he returned to Germany, where the appreciation of his first volume of poems revived his spirits. From now on he lived partly in Stuttgart and partly in Vienna. In 1836 appeared his *Faust,* in which he laid bare his own soul to the world; in 1837, *Savonarola,* an epic in which freedom from political and intellectual tyranny is insisted upon as essential to Christianity. In 1838 appeared his *Neuere Gedichte,* which prove that *Savonarola* had been but the result of a passing exaltation. Of these new poems, some of the finest were inspired by his hopeless passion for Sophie von Löwenthal, the wife of a friend, whose acquaintance he had made in 1833 and who "understood him as no other," In 1842 appeared *Die Albigenser,* and in 1844 he began writing his *Don Juan,* a fragment of which was published after his death. Soon afterwards he began to show signs of aberration, and in Oct. 1844 he was placed under restraint. He died in the asylum at Oberdöbling near Vienna on Aug. 22, 1850. Lenau's fame rests mainly upon his shorter poems; even his epics are essentially lyric in quality. He is the greatest modern lyric poet of Austria, and the typical representative in German literature of the pessimistic *Weltschmerz* which, beginning with Byron, reached its culmination in the poetry of Leopardi.

Lenau's *Sämtliche Werke* were published in 4 vols. by A. Grün (1855); but there are several more modern editions, as those by M. Koch in Kürschner's *Deutsche Nationalliteratur,* vols. 154–155 (888), and by E. Castle (2 vols., 1900). *See* A. Schurz, *Lenaus Leben, grösstenteils aus des Dichters eigenen Briefen* (1855); L. A. Frankl, *Zu Lenaus Biographie* (1854, 2nd ed., 1885); A. Marchand, *Les Poètes lyriques de l'Autriche* (1881); L. A. Frankl, *Lenaus Tagebuch und Briefe an Sophie Löwenthal* (1891); A. Schlossar, *Lenaus Briefe an die Familie Reinbeck* (1896); L. Roustan, *Lenau et son temps* (1898); E. Castle, *Lenau und die Familie Löwenthal* (1906).

LENBACH, FRANZ VON (1836–1904), German painter, was born at Schrobenhausen, in Bavaria, on Dec. 13, 1836. His father was a mason, and the boy was intended to follow his father's trade. With this view he was sent to school at Landsberg, and then to the polytechnic at Augsburg. However, when he had seen the galleries of Augsburg and Munich, he obtained his father's permission to become an artist, and worked for a short time in the studio of Gräfle, the painter; after this he devoted much time to copying. Thus he was already accomplished in technique when he became the pupil of Piloty. In 1856 he painted the "Shepherd Boy" (Schack Gallery, Munich). In 1858 he accompanied Piloty to Italy. A few interesting works remain as the outcome of this first journey—"A Peasant seeking Shelter from Bad Weather" (1858) and "The Arch of Titus" (Palfy collection, Budapest). By these early works which were painted from nature and which were attacked for their "trivial realism" he paved the way for the realistic movement in Germany. On returning to Munich, he was at once called to Weimar to take the appointment of professor at the Academy. But he did not hold it long, having made the acquaintance of Count Schack, who commissioned a great number of copies for his collection. Lenbach returned to Italy the same year, and there copied many famous pictures. He set out in 1867 for Spain, where he copied not only the famous pictures by Velasquez in the Prado, but also some landscapes in the museums of Granada and the Alhambra (1868). But he is best known for his portraits. At a time when idealized

and effeminate portraits were the fashion, he succeeded in becoming the most favoured portrait painter in Germany by his powerful interpretations of men of strong character. He counted among his sitters the greatest men of his time; his portraits of Bismarck are famous. He painted the emperor William I., Richard Wagner, Franz Lizst, Paul Heyse, Wilhelm Busch, Moritz Schwind, Helmholtz, Gladstone, Minghetti, Morelli.

See K. Knackfuss, *Lenbach,* and *Franz von Lenbach Bildnisse* (1900).

LENCA, a group of Indians who formerly occupied central Honduras and eastern Salvador. Vocabularies collected in Chilanga, Similatón, Opatorio, Guajiguiro and Yanalanquira show local variations in speech. In Salvador these Indians are scarcely distinguishable from the ladino population. In Honduras, however, Lenca living amid rugged mountains have maintained their ancient customs in semi-independence. During recent years they have availed themselves of the unsettled state of the country to raid defenceless villages. Ancient ruined cities formerly occupied by the Lenca testify to a former high cultural level. Many of these cities are perched on lofty hill tops and are strongly fortified.

LENCLOS, NINON DE (1616–1705), the daughter of a gentleman of good position in Touraine, was born in Paris on May 15, 1616. Her long and eventful life divides into two periods, during the former of which she was the typical Frenchwoman of the gayest and most licentious society of the 17th century, during the latter the recognized leader of the fashion in Paris, and the friend of wits and poets. She had a succession of lovers, among them being Gaspard de Coligny, the marquis d'Estrées, La Rochefoucauld, Condé and Saint-Evremond. Queen Christina of Sweden visited her, and Anne of Austria was powerless against her. Eventually she settled down to the social leadership of Paris. Among her friends she counted Mme. de la Sablière, Mme. de la Fayette and Mme. de Maintenon. Her long friendship with Saint-Evremond deserves notice. They had been lovers in their youth, and throughout his long exile the wit seems to have kept a kind remembrance of her. The few really authentic letters of Ninon are those addressed to her old friend.

If Ninon owes part of her posthumous fame to Saint-Evremond, she owes at least as much to Voltaire, who was presented to her as a promising boy poet by the abbé de Châteauneuf. To him, she left 2,000 francs to buy books, and his letter on her was the chief authority of many subsequent biographers. Her personal appearance is, according to Sainte-Beuve, best described in *Clélie,* a novel by Mlle. de Scudéry, in which she figures as Clarisse. Her distinguishing characteristic was neither beauty nor wit, but high spirits and perfect evenness of temperament.

The letters of Ninon published after her death were, according to Voltaire, all spurious, and the only authentic ones are those to Saint-Evremond, which can be best studied in Dauxmesnil's edition of *Saint-Evremond,* and his notice on her. Sainte-Beuve has an interesting notice of these letters in the *Causeries du lundi,* vol. iv. The *Correspondance authentique* was edited by E. Colombey in 1886. *See* also Helen K. Hayes, *The Real Ninon de l'Enclos* (1908); Mary C. Rowsell, *Ninon de l'Enclos and her century* (1910); Claude Ferval (Aimery de Pierrebourg), *Ninon et son cortège* (1924); E. Magne, *Ninon de Lenclos (Portraits et documents inédits)* (1925); Cecil Austin, *The Immortal Ninon* (1927).

LEND-LEASE: *see* INTER-ALLIED DEBTS.

L'ENFANT, PIERRE CHARLES (1754–1825), engineer and architect, was born in Paris, France, on Aug. 2, 1754. After completing his education as an architect and engineer, he became an officer in the French colonial troops. His enthusiasm for the American cause brought him, in 1777, to the colonies, where he volunteered in the Continental army at his own expense. In Feb. 1778, he was commissioned captain of engineers. His various military services, knowledge of fortification, and work as a disciplinarian won the admiration of Gen. Washington and other officers, and in 1783, Congress promoted him to major of engineers.

When the Society of the Cincinnati was founded in May 1783, he was commissioned to design its insignia, and as he was about to sail for France, assisted in organizing the French branch of that society. Upon his return to America, he established himself as an architect and engineer in New York city.

Following the decision of Congress to establish the capital on the banks of the Potomac, L'Enfant prepared a plan for the city. The plan was noted for the breadth of its avenues, the large tracts set aside for gardens, parks and squares and for the general logic of its arrangements. It was prepared on such a "scale as to leave room for that aggrandizement and embellishment which the increase of the wealth of the nation will permit it to pursue at any period, however remote." His plan was accepted, and he was employed in March 1791 to direct the work, but his "untoward disposition," as President Washington said, resulted in his withdrawal from active supervision in March, 1792, though his plan was in general followed.

L'Enfant failed to obtain satisfactory remuneration or recognition for his plan of the national capital, and died poor and disappointed on June 14, 1825, in Prince George county, Md. On April 28, 1909, his body was removed to Arlington National Cemetery, where a monument was erected to him by Congress.

See *Records* of Columbia Hist. Soc. vol. 1–3 (Washington, 1897–1900); J. J. Jusserand, *With Americans of Past and Present Days* (1916).

LENGLEN, SUZANNE (1899–1938), French lawn-tennis player, was born at Compiègne, May 24, 1899. She was taught to play tennis by her father and began to show brilliance at an early age, winning the championship of Picardy when only 14 years old. In June 1914 she won the hard court singles and doubles in Paris. During the World War she played in exhibition matches on the Riviera for the French Red Cross 1916–8. In 1919 she made her first appearance at the Wimbledon tournament and won both the singles and doubles championships, defeating Mrs. Lambert Chambers in the final round. In the following year at Wimbledon she won the ladies' singles and the mixed doubles title with G. L. Patterson. In Aug. 1921, after again winning the singles and doubles at Wimbledon, she visited America and was defeated by Mrs. Mallory. In the following year Mlle. Lenglen defeated Mrs. Mallory 6–2, 6–0 at Wimbledon. In the same year she won the French National Championship, took all three championships in the Brussels tournament and was undefeated throughout the season. She again won the singles at Wimbledon in 1923 and 1925, but was obliged to retire in 1924 owing to illness, as she was also in 1926. She became a professional in 1926 and toured the United States playing matches in a number of cities. In 1927 she played in England and on the Continent but in September, 1928, announced her retirement from further competition. (*See* LAWN TENNIS AND TENNIS.)

LENIN, VLADIMIR ILYICH ULYANOV (1870–1924), founder and guiding spirit of the Soviet Republics and the Communist International, the disciple of Marx, the leader of the Bolshevik party and the organizer of the Oct. revolution in Russia, was born on April 9 (22), 1870, in the town of Simbirsk, now Ulyanovsk. His father, Ilya Nicolâevitch, was a schoolmaster. His mother, Maria Alexandrovna, was the daughter of a doctor named Berg. His eldest brother (b. 1866) joined the "Narodovoltze" (a revolutionary terrorist society), and taking part in the unsuccessful attempt on the life of Alexander III., was executed (1891); this was a determining factor in Lenin's life.

Early Life.—The third of a family of six, Lenin completed his course at the Simbirsk gymnasium in 1887, winning the gold medal. He entered the Kazan University to study law, but was sent down in Dec. of the same year for taking part in a gathering of students and was banished to the country. It was not till the autumn of 1889 that he was allowed to return to Kazan, where he began the systematic study of Marx and met the members of the local Marxist circle. In 1891 Lenin passed the law examinations of the St. Petersburg University, and in 1892 he began to practise as a barrister at Samara, appearing for the defence in several trials. His life, however, was chiefly filled by the study of Marxism and its application to the economic and political development of Russia and subsequently of the whole world.

In 1894 he moved to St. Petersburg, and began his propaganda work. To this period belong Lenin's first polemical writings directed against the popular party and passed from hand to hand in manuscript form. Soon after, Lenin started in the Press a theoretical struggle against the falsifiers of Marx. In April 1895

he first went abroad to meet Plekhanov, Zasulich, Axelrod and the Marxist group known as the "Osvobozhdenie Truda" (Deliverance of Labour). On his return to St. Petersburg, he organized the illegal "Union for the liberation of the Working Class," which rapidly became an important organization, carrying on propaganda among the workers. In Dec. 1895 Lenin and his closest collaborators were arrested. He spent the year 1896 in prison, and in Feb. 1897 he was exiled for three years to the Yenisei province in eastern Siberia. In 1898 he married N. K. Krupskaya, a comrade in the St. Petersburg Union and his faithful companion for the remaining 26 years of his life. During his exile he finished his most important economic work, *The Development of Capitalism in Russia,* based on an enormous mass of statistical material (1899). In 1900 Lenin went to Switzerland to arrange, with the "Deliverance of Labour" group, the publication of a revolutionary paper intended for Russia. At the end of the year the first number of the paper *Iskra* (The Spark) appeared in Munich, with the motto "From Spark to Flame." Its aim was to give a Marxian interpretation of the problems of the revolution, with the political watchwords of the struggle, and to form a centralized "underground" revolutionary party of Social Democrats, which, standing at the head of the proletariat, should open the struggle against Tsarism. The idea of an organized party leadership of the struggle of the proletariat in all its forms and manifestations, which is one of the central ideas of Leninism, is closely connected with the idea of the hegemony of the working class within the democratic movement of the country. This idea found direct expression in the programme of the dictatorship of the proletariat when the development of the revolutionary movement had prepared the conditions for the Oct. revolution.

Bolsheviks and Mensheviks.—The second Congress of the R.S.D.R.P. (Brussels, London) in July and Aug. 1903 accepted the programme worked out by Plekhanov and Lenin, but ended with the historic split of the party into Bolsheviks and Mensheviks. Thereupon Lenin entered on his separate path as leader of the Bolshevik section, later the Bolshevik party. The differences concerned tactics and finally the party programme. The Mensheviks tried to bring the policy of the Russian proletariat into line with that of the liberal bourgeoisie. Lenin saw in the peasantry the closest ally of the proletariat. Occasional agreements and closer relations with the Mensheviks failed to arrest the constant widening of the two lines—the revolutionary and the opportunist—the proletarian and the bourgeois. The struggle with the Mensheviks forged the policy which led to the break with the Second International (1914), to the Oct. revolution (1917) and to the change of the party's name from Social Democrat to Communist (1918).

A revolutionary situation was created in the country by the defeat of the army and navy in the Russo-Japanese War, the shooting of the workers on Jan. 9 (22) in 1905, by agrarian disturbances and political strikes. Lenin's programme was the preparation of an armed rising of the masses against Tsarism, and the creation of a provisional Government to organize the revolutionary democratic dictatorship of the workmen and peasants for the deliverance of the country from Tsarism and serfdom. The third congress of the party, consisting exclusively of Bolsheviks (May 1905), passed a new agrarian programme which included the confiscation of the domains of landowners. In Oct. 1905 the All-Russian strike began. On the 17th of the month the Tsar issued his manifesto about the "Constitution." In the beginning of Nov. Lenin returned to Russia from Geneva, and appealed to the Bolsheviks to bring into the party wider circles of workers, but to retain their illegal apparatus in anticipation of counter-revolutionary blows.

In the events of 1905 Lenin distinguished three main features—(1) the temporary seizure by the people of real political freedom, (2) the creation of new if only potential revolutionary power in the shape of soviets of workers', soldiers' and peasants' deputies; (3) the use of force by the people against those who had employed it against them. Those conclusions, from the events of 1905, became the guiding principles of Lenin's policy in 1917 and led to the dictatorship of the proletariat in the form of the Soviet State.

The rising in Moscow at the end of Dec., lacking as it did the support of the army, without simultaneous risings in other towns and sufficient response in the country districts, was quickly suppressed. The Liberal bourgeoisie came to the front. The epoch of the first two Dumas began. At this time, Lenin formulated the principles of the revolutionary exploitation of parliamentary methods as a means of fresh attack. In Dec. 1907 Lenin left Russia, to return only in 1917. Now (in 1907) began the epoch of victorious counter-revolution, prosecutions, exile, executions and emigration. Lenin led the struggle against the Mensheviks, the advocates of the liquidation of the "underground" party—hence those known as "liquidators"—and of the change of their methods into legal ones within the framework of the existing régime; against the "conciliators" who tried to take up an intermediate position between Bolshevism and Menshevism—against the Socialist revolutionaries who tried to make up for the inertia of the masses by personal terrorism; finally, against those Bolsheviks, the so-called "callers-off," who demanded the recall of the Social Democratic deputies from the Duma in the name of immediate revolutionary activity.

At the same time, Lenin carried on an extensive campaign against the attempt to revise the theoretic basis of Marxism on which his whole policy was founded. In 1908 he wrote a major treatise directed against the essentially idealistic philosophy of Mach, Avenarius and their Russian followers, who tried to unite empiric criticism with Marxism. Lenin proved that the methods of dialectical materialism as formulated by Marx and Engels were confirmed by the development of scientific thought in general and natural science in particular. Thus Lenin's constant revolutionary struggle went hand in hand with his theoretical controversies.

The years 1912–14 were marked in Russia by a fresh outburst of activity in the workers' movement. Breaches made their appearance in the counter-revolutionary régime. At the beginning of 1912 Lenin summoned a secret conference of the Russian Bolshevik organizations in Prague. The "liquidators" were declared to be outside the party. The split with the Mensheviks became final. A new central committee was elected. Lenin organized from abroad the publication in St. Petersburg of a legal newspaper, *Pravda,* which in its constant conflict with the censorship and the police exercised a guiding influence on the vanguard of the working class. In July 1912 Lenin, together with his closest colleagues, moved from Paris to Cracow in order to be in closer touch. The revolutionary movement in Russia was growing, and was thereby giving the Bolsheviks the preponderance. Lenin sent articles under different pseudonyms almost every day to the Bolshevik legal newspapers, drawing the inevitable inferences from them in the illegal ("underground") Press. At this time, as well as before and after it, N. K. Krupskaya was the centre of the organizing work. She received comrades from Russia, gave instructions to others on their way there, set up "underground" connections, wrote, coded and decoded letters. It was in the small town of Poronin in Galicia that the declaration of war found Lenin. The Austrian police suspected him of being a Russian spy and arrested him; he was, after a fortnight, expelled to Switzerland.

Internationalism.—A new and international phase of Lenin's work now opened. His manifesto, published in the name of the party on Nov. 1, 1914, denounced the imperialistic character of the War and the war guilt of all the great powers, who had long been preparing a sanguinary struggle for the purpose of widening their markets and destroying their rivals. The patriotic agitation of the bourgeoisie on both sides, who threw the blame each upon the other, was shown to be a manoeuvre to deceive the workers. The manifesto points out that the majority of Social Democratic leaders were on the side of the bourgeoisie of their own country, thus violating the resolutions of the International Socialist congresses and bringing about the downfall of the Second International. The defeat of their "own" governments should be the slogan of the Social Democrats of all countries. Lenin subjects to a merciless criticism not only Socialist patriotism, but that

pacifism which, while occupied with platonic protests, withdraws from the revolutionary struggle with Imperialism. The struggle with pacifism develops into a great struggle with those elements of the working class movement which are midway between the Social Democrats and the Communists, supporting the former in actual practice.

The theorists and politicians of the Second International redoubled the accusations of anarchism which they had before brought against Lenin. As a matter of fact, all Lenin's work was characterized by a twofold struggle, on the one hand with reformism which from the beginning of the War gave its support to the imperialist policy of the propertied classes, and on the other hand with anarchism and all the different varieties of revolutionary adventurists.

On Nov. 1, 1914 Lenin promulgated a programme for the creation of a new International "to undertake the task of organizing the forces of the proletariat for the revolutionary attack on capitalist governments, for the civil war against the bourgeoisie of all countries, for the attainment of political power and the victory of Socialism."

In Sept. 1915 (Sept. 5 and 8) there was held at Zimmerwald in Switzerland the first conference of European Socialists who were opposed to the imperialistic war. Thirty-one delegates were present. The left wing of the Zimmerwald conference and of the later one at Kienthal adopted Lenin's demand for the transformation of the imperialist war into a civil war, and became the nucleus of the future Communist International. The latter worked out its programme, tactics and organization under Lenin's guidance, and it was he who directly inspired the decisions of the first four congresses of the Communist International.

Lenin was prepared for his struggle on an international scale not only by his profound knowledge of Marxism and his experience of the revolutionary party organization in Russia, but also by his intimate acquaintance with the workers' movement throughout the world. He was master of the English, German and French languages, and could read Italian, Swedish and Polish. He was firmly opposed to the mechanical application of the methods of one country to another, and he investigated and decided questions concerning revolutionary movements, not only in their international reactions, but also in their concrete national form.

Revolution of 1917.—The revolution of Feb. 1917 found Lenin in Switzerland. His attempts to reach Russia met with the opposition of the British Government, and he decided to travel through Germany. The success of this plan gave occasion to Lenin's enemies for a fierce campaign of slander, which, however, was powerless to prevent him from assuming the leadership of his party and shortly afterwards of the revolution.

On the night of April 3, on leaving the train, Lenin made a speech in the Finlyandsky station in Petrograd. He repeated and developed the leading ideas it contained in the days which followed. The overthrow of Tsarism, he said, was only the first stage in the revolution. The bourgeois revolution could no longer satisfy the masses. The task of the proletariat was to arm, to strengthen the power of the Soviets, to rouse the country districts and to prepare for the conquest of supreme power in the name of the reconstruction of society on a Socialist basis.

This far-reaching programme was not only unwelcome to those engaged in propagating patriotic Socialism, but even roused opposition among the Bolsheviks themselves. Plekhanov called Lenin's programme "crazy." Lenin, however, foresaw that the distrust of the bourgeoisie and of the Provisional Government would grow stronger daily, that the Bolshevik party would obtain a majority in the Soviets and that the supreme power would pass into their hands. The small daily *Pravda* became at once in his hands a powerful instrument for the overthrow of bourgeois society.

The policy of coalition with the bourgeoisie pursued by the patriotic Socialists, and the hopeless attack which the Allies forced the Russian Army to assume at the front roused the masses and led to armed demonstrations in Petrograd in the first days of July. The struggle against Bolshevism became intense. On July 5th forged "documents" were published by the counter-revolutionary secret service, purporting to prove that Lenin was acting under the orders of the German general staff. In the evening "reliable" detachments summoned from the front by Kerensky and Cadet officers from the districts round Petrograd occupied the city. The popular movement was crushed. The hounding of Lenin reached its height. He now began to work "underground," hiding first in Petrograd with a worker's family and then in Finland.

The July days and the retributions which followed aroused a burst of energy in the masses. The Bolsheviks obtained a majority in the Soviets of Petrograd and Moscow. Lenin demanded decisive action to seize the supreme power. "Now or never!" he repeated in passionate articles, letters and interviews.

The Soviet of People's Commissaries.—The rising against the Provisional Government coincided with the opening of the second Congress of the Soviets on Oct. 25. Lenin, after being in hiding for three and a half months, appeared in the Smolny Institute and directed the fight. In the night sitting of Oct. 27 he proposed a draft decree about peace which was passed unanimously and another about the land, which was passed with one dissentient and eight abstentions. The Bolshevik majority, supported by the left wing of the Socialist revolutionaries, declared that supreme power was now vested in the Soviets. The Soviet of People's Commissaries was appointed, with Lenin at the head.

Having obtained the land of the estate owners, the peasants supported the Bolsheviks. The Soviets became masters of the situation. The constituent assembly which was elected in Nov. and met on Jan. 5 was an anachronism. The conflict between the two stages of the revolution was at hand. Lenin did not hesitate for an instant. On the night of Jan. 6 the All-Russian Central Executive Committee, on Lenin's motion, passed a decree dissolving the constituent assembly. The dictatorship of the proletariat, said Lenin, meant the greatest possible degree of democracy for the toiling majority of the people, putting in the hands of labour all those material goods (buildings for meetings, printing presses and so on) lacking which "liberty" remains an illusion. The dictatorship of the proletariat in Lenin's view is a necessary stage in the abolition of class divisions in society.

The question of war and peace provoked a new crisis. A considerable proportion of the party demanded a "revolutionary war" against the Hohenzollerns, leaving out of account altogether the economic situation of Russia and the temper of the peasantry. Lenin felt that it was necessary for propaganda purposes to drag out negotiations with the Germans for as long as possible. But he demanded that, in the event of a German ultimatum, peace should be signed even at the price of a loss of territory or the payment of an indemnity. The revolution kindling in the west would sooner or later undo the hard terms of peace. Lenin's political realism manifested itself in all its strength in regard to this question. The majority of the Central Committee in opposition to Lenin made a further attempt to avoid yielding to German imperialism by declaring the state of war at an end, but refusing at the same time to sign an imperialistic peace. This led to a renewed attack by the Germans. After heated debates in the Central Committee at the sitting of Feb. 18 Lenin won a majority for his proposal that negotiations should be reopened forthwith, and that the German terms which were now still more unfavourable should be signed.

The Soviet Government on Lenin's initiative transferred itself to Moscow. Peace having been attained, Lenin now brought before the party and the country the whole question of its economic and cultural organization.

The greatest trials, however, were still to come. By the end of the summer of 1918 Central Russia found itself surrounded by a ring of fire. Hand in hand with the Russian counter-revolution there came the rising of the Czechoslovaks on the Volga; on the north and south came the British intervention (in Archangel on Aug. 2, in Baku on Aug. 14). Food supplies were cut off. Lenin never ceased to direct his party and the Government. He carried on propaganda work, roused the masses, organized the getting of corn; followed the enemy's movements, was in direct communication with the Red Army. He followed the international situation, finding his bearings by the dissensions in the camps of the imperialists. He found time for interviews with foreign revolu-

tionaries and with Soviet engineers and economists.

On Aug. 30 the Social-Revolutionary Kaplan aimed two shots at Lenin when on his way to a workers' meeting. This attack intensified the civil war. Lenin's strong constitution quickly recovered from the effect of his wounds. During his convalescence he wrote a pamphlet, *The Proletarian Revolution and the Renegade Kautsky,* directed against the most prominent theorist of the Second International. By Oct. 22 he was again speaking in public.

The New Economic Policy.—The war on the home fronts remained his chief occupation. Economic and administrative problems had necessarily to take a subordinate place. The civil war fed from abroad was at its height. The struggle ended at the beginning of 1921 with the utter defeat of the counter-revolution and the Government grew in strength. The fact that the War had not led immediately to a proletarian revolution in Europe had enormously increased the difficulties of Socialist reconstruction, which was impossible without agreement between the proletariat and the peasantry. The system of requisitioning superfluities from the peasants must be replaced by a tax correctly assessed. Private interchange of commodities must be allowed. These measures began a new phase in the development of the Oct. (Nov.) revolution, that known as the "new economic policy."

In his policy within the Soviet Federation Lenin tried in every way to create for the nationalities which had been oppressed under Tsarism, conditions of free national development. He made unsparing war against all imperialist tendencies especially within the party itself—the purity of whose ideas he guarded with the utmost jealousy. The charges of oppressing nationalities made against Lenin and his party with reference to Georgia, etc., were the product of the sharp class warfare within the nation.

The principles of national self-determination, Lenin insisted on applying in full to colonial peoples. His doctrine was that the Western European proletariat should refrain from mere declarations of sympathy with oppressed nationalities, and instead should join them in the struggle against imperialism.

At the eighth congress of Soviets (1920) Lenin made a report on the work carried out on his initiative for the drafting of a plan for the electrification of the country. The gradual effort towards a high degree of technical development is the mark of the successful transformation from the system of small scale peasant economy, with its lack of co-ordination, to the system of large scale Socialist production based on a single, comprehensive plan. "Socialism is a Soviet Govt. plus electrification."

Death.—The exhaustion brought on by excessive hard work over a number of years ruined Lenin's health. Sclerosis attacked his cerebral arteries. At the beginning of 1922 his doctors forbade him daily work. From June to Aug. the disease made rapid progress, and for the first time he began to lose the power of speech and in Dec. he became paralysed in the right arm and leg. He died on Jan. 21, 1924, at 6.30 P.M., at Gorky, near Moscow. His funeral was the occasion for an unexampled manifestation of love and grief on the part of millions.

Lenin's outward appearance was distinguished by simplicity and strength. He was below the middle height, with the plebeian features of the Slavonic type of face, brightened by piercing eyes; and his powerful forehead and still more powerful head gave him a marked distinction. He was tireless in work to an unparalleled degree. He put the same exemplary conscientiousness into reading lectures in a small workmen's club in Zurich and in organizing the first Socialist State in the world. He appreciated and loved to the full science, art and culture, but he never forgot that as yet these things are the property of a small minority. His way of life in the Kremlin was little different from his life as an emigré abroad. The simplicity of his daily habits was due to the fact that intellectual work and intense struggle not only absorbed his interests and passions but also gave him intense satisfaction. His thoughts never ceased to labour at the task of freeing the workers.

His works include: *Ekonomicheskoye soderzhaniye narodnichestva i Kritika evo v Knige g. Struve, 1895* (The Economic Content of the popular party and Mr. Struve's criticism of it. The reflection of Marxism on bourgeois literature); *Kharakteristike ekonomicheskovo romantizma* (1897) (The characteristics of economic romanticism), Sismondi and our Sismondists; *Razvitiye Kapitalizma v Rossii,* 1899 (The development of Capitalism in Russia). The process of making a home market for large scale industry; *Chto Dyelat,* 1902. (What is to be done?) French trans. *Que Faire?* The most urgent question of our movement; *Dve taktiki sotsial-demokratii v demokraticheskoi revolyutsii,* 1905 (Two tactics of the Social Democracy in the democratic revolution); *Agrarnaya programma sotsial-demokratii v pervoi russkoi revolyutsii 1905–1907* (1907) (The agrarian programme of the Social-Democrats in the first Russian revolution 1905–07); *Za 12 let.,* 1908 (During 12 years), Two tendencies in Russian Marxism and Russian Social Democracy; *Materialism i empiriokrititsism,* 1909 (Materialism and empiriocriticism). Critical observations on a reactionary philosophy; *Krakh II. Internatsionala,* 1915 (Collapse of the Second International. Eng. trans., 1919); *Sotsializm i voina,* 1915 (Socialism and War. In collaboration with Zinoviev. German trans., 1915); *Imperialism, kak noveishii etap kapitalisma, 1917* (Imperialism, the final stage of capitalism); French trans., 1923; *Pisma o taktike,* 1917 (Letters about tactics); *Uroki revolyutsii,* 1917 (Lessons of the Revolution. Eng. trans., 1918; German trans., 1921); *Gosudarstvo i revolyutsiya,* 1917 (The state and revolution. Engl. trans., 1919). The Marxist doctrine about the state and the tasks of the proletariat in a revolution. French trans., 1919; German trans., 1918; *Grozyashchaya Katastrofa i kak c nei borotsya,* 1917 (The catastrophe which threatens us and how to struggle with it. French trans., *La catastrophe imminente et les mesures de la conjurer,* 1918). German trans., 1918; *Uderzhat li bolsheviki gosudarstvennuyu vlast?* 1917 (Will the Bolsheviks maintain power? German trans., 1921); *Proletarskaya revolutsiya i renegat Kautskii,* 1918. (The proletarian revolution and Kautsky the Renegade. Eng. trans., 1920); French trans., 1919; German trans., 1918; *Vybory v Uchreditelnoye Sobraniye i diktatura proletariata,* 1919. (The dictatorship of the Proletariat and elections to the Constituent Assembly. Eng. trans., 1920); German trans., 1920; *Detskaya bolezn "levismy" v kommunisme,* 1920 ("Left Wing Communism, an infantile disorder." Eng. trans., 1921; French trans., 1921; German trans., 1921); *Krizis v partii,* 1921 (The Crisis in the Party); *O prodnaloge,* 1921 (On the tax in kind. German trans.); *Stranichki iz dnevnika,* 1923 (Pages from my diary); *O Kooperatsii,* 1923 (On co-operation. French trans. Sur la Coopération, 1924); *Luchshe menshe, da luchsche,* 1923 (Better little but good); *Sobraniye sochinenii T.T. 1–19,* 1921–24 (collected works in 19 vol.).

There are two German editions of Lenin's collected works—*Ausgewählte Werke Sammelband,* 1925, and *Auswahl aus seinen Werken. See* also Landau-Aldanow, *Lenin and Bolshevism* (1920); K. Wiedenfeld, *Lenin and his Work* (1923); N. Bucharin, *Lenin, Life and Works* (1924); E. Drahn, *Lenin eine Bio-Bibliographie* (1924); M. Gorky, *Lenin et le paysan russe* (1924); L. Trotsky, *Lenin* (in English 1925); J. Stalin, *Leninism* (in English 1928). (L. TR.; X.)

LENINGRAD (formerly St. Petersburg, then Petrograd) former capital of the Russian empire from 1703 to 1917 when the capital was transferred to Moscow by the newly established soviet government. At present it is the chief town of the Leningrad region and the second largest city in the U.S.S.R. Pop. (1939) 3,191,304. Its name was originally St. Petersburg, but after the outbreak of war with Germany in 1914 this Germanic name was changed to Petrograd, grad being a form of the Russian *gorod,* a town. After the death of Lenin in 1924 the name was altered to Leningrad. It stands at the head of the Gulf of Finland, on the islands and shores of the mouth of the Neva river, and is the only outlet to the Baltic remaining to Russia. Although its foundation as a city dates from 1703, the Neva outlet for trade is very ancient. According to early chronicles, the way from the Varangii to the Greeks was up the Dnieper, by a portage to the river Lovot, down the Lovot to Ilmen lake, via the Volkhov to Lake Ladoga, and thence along the Neva river to the Gulf of Finland, wares being probably discharged on Vasilyevskiy or Basil island in the Neva delta. Peter the Great chose the site of the city without any consideration of physical suitability, basing his choice entirely on proximity to western Europe and outlet to the Baltic.

The islands and arms of the channels of the Neva are flat and low-lying marshes, and the delta plain is exposed to floods, especially when the westerly autumn gales force the waters of the Gulf of Finland into the Neva channel. The floods of 1824 and 1924 were particularly disastrous. The evaporation from the swamps and the northerly situation make the climate damp and severe, winter lasting from November to April and the Neva being frozen for six months. The summer nights of June and July are brief twilights reminiscent of the Arctic summer.

So many labourers lost their lives in the difficult task of building the city on piles in the marshes that Leningrad has the repu-

tation of being built on bones. The building of the harbour and the gradual development of factory industries brought an influx of industrial workers to the city, and the unfortunate condition of these workers contrasted sharply with the luxury and display of the court, so that if Moscow sums up much of the whole complex history of Russia, Leningrad gives the clearest picture of the causes of the unrest that led to the upheaval of 1917. The first strike occurred in 1749 among the textile workers, and the proletariat early had the support of the students of the university, who were repeatedly subjected to political persecution, imprisonment and exile.

The Regime of Terror.—The gloomy Peter Paul fortress, where political prisoners were incarcerated and frequently died from their hardships and the Alexeyevsky Ravelin, in whose damp cells many prisoners also died, including Ivan Possoshkov, the author of "Poverty and Wealth" were perpetual reminders to the proletariat and *intelligentsia* of the regime of oppression. The prison of the bastion of the former has been disused since 1922. From the mid-eighteenth century onwards, governors and governed lived side by side in Leningrad in an atmosphere of contempt, fear and repression on one side and of hate, fear and terrorist outbreaks of bomb attacks and revolutionary attempts on the other, until the cataclysm of 1917.

The wide difference in outlook between the governing classes of Russia and those of western countries is vividly expressed in the declaration of Uvarov, minister of education from 1833–49, that his aim was to construct "dams" that would hold up the flow of new ideas into Russia, and that he hoped to retard the westernization of the country by 50 years. Leningrad had been specially built by Peter the Great to admit new ideas; its educational institutions had been largely staffed from the first by foreign teachers and its contact with the western world was close. It was thus the place where the struggle between conservatism and the effects of the impact of outside thought was sharpest.

Here the 1825 Dekabrist mutiny occurred; it witnessed the terrorist acts of the 1870 to 1880 Narodnaya Volya groups and the 1905 revolution received its baptism of blood near the winter palace.

The 1917 revolution broke out here and in July of that year. there began the Bolshevist movement culminating in the October 1917 revolution.

Architectural Developments.—The city has a suburb, the so-called Viborg suburb, on the north of the Neva, but the main part lies on the left bank, and a bridge connects the two parts. The terminus of the railway to Finland lies on the north bank. The railway terminus for Moscow and Murmansk lies on the left bank, and the line crosses the river in a northeasterly direction. The Okhta bridge connects the left bank with the right bank Okhta suburb.

The numerous islands Vasilyevskiy (Basil), Petrograd, the Apothecaries' island, Kamenniy, Krestovskiy and Elagin are all built over and are connected by stone, wooden, floating or boat bridges. Three main streets, with three great canals intersecting them, form the nucleus of the city, with numbers of smaller streets and canals parallel. The longest and most important street is the former Prospekt Nevskiy, now Prospekt of the 25th of October, which connects the centre of the city with the terminus of the ancient highway to Moscow, now the site of the railway station for that town. The Admiralty buildings erected in 1703–04 became the centre of the city and the wide *Prospekts* or streets radiate outward from it in straight lines.

The Peter Paul fortress and the baroque Alexander Nevskiy cathedral were designed by Domenico Tresini. From 1741–61 bridges were built, swamps drained, streets paved and parks laid out, and the architect Rastrelli in the mid-eighteenth century designed a series of baroque buildings, including the Winter Palace and the Smolny monastery.

During the reign of Catherine II there was much building activity and the transition style of de la Motte, Velton and Rinaldi and the classical style of Guarenghi, Starov and Bazhenov replaced the baroque, giving the city a strong, regular appearance reminiscent of ancient Palmyra. Embankments of the famous Finnish grey and pink granite were built along the Neva at that time.

The greatest architectural development was in the time of Alexander I (1801–25), when "architectural landscapes" in which buildings supplemented one another as parts of a united whole were designed by Thomon, Zakharov, Voronikhin and Rossi. The Strelka on Basil island, the Castle (now Uritzky) place, Peter's (now Dekabrists') place and Theatre street (now Rossi street) are examples of this period.

Educational Institutions.—The educational institutions are of great importance. The Academy of Sciences (*see* ACADEMIES), opened in 1725, has been responsible for many surveys in Russia and its museums, Asiatic, anthropological, ethnographical, botanic, geological, mineralogical and zoological are justly famous, as are its publications.

The recent researches of I. P. Pavlov, director of the physiological laboratories of the Russian Academy of Sciences on "Conditioned Reflexes" are world famous, as is the soil survey of Glinka and Prasolov, carried out under the auspices of the Dokuchaev Institute of Soils.

Among the numerous other museums are the Russian, with a particularly fine Buddhist section, the Hermitage, the Palace of Art, the Agricultural museum, the Court Stables museum, the Museum of People's Health and Children's Welfare, the Museum of Commercial Navigation, the Tolstoy museum, the Jewish museum, and the Museum of the Revolution.

The work of the Geographical society with branches in many parts of Russia, is widely known as is that of the Entomological society.

Other educational institutions are the Leningrad state university, formerly the University of St. Petersburg founded in 1819, the Communist university, the Communist University for National Minorities, the Polytechnical institute, the Estonian Pedagogical institute, the Institute of Modern Oriental Languages, the Academy of History of Material Culture, the Academy of Fine Arts, and medical, agricultural, forestry, mining and other places of technical instruction. The state public library, founded in 1814. has a collection of 3,000,000 books, including many priceless manuscripts. In 1917 it was enriched by books confiscated from private libraries, but in compliance with the Riga peace treaty of 1920, many valuable books were returned to Poland. Some rare manuscripts and books, including the Koran of the Caliph Osman, were returned to the central Asiatic republics.

Many of the primary and secondary schools are well equipped and there is a Jewish high school. A faculty for northern nationalities was established, which has 200 students representing 31 nationalities, Samoyedes, Kamchadals, Golds, Tungus, Ostyaks, Lapps, Gilyaks, Chukchee, etc. A boarding house is run, the students taking turns for household tasks. Many hardships have to be overcome by the students in their long journey over trackless marshy wastes to reach Leningrad, the journey sometimes occupying months. It is hoped that these students will return to their tribes and help to raise the standard of life there.

Several factories have classes for workers, and there are crêches for the children of working mothers. There are homes for orphan children.

The lessening of the problem of overcrowding, owing to the transference of the centre of government to Moscow in 1918 when the Germans advanced into the Baltic provinces, and the increased attention to child welfare diminished the former high infant mortality rate.

Tuberculosis and other lung diseases, partly engendered by the damp foundations of the city, still take a high toll of the population.

For a detailed description of the architecture of Leningrad and the present contents of its museums, see *Guide to the Soviet Union, Moscow,* 1925 (in English).

Industries.—A ship canal (1875–88) made Leningrad a seaport and greatly increased its trade. The channel is 25 to 28 ft. deep. Steamers discharge in the Gutuyev basin (depth 21 ft.) and there are separate harbours for coaling vessels and for timber.

The imports are coffee, madder, indigo, corn meal, dye-woods,

cotton, cotton-stuffs and yarns, machinery and mill work, woollen fabrics and yarn, linen fabrics and yarn, coals, salt, iron, lead, shot, hardware, wire, spices, fruits, tobacco and herrings and the exports, tallow, hemp, flax, grain, linseed, timber, copper, hides, potash, bristles, hempseed, vegetable oil, furs, leather, fox, hare and squirrel skins, canvas and coarse linen, cordage, caviare, wax, isinglass, quilts, tar, oil-cake, naphtha, and spirits.

An ice breaking campaign has been carried out to lessen the time of the closure of the port through winter frost and in 1926 during December, which in former times was a closed month, 73 ships entered the harbour and 98 left it, 175,000 tons of grain being exported in that month. Until the breaking off of diplomatic relations between Great Britain and Russia in 1927, Great Britain had replaced Germany as the chief import and export country for Leningrad; 51.3% of the imports into Leningrad in 1926 were from Britain and she received 31.8% of the exports from that city.

Germany and Finland supply most of the imports of Leningrad, and Germany, Finland and Estonia take most of the exports. The cutting off of the Finnish, Baltic and Polish background to the trade of Leningrad had an adverse effect on the city, but on the other hand it made her port the only Russian outlet to the Baltic.

In recent years trading links between Leningrad and Riga have revived and Latvia has made special arrangements as regards railway gauge to encourage this trade. The industries of Leningrad, though depending on imports from other regions for metal and other raw material and also on imported foodstuffs for the workers, still occupy a prominent place and the recent provision of electric power is helping to solve the problem of fuel supply.

Metal and machinery manufactures occupy the first place and include the building of steamers and war vessels, the manufacture of engines, machinery and agricultural implements and of electro-technical equipment. The Putilov works specialize in the production of steel and of wire drawing plates for nail factories and of motor tractors, engines, turbines, etc., and the Sevkabel works in the manufacture of enamelled wire and high voltage cables. The making of pneumatic hammers for ferro-concrete, casting of centrifugal pumps, steel tramcars, manometers, galvanometers and electro-magnetic measuring instruments was successfully introduced as early as 1917.

The manufacture of chemicals, including celluloid and various medicinal preparations has developed markedly also, beginning about the year 1923. Textiles and ready-made clothing, galoshes and other rubber goods, leather goods, tobacco, paper, furniture, matches, printing, foodstuffs and the making of alcoholic drinks are other branches of industry.

The fact that Leningrad has survived the violent fluctuations in its fortunes since 1914, is still the second city of Russia and is developing new branches of industry, speaks much for its vitality.

After the outbreak of war in 1914, the expansion of war industries resulted in a marked increase of the population which reached in 1916 a total of 2,416,000. During 1917 it was in a constant turmoil of civil fighting, while in 1918 it was threatened by the German armies and by the disturbances in Poland and the Baltic provinces, while its inner life was further disorganized by the removal of the government to Moscow. It also bore the brunt of the attacks of Kerensky and General Krasnov and of the attempt of General Yudenich in 1919. By 1920, its population had fallen to 722,000; its industry and trade were practically at a standstill and in that year and the next, in common with most of Russia, it faced famine and disease. Yet by 1923 its population had reached 1,071,103 and its trade and industry were reviving. The destructive floods of 1924 added heavily to its burdens, but by 1926 its population was 1,690,065 and the city was turning its attention to the introduction of new skilled industries, to the improvement of its port facilities and to new scientific and educational work.

LENINGRAD REGION, an administrative division of the Russian S.F.S.R., created in June, 1927, from the provinces of Leningrad, Murmansk, Novgorod, Pskov and Cherepovetz. Area 55,483 sq.mi. Pop. (1939) 6,435,076 (rural 2,315,846, urban 4,119,230), of whom 3,191,304 are concentrated in the town of Leningrad. The Murmansk (*q.v.*) district, with the Kola (*q.v.*) peninsula, is distinct from the rest of the area in structure, climate and general conditions of life, but has been included in the Leningrad area because of the importance of Murmansk as an ice-free port all the year round, and because of the completion in 1917 of a railway line between Leningrad and Murmansk. The remaining provinces Leningrad, Cherepovetz, Pskov and Novgorod adjoin and consist mostly of flat and marshy land, except for the Valdai plateau (600–1,000 ft.) which extends into the southeastern part of the province of Novgorod and the small Duderhof plateau (300–550 ft.) in the south of Leningrad province.

The whole region is covered with boulder clay, very often arranged in *eskers* or ridges, the bottom moraine of the Scandinavian and Finnish ice sheet which covered the region in the glacial epoch.

Numerous small lakes, with some large ones, notably Ladoga, Peipus or Chudskoe (the southern extension of which is often called Pskov), Ilmen and Byelo Ozero, immense marshes, often covered with forests of birch and elm, and small streams flowing either into the Baltic sea, the lakes, or the tributaries of the Volga and the western Dwina, are the most characteristic features of the district.

The marshes can be crossed only when frozen. Six centuries ago they were even less accessible, but the slow upheaval of northwest Russia, going on at a rate of three or more ft. per century, has exercised a powerful influence on the drainage of the country, while artificial drainage has been carried out on a large scale.

The soils consist mainly of glacial sands, post glacial clays, sands and peat bogs, with thick alluvial deposits in the valleys of the Neva and some other streams.

The proximity of the Baltic influences the climate, which is damp and cold, average January temperature at Leningrad, Novgorod, and Pskov respectively 15° F., 14.5° and 17.1°, average July temperature 64°, 62.5° and 64.8°. The average annual rainfall is 20 in., with a maximum in July and August and a minimum in spring and the prevailing winds are from the southwest. The rivers are frozen from 140 to 160 days, while snow lies on the ground from 120 to 160 days.

Forest covers 50% of the area, Cherepovetz and Leningrad having most and Pskov least forest; the oak is found south of a line roughly from the town of Cherepovetz to that of Leningrad, while north of that line are coniferous forests.

Soil and climatic conditions are more favourable to cattle and dairy produce and root, grass and technical cultures than to grain growing, especially as heavy summer rain may ruin grain crops. Leningrad provides a ready market for meat and dairy produce and flax is in great demand for the textile industry and is also exported. But much grain is grown for local needs. Pskov is the most important meat producing region, while Novgorod, Leningrad and Cherepovetz come next. Beef, veal, pork and mutton are produced in quantity, but the town of Leningrad needs more meat than is produced in all four provinces. Milk is produced in Leningrad province for sale in the town, while Novgorod and Cherepovetz are the chief butter producing areas; dairying is just beginning intensively in Pskov. Wool is used by the peasants for homespun. Beekeeping is a supplementary source of income; honey and wax were exports from Novgorod in very ancient times.

The system of cultivation in the division is still in many cases the uneconomical three-field of tradition, but more productive; many field systems with more frequent sowing of grass and clover are being introduced. The use of manure is increasing. Better agricultural implements have been introduced. The government and co-operative societies grant credit to peasants for the purchase of such instruments.

Collective farming is little developed, possibly 1% of the land being worked in this way. Co-operative systems are more numer-

ous in Cherepovetz and Leningrad than in Pskov and Novgorod. Flax growing is improving and increased. In Leningrad province flax is less cultivated; it demands 102 working days as against 24 for grass and the peasants in this area are attracted to factory labour.

The chief grain crops are rye and oats, barley occupying a much smaller place except in Pskov. Potatoes and vegetables are increasingly produced for the Leningrad market, Pskov and Leningrad provinces occupying the first place and Cherepovetz the last in this respect. The area under potatoes has been increased in Novgorod. Apples are grown in Pskov and Novgorod and berry fruits in Leningrad province for the town market.

Agriculture and stock raising suffered severely during the terrible times following the 1914 war and especially in the post-revolution period, but since 1924 a marked improvement has set in and in some cases the 1913 level has been passed. Cattle-breeding and flax cultivation have again attained an export character; grain growing is still for local needs only and the town of Leningrad depends on the Ukraine, the Volga area and Siberia for its grain supply and upon Vologda province and Siberia to supplement its meat, eggs and butter supplies. The Ukraine, the southeast region, Turkestan and Siberia supply sugar, tobacco, oil seeds, wool, cotton, silk, leather and hemp to the town.

Timber production is fully developed as regards sawmilling, but except in Leningrad paper, cardboard and cellulose production has no importance. Matches are made in Novgorod, Leningrad and Cherepovetz. The peasants make wooden articles of every description, household utensils, sledges, carts, etc. Timber is still the chief fuel used by the peasants. In the forested areas hunting is a supplementary source of income, though in Cherepovetz (*q.v.*), it has an export character. Wolves and bears greatly increased and rewards are offered for their capture. At the same time efforts are being made to introduce laws for the prevention of the destructive exploitation of fur-bearing animals in Cherepovetz, Pskov and Novgorod. In Leningrad province there is very little hunting. Fishing is productive in the lakes and streams, especially in Ilmen and Byelo Ozero. There is little mineral wealth.

The region is deficient in fuel, but has much unexploited hydro-electric power. The first step in its utilization was the opening of the Volkhov hydro-electric station in 1926–27, which has a capacity of 55,000 kilowatts. A drawback to this station is the low water in late summer when only three out of its eight turbines are working.

The Red October station on the right bank of the Neva river near Leningrad, working on peat fuel, is able to supplement this deficiency. Two smaller stations have been opened on the Svir river and the Marii waterway and part of the railway will in future use electricity.

The cheapening of manufactured products now that factories depend less on imported coal, with heavy freight costs, is already apparent. Moreover the use of hydro-electric power and peat permits the export of timber which was previously used for fuel.

Industries.—The striking feature of industrial production in the area is the concentration of factory industry in the town of Leningrad (*q.v.*), which had a population of 3,191,304 in 1939.

The smaller industries of the provinces of Novgorod, Pskov and Cherepovetz, which depend on local raw material and local markets, recovered from the disastrous 1914–20 years much more rapidly than Leningrad, where large scale industry dependent on other regions for fuel and raw material and to a large extent on foreign capital and markets, had reached a complex stage in pre-war times. Novgorod has recovered most rapidly, its sawmilling, furniture, match, pottery, glass and paper industries being now at pre-World War I level.

Other industries of the province are linen manufacture, brewing, distilling, the making of leather goods, bricks, tiles, candles, etc.

In Cherepovetz sawmilling is the most important industry, though it is still less than in pre-war times, partly because of efforts to prevent destructive exploitation of the forests. Leather goods, boots and shoes and matches are produced in considerable quantities.

Peasant industries throughout the whole region are less developed than in other parts of Russia.

Communications.—Although Leningrad has three waterways, the Mariinski, Tikhvin and Vyshne-Volochok, linking it with the Volga system, the railways take a far greater share in freightage than the waterways. The severity of the climate prevents navigation for five to six months during the winter, and low water in late summer also hampers it. The Tikhvin waterway is available for small steamers only, and most goods go via the Mariinski canal route.

Road communication suffers here, as in many other regions of Russia from the spring thaws and the autumn rains, which convert unmetalled tracks into seas of mud. In connection with the general poor road construction in Russia it must be remembered that Russia was the eastern outpost of Europe against nomad raiding tribes and that the government was thus obliged to concentrate on a few strategic roads for protection against them. The Soviet government endeavours to provide better surface roads to enable agricultural products to reach the railways and in the Leningrad area many miles of macadamised roads have been laid down. The two ports of the area are Leningrad and Murmansk. Most imports and exports go through the former, since the latter is in an initial stage of development and also involves heavy rail freightage costs. The chief towns are Leningrad, Pskov, Novgorod, Staraya Russa, Kronstadt and Cherepovetz (*qq.v.*).

Population and History.—The population in Novgorod, Pskov and Cherepovetz provinces is mainly Great Russian, with 1% of Estonians in Pskov, and 1% of Karelians in Cherepovetz. In Leningrad province, excluding the city itself 77.9% are Great Russians, 11.5% Finns and 5.5% Estonians. The population of the town, as of all seaports, is mixed, 83% being Russian; other nationalities represented are Poles, Jews, Estonians, Letts, Lithuanians and Finns.

An interesting commentary on the present stage of development in Russia and on the lack of communications is the fact that in 1925–26, Professor Zolotariev discovered in the Leningrad province tribes of Veps, Izhors and Vods, numbering 10 to 15,000, whose language, akin to Finnish had been thought to be extinct. The Vod tribes were living in mud huts; they hand on swords from generation to generation instead of names. A settlement of Veps in the Lodeinopol district had no wheeled vehicles. Settlement, especially in Novgorod province, where stone age remains of Neolithic date are numerous round the beds of former lakes, is very ancient. The region between Lake Ladoga and the Gulf of Finland was inhabited in the 9th century chiefly by Finnish tribes, though even at that date there was some Slav penetration.

The site of Leningrad was at that time a swamp. But Novgorod (*q.v.*), about 100 mi. S.E. of Leningrad, was already a flourishing city, with a marked republican tendency, where merchants trading in slaves, fur, honey and wax along the Baltic-Black sea route were in the ascendancy. The Varangian chief, Rurik, according to Nestor's chronicle, fortified a small Slav town on the Volkhov, called it Novgorod (New Town) and established himself there as prince.

After the decline of Kiev, Novgorod became the chief centre of Russian city life and later extended its power over the surrounding district and established colonies in the Far North, extending from Lapland to Siberia; possibly traders from these colonies penetrated to the Ob in their quest for fur. At its period of greatest expansion all the lands beyond Byelo Ozero, including the north Dwina country, Russian Lapland, the region between Lake Onega and the White Sea coastlands, the upper Kama basin, the Pechora basin and the land on both sides of the Urals, had trading colonies from Novgorod.

In 1700 Peter the Great declared war on Sweden, and in 1703 captured the Swedish fortress on the Neva, and laid the foundations of the cathedral to St. Peter and St. Paul and of a fort which received his own name.

In 1704 the fort of Kronslott (present day Kronstat) was

erected on the island of Kotlin, and the Admiralty on the Neva, opposite the fortress. Determined "to open a window to the west," and wearied of the opposition of Moscow to his reforms, the emperor decided to build a new city on the marshy ground, driving piles into the swamp to serve as foundations.

In thus founding a channel for trade with the Baltic, Peter the Great restored an ancient trade current of Russia, to which Novgorod and Pskov had owed their rise, and the new city rapidly developed. The later construction of canals and railways linking it with the rest of the Russian empire further added to its importance. The development of the Ural and of the Ukrainian mining and metallurgical industries did not destroy the importance of the city. Even the removal after the 1917 revolution of the administrative centre to Moscow, the real heart of Russia, at a time when industry was at its lowest ebb and when the loss of the Baltic provinces and Poland was adversely affecting Leningrad, has merely checked, not ruined, the development of the city. One factor in this is that the very loss of these areas concentrated all trade through the Baltic to Russia in the only remaining port, Leningrad.

The presence of this large city population has modified local agriculture in the direction of meat, milk, dairy and vegetable production, has markedly diminished peasant petty trades and has intensified forest clearing to meet its fuel needs. Along with this has gone the opening up of the four provinces by canals, roads and railways, though much remains to be done. The general literacy rate, especially in the environs of Leningrad is high. (*See* NOVGOROD; PSKOV.)

LENKORAN, a town of Russia in the Azerbaijan S.S.R., in 38° 46′ N., 48° 51′ E., on the Caspian sea, at the mouth of a small stream of the same name, close to a large lagoon. Population 11,878. The town has no railway link and consequently has little trade. Taken by storm on New Year's day 1813 by the Russians, Lenkoran was surrendered by Persia to Russia by the Treaty of Gulistan, along with the khanate of Talysh, of which it was the capital.

The DISTRICT OF LENKORAN (2,117 sq.m.) is a thickly wooded mountainous region, shut off from the Persian plateau by the Talysh range (7,000–8,000 ft. high), and with a narrow marshy strip along the coast. The climate is exceptionally moist and warm (annual rainfall 52·79 in.; mean temperature in summer 75° F, in winter 40°), and fosters the growth of even Indian species of vegetation. The iron tree (*Parrotia persica*), the silk acacia, *Carpinus betulus, Quercus iberica,* the box tree and the walnut flourish freely, as well as the sumach, the pomegranate, and the *Gleditschia caspica.* The Bengal tiger is not infrequently met with, and wild boars are abundant. The Talyshes, belonging to the Iranian family, and speaking an independently developed language closely related to Persian, are the aboriginal population.

In the northern half of the district the Tatar element predominates and there are a number of villages settled by Russian Raskolniks (Nonconformists). Agriculture, bee-keeping, silkworm-rearing and fishing are the principal occupations.

LENNEP, JACOB VAN (1802–1868), Dutch poet and novelist, was born on March 24, 1802 at Amsterdam, where his father, David Jacob van Lennep (1774–1853), a scholar and poet, was professor of eloquence and the classical languages in the Athenaeum. Lennep graduated in law, and settled as an advocate in Amsterdam. He made his first real hit with the *Nederlandsche Legenden* (2 vols., 1828) and his fame was further raised by his patriotic songs at the time of the Belgian revolt, and by his comedies *Het Dorp aan de Grenzen* (1830) and *Het Dorp over de Grenzen* (1831), which also had reference to the political events of 1830. In 1833 he broke new ground with the publication of *De Pleegzoon* (*The Adopted Son*), the first of a series of historical romances in prose, which gave him in Holland a position somewhat analogous to that of Sir Walter Scott in Great Britain. He died at Oosterbeek near Arnheim on Aug. 25, 1868.

There is a collected edition of his *Poetische Werken* (13 vols., 1859–72), and also of his *Romantische Werken* (23 vols., 1855–72). *See* also a bibliography by P. Knoll (1869); and Jan ten Brink, *Geschiedenis der Noord-Nederlandsche Letteren in de XIXe Eeuw* (No. iii.).

LENNEP, former town in the Prussian Rhine province, Germany, 18 mi. E. of Düsseldorf, and 9 mi. S. of Barmen by rail. Pop. was 14,120. It manufactured cloth, hosiery and yarn and also iron and steel goods. In 1929 it was incorporated with Remscheid (*q.v.*).

LENNOX, a name given to a large district in Dumbartonshire and Stirlingshire, which was erected into an earldom in the latter half of the 12th century. It embraced the ancient sheriffdom of Dumbarton and nineteen parishes with the whole of the lands round Loch Lomond.

Alwin, first earl of Lennox, died before 1217. The second Alwin had ten sons; one founded the clan Macfarlane. Maldouen, the 3rd earl, was a witness to the treaty between Alexander II., of Scotland, and Henry III., at Newcastle in 1237.

In 1392 the earldom reverted to the king, who re-granted it to Duncan the 8th earl. In 1424, when Murdoch, then duke of Albany, ransomed James I. from his long captivity, Duncan went with the Scottish party to Durham, and next year he was executed; the widowed duchess of Albany, now also countess of Lennox, lived at Inchmurrin, Loch Lomond, until her death. Elizabeth, her sister, married Sir John Stewart of Darnley. Their grandson, Sir John Stewart, made a lord of parliament as Lord Darnley, became earl of Lennox in 1473. Matthew, 2nd earl of this line, left a son John, 3rd earl, who was murdered in 1526. His son Matthew, the 4th earl, married Margaret Douglas, the heir of the 6th earl of Angus by his wife, Margaret Tudor, sister of Henry VIII. and widow of James IV. Their eldest son Henry Lord Darnley married Mary, queen of Scots. He was murdered in 1567, and his son James became king of Scotland.

The title passed from James VI. to the king's uncle, Charles; in 1578 it was granted to Robert Stewart, second son of John, 3rd earl, but he in 1580 exchanged it for that of earl of March, and the earldom of Lennox was given to Esme Stewart, grandson of the 3rd earl. In 1581 Esme became duke of Lennox, earl of Darnley, Lord Aubigny, Tarboulton and Dalkeith. His son, Ludovic, was given his father's honours and estates, and was created Lord Settrington (1613), earl of Newcastle and duke of Richmond (1623). He died in 1624, being succeeded in his Scottish titles by his brother Esme, already earl of March, Lord Clifton of Leighton Bromswold (1619) and seigneur d'Aubigny in France. James, 4th duke of Lennox, was created duke of Richmond in 1641. In 1660 the titles passed from the 5th duke to Charles, Lord Stuart of Newbury and earl of Lichfield. He was drowned in 1672, and his sister Katharine, wife of Henry O'Brien, heir apparent of the 7th earl of Thomond, was served heir to him. Her only daughter, the countess of Clarendon, was mother of Theodosia Hyde, ancestress of the present earls of Darnley.

The Lennox dukedom was given by Charles II., with the titles of earl of Darnley and Lord Tarbolton to Charles Lennox, duke of Richmond, earl of March and Lord Settrington, son of the duchess of Portsmouth. The ancient lands of Lennox he sold to the duke of Montrose.

The wife of the 4th duke, Lady Charlotte Gordon, brought her family estates to the Lennoxes; the additional name of Gordon being taken by the 5th duke of Richmond and of Lennox. The 6th duke was granted the titles of duke of Gordon and earl of Kinrara (1876).

See *Scots Peerage,* ed. by J. B. Paul, vol. v. (Edinburgh, 1904–11); *The Lennox* by William Fraser (Edinburgh, 1874) and G. E. C[okayne], *Complete Peerage,* vol. v., pp. 60–68 (1893).

LENNOX, CHARLOTTE (1720–1804), British writer, daughter of Colonel James Ramsay, lieutenant-governor of New York, was born in 1720. She went to London in 1735, and, being left unprovided for at her father's death, she began to earn her living by writing. She made some unsuccessful appearances on the stage and married in 1748. Her chief works are: *The Female Quixote; or the Adventures of Arabella* (1752), a novel; *Shakespear illustrated; or the novels and histories on which the plays . . . are founded* (1753–54); *The Life of Harriet Stuart* (1751), a novel; and *The Sister,* a comedy produced at Covent Garden (Feb. 18, 1769).

LENNOX, MARGARET, COUNTESS OF (1515–1578), daughter of Archibald Douglas, 6th earl of Angus, and Margaret Tudor, daughter of Henry VII. of England and widow of James IV. of Scotland, was born at Harbottle castle, Northumberland, on Oct. 8, 1515. On account of her nearness to the English crown, Lady Margaret Douglas was brought up chiefly at the English court in close association with the Princess Mary, who remained her fast friend throughout life. She was high in Henry VIII.'s favour, but was twice disgraced; first for an attachment to Lord Thomas Howard, who died in the Tower in 1537, and again in 1541 for a similar affair with Sir Charles Howard, brother of Queen Catherine Howard. In 1544 she married a Scottish exile, Matthew Stewart, 4th earl of Lennox (1516–71), who was regent of Scotland in 1570–71. During Mary's reign the countess of Lennox had rooms in Westminster palace; but on Elizabeth's accession she removed to Yorkshire, where her home at Temple Newsam became a centre for Catholic intrigue. By a series of successful manoeuvres she married her son Henry Stewart, Lord Darnley, to Mary, queen of Scots. In 1566 she was sent to the Tower, but after the murder of Darnley in 1567 she was released. She was at first loud in her denunciations of Mary, but was eventually reconciled with her daughter-in-law. In 1574 she again aroused Elizabeth's anger by the marriage of her son Charles, earl of Lennox, with Elizabeth Cavendish, daughter of the earl of Shrewsbury. She was sent to the Tower with Lady Shrewsbury, and was only pardoned after her son's death in 1577. Her diplomacy largely contributed to the future succession of her grandson James to the English throne. She died on March 7, 1578.

LENO, DAN, the stage-name of George Galvin (1861–1904), English comedian, who was born at Somers Town, London, in Feb. 1861. His parents were actors, known as Mr. and Mrs. Johnny Wilde. Dan Leno was trained to be an acrobat, but soon became a dancer, travelling with his brother as "the brothers Leno," and winning the world's championship in clog-dancing at Leeds in 1880. Shortly afterwards he appeared in London at the Oxford, and in 1886–87 at the Surrey theatre. In 1888–89 he was engaged by Sir Augustus Harris to play the Baroness in the *Babes in the Wood,* and from that time he was a principal figure in the Drury Lane pantomimes. He was the wittiest and most popular comedian of his day, and delighted London music-hall audiences.

LENOIR CITY, a town of Loudon county, Tenn., U.S.A., on the Tennessee river, 24 mi. S.W. of Knoxville. It is on federal highways 11 and 70 and is served by the Southern railway. The population was 4,470 in 1930 and 4,373 in 1940. The manufactures include cotton yarn, hosiery, railroad castings and lumber.

LENORMAND, HENRI-RENÉ (1882–), French dramatist, was born on May 3, 1882, in Paris, and was educated at the Lycée Jansen de Sailly, afterwards graduating at the Sorbonne. His first important play, *Les Possédées,* was produced in 1909 at the Théâtre des Arts; but for his first success he had to wait until, ten years later, Georges Pitoëff staged at his theatre in Geneva *Le Temps est un Songe* (1919) and *Les Ratés* (1920). These plays were subsequently transferred to Paris and well received. They were followed by *Le Simoun,* produced by Firmin Gémier and Gaston Baty at the Comédie Montaigne (1920), and by *Le Mangeur de Rêves,* produced by Pitoëff first in Geneva and afterwards in Paris (1922). The author by this time held a leading position among the younger dramatic authors of France, and in 1925 became the President of the *Théâtre des Jeunes Auteurs.* Gémier, director of the Odéon, revived *Le Simoun* in 1922, and produced in succession *La Dent Rouge* (1922) and *L'Homme et ses Fantômes* (1924). His later plays include *A l'Ombre du Mal* (1924), *Le Lâche* (1925), *L'Amour Magicien* (1926) and *Mixture* (1927). *Le Temps est un Songe* is the first of the plays included in the complete edition of his dramatic works (Georges Crès et Cie.), and that play may be regarded as the beginning of his career as a dramatist of international repute.

Lenormand's plays have since been produced throughout the world and translated into many languages. The fundamental inspiration of the dramatist is the conflict of positive good with an equally positive and creative principle of evil, combined with an equally vivid sense of destiny as determined by motives, latent and often unconfessed, in the minds of his protagonists. *Le Mangeur de Rêves* should be read, not as the analysis of a Freudian complex but as a modern replica of the tragedy of *Oedipus Rex.* In the modern tragedy, however, the fate of the characters is determined by a revelation of motives existing subconsciously in their minds. (J. PA.)

LENORMANT, FRANÇOIS (1837–1883), French Assyriologist and archaeologist, was born in Paris on Jan. 17, 1837, the son of a well known archaeologist, Charles Lenormant, who died at Athens on Nov. 24, 1859, when father and son were visiting Greece. Lenormant became sub-librarian of the Institute (1862), and professor of archaeology at the *Bibliothèque Nationale* (1874). He made many archaeological expeditions in the Mediterranean. He died in Paris on Dec. 9, 1883. Lenormant's most famous work is *Origines de l'histoire d'après la Bible.* He was one of the first to recognize in the cuneiform inscriptions the existence of a non-Semitic language now known as Accadian.

LENOX, a town of Berkshire county, Massachusetts, U.S.A., on the Housatonic river, near the west boundary of the State. It is served by the New York, New Haven and Hartford railroad. The population in 1940 was 2,884. The district has been a summer and autumn resort since 1835. Lenox was settled about 1750 and became an independent town in 1767. It has associations with Nathaniel Hawthorne, Fanny Kemble, Henry Ward Beecher, Catherine M. Sedgwick, Harriet Hosmer, Maria S. Cummins and many other men and women of prominence.

LENS, a town of northern France, department of Pas-de-Calais, 13 mi. N.N.E. of Arras by rail on the Déûle and on the Lens canal. Pop. (1936), 32,730. In 1648 the neighbourhood of Lens was the scene of a celebrated victory gained by Louis II of Bourbon, prince of Condé, over the Spaniards. Lens was captured by the Germans in Oct. 1914 and held until 1918. In this district the front line remained stable, with the result that Lens was reduced to a heap of ruins.

Reconstruction is actively going on, but the ruins of houses and mine heads may still be seen. Lens occupies a central position on the coalfields of Pas-de-Calais and was in 1914 one of the chief coalmining centres in France, but destruction of the machinery and flooding of the mines during the German occupation has caused postwar production to be far below prewar output. Liévin (pop. 13,315), likewise a coal centre, lies $2\frac{1}{2}$ mi. W.S.W.

LENS, in optics, an instrument which refracts the luminous rays proceeding from an object in such a manner as to produce an image, real or virtual, of the object (from Lat. *lens,* lentil, on account of the similarity of the form of a lens to that of a lentil seed). It is generally made of glass, although for special purposes, when it is desired to transmit rays which are strongly absorbed by glass, or for special refraction and dispersion, other substances, such as rock salt or fluorspar, are employed. For the general scientific principles governing the passage of light through lenses and systems of lenses *see* OPTICS. For the behaviour of lenses in various instruments *see* MICROSCOPE; PHOTOGRAPHY (for the photographic lens), TELESCOPE. For the lens of the eye *see* VISION.

THE MANUFACTURE OF LENSES

A typical method of making a lens involves seven separate processes: (1.) *Cutting* from a large block of glass a piece of suitable size by means of a rotating thin iron blade, one foot in diameter, whose edge, against which the glass is pressed, is charged with small fragments of diamond ($\frac{1}{100}$ in. diameter, and less), the rate of rotation being 240 times a minute. (2.) *Roughing, i.e.,* shaping with carborundum (the grains being of about $\frac{1}{80}$ in. diameter) made into a mud with water and smeared on a flat horizontal cast iron plate, of $3\frac{1}{2}$ feet in diameter, which rotates sixty times a minute. (3.) *Roughing to curve* on both sides with similar carborundum on rotating cast iron dishes of the desired curvature. (4.) *Trueing to curve* on similar, but more accurate, iron dishes with emery mud whose grains are from 0·1 mm. down to 0·05 mm. diameter. (5.) *Smoothing* the lens—a process like the trueing but in which emery grains down to about 0·01 mm. diameter or less are used. (6.) *Polishing* with wet jewellers-rouge on polishers consisting of iron dishes whose sur-

faces are coated with pitch. (7.) *Edging* the lens on a lathe, by means of a brass plate whose surface is fed with trueing emery, until the lens is circular and of the required diameter; the lens being so chucked that the circular edge is concentric with the thickest (or thinnest) part of the lens. The words in italics are those in general use to describe these processes. The dimensions, speeds, etc., are subject to modification in different workshops.

History.—The references of Pliny and other ancient writers show that burning glasses were known to them in the form of glass spheres filled with water; and passages from Greek and Roman writers have been cited as showing that they knew of the magnifying properties of lenses, or at least of such glass spheres filled with water. One of the most thorough reviews of the subject (T. H. Martin, "Sur des instruments d'optique faussement attribués aux anciens par quelques savants modernes," *Bulletino di Bibliografia e di Storia delle Scienze matematiche e fisike*, Vol. iv. 1871. *See* also E. Wilde *Geschichte der Optik*, 1838–43) denies to the ancients all knowledge of spectacle lenses whether for short or long sight, or indeed of any kind of lenses, if we except the spheres of glass filled with water referred to above; and maintains that the lens-shaped glasses or crystals which have been found from time to time among the relics of departed civilizations were made by polishers of jewels for purposes of ornament.

We must come to the end of the thirteenth century for the first authentic mention of the use of lenses, which appears to be that of Meissner (1260–80) when he expressly states that old people derive advantage from spectacles (*see* E. Bock, *Die Brille u. ihre Geschichte* 1903). In the archives of the old Abbey of Saint-Bavon-les-Gand, the statement is found that Nicolas Bullet a priest, in 1282 used spectacles in signing an agreement (*see* P. Pansier, *Histoire des Lunettes* 1901). The first picture in which spectacles are known to have appeared is by Tommaso da Modena, in the Church of San Nicola in Treviso, and is of date 1360. In a sermon delivered February 23, 1305, Giordano da Rivalto stated that "it was only twenty years since the art of making spectacles was discovered" (*see* P. Pansier, *Histoire des Lunettes*). It may be accepted, from this and like evidence that the use of spectacles dates from a little prior to 1280; the industry of a host of enquirers has produced no certain evidence that a lens, as such, of any kind had been intentionally made by man previously to this date. William Bourne gives an account, very imperfect, but yet sufficient to show that processes for making lenses were then in use (about 1585) very like those still extant (W. Bourne, *A Treatise on the properties and qualities of glasses for optical purposes*, Brit. Mus., Lands. ms. 121, undated but author refers to a book written by him seven years previously which is probably his *Treasure for Travellers*, 1578). Very different is the account which is given by Baptista Porta of Naples in his famous book *Magia Naturalis, Libri Viginti* (Frankfurt, 1591). The following extract is from bk. xxvii., ch. 21 in the English translation (*Natural Magick by John Baptista Porta, a Neapolitane in Twenty Books*, 1658), but the matter is identical with the Latin edition of 1591. The translation has, however, rendered the original *pilae vitreae*—the phrase employed (as by Pliny) to describe *hollow* glass balls—by "Glass-balls"; and the reader must bear this in mind if he wishes to follow the description correctly: "In Germany there are made Glass-balls, whose diameter is a foot long, or thereabouts. The Ball is marked with the Emrilstone round and is so cut into many small circles, and they are brought to Venice. Here with a handle of wood are they glewed on, by Colophonia melted. And if you will make Convex Spectacles, you must have a hollow iron dish, that is a portion of a great sphere, as you will have your spectacles more or less Convex; and the dish must be perfectly polished . . . upon the Dish or Ball, there is strewed white-sand, that comes from Vincentia, commonly called Saldame, and with water it is forcibly rubbed between our hands, and that so long until the superficies of that circle shall receive the Form of the Dish, namely a Convex superficies . . . then rubbing it over again with powder of Tripolis that it may be exactly polished; when it is perfectly polished, you shall make it perspicuous thus. They fasten a woollen-cloth upon wood; and upon this they sprinkle water of Depart, and powder of Tripolis; and by rubbing it diligently, you shall see it take a perfect glass."

Manzini's book (*L'Occhiale all' occhio Dioptrica Pratica*, Bologna, 1660) shows that a well developed technique was in use in Italy in 1660; while in 1671 appeared *La Dioptrique Oculaire* by a Père Cherubin d'Orléans which not only deals with optics, with telescopes (including binocular) and microscopes, their theory, construction and use, but with the working of lenses, and of various machines invented by himself for that purpose. He writes on all these matters from actual experience, and the tools and materials which he used were almost identical with many still widely used. No other writer has given so adequate a description of the making of lenses until quite recently, and his machines are a great advance on those described by Manzini.

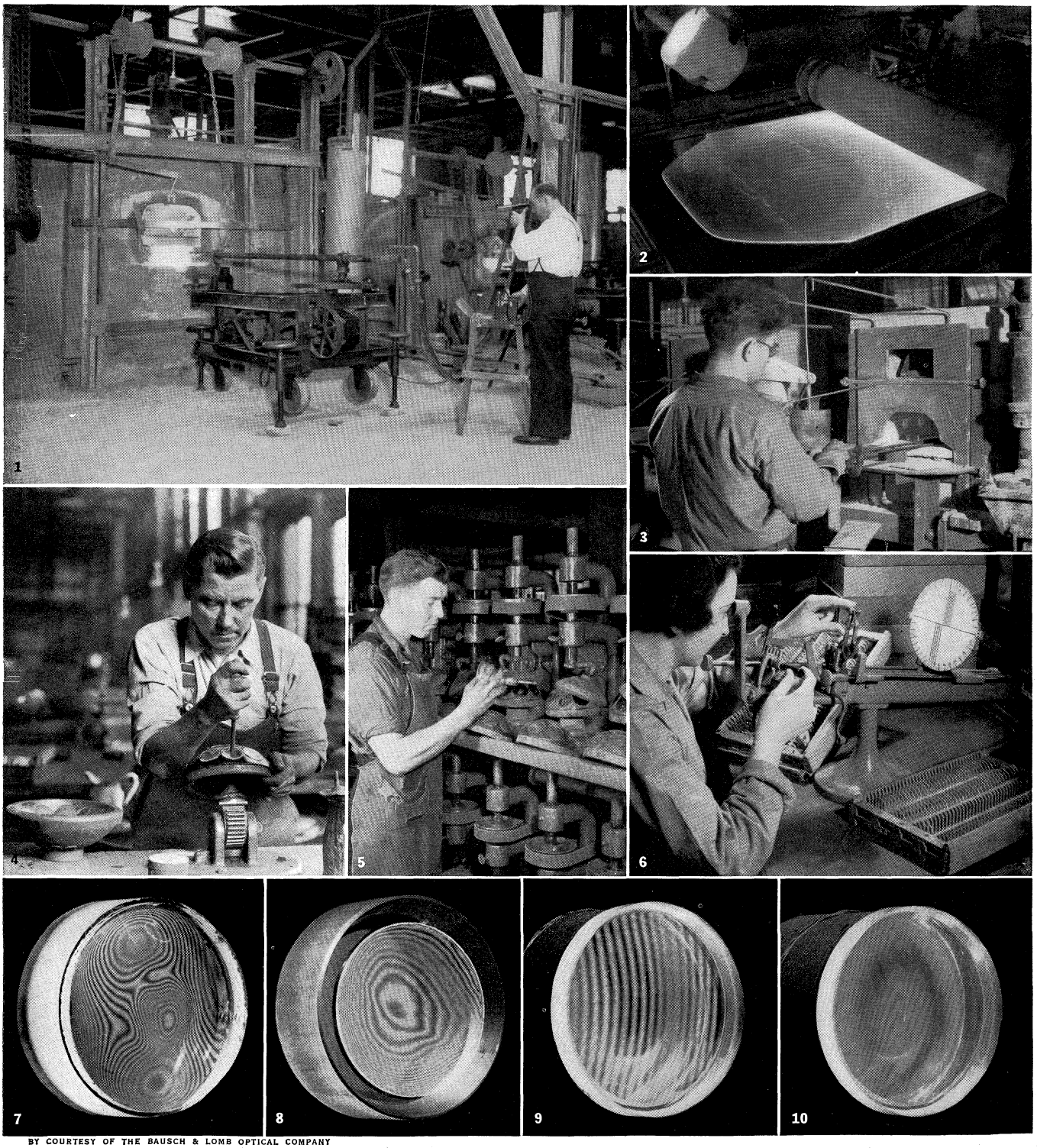
About this time Hooke was working on the microscope (*see* his *Micrographia* 1667). He describes a way of making microscope objective lenses, in which he drew a piece of broken Venice glass into a thin thread, then held one end of this thread in a flame till a globule of glass was formed. He then polished a flat surface on the thread side of the globule, first on a whetstone then on a smooth metal plate with tripoli. These lenses, however, being too small he used good plano-convex object glasses, and there is no indication that he made these himself.

The great Dutch microscopist, Leeuwenhoek, made his own lenses, but left no account of his methods, for reasons that he gives in a letter to Leibnitz dated 28th September 1715. "As to your idea of encouraging young men to polish glass—as it were to start a school of glass polishing—I do not myself see that would be of much use. Quite a number, who had time on their hands at Leyden, became keen on polishing glasses, owing to my discoveries; indeed there were three masters of that art in that town, who instructed students who were interested in such things. But what was the result of their labour. Nothing at all, so far as I have learnt." (Leeuwenhoek, *Epistolae Physiologicae super Compluribus Naturae Arcanis*, 1719.) Newton (*Optiks* 1721) makes some important remarks on polishing, which though referring to mirrors are also applicable to lenses; and appears to have been the first to use pitch for polishing, an important innovation.

Herschel in 1774 used a pitch polisher for polishing the speculum mirrors, some of them very large, for his telescope. He mentions (*see* his *Collected Papers* Roy. Soc. and R.A.S., 1912) that the polishing operation was carried out by ten men on one occasion. He gave an account of the polishing of a large speculum by a machine which he made to avoid the necessity of employing so many men, but gives no very clear description of the machine, nor any illustration of it. Fraunhofer, who made telescope lenses of great excellence, is said to have been the first to use proof spheres for testing the accuracy of his surfaces. Lord Rosse described before the Royal Society (*see* his *Collected Papers* 1926) a machine for polishing large specula, and in the course of the same papers he describes the mode of preparation of his rouge by calcination, at a dull red heat, of peroxide of iron produced as a precipitate with ammonia water from a dilute solution of iron sulphate.

Grinding and Polishing.—The object of lens polishing is to produce regular transparent surfaces of revolution on a piece of glass or other clear substance. The surfaces are usually required to be flat or spherical, while occasionally slight departures from these shapes are needed in order to obtain some optical advantage not otherwise attainable. The process is divided into two others, viz., grinding and polishing. The nature of ground glass surfaces was studied very thoroughly by Preston (*Trans. Opt. Soc.* 1922). He shows quite conclusively that such surfaces consist of a great number of conchoidal fractures from which pieces of glass have been broken; he has observed too that below this obviously broken surface there is a region in which there are small cracks which must be removed by polishing if the surface is to be perfectly clear.

There is no general agreement about the nature of polished glass surfaces. The late Lord Rayleigh (who had observed, though

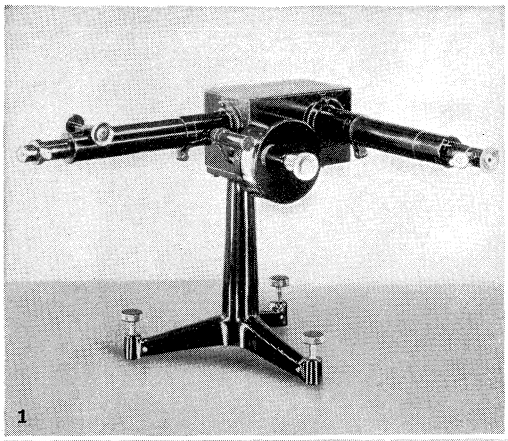


BY COURTESY OF THE BAUSCH & LOMB OPTICAL COMPANY

OPERATIONS IN THE MAKING OF EYEGLASS LENSES FROM OPHTHALMIC GLASS

1. Furnaces which produce more than 100 different types of optical and ophthalmic glass. During the melting process, furnace temperatures are carefully controlled. The equipment in the illustration stirs the molten glass
2. Molten glass is poured onto a steel table, rolled into a huge sheet of the desired thickness and carefully cooled to room temperature. It is then cut into smaller sheets, and after inspection the approved glass begins its transformation into ophthalmic lenses
3. Small squares of glass are heated to a plastic consistency and moulded into round blanks having the approximate shape of the lens desired
4. The lens blanks here are attached to the grinding block by means of pitch and resin
5. One of the operations through which the lenses pass during rough grinding, fine grinding and polishing
6. After passing inspection, the optical centre and other identification marks are stamped on each lens before wrapping and packaging
7. (Illustrations 7, 8, 9, 10 show how precision lens surfaces are tested by the Interference Method). Lens showing Newton's Rings caused by two glass surfaces, one of which is not accurately polished, revealing colour fringes like contour lines
8. Lens showing interference of light reflected from two surfaces not in perfect contact. Colour bands as in soap-bubble film are shown
9. Test glass applied to lens showing that it has a good surface. This is shown by tilting one glass slightly to introduce a prism of air, producing even interference bands as shown
10. A pair of accurate test glasses superimposed, showing one interference band covering the entire lens area. The variation is less than 1/100,000in. on the entire lens surface

LENS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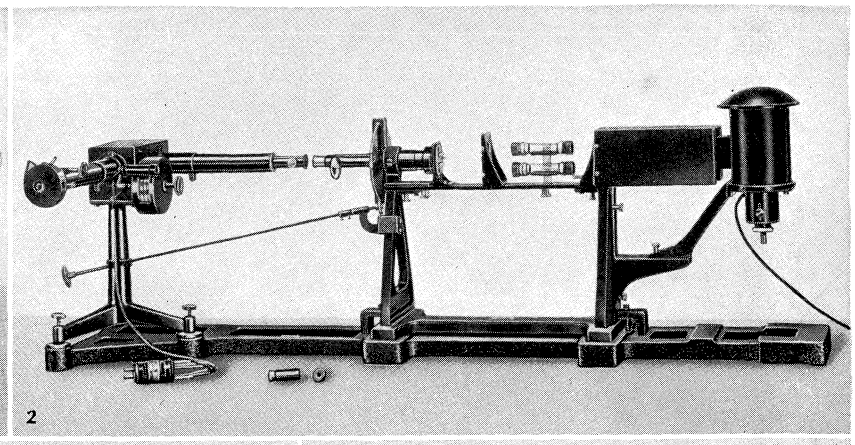
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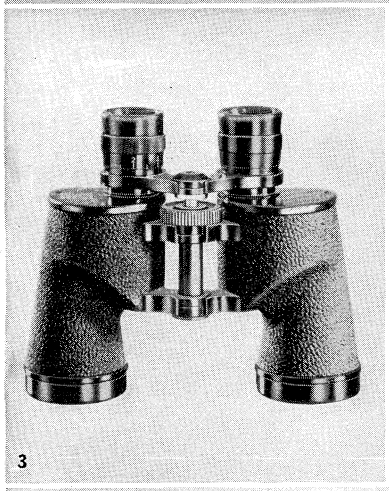
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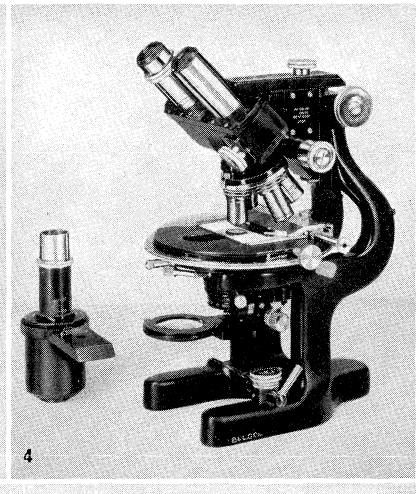
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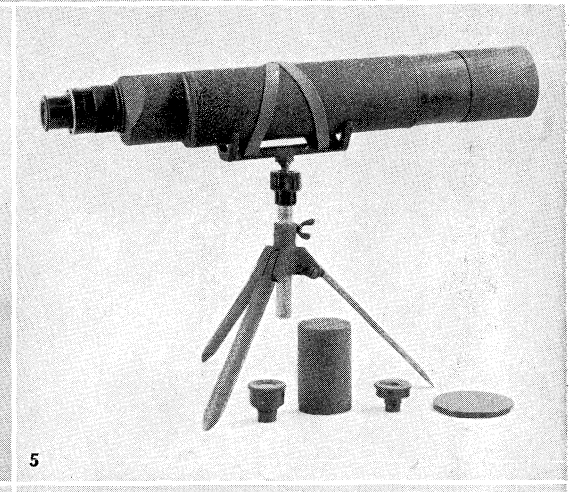
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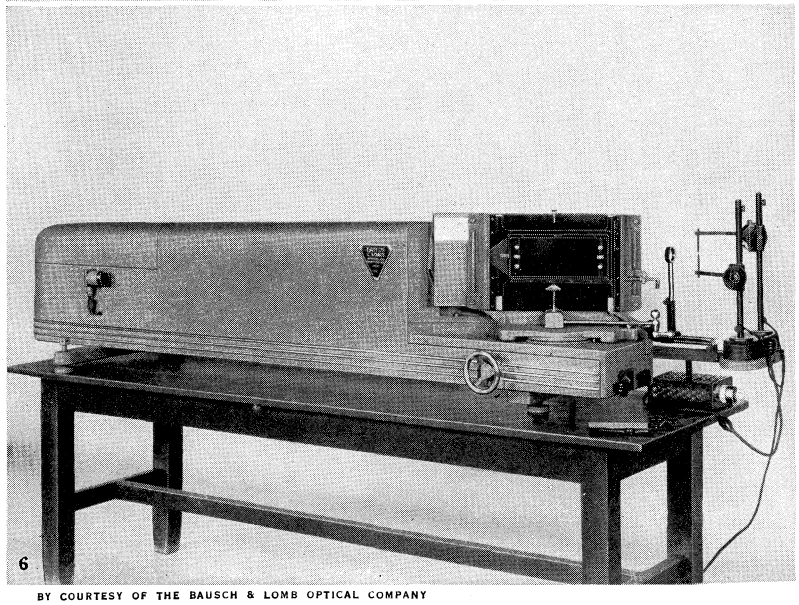
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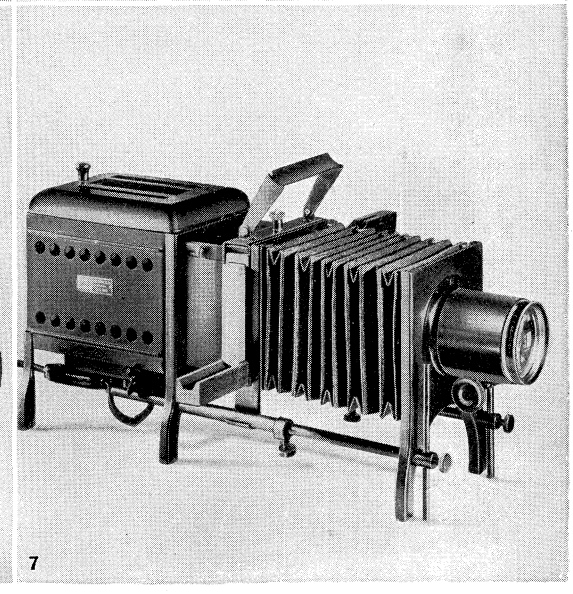
7

BY COURTESY OF THE BAUSCH & LOMB OPTICAL COMPANY

VARIOUS TYPES OF INSTRUMENTS EMPLOYING LENSES

1. Large spectroscope having constant deviation prism. The degree of rotation on an illuminated drum, graduated from 4,000 to 8,000 Angstrom units, indicates which wave-length of light is observed
2. Complete spectrophotometric unit: left, spectroscope; centre, Martens' type photometer; right, substance to be measured and lamp housing
3. Seven-power, 35-mm. aperture, stereo-prism binocular having unusually wide and corrected field, giving high degree of light transmission
4. Advanced type of compound microscope, adaptable to all types of research and photomicrography
5. 65-mm. spotting telescope used for terrestrial observations. Magnifications are from 10 to 27x
6. Littrow spectrograph with quartz lenses and prisms for photography of ultra-violet spectral regions. Used in both qualitative and quantitative analytical work
7. Standard balopticon for use with lantern slides

not with the particularity of Preston, that in grinding glass the particles of abrasive appear to act by breaking out small fragments) thought that the process of polishing was not continuous with that of grinding, but consisted of a removal of molecular layers of the surface of the glass; and he measured the amount of glass so removed (*see* his *Scientific Papers,* vol. iv., 1901, and *Proc. Roy. Inst.,* March, 1901). He attributed to Herschel the opinion that polished surfaces differ from ground ones only in the fragments removed being smaller; the process in each case being that of attrition. Attempts made by Rayleigh to discover whether the surface of polished glass were different in physical properties from the mass failed to reveal any certain difference between the surface and the interior. Some accept the conclusions of Beilby from his observations on metals, glass and Iceland Spar. According to Beilby (*Proc. Roy. Soc.* A, vol. lxxii., and other papers) in polishing the surface molecules are set in gliding motion by the polisher so that they form an extremely thin film of fluid subject to surface tension, which, he thinks, accounts for the smooth surface which is left by polishing. This view is supported by French who finds strong support for it from his own experiments (*Trans. Opt. Soc.* 1916 and 1917). These and other possible views are critically considered with evidence from his own work by Preston whose conclusion is that the process of polishing glass is principally one of ultra-microscopic abrasion (*Trans. Opt. Soc.* 1926).

Materials, Machines and Tools.—The machines in general use (with the exception of those referred to later for the mass production of high quality lenses) are very simple and pretend to no accuracy of construction. The accuracy of the surface to be produced is very high. A piece of plate glass of, say 6 in. square may have inequalities of $\frac{1}{100}$ in., and from a number of specimens a piece with errors no more than $\frac{1}{1,000}$ in. may be selected. The surfaces of good spectacle lenses depart from true spheres by amounts of the order of $\frac{1}{10,000}$ in., while the optical work in good binoculars has rarely errors of as much as $\frac{1}{100,000}$ in.; and, finally, the best optical work of the few firms of highest repute may depart from the ideal aimed at by less than 1×10^{-6} in. To obtain such precision by mechanical guidance of the tool would be a hopeless task, even were the mechanism perfectly rigid, the polishers free from wear or flow, and the films of polishing substances of invariable thickness. None of these conditions are complied with, and the optician must rely for the production of accurate polished surfaces on quite other principles than those used by the engineering machinist. He is satisfied, then, with a machine which will move his polisher to and fro over the surface of his lens or block of lenses—from say 6 to 250 times a minute, according to the size of the work. Simultaneously the tool, or lens, whichever is undermost, rotates on a vertical spindle, the uppermost element being allowed to rotate also. The pitch (or other base for the polishing material) is not a solid, but a liquid which, though rigidly resisting distortion in passing over any small inequality of surface, yet, by a slow accommodation to the surface (spherical in the main) over which it passes, retains a spherical shape whose radius of curvature is always that of the surface it is polishing.

The Trueing Tools are usually made of cast iron, turned on the working surface to the desired radius of curvature. There are always two tools of the same radius, convex and concave, and after turning they are ground together with fine emery of the grade known as "trueing" until they fit exactly. The polisher holders (convex and concave) are similar to the trueing tools, but should be of radius of curvature greater or less than that of the trueing tool (according as the latter is convex or concave) by such an amount that the polisher is of a uniform thickness. If a number of lenses are to be polished together they are held on a similar tool by blobs of cement known as mallets.

Polishers are usually of pitch, although felt is sometimes used for the commoner work and various wax mixtures are also used. For pitch polishers wood pitch (*e.g.,* Swedish) may be filtered when hot through gauze and then boiled until, at the temperature at which it is to be used, it can be indented readily but not deeply by pressure of the thumbnail. Although this rough test is often the only one applied, it is the better practice to use a mechanical device, *e.g.,* a weighted cone or ball, applied for a definite time and to measure the indentation produced by it. Since the viscosity of pitch is halved for each $1\frac{3}{4}$° C rise of temperature, it is necessary to vary the pitch according to the temperature of the workshop, for if the pitch is too hard it causes scratches, while if too soft it soon loses its truly spherical shape, and the lenses get a bad figure. A typical mixture for *mallets* consists of two parts of pitch to three of red ochre; instead of the red ochre, wood ash may be used.

Grinding and Polishing Materials.—For roughing, the fastest material is carborundum; for trueing and smoothing various forms of aluminium oxide (Al_2O_3) are used. The impure forms known as emery have been used for grinding from time immemorial, and up till the end of the 19th century the emery from the Isle of Naxos had formed the principal source of supply for the optical industry. Purer and better natural forms known as corundum are found in the United States, Canada, Madagascar and elsewhere, while the artificial forms sold under various names (aloxite, alundum, etc.), are better still. All those mentioned require grinding and grading by elutriation; a very fine and uniformly graded material being of the highest importance if speedy polishing is to be accomplished. The following table shows the average sizes of grain suitable for optical work:

Trueing	Average size of grain				0·01	mm.	diameter
Fine trueing	,,	,,	,,	,,	0·005	,,	,,
Smoothing	,,	,,	,,	,,	0·0025	,,	,,
Fine smoothing	,,	,,	,,	,,	0·0012	,,	,,

The finest of these materials are very expensive to produce. In 1923 a further form of Al_2O_3 (Sira abrasive) of great purity, hardness and uniformity of grading became available. Owing to its sharp crystal edges, and to the fact that they maintain their quick-cutting properties, grinding with Sira abrasive is a rapid process. This abrasive is not so fine in grain as some of the grades of emery mentioned, but on account of its uniformity and because of the shape of its grains, it gives a ground surface with shallow pits of even depth which can be more quickly polished than the ground surface obtained with the usual series of progressively finer emeries. There are two materials in general use for polishing lenses. The first, jewellers' rouge, is a fine red iron oxide prepared by calcination of ferrous sulphate. The second is putty powder (tin oxide), which is often used with polishers of the wax class, and particularly for polishing soft materials. Other substances are of occasional use for special purposes, such as diamantine and chromium oxide. All these are used wet.

Mass Production.—In the mass production of lenses polishing processes have developed in two directions. The first aims at increasing the number of polishing spindles which can be attended to by a single workman. In other factories, particularly in some making large numbers of lenses (such as camera lenses) of good quality, carefully designed machines are used to secure that the best conditions for good polishing are automatically maintained. For instance in Taylor's polishing machines (*U.S. Pat. Sp. 1,562,068,* 1925) the rising and falling motion of the member which actuates the polisher is eliminated, and reactions, due to inertia, which are cause of the polisher becoming deformed, are thus abolished. At the same time the liquid is automatically applied to the polisher when the adhesion between the work and the polisher increases owing to the drying of the latter (*Brit. Pat. Sp.* 126,489/18). Similar machines are used for the lens smoothing. In the roughing of glass to shape a departure from the traditional processes has been made by Carl Zeiss Ltd., by the use of copper cylinders charged on the circumference with diamond dust (C. Zeiss, *Brit. Pat. Sp.* 14,126/07). With laps of this kind rotating at high speed (1,500 revolutions or more per min.) and with an ample supply of lubricant (*e.g.,* a sodium oleate solution in that strength which gives the minimum surface tension), cuts of a half inch deep and three or four inches wide can be milled off. A similar process is carried out by a slightly different form of machine (W. Taylor, *U.S. Pat. Sp. 1,432,093,* 1922), which, built on the turret principle, has three lens-holding spindles and two

abrasive wheels operating simultaneously on two lenses at once, one roughing, the other trueing; with this machine it is claimed that, owing to the principle of grinding adopted, spherical surfaces may be ground indefinitely.

The principal subsidiary processes are the centring and edging of the lenses, and the cementing of achromatic lenses. The process of centring and edging has been briefly described in the introduction. Machines are now made where the process becomes semi-automatic. For instance, one lens is mounted and adjusted on one spindle while a second lens is being ground by a diamond lap or corundum wheel, on the second spindle, the two spindles being mounted so that they can be interchanged by swinging about a common centre. For the cementing of achromatic objectives, liquid Canada balsam is still generally used, and is hardened around the rim of the objective by prolonged baking in a warm oven.

THE TESTING OF LENSES

A lens should be well polished, and free from bubbles and other defects in the glass. These faults are easily seen in a good light against a dark background if the examiner's eyes are screened. Defects of definition are more important, and not so simply dealt with. Among the tests applied to a lens should never be omitted its trial in actual use, but there should be added tests more severe than any to which it will be subjected in use and such as to indicate the degree and cause of any faults present. It must suffice to deal here with telescope and microscope objectives. Spectacle lenses, condensers and lenses for magnifiers and eye-pieces are made in large quantities and sold without any test at all being made except to reveal such faults as might be readily perceived by a purchaser; where manufacture is carefully controlled it is rare that any such lens that is not amply good enough for the unexacting requirements is put on the market.

A good test-object for telescope objectives is a star, or an artificial star produced by a distant ball of black glass, or a bulb of mercury, in which the sun is reflected. Actually, if the wave theory of light be taken into account, calculation shows that the image formed by a telescope lens is not a point, but a disc of finite diameter surrounded by rings of rapidly decreasing intensity (G. Airy, "Diffraction at a Circular Object Glass," *Trans. Camb. Phil. Soc.* 5, 1835, *see* also LIGHT). Examination of the image with a lens of high enough power confirms the result of calculation. William Halley in 1720 knew that the image of a star had a size greater than was attributable to the star alone, and Herschel knew of the rings referred to long before any explanation of them was given (J. F. W. Herschel, "Light," *Encyc. Metropolitana,* 1849). Examination of these rings, particularly as they appear a little within and without focus, can yield with experience most valuable information concerning any faults that may be present; and this method of test has been applied with excellent results by Dennis Taylor (*The Adjustment and Testing of Telescope Objectives,* York, 1896).

Another test which is highly informative is that of Foucault (*Comptes Rendus*, 1858, "Memories," *Ann. de l'Observatoire de Paris,* 1859) adopted later for other purposes by Toepler (*Pogg. Ann.* 1866–68). The eye placed in the focus of a star (or artificial star) sees the object glass uniformly illuminated. In the Foucault test a knife edge passed slowly across the focus from right to left makes the illumination disappear over the whole area of the object glass simultaneously if, and only if, the rays all pass accurately through the focus; this affords direct evidence of the course of the rays from different parts of the object glass. Still fuller knowledge of the course of the rays is to be had from Hartmann's method ("Objectivuntersuchungen," *Zeits. f. Instrumentenk.,* 1904). In this, a diaphragm pierced with holes is placed close to the object glass, and the image of a star photographed within and without focus. Such photographs consist of dots, each of which corresponds to one of the apertures in the diaphragm; and from the distances apart of the dots in the two photographs the course taken by the rays from the corresponding parts of the object glass can be found. Highly accurate results have been obtained by this method but it is very laborious. Methods which are of value in special cases have been developed by Waetzmann, founded on the Jamin Refractometer (E. Bratke, Über die Waetzmannsche Interferenzmethode zur Untersuchung optischen Systeme, *Zeitschr. f. Phys.* 1924), Ronchi (Vasco Ronchi, Über die Schattenstreifen zum Studien der Lichtwellen *Zeistchr. für Instrumentenkunde,* 1926) and Lenouvel (M. L. Lenouvel, *Revue d'Optique* 3 (1924), pp. 211 and 315. These last two derived from Foucault's test.

In quite a different category from the above are the methods of examination founded by Twyman and Green (F. Twyman and A. Green, *Brit. Pat.* 103,832/16, and 213,274/23, F. Twyman, *Brit. Pat.* 130,224/18) on the interferometer of Michelson. The method is applicable to object glasses of every size—including microscope objectives and even complete lens systems—and the information is given in terms of aberrations of wave-front produced by the lens, or if desired, by simple transformations (J. W. Perry, "The Determination of Aberrations, etc." *Trans. Opt. Soc.* 1924) in terms of the geometric convention in which almost all practical lens computations are carried out; the test is of high accuracy, can be carried out very rapidly and can be recorded in a photograph in which the errors due to each area of the lens aperture are represented. Those who have adopted it as a means of controlling their lens production have found it to yield readily information more complete and useful than that obtainable in any other way.

MICROSCOPE LENSES

The manufacture and testing of microscope lenses involves peculiar difficulties, arising from the smallness of the lenses and their short radii of curvature. The front lens of a high-powered microscope is always either hemispherical or more than hemispherical in shape, and often less than $\frac{1}{10}$ in. diameter. When it is borne in mind that the radius of curvature of these small lenses requires to be made to the calculated radius to within $\frac{1}{10,000}$ in. the necessity of special means to ensure these conditions will be realized.

Although pitch is employed as a polisher it is more customary to use a mixture such as shellac and putty powder, and the methods of grinding and polishing already described are then applicable with such modifications as are implied by the above mentioned characteristics of the deeper lenses used for microscope objectives. Very accurate means of measuring the radius of curvature have to be employed. One method in use employs two microscopes fixed so that their axes make a given angle with one another. The lens surface to be tested is placed on a traversing table in such a way that it can reflect the light back into one microscope or the other alternatively, according to the position occupied by the traversing table. The distance traversed taken together with the angular separation of the axes of the microscopes enables the radius of curvature of the lens surface to be calculated.

As already stated nearly all the front lenses of high power objectives are hemispherical or more than hemispherical, and to determine the departure from sphericity of such a lens is one of the outstanding difficulties of the microscope manufacturer. The method of centring does not differ in principle from that adopted in the case of larger lenses. The successful setting and edging of the lens is, however, an operation of considerable skill. The mechanical accuracy of the mount also requires special care, as does the process of mounting and cementing the front lens, the spherical surface of which bears against a shoulder, the lens being centred and cemented in position with shellac.

Testing Microscope Lenses.—A usual test of microscope objectives is to examine a familiar object, such as a Podura scale or one of certain diatoms such as *Amphipleura pellucida.* The utility of these objects usually depends on the presence of regular markings of more or less constant separation which thus furnish a test of the resolving power of objectives. A better test of resolving power is to be found in the Grayson rulings, consisting of ten fine diamond lines ruled on realgar surfaces and separated by distances down to $\frac{1}{120,000}$ in. The manufacturer, however, requires to assist him in achieving perfection in his lenses an indication not only that the lens is imperfect, but of the nature of its imperfection. The reflection of light from a very small mercury globule gives him a small point of light which will serve a purpose

similar to that of the star in the observation of the diffraction rings in the testing of telescope lenses. In place of the mercury globule, the light transmitted through a selected accidental perforation in a piece of silvered glass can be used with advantage. The observation of the ring system inside and outside focus with either of these kinds of object affords in either case an indication of the accuracy of the aberration correction or of the manufacture of the lens. Here again, however, a special difficulty arises in the case of the microscope, for the aberrations which in the case of a telescope are simple (involving in the calculations terms of the second order only), in the case of the microscope are much more complex; this complexity is reflected in the appearance of the rings, not only the brightness but their disposition also being strongly affected by the aberrations of the various zones. Thus judgment of the correction required is very difficult. Information of a more direct character is obtained from observing the appearance within and without focus on the exposure one by one of narrow zones of the objective, but here again considerable experience is needed before a right judgment can be come to. It should here be noted that even in the repetition manufacture of an approved type of objective the maker requires to make a final correction of aberration, which may be effected by slightly altering the position of one of the lenses. The means that appears likely to afford the most direct information on this subject is provided by the microscope objective interferometer, the application of which to this problem of the aberrations of microscope lenses seems likely to afford valuable information. (For aberration in optical systems, *see* OPTICS.)

(*See* also LIGHT; VISION OR SIGHT; SPECTACLES.) (F. T.)

LENT, in the Christian Church, the period of fasting preparatory to the festival of Easter. As this fast falls in the early part of the year, it became confused with the season, and gradually Lent, which originally meant spring, was confined to this use.

The length of this fast and the rigour with which it has been observed have varied greatly at different times and in different countries (*see* FASTING). In the time of Irenaeus the fast before Easter was very short, but very severe; thus some ate nothing for forty hours between the afternoon of Good Friday and the morning of Easter. This was the only authoritatively prescribed fast known to Tertullian (*De jejunio,* 2, 13, 14; *De oratione,* 18). In Alexandria about the middle of the 3rd century it was already customary to fast during Holy Week; and earlier still the Montanists boasted that they observed a two weeks' fast instead of one. Of the Lenten fast or Quadragesima, the first mention is in the fifth canon of the council of Nicaea (325), and from this time it is frequently referred to, but chiefly as a season of preparation for baptism, of absolution of penitents or of retreat and recollection. In this season fasting played a part, but it was not universally nor rigorously enforced. At Rome, for instance, the whole period of fasting was but three weeks, according to the historian Socrates (*Hist. eccl.* v. 22), these three weeks, in Mgr. Duchesne's opinion, being not continuous but, following the primitive Roman custom, broken by intervals. Gradually, however, the fast as observed in East and West became more rigorously defined. In the East, where after the example of the Church of Antioch the Quadragesima fast had been kept distinct from that of Holy Week, the whole fast came to last for seven weeks, both Saturdays and Sundays (except Holy Saturday) being, however, excluded. Early in the 7th century the fast was made to last 40 days and the cycle of paschal solemnities was extended to the ninth week before Easter by the institution of stational masses for Septuagesima, Sexagesima and Quinquagesima Sundays. The Greek Lent begins on the Monday of Sexagesima, with a week of preparatory fasting, known as *τυροφάγια*, or the "butter-week"; the actual fast, however, starts on the Monday of Quinquagesima (Esto mihi), this week being known as "the first week of the fast" (*ἑβδομὰς τῶν νηστειῶν*). The period of Lent is still described as "the six weeks of the fast" (*ἓξ ἑβδομάδες τῶν νηστειῶν*), Holy Week (*ἡ ἁγία καὶ μεγάλη ἑβδομάς*) not being reckoned in. The Lenten fast was retained at the Reformation in some of the reformed Churches, and is still observed in the Anglican and Lutheran communions. In England a Lenten fast was first ordered to be observed by Earconberht, king of Kent (640–664). In the middle ages, meat, eggs and milk were forbidden in Lent not only by ecclesiastical but by statute law; and this rule was enforced until the reign of William III.

During the religious confusion of the Reformation, the practice of fasting was generally relaxed and it was found necessary to reassert the obligation of keeping Lent and the other periods and days of abstinence by a series of proclamations and statutes. After the Revolution the Lenten laws fell obsolete, though they remained on the statute-book till repealed by the Statute Law Revision Act 1863. But during the 18th century, though the strict observance of the Lenten fast was generally abandoned, it was still observed and inculcated by the more earnest of the clergy, such as William Law and John Wesley; and the custom of women wearing mourning in Lent, which had been followed by Queen Elizabeth and her court, survived until well into the 19th century. With the growth of the Oxford Movement in the English Church, the practice of observing Lent was revived; and, though no rules for fasting are authoritatively laid down, the duty of abstinence is now very generally inculcated by bishops and clergy, either as a discipline or as an exercise in self-denial. For the more "advanced" Churches, Lenten practice tends to conform to that of the pre-Reformation Church.

Mid-Lent, or the fourth Sunday in Lent, was long known as *Mothering Sunday,* in allusion to the custom for girls in service to be allowed a holiday on that day to visit their parents. They usually took as a present for their mother a small cake known as a *simnel.* In shape it resembled a pork-pie but in materials it was a rich plum-pudding. The word is derived through M. Lat. *simenellus, simella,* from Lat. *simila,* wheat flour. In Gloucestershire simnel cakes are still common; and at Usk, Monmouth, the custom of mothering is still scrupulously observed. *See* article "Lent" in *Catholic Encyclopaedia.*

LENTHALL, WILLIAM (1591–1662), English parliamentarian, speaker of the House of Commons, second son of William Lenthall, of Lachford, Oxfordshire, was born at Henley-on-Thames in June 1591. He left Oxford without taking a degree in 1609, and was called to the bar at Lincoln's Inn in 1616, becoming a bencher in 1633. He represented Woodstock in the Short Parliament (April 1640), and was chosen (1640) by Charles I. to be speaker of the Long Parliament. On Jan. 4, 1642, however, when the king entered the House of Commons to seize the five members, Lenthall behaved with great prudence and dignity. Having taken the speaker's chair and looked round in vain to discover the offending members, Charles turned to Lenthall standing below, and demanded of him "whether any of those persons were in the House, whether he saw any of them and where they were." Lenthall fell on his knees and replied: "May it please your Majesty, I have neither eyes to see nor tongue to speak in this place but as the House is pleased to direct me, whose servant I am here." On the outbreak of the great rebellion, Lenthall threw in his lot with the parliament.

He carried on his duties as speaker without interruption till 1647, when the power of the parliament had been transferred to the army. On July 26, a mob invaded the House of Commons and obliged it to rescind the ordinance re-establishing the old parliamentary committee of militia; Lenthall was held in the chair by main force and compelled to put to the vote a resolution inviting the king to London. Threats of worse things came to Lenthall's ears, and, taking the mace with him, he left London on the 29th to join the army and Fairfax. Returning to London with the army, he was installed again by Fairfax in the chair (Aug. 6), and all votes passed during his absence were annulled. He adhered henceforth to the army party, but with a constant bias in favour of the king. His speakership continued till April 20, 1653, when the Long Parliament was summarily expelled. Cromwell directed Colonel Harrison, on the refusal of Lenthall to quit the chair, to pull him out—and Lenthall submitted to the show of force. He was speaker in the parliament of 1654, but was not re-elected to the chair in the parliament of 1656.

After Cromwell's death, the officers, having determined to recall the "Rump" parliament, assembled at Lenthall's house at

the Rolls (May 6, 1659), to desire him to send out the writs. Lenthall made various excuses for not complying. Nevertheless, upon the officers threatening to summon the parliament without his aid, he led the procession to the parliament house. Lenthall was now restored to the speakership. He was temporarily made keeper of the new great seal (May 14). On Oct. 13 Lambert placed soldiers round the House and prevented the members from assembling. Lenthall's coach was stopped as he was entering Palace Yard, the mace was seized, and he was obliged to return. The army, however, soon returned to their allegiance to the parliament. On Dec. 24, they marched to Lenthall's house, and expressed their sorrow. On the 29th the speaker received the thanks of the reassembled parliament.

Lenthall now turned his attention to bringing about the Restoration. He had been in communication with Monk for some time, and when Monk entered London with his army Lenthall met him in front of Somerset House. Nevertheless he was included (June 11) by the House of Commons, among the 20 persons excepted from the act of indemnity and subject to penalties not extending to life. Monk's testimony and intercession saved him, though he was declared incapable of holding for the future any public office. His last public act was a disgraceful one. Unmindful now of the privileges of parliament, he consented to appear as a witness against the regicide Thomas Scot, for words spoken in the House of Commons while Lenthall was in the chair. It was probably after this that he was allowed to present himself at court. Lenthall died on Sept. 3, 1662.

See C. H. Firth in the *Dict. Nat. Biog.;* Wood (ed. Bliss), *Ath. Oxon.* iii. 603, who gives a list of his printed speeches and letters; Foss, *Lives of the Judges,* vi. 447; and J. A. Manning, *Lives of the Speakers of the House of Commons.*

LENTICEL, a special organ, which appears as an elongated scar on the surface of the cells of trees, and which makes provision for gaseous interchange between the internal tissues and the external air after the formation of cork. A lenticel is formed by the phellogen dividing and giving rise to a loose tissue of rounded cells through which air can pass to the tissue below. The lenticels of the stem are usually found below the stomata whose function they take up after the latter have been cast off with the epidermis. (*See* PLANTS AND PLANT SCIENCE.)

LENTIL, the seed of *Lens esculenta* (also known as *Ervum Lens*), a small annual of the vetch tribe. The plant varies from 6 to 18 in. in height, and has many long ascending branches. The leaves are alternate, with six pairs of oblong-linear, obtuse, mucronate leaflets. The flowers, two to four in number, are of a pale blue colour, and are borne in the axils of the leaves; they are produced in June or early in July. The pods are about $\frac{1}{2}$ to $\frac{3}{4}$ in. long, broadly oblong, slightly inflated, and contain two seeds, the shape of a doubly convex lens, and about $\frac{1}{6}$ to $\frac{3}{8}$ in. in diameter. There are many cultivated varieties of the plant, differing in size, hairiness and colour of the leaves, flowers and seeds. The last may be more or less compressed in shape, and in colour may vary from yellow or grey to dark brown; they are also sometimes mottled or speckled. In English commerce two kinds of lentils are principally met with, French and Egyptian. The former are usually sold entire, and are of an ash-grey colour externally and of a yellow tint within; the latter are usually sold like split peas, without the seed coat, and consist of the reddish-yellow cotyledons, which are smaller and rounder than those of the French lentil; the seed coat when present is of a dark brown colour. Considerable quantities of lentils are also imported into the United States, where they are grown to only a limited extent, in the Pacific northwest.

The native country of the lentil is not known. It was probably one of the first plants brought under cultivation by mankind. Lentils have been found in the lake dwellings of St. Peter's island, Lake of Bienne, which are of the Bronze age. The red pottage of lentils for which Esau sold his birthright (Gen. xxv. 34) was apparently made from the red Egyptian lentil. This lentil is cultivated in one or other variety in India, Persia, Syria, Egypt, Nubia and North Africa, and in Europe, along the coast of the Mediterranean, and as far north as Germany, Holland and France. In Egypt, Syria and other Eastern countries the parched seeds are exposed for sale in shops, and esteemed the best food to carry on long journeys.

The reddish variety of the lentil (*lentillon d'hiver*) is the kind most esteemed in France on account of the superior flavour of its smaller seeds. It is sown in autumn either with a cereal crop or alone, and is cultivated chiefly in the north and east of France. The large or common variety, *lentille large blonde,* cultivated in Lorraine and at Gallardon (Eure-et-Loir), and largely in Germany, is the most productive, but is less esteemed. This kind has very small whitish flowers, two or rarely three on a footstalk, and the pods are generally one-seeded, the seeds being of a whitish or cream colour, about $\frac{3}{8}$ of an inch broad and $\frac{1}{8}$ in. thick. A single plant produces from 100 to 150 pods, which are flattened, about $\frac{3}{4}$ in. long and $\frac{1}{2}$ in. broad. Another variety, with seeds similar in form and colour to the last, but of much smaller size, is known as the *lentillon de Mars.* It is sown in spring. This variety and the *lentille large* are both sometimes called the *lentille à la reine.* A small variety, *lentille verte du Puy,* cultivated chiefly in the departments of Haute Loire and Cantal, is also grown as a vegetable and for forage. The Egyptian lentil was introduced into Britain in 1820. It has blue flowers. Another species of lentil, *Ervum monanthos,* is grown in France about Orleans and elsewhere under the name of *jarosse* and *jarande.* It is, according to Vilmorin, one of the best kinds of green food to grow on a poor dry sandy soil; on calcareous soil it does not succeed so well.

It is usually sown in autumn with a little rye or winter oats, at the rate of a hectolitre to a hectare.

Lentils are more especially the food of the poor in all countries where they are grown, and have often been spurned when better food could be obtained.

The herbage is highly esteemed as green food for suckling ewes and all kinds of cattle (being said to increase the yield of milk), also for calves and lambs.

LENTO (It., slow), a musical term indicating a tempo between largo (*q.v.*) and andante (*q.v.*).

LENTULUS, the name of a Roman patrician family of the Cornelian gens. The word *Lentulitas* is coined by Cicero (*Ad Fam.* iii. 7, 5) to express the attributes of a pronounced aristocrat. The following members of the family deserve mention:

PUBLIUS CORNELIUS LENTULUS, nicknamed SURA, one of the chief figures in the Catilinian conspiracy. When accused by Sulla (to whom he had been quaestor in 81 B.C.) of having squandered the public money, he refused to render any account, but insolently held out the calf of his leg (*sura*), on which boys were punished when they made mistakes in playing ball. He was praetor in 75, governor of Sicily 74, consul 71. In 70, being expelled from the senate with a number of others for immorality, he joined Catiline. When Catiline left Rome after Cicero's first speech *In Catilinam,* Lentulus took his place as chief of the conspirators in the city. In conjunction with C. Cornelius Cethegus, he undertook to murder Cicero and set fire to Rome, but the plot failed owing to his indiscretion in communicating it to the ambassadors to the Allobroges, then in Rome, in the hope of securing armed assistance. They betrayed him, and the conspirators were arrested and forced to confess. Lentulus was executed on Dec. 5, 63 B.C.

See Dio Cassius xxxvii. 30, xlvi. 20; Plutarch, *Cicero,* 17; Sallust, *Catilina;* Cicero, *In Catilinam,* iii., iv.; *Pro Sulla,* 25; also CATILINE.

PUBLIUS CORNELIUS LENTULUS, called SPINTHER from his likeness to an actor of that name, supporter of Pompey. In 63 B.C., as curule aedile, he assisted Cicero in the suppression of the Catilinarian conspiracy. He was praetor in 60, and with Caesar's support got the province of Hispania Citerior in 59 and was consul in 57. He took a leading part in recalling Cicero from exile. From 56–53 Lentulus was governor of the province of Cilicia (with Cyprus) and during that time was commissioned by the senate to restore Ptolemy XI. Auletes to his kingdom (*see* PTOLEMIES). In spite of his indebtedness to Caesar, Lentulus joined the Pompeians on the outbreak of civil war (49). The generosity with which he was treated by Caesar after the capitulation of Corfinium made him hesitate, but he finally decided in favour of Pompey. After Pharsalus, Lentulus escaped to Rhodes.

According to Aurelius Victor (*De vir. ill.* lxxviii., 9, if the reading be correct), he subsequently fell into Caesar's hands and was put to death.

See Caesar, *Bell. Civ.* i. 15–23, iii. 102; Plutarch, *Pomp.* 49; Valerius Maximus ix. 14, 4; many letters of Cicero, especially *Ad Fam.* i. 1–9.

LUCIUS CORNELIUS LENTULUS, surnamed CRUS or CRUSCELLO, member of the anti-Caesarian party. In 61 B.C. he was the chief accuser of P. Clodius (*q.v.*) in the affair of the festival of Bona Dea. When consul (49) he advised the rejection of all peace terms offered by Caesar, and declared that, if the senate did not at once decide upon opposing him by force of arms, he would act upon his own responsibility. He fled from Rome as soon as he heard of Caesar's advance, and crossed over to Greece. After Pharsalus, he made his way to Rhodes (but was refused admission), thence, by way of Cyprus, to Egypt. He landed at Pelusium the day after the murder of Pompey, and was seized and put to death by Ptolemy.

See Caesar, *Bell. Civ.* i. 4, iii. 104; Plutarch, *Pompey*, 80.

A full account of the different Cornelii Lentuli, with genealogical table, will be found in Pauly-Wissowa's *Realencyclopädie*, iv. pt. 1, p. 1355 (1900) (*s.v.* "Cornelius"); *see* also V. de Vit, *Onomasticon*, ii. 433.

LENZ, JACOB MICHAEL REINHOLD (1751–1792), German poet, was born in Sesswegen, Livonia, the son of the village pastor, on Jan. 12, 1751, and brought up at Dorpat. In 1771 he went to Strasbourg as tutor to two young German noblemen. He fell in love with Friederike Brion, daughter of the pastor of Sesenheim, famous for her attachment to Goethe, and the lyrics (the best of his poems) which he wrote to her, *Die Liebe auf dem Lande*, were long attributed to Goethe, as was for a time his first play, *Der Hofmeister, oder Vorteile der Privaterziehung* (1774). Lenz had undoubted genius, but a nervous temperament, which brought on him repeated attacks of insanity at different times. His bad and vicious manners drove him from Weimar, where he had at first been well received by the reigning duke in 1776. He led a wandering life from that time onwards, though he found at last a small teaching post near Moscow, where he died insane on May 24, 1792.

Lenz's *Gesammelte Schriften* were published by L. Tieck in three volumes (1828); supplementary to these are E. Dorer-Egloff, *J. M. R. Lenz und seine Schriften* (1857); modern critical editions of his *Gesammelte Schriften* by F. Blei (1909–13, 5 vols.) and E. Lewy (4 vols., 1917). *See* Kindermann, *Lenz und die deutsche Romantik* (1924).

LEO I., who alone of Roman pontiffs shares with Gregory I. the surname of THE GREAT, pope from 440 to 461, was a native of Rome, or, according to a less probable account, of Volterra in Tuscany. In 429, when the first unmistakable reference to Pope Leo occurs, he was still only a deacon, but already a man of commanding influence; it was at his suggestion that the *De incarnatione* of the aged Cassianus, having reference to the Nestorian heresy, was composed in that year, and about 431 Cyril of Alexandria wrote to him to prevent the Roman Church from lending any support to the ambitious schemes of Juvenal of Jerusalem. In 440, while Leo was in Gaul, whither he had been sent to compose some differences between Aetius and another general named Albinus, Pope Sixtus III. died. The absent archdeacon was unanimously chosen to succeed him, and was consecrated on Sept. 29. In 443 he began to take stern measures against the Manichaeans (who since the capture of Carthage by Genseric in 439 had become very numerous at Rome), and in 444 he was able to report to the Italian bishops that some of the heretics had returned to Catholicism, while many had been sentenced to perpetual banishment "in accordance with the constitutions of the Christian emperors," and others had fled; in seeking these out the help of the provincial clergy was sought. During the earlier years of Leo's pontificate Hilarius of Arles was compelled to return to his obedience to the Roman See. The edict of Valentinian III. (445) denounced the contumacy of the Gallic bishop, and enacted "that nothing should be done in Gaul, contrary to ancient usage, without the authority of the bishop of Rome, and that the decree of the apostolic see should henceforth be law."

In 448 he received with commendation a letter from Eutyches, the Constantinopolitan monk, complaining of the revival of the Nestorian heresy there; and in 449 Eutyches asked for Leo's support at the oecumenical council at that time under summons to meet at Ephesus. Leo then by his legates sent to Flavian the epistle setting forth in detail the doctrine ever since recognized as orthodox regarding the union of the two natures in the one person of Jesus Christ. Leo's letter, though submitted, was not read by the assembled fathers at the Synod of Ephesus and the papal legates were in danger of their lives from the violence of the theologians who, not content with deposing Flavian and Eusebius, shouted for the dividing of those who divided Christ. When the news of the result of this council reached Rome, Leo wrote to Theodosius requesting the emperor to sanction another council, to be held this time, however, in Italy.

Among the reasons urged by Leo for holding this council in Italy had been the threatening attitude of the Huns; their irruption took place in the following year (452). After Aquileia had succumbed to Attila's long siege, the conqueror set out for Rome. Near the confluence of the Mincio and the Po he was met by Leo, whose eloquence persuaded him to turn back. Legend has sought to enhance the impressiveness of the occurrence by an unnecessarily imagined miracle. The pope was less successful with Genseric when the Vandal chief arrived under the walls of Rome in 455, but he secured a promise that there should be no incendiarism or murder, and that three of the oldest basilicas should be exempt from plunder—a promise which seems to have been faithfully observed. Leo died on Nov. 10, 461, the liturgical anniversary being April 11. His successor was Hilarius or Hilarus, who had been one of the papal legates at the "robber" synod in 449.

The title of *doctor ecclesiae* was given to Leo by Benedict XIV. Leo was a great preacher. From his short and pithy *Sermones* many of the lessons now to be found in the Roman breviary have been taken.

The works of Leo I. were first collectively edited by Quesnel (Lyons, 1700), and again, on the basis of this, in what is now the standard edition by Ballerini (Venice, 1753–56). Ninety-three *Sermones* and 173 *Epistolae* occupy the first volume; the second contains the *Liber Sacramentorum*, usually attributed to Leo, and the *De Vocatione Omnium Gentium*, also ascribed, by Quesnel and others, to him, but more probably the production of a certain Prosper, of whom nothing further is known. The works of Hilary of Arles are appended. *See* also P. Batiffol, *Le Siège apostolique* (*359–451*) (1924).

LEO II., pope from August 682 to July 683, was a Sicilian by birth, and succeeded Agatho I. The only fact of permanent historical interest with regard to Leo is that he wrote once and again in approbation of the decision of the sixth oecumenical council (Constantinople, 681), and in condemnation of the Monothelite heresy and of Honorius, whom he regarded as one who *profana proditione immaculatam fidem subvertere conatus est.* In the Greek text of the letter to the emperor in which the phrase occurs the milder expression παρεχώρησεν (*subverti permisit*) is used for *subvertere conatus est.* This Hefele in his *Conciliengeschichte* (iii. 294) regards as alone expressing the true meaning of Leo. It was during Leo's pontificate that the dependence of the see of Ravenna upon that of Rome was finally settled by imperial edict. Benedict II. succeeded him.

LEO III., whose pontificate (795–816) covered the last eighteen years of the reign of Charlemagne, was a native of Rome, and having been chosen successor of Adrian I. on Dec. 26, 795, was consecrated to the office on the 27th day. His first act was to send to Charles as patrician the standard of Rome along with the keys of the sepulchre of St. Peter and of the city. On April 25, 799, Leo was attacked while riding in procession through the city; the object of his assailants, incited by Paschalis and Campulus, nephews of Adrian I., was, by depriving him of his eyes and tongue, to disqualify him for the papal office. This barbarous intention was not executed, but Leo sought the help of Winegis, the Frankish duke of Spoleto. Having vainly requested the presence of Charles in Rome, Leo crossed the Alps to meet the king at Paderborn; he was received with much ceremony and respect, but Charles appointed both the pope and his accusers to appear as parties before him in Rome. Leo returned to his diocese; Charles, who did not arrive until November in the following year, acquitted the pope, who, however, was permitted or rather re-

quired to clear himself by the oath of compurgation. The coronation of Charles followed two days afterwards. His enemies renewed their attacks after Charles's death; the violent repression of a conspiracy led to an open rebellion at Rome; serious charges were once more brought against him, when he died in 816. Under Leo's pontificate Felix of Urgel, the adoptianist, was anathematized (798) by a Roman synod. Leo at another synod held in Rome in 810 admitted the dogmatic correctness of the *filioque*, but deprecated its introduction into the creed. On this point, however, the Frankish Church persevered in the course it had already initiated. Leo's successor was Stephen IV.

LEO IV., pope from 847 to 855, was a Roman by birth, and succeeded Sergius II. His pontificate was chiefly distinguished by his efforts to repair the damage done by the Saracens. He built and fortified the suburb on the right bank of the Tiber still known as the Civitas Leonina. A conflagration, which he is said to have extinguished by his prayers, is the subject of Raphael's great work in the Sala dell' Incendio of the Vatican. He held three synods, one of them (in 850) distinguished by the presence of Louis II., who was crowned emperor on the occasion. Leo was succeeded by Benedict III.

LEO V., a native of Ardea, was pope for two months in 903 after the death of Benedict IV. He was overthrown and cast into prison by the priest Christopher, who installed himself in his place.

LEO VI., succeeded John X. in 928, and reigned seven months and a few days. He was succeeded by Stephen VIII.

LEO VII., pope from 936 to 939, was preceded by John XI., and followed by Stephen IX.

LEO VIII., pope from 963 to 965, a Roman by birth, held the lay office of *protoscrinius* when he was elected to the papal chair at the instance of Otto the Great by the Roman synod which deposed John XII. in December 963. In February 964, the emperor having withdrawn from the city, Leo fled, and was deposed by a synod presided over by John XII. On the sudden death of John, the people chose Benedict V. as his successor; but Otto laid siege to the city and compelled their acceptance of Leo. It is usually stated that, at the synod which deposed Benedict, Leo conceded to the emperor and his successors as sovereign of Italy full rights of investiture, but the genuineness of the document is more than doubtful. Leo VIII. was succeeded by John XIII.

LEO IX., saint, pope from 1049 to 1054, a native of Upper Alsace, was born on June 21, 1002. His name was Bruno; through his father he was related to the emperor Conrad II. He was educated at Toul, where he successively became canon and (1026) bishop; he rendered political services to Conrad II., and afterwards to Henry III., and zealously promoted the rule of the order of Cluny. On the death of Damasus II., Bruno was in December 1048, with the concurrence of the emperor and of the Roman delegates, selected pope by an assembly at Worms; he stipulated, however, that he should first proceed to Rome and be canonically elected by the voice of clergy and people. On his way to Rome he met abbot Hugo of Cluny at Besançon, where he was joined by the young monk Hildebrand, afterwards Pope Gregory VII. He arrived in pilgrim garb at Rome, and at his consecration assumed the name of Leo IX. One of his first public acts was to hold the well-known Easter synod of 1049, at which celibacy of the clergy (down to the rank of subdeacon) was anew enjoined, and where he pronounced against every kind of simony. The greater part of 1050 was spent in a progress through Italy, Germany and France. After presiding over a synod at Pavia, he joined the emperor Henry III. in Saxony, and accompanied him to Cologne and Aix-la-Chapelle; at Reims he summoned a meeting of the higher clergy, by which reforming decrees were passed. At Mainz he held a council, at which the Italian, French and German clergy were represented, and ambassadors of the Greek emperor were present; here simony and the marriage of the clergy were the principal matters dealt with. After a fourth Easter synod in 1053 Leo set out against the Normans in the south with an army of Italians and German volunteers, but his forces were defeated at Astagnum near Civitella (June 18, 1053). He died on April 19, 1054. He was succeeded by Victor II.

See E. Martin, *Saint Léon IX.* (1904); J. H. Stein, *Der deutsche Heilige im Petersdom, Papst Leo IX.* (1925).

LEO X. [Giovanni de' Medici] (1475–1521), pope March 11, 1513 to Dec. 1, 1521, was the second son of Lorenzo de' Medici, called the Magnificent, and was born at Florence on Dec. 11, 1475. He received the tonsure at the age of seven and was soon loaded with rich benefices and preferments. Innocent VIII. named him cardinal-deacon of Sta. Maria in Dominica in March 1489. He received a careful education at Lorenzo's court under Angelo Poliziano, Pico della Mirandola, Marsilio Ficino, and Bibbiena. From 1489 to 1491 he studied theology and canon law at Pisa. In 1492 he was formally admitted into the sacred college and settled in Rome. The death of Lorenzo called the seventeen-year-old cardinal to Florence. He participated in the conclave on the death of Innocent VIII. in July 1492, and opposed the election of Cardinal Borgia. He lived with his elder brother Piero at Florence throughout the agitation of Savonarola and the invasion of Charles VIII. of France, until the Medici were expelled in November 1494. Giovanni then travelled in Germany, in the Netherlands and in France. In May 1500 he returned to Rome, where he devoted himself to art and literature. When the death of Piero de' Medici took place in 1503 Giovanni became head of his family. On Oct. 1, 1511, he was appointed papal legate of Bologna and the Romagna, and when the Florentine republic declared in favour of the schismatic Pisans Julius II. sent him against Florence at the head of the papal army. A bloodless revolution permitted the return of the Medici on Sept. 14, 1512. Giovanni's younger brother Giuliano became the nominal head of the republic, but the cardinal was the real ruler. Julius II. died in Feb. 1513, and the conclave, after a stormy seven days' session, united on Cardinal de' Medici as the candidate of the younger cardinals. He was ordained to the priesthood on March 15, consecrated bishop on the 17th, and enthroned with the name Leo X. on the 19th.

Many problems confronted Leo X. on his accession. He had to preserve the papal conquests which he had inherited from Alexander VI. and Julius II., to minimize foreign influence, whether French, Spanish or German, in Italy to put an end to the Pisan schism and to settle the other troubles incident to the French invasion. Other outstanding problems were the restoration of the French Church to Catholic unity, and the settlement of the wranglings of the German humanists. At the time of Leo's accession Louis XII. of France, in alliance with Venice, was attempting to regain the duchy of Milan and the pope, after fruitless endeavours to maintain peace, joined the league of Mechlin on April 5, 1513, with the emperor Maximilian I., Ferdinand I. of Spain and Henry VIII. of England. The French and Venetians were at first successful, but on June 6 they were defeated at Novara. The Venetians continued the struggle until October. On Dec. 19 the fifth Lateran council, reopened by Leo in April, ratified the peace with Louis XII., and registered the conclusion of the Pisan schism. While the council was planning a crusade and considering the reform of the clergy, a new crisis occurred between the pope and the king of France. Francis I., who succeeded Louis XII. on Jan. 1, 1515, was intent on recovering Milan and Naples. Leo formed a new league with the emperor and the king of Spain, and, to ensure English support, made Wolsey a cardinal. Francis entered Italy in August and won the battle of Marignano (Sept. 14).

The pope in October signed an agreement binding him to withdraw his troops from Parma and Piacenza, on condition of French protection at Rome and Florence. He held a secret conference with Francis at Bologna in Dec. 1515. The ostensible subjects under consideration were the establishment of peace between France, Venice and the Empire, with a view to an expedition against the Turks, and the ecclesiastical affairs of France. Precisely what was arranged is unknown.

During these two or three years of incessant intrigue and warfare the Lateran council was seriously hampered. Its three main objects, the peace of Christendom, the crusade and the reform of the church demanded general agreement among the powers which was lacking. Its most important achievements were the registration at its eleventh sitting (Dec. 19, 1516) of the abolition of the

pragmatic sanction, which the popes since Pius II. had unanimously condemned, and the confirmation of the concordat between Leo X. and Francis I., which was to regulate the relations between the French Church and the Holy See until the Revolution. Leo closed the council on March 16, 1517. It had ended the schism, ratified the censorship of books introduced by Alexander VI. and imposed tithes for a war against the Turks. It raised no voice against the primacy of the pope.

Leo had practised nepotism from the beginning. His cousin Giulio (later Clement VII.), was made archbishop of Florence, cardinal and vice-chancellor of the Holy See. Leo had named his younger brother Giuliano and his nephew Lorenzo, Roman patricians; he had placed Lorenzo in charge of Florence; he married Giuliano to Filiberta of Savoy, and intended to carve out a kingdom for him in Central Italy. After the death of Giuliano in March 1516, Leo transferred his ambitions to Lorenzo. At the very time (Dec. 1516) that peace between France, Spain, Venice and the Empire seemed to give some promise of a Christendom united against the Turk, Leo was preparing an enterprise against the duke of Urbino. He obtained 150,000 ducats from Henry VIII. of England, in return for which he entered the imperial league of Spain and England against France. The war lasted from Feb. to Sept. 1517, and ended with the expulsion of the duke and the triumph of Lorenzo; but it increased brigandage and anarchy in the States of the Church, hindered the preparations for a crusade and wrecked the papal finances. Leo now took advantage of a plot of several of the members of the sacred college to poison him, to execute one cardinal, imprison several others, and to make a radical change in the college. On July 3, 1517, he published the names of 31 new cardinals, among whom were such as Lorenzo Campeggio, Giambattista Pallavicini, Adrian of Utrecht, Cajetan, Cristoforo Numai and Egidio Canisio.

Leo meanwhile was planning a crusade to prevent the advance of Selim I. A truce was to be proclaimed throughout Christendom; the pope was to be the arbiter of disputes; the emperor and the king of France were to lead the army; England, Spain and Portugal were to furnish the fleet; and the combined forces were to be directed against Constantinople. Papal diplomacy in the interests of peace failed, however; Cardinal Wolsey made England, not the pope, the arbiter between France and the Empire; and much of the money collected for the crusade from tithes and indulgences was spent in other ways. In 1519 Hungary concluded a three years' truce with Selim I., but the succeeding sultan, Suliman the Magnificent, renewed the war in June 1521, and captured the citadel of Belgrade. Leo treated the Uniate Greeks with great loyalty, and by bull of May 18, 1521, forbade Latin clergy to celebrate mass in Greek churches and Latin bishops to ordain Greek clergy. These provisions were later strengthened by Clement VII. and Paul III. and went far to settle the chronic disputes between the Latins and Uniate Greeks.

Leo was disturbed throughout his pontificate by heresy and schism. The dispute between Reuchlin and Pfefferkorn was referred to the pope in Sept. 1513. He in turn referred it to the bishops of Spires and Worms, who gave decision in March 1514 in favour of Reuchlin. After the appeal of the inquisitor-general, Hochstraten, and the appearance of the *Epistolae obscurorum virorum*, however, Leo annulled the decision (June 1520) and imposed silence on Reuchlin. The pope had authorized the extensive grant of indulgences to secure funds for the crusade and for the rebuilding of St. Peter's at Rome. Against the attendant abuses the Augustinian monk Martin Luther (*q.v.*), posted (Oct. 31, 1517) on the church door at Wittenberg his famous ninety-five theses, which were the signal for widespread revolt against the church. Leo directed (Feb. 3, 1518) the vicar-general of the Augustinians to impose silence on the monks. On Aug. 7 Luther was cited to appear at Rome. The citation was cancelled, however, and Luther betook himself in October 1518 to Augsburg to meet the papal legate, Cardinal Cajetan. Fruitless negotiation followed, during which the pamphlets of the reformer set all Germany on fire.

Leo formally excommunicated Luther by bull of Jan. 3, 1521; and in a brief directed the emperor to take energetic measures against heresy. On May 21, 1521, Henry VIII. of England sent to Leo his book against Luther on the seven sacraments. The pope in return conferred on the king of England the title "Defender of the Faith" by bull of Oct. 11, 1521. Neither the imperial edict nor the work of Henry VIII. stayed the Lutheran movement. It was under Leo X. also that the Protestant movement had its beginning in Scandinavia. The pope had repeatedly used the rich northern benefices to reward members of the Roman curia, and in 1516 he sent the grasping and impolitic Arcimboldi as papal nuncio to Denmark to collect money for St. Peter's. King Christian II. expelled the nuncio and summoned (1520) Lutheran theologians to Copenhagen, and proceeded to abolish the jurisdiction of Rome in Denmark. Leo sent a new nuncio to Copenhagen (1521) in the person of the Minorite Francesco de Potentia, who readily absolved the king and received the rich bishopric of Skara. Neither the pope nor his legate, however, took any steps to remove abuses or otherwise reform the Scandinavian churches.

That Leo did not do more to check the tendency toward heresy and schism in Northern Europe is partly explained by political complications, and by his own preoccupation with schemes of papal and Medicean aggrandizement in Italy. The death of the emperor Maximilian on Jan. 12, 1519, had seriously affected the situation. Leo allowed it to appear at first that he favoured Francis I. while really working for the election of some minor German prince. He finally accepted Charles I. of Spain as inevitable, and the election of Charles (June 28, 1519) revealed Leo's desertion of his French alliance, a step facilitated by the death of Lorenzo de' Medici and his French wife. Leo desired to unite Ferrara, Parma and Piacenza to the States of the Church. An attempt in 1519 to seize Ferrara failed, and in May 1521 a treaty of alliance was signed at Rome between pope and emperor. Milan and Genoa were to be taken from France and restored to the Empire, and Parma and Piacenza were to be given to the Church on the expulsion of the French. The expense of enlisting 10,000 Swiss was to be borne equally by pope and emperor. Charles took Florence and the Medici family under his protection and promised to punish all enemies of the Catholic faith. Leo agreed to invest Charles with Naples, to crown him emperor, and to aid in a war against Venice. Henry VIII. announcd his adherence to the League in August. Francis I. had already begun war with Charles in Navarre, and in Italy, too, the French made the first hostile movement (June 23, 1521). Leo lived to hear of the capture of Milan from the French and of the occupation by papal troops of the long-coveted provinces (November 1521). He died suddenly on Dec. 1, 1521. His successor was Adrian VI.

Leo was friendly with King Emmanuel of Portugal on account of the latter's missionary enterprises in Asia and Africa. His concordat with Florence (1516) guaranteed the free election of the clergy in that city. His constitution of March 1, 1519 condemned the king of Spain's claim to refuse the publication of papal bulls. He maintained close relations with Poland because of the Turkish advance and the Polish contest with the Teutonic Knights. His bull of July 1, 1519, which regulated the discipline of the Polish Church, was later transformed into a concordat by Clement VII. Leo showed special favours to the Jews and permitted them to erect a Hebrew printing-press at Rome. He approved the formation of the Oratory of Divine Love, a group of pious men at Rome which later became the Theatine Order, and he canonized Francesco di Paola.

Leo X. was a patron of learning, and made Rome the centre of European culture. While yet a cardinal, he had restored the church of Sta. Maria in Dominica after Raphael's designs; and as pope he built S. Giovanni on the Via Giulia after designs by Jacopo Sansovino and pressed forward the work on St. Peter's and the Vatican under Raphael and Chigi. His constitution of Nov. 5, 1513 reformed the Roman university, which had been neglected by Julius II.; although it never attained to the importance of Padua or Bologna, it nevertheless possessed in 1514 an excellent faculty of eighty-eight professors. Leo called Theodore Lascaris to Rome to give instruction in Greek, and established a Greek printing-press from which the first Greek book printed at

Rome appeared in 1515. He made Raphael custodian of the classical antiquities of Rome and the vicinity. The distinguished Latinists Pietro Bembo (1470–1547) and Jacopo Sadoleto (1477–1547) were papal secretaries, as well as the famous poet Bernardo Accolti (d. 1534). Poets and literati were bishops, or papal scriptors or abbreviators, or in other papal employ. Leo's lavish expenditure exhausted within two years the hard savings of Julius II. To fill the treasury he created new offices and sold them. He sold cardinals' hats. He sold membership in the "Knights of Peter." He borrowed large sums from bankers, curials, princes and Jews.

In spite of his worldliness, Leo prayed, fasted, and was exact in religious observance. To the virtues of liberality, charity and clemency he added the Machiavellian qualities of falsehood and shrewdness, so highly esteemed by the princes of his time. He failed entirely in his general policy of expelling foreigners from Italy, of restoring peace throughout Europe, and of prosecuting war against the Turks. He failed to recognize the need of reform within the church and the dangers which threatened the papal monarchy; and he neglected the spiritual needs of the time. He was zealous in establishing the political power of the Holy See; he made it unquestionably supreme in Italy; he successfully restored the papal power in France; and he secured a prominent place in the history of culture.

AUTHORITIES.—The life of Leo X. was written shortly after his death by Paolo Giovio, bishop of Nocera, who had known him intimately. Other important contemporary sources are the Italian *History* of the Florentine writer Guicciardini, covering the period 1492–1530 (Milan, 1884); the reports of the Venetian ambassadors, Marino Giorgi (1517), Marco Minio (1520) and Luigi Gradenigo (1523), in vol. iii. of the 2nd series of *Le Relazioni degli ambasciatori Veneti,* edited by Alberi (Florence, 1846); and the *Diarii* of the Venetian Marino Sanuto (58 vols., 1879–1903). Other materials for the biography are to be found in the incomplete *Regesta* edited by Joseph Cardinal Hergenröther (Freiburg-i.-B., 1884 ff.); in the Turin collection of papal bulls (1859, etc.); in *Il Diario di Leone X. dai volumi manoscritti degli archivi Vaticani della S. Sede connote di M. Armellini* (Rome, 1884); and in "Documenti risguardanti Giovanni de' Medici e il pontifice Leone X.," appendix to vol. 1 of the *Archivio storico Italiano* (Florence, 1842).

See L. Pastor, *Geschichte der Päpste im Zeitalter der Renaissance u. der Glaubensspaltung von der Wahl Leos X. bis zum Tode Klemens VII.* part 1 (Freiburg-i.-B., 1906); M. Creighton, *History of the Papacy,* vol. 6 (1901); F. Gregorovius, *Rome in the Middle Ages,* trans. by Mrs. G. W. Hamilton, vol. viii., part 1 (1902); L. von Ranke, *History of the Popes,* vol. i., trans. by E. Foster in the Bohn Library; *Histoire de France,* ed. by E. Lavisse, vol. 5, part 1 (1903); Walter Friedensburg, "Ein rotulus familiae Papst Leos X.," in *Quellen u. Forschungen aus italienischen Archiven u. Bibliotheken,* vol. vi. (1904); W. Roscoe, *Life and Pontificate of Leo X.* (6th ed., 1853), a celebrated biography but out of date in spite of the valuable notes of the German and Italian translators, Henke and Bossi; F. S. Nitti, *Leone X. e la sua politica secondo documenti e carteggi inediti* (Florence, 1892); A. Schulte, *Die Fugger in Rom 1495–1523* (Leipzig, 1906); and H. M. Vaughan, *The Medici Popes* (1908).

LEO XI. (Alessandro de' Medici) was elected pope on April 1, 1605, at the age of seventy. He had long been archbishop of Florence and nuncio to Tuscany; and was entirely pro-French in his sympathies. He reigned for 26 days and was succeeded by Paul V.

See the contemporary life by Vitorelli, continuator of Ciaconius, *Vitae et res gestae summorum Pontiff. Rom.;* Ranke, *Popes* (Eng. trans., Austin), ii. 330; v. Reumont, *Gesch. der Stadt Rom.* iii. 2, 604; Brosch, *Gesch. des Kirchenstaates* (1880), i. 350.

LEO XII. (Annibale della Genga), pope from 1823 to 1829, was born near Spoleto on Aug. 22, 1760. Educated at the Accademia dei Nobili ecclesiastici at Rome, he was ordained priest in 1783. In 1792 Pius VI. made him his private secretary, in 1793 creating him titular archbishop of Tyre and despatching him to Lucerne as nuncio. In 1794 he was transferred to the nunciature at Cologne, but owing to the war had to make his residence in Augsburg. During the dozen or more years he spent in Germany he was entrusted with missions to the courts of Dresden, Vienna, Munich and Württemberg. After the abolition of the States of the Church, he was treated by the French as a state prisoner, and lived at the abbey of Monticelli, solacing himself with music and with bird-shooting. In 1814 he was chosen to carry the pope's congratulations to Louis XVIII.; in 1816 he was created cardinal-priest of Santa Maria Maggiore, and appointed to the see of Sinigaglia, which he resigned in 1818. In 1820 Pius VII. made him cardinal vicar. In the conclave of 1823, in spite of the active opposition of France, he was elected pope by the *zelanti* on Sept. 28. At the time he was thought to be dying, but he unexpectedly rallied. His foreign policy, entrusted at first to Della Somaglia and then to the more able Bernetti, moved in general along lines laid down by Consalvi; and he negotiated concordats advantageous to the papacy. Personally most frugal, Leo reduced taxes, made justice less costly, and found money for public improvements; yet he left the finances more confused than he had found them, and even the jubilee of 1825 did not mend matters. His domestic policy was one of extreme reaction. He condemned the Bible societies, and under Jesuit influence reorganized the educational system. Severe ghetto laws led many of the Jews to emigrate. He hunted down the *Carbonari* and the Freemasons; he took strong measures against political agitation in theatres. Leo, temperamentally stern, hard-working in spite of bodily infirmity, died at Rome on Feb. 10, 1829. He was succeeded by Pius VIII.

AUTHORITIES.—Artaud de Montor, *Histoire du Pape Léon XII.* (2 vols., 1843; by the secretary of the French embassy in Rome); Brück, "Leo XII.," in Wetzer and Welte's *Kirchenlexikon,* vol. vii. (Freiburg, 1891); F. Nippold, *The Papacy in the 19th Century* (New York, 1900), chap. 5; Benrath, "Leo XII.," in Herzog-Hauck, *Real-encyklopädie,* vol. xi. (Leipzig, 1902), 390–393, with bibliography; F. Nielsen, *The History of the Papacy in the 19th century* (1906), vol. ii. 1–30; Lady Blennerhassett, in the *Cambridge Modern History,* vol. x. (1907), 151–154.

LEO XIII. (Gioacchino Pecci) (1810–1903), pope from 1878 to 1903, reckoned the 257th successor of St. Peter, was born at Carpineto on March 2, 1810. His family was Sienese in origin, and his father, Colonel Domenico Pecci, had served under Napoleon. His mother, Anna Prosperi, is said to have been a descendant of Rienzi, and was a member of the third order of St. Francis. He and his elder brother Giuseppe (known as Cardinal Pecci) were educated by the Jesuits at Viterbo, and at Rome. In 1825 he headed a students' deputation to Pope Leo XII. After graduation as doctor of theology he entered the Accademia dei Nobili ecclesiastici. Two years later Gregory XVI. appointed him a domestic prelate. He was ordained priest on Dec. 31, 1837, and a few weeks later was made apostolic delegate of Benevento. In 1841 he was appointed delegate of Perugia, at that time a centre of anti-papal secret societies. There he obtained a reputation as a social and municipal reformer. In 1843 he was sent as nuncio to Brussels, being first consecrated a bishop (Feb. 19). During his three years' residence at Brussels he was occupied with the education controversy then raging, and he mediated between the Jesuits and the Catholic university of Louvain. In January 1846 he was appointed bishop of Perugia with the rank of archbishop; but before returning to Italy he spent February in London, and March and April in Paris. On Dec. 19, 1853, he received the red hat from Pius IX. Meanwhile, and throughout his long episcopate of thirty-two years, he built and restored many churches, striving to elevate the intellectual as well as the spiritual tone of his clergy, and showing in his pastoral letters an unusual regard for learning and for social reform.

His position in Italy was similar to that of Bishop Dupanloup in France; and, as but a moderate supporter of the policy enunciated in the Syllabus, he was not altogether *persona grata* to Pius IX. He protested against the loss of the pope's temporal power in 1870, against the confiscation of the property of the religious orders, and against the law of civil marriage established by the Italian government, and he refused to welcome Victor Emmanuel in his diocese. In 1877, when the papal office of *camerlengo* became vacant, Pius IX. appointed to it Cardinal Pecci, who thus returned to reside in Rome.

When Pius IX. died (Feb. 7, 1878) Cardinal Pecci was elected pope at the subsequent conclave with comparative unanimity, obtaining at the third scrutiny (Feb. 20) forty-four out of sixty-one votes, or more than the requisite two-thirds majority. Although his long seclusion at Perugia had caused his name to be little known outside Italy, there was a general belief that the conclave

had selected a man who was a prudent statesman as well as a devout churchman.

The second day after his election Pope Leo XIII. crossed the Tiber *incognito* to his former residence in the Falconieri Palace to collect his papers, returning at once to the Vatican, where he continued to regard himself as "imprisoned" so long as the Italian government occupied the city of Rome. He was crowned in the Sistine Chapel on March 3, 1878, and at once began a reform of the papal household on austere and economic lines. He summoned to the Vatican certain Perugian clergy who had been trained under his own eye, and from the first he was less accessible than his predecessor had been, either in public or private audience. The stricter theological training of the Roman Catholic clergy throughout the world on the lines laid down by St. Thomas Aquinas was his first care, and to this end he founded in Rome and endowed an academy bearing the great schoolman's name, further devoting about £12,000 to the publication of a new and splendid edition of his works, the idea being that on this basis the later teaching of Catholic theologians and many of the speculations of modern thinkers could best be harmonized and brought into line.

The study of Church history was encouraged, and in August 1883 the Vatican archives and library were thrown open to qualified historians. His belief was that the Church would not suffer by the publication of documents. A man of literary taste and culture, familiar with the classics, a facile writer of Latin verses[1] as well as of Ciceronian prose, he was anxious that the Roman clergy should unite the humanities with their theological studies. He also established voluntary schools, the competition of which with the State schools ultimately obliged the State to include religious teaching in its curriculum. The numerous encyclicals issued by Leo XIII. were prepared and written by himself, but were submitted to the customary revision. The encyclical *Aeterni Patris* (Aug. 4, 1879) was written in the defence of the philosophy of St. Thomas Aquinas. In later ones, working on the principle that the Christian Church should superintend and direct every form of civil life, he dealt with the Christian constitution of states (*Immortale Dei,* Nov. 1, 1885), with human liberty (*Libertas,* June 20, 1888), and with the condition of the working classes (*Rerum novarum,* May 15, 1891).

This last was described as "the social Magna Carta of Catholicism," and it won for Leo the name of "the workingman's pope." Translated into the chief modern languages, many thousands of copies were circulated among the working classes in Catholic countries. Other encyclicals were on Christian marriage (*Arcanum divinae sapientiae,* Feb. 10, 1880), on the Rosary (*Supremi apostolatus officii,* Sept. 1, 1883, and *Superiore anno,* Sept. 5, 1898), and on Freemasonry (*Humanum genus,* April 20, 1884). Other famous encyclicals were on the study of Holy Scripture (Nov. 18, 1893) and on the reunion of Christendom (June 20, 1894). He showed special anxiety for the return of England to the Roman Catholic fold, and addressed a letter *ad Anglos,* dated April 14, 1895. This he followed up by an encyclical on the unity of the Church (*Satis cognitum,* June 29, 1896); and the question of the validity of Anglican ordinations from the Roman Catholic point of view having been raised in Rome by Viscount Halifax, a commission was appointed to consider the subject, and on Sept. 15, 1896 a condemnation of the Anglican form as theologically insufficient was issued, and was directed to be taken as final.

The establishment of a diocesan hierarchy in Scotland had been decided upon before the death of Pius IX., but the actual announcement of it was made by Leo XIII. On July 25, 1898 he addressed to the Scottish Catholic bishops a letter, in the course of which he said that "many of the Scottish people who do not agree with us in faith sincerely love the name of Christ and strive to ascertain His doctrine and to imitate His most holy example." The Irish and American bishops he summoned to Rome to confer with him on the subjects of Home Rule and of "Americanism," respectively. In India he established a diocesan hierarchy, with seven archbishoprics.

With the government of Italy his general policy was generally conciliatory. In 1879, addressing a congress of Catholic journalists in Rome, he exhorted them to proclaim that the affairs of Italy would never prosper until the temporal power was restored; in 1887 he found it necessary to deprecate the violence with which this doctrine was advocated in certain journals. A similar counsel of moderation was given to the Canadian press in connection with the Manitoba school question in Dec. 1897. The less conciliatory attitude towards the Italian government was resumed in an encyclical addressed to the Italian clergy (Aug. 5, 1898), in which he insisted on the duty of Italian Catholics to abstain from political life while the papacy remained in its "intolerable position." And in Jan. 1902, reversing the policy which had its inception in the encyclical, *Rerum novarum,* of 1891, and had further been developed ten years later in a letter to the Italian bishops entitled *Graves de communi,* the "Sacred Congregation of Extraordinary Ecclesiastical Affairs" issued instructions concerning "Christian Democracy in Italy," directing that the popular Christian movement, which embraced in its programme a number of social reforms, such as factory laws for children, old-age pensions, a minimum wage in agricultural industries, an eight-hour day, the revival of trade gilds, and the encouragement of Sunday rest, should divert its attention from all such things as savoured of novelty and devote its energies to the restoration of the temporal power.

His policy towards all governments outside Italy was to support them wherever they represented social order; and it was with difficulty that he persuaded French Catholics to be united in defence of the republic. The German *Kulturkampf* was ended by his exertions. In 1885 he arbitrated between Germany and Spain in a dispute concerning the Caroline Islands. In Ireland he condemned the "Plan of Campaign" in 1888, but he conciliated the Nationalists by appointing Dr. Walsh archbishop of Dublin. The jubilee of Queen Victoria in 1887 and the pope's priestly jubilee a few months later were the occasion of friendly intercourse between Rome and Windsor. Similar courtesies were exchanged during the jubilee of 1897, and again in March 1902; and the visit of Edward VII. to Leo XIII. in April 1903 was a further proof of friendliness between the English court and the Vatican.

The elevation of Newman to the college of Cardinals in 1879 was taken as evidence that Leo XIII. had a wider horizon than his predecessor; and his similar recognition of two of the most distinguished "inopportunist" members of the Vatican council, Haynald, archbishop of Kalocsa, and Prince Fürstenberg, archbishop of Olmütz, was even more noteworthy. Döllinger the pope attempted to reconcile, but failed. He worked for the reunion of the Oriental Churches with the see of Rome, establishing Catholic educational centres in Athens and in Constantinople with that end in view. He used his influence with the rulers of Russia, of China, Japan and Persia, to secure the free practice of their religion for Roman Catholics in those countries. Among the canonizations and beatifications of his pontificate was that of Sir Thomas More. His encyclical issued at Easter 1902, and described by himself as a kind of will, was mainly a reiteration of earlier condemnations of the Reformation, and of modern philosophical systems, which for their atheism and materialism he makes responsible for all existing moral and political disorders.

Grave and serious in manner, speaking slowly, but with energetic gestures, simple and abstemious in his life—his daily bill of fare being reckoned as hardly costing a couple of francs—Leo XIII. distributed large sums in charity, and at his own charges placed costly astronomical instruments in the Vatican observatory, providing also accommodation and endowment for a staff of officials. He always showed the greatest interest in science and in literature, and he would have taken a position as a statesman of the first rank had he held office in any secular government. Under him the papacy acquired a prestige unknown since the middle ages. On March 3, 1903, he celebrated his jubilee in St. Peter's with more than usual pomp and splendour; he died on July 20 following. His successor was Pius X.

[1] *Leonis XIII. Pont. Maximi carmina,* ed. Brunelli (Udine, 1883); *Leonis XIII. carmina, inscriptiones, numismata,* ed. J. Bach (Cologne, 1903).

See *Scelta di atti episcopali del cardinale G. Pecci . . .* (Rome, 1879); *Leonis XIII. Pont. Max. acta* (17 vols., Rome, 1881–98); *Sanctissimi Domini N. Leonis XIII. allocutiones, epistolae,* etc. (Bruges and Lille, 1887, etc.); the encyclicals (*Sämtliche Rundschreiben*) with a German translation (6 vols., Freiburg, 1878–1904); *Discorsi del Sommo Pontefice Leone XIII. 1878–1882* (Rome, 1882). There are lives of Leo XIII. by B. O'Reilly (new ed., Chicago 1903), H. des Houx (pseudonym of Durand Morimbeau) (Paris, 1900), by W. Meynell (1887), by J. McCarthy (1896), by Boyer d'Agen (*Jeunesse de Léon XIII.* [1896]; *La Prélature,* 1900), by M. Spahn (Munich, 1905), by L. K. Goetz (Gotha, 1899), by T. Serclaes, *Le Pape Léon XIII.* (3 vols., 2nd ed., 1907). *See* also O. Schilling, *Die Staats- und Soziallehre des Papstes Leo XIII.* (1925). (A. W. Hu.; X.)

LEO I., variously surnamed Thrax, Magnus and Makelles, emperor of the East, 457–474, was born in Thrace about 400. From his position as military tribune he was raised to the throne by the soldiery and recognized both by senate and clergy; his coronation by the patriarch of Constantinople is said to have been the earliest instance of such a ceremony. Leo owed his elevation mainly to Aspar, the commander of the guards, who was debarred by his Arianism from becoming emperor in his own person, but hoped to exercise a virtual autocracy through his former steward and dependant. But Leo, following the traditions of his predecessor Marcian, set himself to curtail the domination of the great nobles and repeatedly acted in defiance of Aspar. He vigorously suppressed the Eutychian heresy in Egypt, and by exchanging his Germanic bodyguard for Isaurians removed the chief basis of Aspar's power. With the help of his generals Anthemius and Anagastus, he repelled invasions of the Huns into Dacia (466 and 468).

In 467 Leo had Anthemius elected emperor of the West, and in concert with him equipped an armament of more than 1,100 ships and 100,000 men against the pirate empire of the Vandals in Africa. Through the remissness of Leo's brother-in-law Basiliscus, who commanded the expedition, the fleet was surprised by the Vandal king, Genseric, and half of its vessels sunk or burnt (468). This failure was made a pretext by Leo for killing Aspar as a traitor (471), and Aspar's murder served the Goths in turn as an excuse for ravaging Thrace up to the walls of the capital. In 473 the emperor associated with himself his infant grandson, Leo II., who, however, survived him by only a few months. His surnames Magnus (Great) and Makelles (butcher) respectively reflect the attitude of the Orthodox and the Arians towards his religious policy.

See E. Gibbon, *The Decline and Fall of the Roman Empire* (ed. Bury, 1896), iv. 29–37; J. B. Bury, *The Later Roman Empire* (1889), i. 227–233.

LEO III. (*c.* 680–740), called The Isaurian, emperor of the East, 717–740. Born about 680 in the Syrian province of Commagene, he rose to distinction in the military service, and under Anastasius II. was invested with the command of the eastern army. In 717 he revolted against the usurper Theodosius III. and, marching upon Constantinople, was elected emperor in his stead. The first year of Leo's reign saw a memorable siege of his capital by the Saracens, who had taken advantage of the civil discord in the Roman empire to bring up a force of 80,000 men to the Bosporus. By his stubborn defence the new ruler wore out the invaders who, after a twelve months' investment, withdrew their forces. An important factor in the victory of the Romans was their use of Greek fire. Having thus preserved the empire from extinction, Leo proceeded to consolidate its administration, which in the previous years of anarchy had become completely disorganized. He secured its frontiers by inviting Slavonic settlers into the depopulated districts and by restoring the army to efficiency; when the Arabs renewed their invasions in 726 and 739 they were decisively beaten on both occasions by the imperial forces.

His civil reforms include the abolition of the system of prepaying taxes which had weighed heavily upon the wealthier proprietors, the elevation of the serfs into a class of free tenants, the remodelling of family and of maritime law. These measures, which were embodied in a new code published in 740, met with some opposition on the part of the nobles and higher clergy. But Leo's most striking legislative reforms dealt with religious matters. After an apparently successful attempt to enforce the baptism of all Jews and Montanists in his realm (722), he issued a series of edicts against the worship of images (726–729). This prohibition of a custom which had undoubtedly given rise to grave abuses seems to have been inspired by a genuine desire to improve public morality, and received the support of the official aristocracy and a section of the clergy. But a majority of the theologians and all the monks opposed these measures with uncompromising hostility, and in the western parts of the empire the people refused to obey the edict. A revolt which broke out in Greece, mainly on religious grounds, was crushed by the imperial fleet (727), and two years later, by deposing the patriarch of Constantinople, Leo suppressed the overt opposition of the capital.

In Italy the defiant attitude of Popes Gregory II. and III. on behalf of image-worship led to a fierce quarrel with the emperor. The former summoned councils in Rome to anathematize and excommunicate the image-breakers (730, 732); Leo retaliated by transferring southern Italy and Greece from the papal diocese to that of the patriarch. The struggle was accompanied by an armed outbreak in the exarchate of Ravenna (727), which Leo finally endeavoured to subdue by means of a large fleet. But the destruction of the armament by a storm decided the issue against him; his south Italian subjects successfully defied his religious edicts, and the province of Ravenna became detached from the empire. In spite of this partial failure Leo must be reckoned as one of the greatest of the later Roman emperors. By his resolute stand against the Saracens he delivered all eastern Europe from a great danger, and by his thorough-going reforms he not only saved the empire from collapse, but invested it with a stability which enabled it to survive all further shocks for a space of five centuries.

See E. Gibbon, *The Decline and Fall of the Roman Empire* (ed. Bury, 1896), v. 185 *seq.,* 251 *seq.* and appendices, vi. 6–12; J. B. Bury, *The Later Roman Empire* (1889), ii. 401–449; K. Schenk, *Kaiser Leo III.* (Halle, 1880), and in *Byzantinische Zeitschrift* (1896), v. 257–301; T. Hodgkin, *Italy and her Invaders* (1892, etc.), bk. vii., chs. 11, 12. *See* also Iconoclasts.

LEO IV., called Chazar, succeeded his father, Constantine V., as emperor of the East in 775. In 776 he associated his young son, Constantine, with himself in the empire, and suppressed a rising led by his five step-brothers which broke out as a result of this proceeding. Leo was largely under the influence of his wife Irene (*q.v.*), and when he died in 780 he left her as the guardian of his successor, Constantine VI.

LEO V., surnamed The Armenian, emperor of the East, 813–820, was a distinguished general of Nicephorus I. and Michael I. After rendering good service on behalf of the latter in a war with the Arabs (812), he was summoned in 813 to co-operate in a campaign against the Bulgarians. Taking advantage of the disaffection prevalent among the troops, he left Michael in the lurch at the battle of Versinikia and subsequently led a successful revolution against him. Leo justified his usurpation by repeatedly defeating the Bulgarians who had been contemplating the siege of Constantinople (814–817). By his vigorous measures of repression against the Paulicians and image-worshippers he roused considerable opposition, and after a conspiracy under his friend Michael Psellus had been foiled by the imprisonment of its leader, he was assassinated in the palace chapel on Christmas Eve, 820, by his partisans.

See E. Gibbon, *The Decline and Fall of the Roman Empire* (ed. Bury, 1896), v. 193–195; Bury, *Eastern Roman Empire* (1912), p. 43–76; and *English Historical Review,* xxv. (1910) 276 *sqq.*

LEO VI., surnamed The Wise and The Philosopher, Byzantine emperor, 886–911. He was the son of Eudocia, wife of Basil I., but in fact his father was Michael III. The chief event of his reign was the capture of Thessalonica (904) by Mohammedan pirates (described in *The Capture of Thessalonica* by John Cameniata) under the renegade Leo of Tripolis. In Sicily and Lower Italy the imperial arms were unsuccessful, and the Bulgarian Symeon, who assumed the title of "Czar of the Bulgarians and autocrat of the Romaei" secured the independence of his church by the establishment of a patriarchate. But though Gibbon may be right in calling his surname "absurd," he did lasting work

in reforming the civil administration of the empire. His works include seventeen *Oracula,* in iambic verse, on the destinies of future emperors and patriarchs of Constantinople; thirty-three *Orations,* chiefly on theological subjects (such as church festivals); *Basilica,* the completion of the digest of the laws of Justinian, begun by Basil I., the father of Leo; some epigrams in the Greek *Anthology;* an iambic lament on the melancholy condition of the empire; and some palindromic verses, curiously called *καρκίνο ι* (crabs). The treatise on military tactics, attributed to him, is possibly by Leo III., the Isaurian.

Complete edition in Migne, *Patrologia Graeca,* cvii.; for the literature of individual works *see* C. Krumbacher, *Geschichte der bysantinischen Literatur* (1897); H. Monnier, *Les Novelles de Léon Le Sage;* A. Vogt, in *Cambridge Medieval History,* vol. iv., pp. 54–59; M. Mittard, *Etudes sur le règne de Lèon VI.* (1903), in *Byzantinische Zeitschrift,* XII. (J. H. F.)

LEO, BROTHER (d. *c.* 1270), the favourite disciple, secretary and confessor of St. Francis of Assisi. He was one of the small group of most trusted companions of the saint during his last years. Leo was the leader in the early stages of the struggle in the order for the maintenance of St. Francis's ideas on strict poverty, and the chief inspirer of the tradition of the Spirituals on St. Francis's life and teaching. The claim that he wrote the so-called *Speculum perfectionis* cannot be allowed, but portions of it no doubt go back to him. A little volume of his writings has been published by Lemmeus (*Scripta Fratris Leonis,* 1901). He died at the Portiuncula in extreme old age.

All that is known concerning him is collected by Paul Sabatier in the "Introduction" to the *Speculum perfectionis* (1898). (*See* FRANCIS OF ASSISI, ST.; FRANCISCANS.)

LEO, HEINRICH (1799–1878), German historian, was born at Rudolstadt on March 19, 1799, his father being chaplain to the garrison there. As a student (1816–20) at the universities of Breslau, Jena and Göttingen, Leo fell under radical influences and at Jena he attached himself to the radical wing of the German *Burschenschaft,* the so-called "Black Band," under the leadership of Karl Follen. The murder of Kotzebue by Karl Sand, however, shocked him out of his extreme revolutionary views, and from this time he tended, under the influence of the writings of Hamann and Herder, more and more in the direction of conservatism and romanticism, until at last he became an extreme reactionary. He was *Privatdocent* at Erlangen, *Docent* (1822–27) at Berlin and for nearly 40 years (1830–68) professor at Halle.

Leo collaborated in the *Jahrbücher für Wissenschaftliche Kritik* (1827–46). His first considerable work was his *Geschichte der italienischen Staaten* (5 vols., 1829–32). As a friend of the Prussian "Camarilla" and of King Frederick William IV. he collaborated especially in the high conservative *Politisches Wochenblatt,* which first appeared in 1831, as well as in the *Evangelische Kirchenzeitung,* the *Kreuzzeitung* and the *Volksblatt für Stadt und Land.* In all this his critics scented an inclination towards Catholicism; and Leo did actually glorify the counter-Reformation, *e.g.,* in his *Zwölf Bücher niederländischer Geschichte* (2 vols., 1832–35). His other historical works, and particularly his *Universalgeschichte* (6 vols., 1835–44) are biassed by his reactionary views.

Leo was by nature highly excitable and almost insanely passionate, though at the same time strictly honourable, unselfish, and in private intercourse even gentle. During the last year of his life his mind suffered rapid decay, of which signs had been apparent as early as 1868. He died at Halle on April 24, 1878. He left an account of his early life (*Meine Jugendzeit,* Gotha, 1880), which is of interest.

See Lord Acton, *English Historical Review,* i. (1886); P. Krägelin, *Heinrich Laube* (1908).

LEO, JOHANNES (*c.* 1494–1552?), in Italian GIOVANNI LEO or LEONE, usually called LEO AFRICANUS, sometimes ELIBERITANUS (*i.e.,* of Granada), and properly known among the Moors as Al Hassan Ibn Mohammed Al Wezaz Al Fasi, was the author of a *Descrizione dell' Africa,* or *Africae descriptio,* which long ranked as the best authority on Mohammedan Africa. Born probably at Granada of a noble Moorish stock, he received a great part of his education at Fez, and travelled widely in the Barbary States. Before the end of 1513 he seems to have started on his famous Sudan and Sahara journeys (1513–1515) which brought him to Timbuktu, to many other regions of the Great Desert and the Niger basin, and apparently to Bornu and Lake Chad. In 1516–1517 he travelled to Constantinople, probably visiting Egypt on the way; it is more uncertain when he visited the three Arabias (*Deserta, Felix* and *Petraea*), Armenia and "Tartary" (the last term is perhaps satisfied by his stay at Tabriz). His three Egyptian journeys, immediately after the Turkish conquest, all probably fell between 1517 and 1520; on one of these he ascended the Nile from Cairo to Assuan.

As he was returning from Egypt about 1520 he was captured by pirates near the island of Gerba, and was ultimately presented as a slave to Leo X. The pope assigned him a pension and having persuaded him to profess the Christian faith, stood sponsor at his baptism, and bestowed on him (as Ramusio says) his own names, Johannes and Leo. The new convert, having learned Latin and Italian, taught Arabic (among his pupils was Cardinal Egidio Antonini, bishop of Viterbo); he also wrote books in both the Christian tongues he had acquired. His *Description of Africa* was first, apparently, written in Arabic, but the primary text now remaining is that of the Italian version, issued by the author (1526) at Rome, three years after Pope Leo's death. The Moor returned to Africa some time before his death at Tunis, probably in 1552; according to some, he renounced his Christianity and returned to Islam.

The *Descrizione dell' Africa* in its original Arabic ms. is said to have existed for some time in the library of Vincenzo Pinelli (1535–1601); the Italian text, though issued in 1526, was first printed by Giovanni Battista Ramusio in his *Navigationi et Viaggi* (vol. i.) of 1550. A Latin version by Joannes Florianus, *Joannis Leonis Africani de totius Africae descriptione libri i.–ix.* served as the basis of John Pory's Elizabethan English translation, made at the suggestion of Richard Hakluyt (*A Geographical Historie of Africa,* London, 1600). Pory's version was reissued, with notes, maps, etc., by Robert Brown, E. G. Ravenstein, etc. (3 vols., Hakluyt Society, London, 1896). Heinrich Barth's great works on the Sudan are the best elucidation of the *Descrizione dell' Africa.*

Leo also wrote lives of the Arab physicians and philosophers (*De viris quibusdam illustribus apud Arabes; see* J. A. Fabricius, *Bibliotheca Graeca,* Hamburg, 1726, xiii. 259–298); a Spanish-Arabic vocabulary, now lost, but noticed by Ramusio as having been consulted by the famous Hebrew physician, Jacob Mantino; a collection of Arabic epitaphs in and near Fez (the ms. of this Leo presented, it is said, to the brother of the king); and poems, also lost.

LEO, LEONARDO (1694–1744), more correctly LIONARDO ORONZO SALVATORE DE LEO, Italian musical composer, was born on Aug. 5, 1694, at S. Vito dei Normanni, near Brindisi. He became a student at the Conservatorio della Pietà dei Turchini at Naples in 1703, and was a pupil first of Provenzale and later of Nicola Fago. His earliest known work was a sacred drama, *L'Infedeltà abbattuta;* performed by his fellow-students in 1712. In 1714 he produced, at the court theatre, an opera, *Pisistrato,* which was much admired. He held various posts at the royal chapel, and continued to write for the stage, besides teaching at the conservatorio. After adding comic scenes to Gasparini's *Bajazette* in 1722 for performance at Naples, he composed a comic opera, *La Mpeca scoperta,* in Neapolitan dialect, in 1723. His most famous comic opera was *Amor vuol sofferenze* (1739), better known as *La Finta Frascatana,* highly praised by Des Brosses. *L'Olimpiade* (1737) is his most famous serious opera and he wrote also some admirable sacred music. He died on Oct. 31, 1744. Leo was one of the first of the Neapolitan school to obtain a complete mastery over modern harmonic counterpoint. His sacred music is masterly and dignified, logical rather than passionate, and free from sentimentality. His serious operas suffer from a coldness and severity of style, but in his comic operas he shows a keen sense of humour. A fine and characteristic example of his sacred music is the *Dixit Dominus* in C, edited by C. V. Stanford and published by Novello. A number of songs from his operas are accessible in modern editions, and his charming little Arietta, written for the harpsichord, is still played by all pianists.

LEO (The Lion), in astronomy, the fifth sign of the zodiac denoted by the symbol ♌. According to Greek mythology this

constellation is the Nemean lion, which, after being killed by Hercules, was raised to the heavens by Jupiter in honour of Hercules. It contains the first magnitude star Regulus, situated at a distance from the sun of approximately 50 light years. The swarm of November meteors known as the Leonids appears to come from the region of this constellation. There were magnificent showers in 1833 and 1866; a repetition was expected in 1899 but the display was disappointing, and after that time (and up to 1945) there were no showers comparable to the earlier ones. Regulus is located closer to the ecliptic, or path of the sun, than any other bright star.

LEOBEN, a town in Styria, Austria, on the Mur, annexed to Germany in 1938. It is the centre of the Upper Styrian lignite workings and has an extensive industry and trade in iron, closely associated with the iron-mining and smelting of Eisenerz and Vordernberg. Surrounded on three sides by the river, it is a well-built, progressive town with a well-known academy of mining and several technical schools. Pop. (1939) 13,407.

LEOBSCHÜTZ (Bohemian *Lubczyce*), a town in the Prussian province of Silesia, Germany, on the Zinna, about 20 mi. N.W. of Ratibor. Pop. (1939) 13,426. Leobschütz existed in the 10th century, and from 1524 to 1623 was the capital of the principality of Jägerndorf. The principal industries are malting, carriage-building, wool-spinning, machine building and the manufacture of hosiery.

LEOCHARES, a Greek sculptor who worked with Scopas on the Mausoleum about 350 B.C. He executed statues of the family of Philip of Macedon, in gold and ivory, which were set up by that king in the Philippeum at Olympia. He also with Lysippus made a group in bronze at Delphi representing a lion-hunt of Alexander. Of this the base with an inscription was found. We hear of other statues by Leochares of Zeus, Apollo and Ares. The statuette in the Vatican, representing Ganymede being carried away by an eagle, so closely corresponds with Pliny's description (*N.H.* 34, 79) of a group by Leochares that we are justified in considering it a copy of that group, especially as the Vatican statue shows all the characteristics of Attic 4th-century art. The attribution of the Belvedere Apollo to Leochares by Furtwängler (*Meister werke*) and Winter is not generally accepted but we may regard the fine statue of Alexander the Great at Munich as a copy of his gold and ivory portrait at Olympia.

See Winter, *Jahrbuch* (1892), p. 164; E. A. Gardner, *Handbook of Greek Sculpture* (1915).

LEOFRIC (d. 1057) earl of Mercia, was a son of Leofwine, earl of Mercia, and became earl at some date previous to 1032. Henceforth, being one of the three great earls of the realm, he took a leading part in public affairs. On the death of King Canute in 1035 he supported the claim of his son Harold to the throne against that of Hardicanute; and during the quarrel between Edward the Confessor and Earl Godwine in 1051 he played the part of a mediator. Through his efforts civil war was averted, and in accordance with his advice the settlement of the dispute was referred to the Witan. When he became earl of Mercia his direct rule seems to have been confined to Cheshire, Staffordshire, Shropshire and the borders of north Wales, but afterwards he extended the area of his earldom. As Chester was his principal residence and the seat of his government, he is sometimes called earl of Chester. Leofric died at Bromley in Staffordshire on Aug. 31, 1057. His wife was Godgifu, famous in legend as Lady Godiva (*q.v.*). Both husband and wife were liberal benefactors to the church, among their foundations being the famous Benedictine monastery at Coventry. Leofric's son, Aelfgar, succeeded him as earl of Mercia.

LEOMINSTER, market town, municipal borough, in the Leominster parliamentary division of Herefordshire, England, 157 mi. N.W. of London and 12 mi. N. of Hereford. Pop. (1938) 5,546. Area, 13.6 sq.mi. It is served by the G.W.R. and L.M.S.R. It still retains some old-timbered houses. The parish church of mixed architecture, Norman nave and fine window tracery, was restored in 1866 and enlarged in 1879. The Butter Cross, an example of timber work of 1633, was re-erected in the grounds of the Grange. Trade is chiefly in agricultural produce, cattle and horse breeding, wool and cider, as the district is rich in orchards. Brewing and agricultural implement making are carried on.

Merewald, king of Mercia, is said to have founded a religious house in Leominster in 660, and a nunnery existed there until the Conquest, when the place became a royal demesne. It was granted by Henry I to the monks of Reading, who built in it a cell of their abbey, and under whose protection the town grew up. In 1539 it reverted to the crown; and in 1554 the town was incorporated. It returned two members to parliament from 1295 to 1867 and one member from then until 1885. Fairs, which have modern representatives, were granted at various times. Leominster was famous for wool from the 13th to the 18th century.

LEOMINSTER, city, Worcester county, Massachusetts, U.S.A., on the Nashua river, 45 mi. N.W. of Boston; served by the New York, New Haven and Hartford and Boston and Maine railroads. The land area is 29.5 sq.mi. The population was 19,744 in 1920 (25% foreign-born white) and 22,226 in 1940. It has numerous and diversified manufacturing industries.

Combs are the product for which the city is most widely known, but paper, celluloid, reed chairs, pianos, buttons, jewellery, shirts, children's carriages and toys are also manufactured. Leominster was formed from part of Lancaster and incorporated as a town in 1740, and in 1915 was chartered as a city.

LEON, LUIS PONCE DE (1527–1591), Spanish poet and mystic, was born at Belmonte de Cuenca, entered the University of Salamanca at the age of 14, and in 1544 joined the Augustinian order. In 1561 he obtained a theological chair at Salamanca, to which in 1571 was added that of sacred literature. He was denounced to the Inquisition for translating the book of Canticles, and for criticizing the text of the Vulgate. He was consequently imprisoned at Valladolid from March 1572 till Dec. 1576; but he was released with an admonition. He returned to Salamanca as professor of Biblical exegesis, and was again reported to the Inquisition in 1582, but without result. In 1583–85 he published the three books of his mystic treatise, *Los Nombres de Cristo,* written in prison. *La Perfecta Casada* (1583) is a treatise for the use of a lady newly married. Ten days before his death, at Madrigal (Aug. 23, 1591), he was elected vicar general of the Augustinian order. Luis de León is the greatest of Spanish mystics, and is counted among the greatest of Spanish lyrical poets. His poems were not issued till 1631, when Quevedo published them as a counterblast to *culteranismo.*

The best edition of Luis de León's works is that of Merino (6 vols., 1816); the reprint (1885) by C. Muñoz Saenz is incorrect. The text of *La Perfecta Casada* has been well edited by Miss Elizabeth Wallace (Chicago, 1903). See *Coleccion de documentos inéditos para la historia de España,* vols. x.–xi.; F. H. Reusch, *Luis de León und die spanische Inquisition* (Bonn, 1873); M. Gutiérrez, *Fray Luis de León y la filosofía española* (1885); M. Menendez y Pelayo, *Estudios de crítica literaria* (1893), Primera série, pp. 1–72.

LEON, MOSES [BEN SHEM-TOB] **DE** (d. 1305), Jewish scholar, was born in Leon (Spain) in the middle of the 13th century and died at Arevalo. His fame is due to his authorship of the most influential Kabbalist work, the *Zohar* (*see* KABBALAH), which was attributed to Simon b. Yohai, a Rabbi of the 2nd century. In modern times the discovery of the modernity of the *Zohar* has led to injustice to the author. Moses de Leon undoubtedly used old materials and out of them constructed a work of genius. He led a wandering life, and was more or less of an adventurer. But as to the greatness of his work, the profundity of his philosophy and the brilliance of his religious idealism, there can be no question.

See Graetz, *History of the Jews,* vol. iv. ch. i.; Geiger, *Leon de Modena.* (I. A.)

LEÓN or **LEÓN DE LAS ALDAMAS,** a city of the state of Guanajuato, Mexico, 259 mi. N.W. of the federal capital and 30 mi. N.W. of the city of Guanajuato. Pop. (1910) 57,722; (1940) 74,155. The Mexican National railways gives it connection with the national capital and other prominent cities of the republic. León stands in a fertile plain on the banks of the Turbio, a tributary of the Río Grande de Lerma, at an elevation of 6,200 ft. above sea level and in the midst of very attractive surroundings. The country about León is considered one of the richest cereal-producing districts of Mexico. The city itself is subject to disas-

trous floods, sometimes leading to loss of life as well as considerable damage to all classes of property. It manufactures saddlery and other leather work, gold and silver embroideries, cotton and woollen goods, especially *rebozos* (long shawls), soap and cutlery. There are also tanneries and flour mills. The city has a considerable trade in wheat and flour. The first settlement of León occurred in 1552, but its formal foundation was in 1576, and it did not reach the dignity of a city until 1836.

LEÓN, the second city of Nicaragua, Central America, capital of the department of the same name, one of the oldest and most picturesque Spanish cities of Central America. Pop. of *municipio* (1940) 30,573. It is 52 mi. from Managua, the national capital, and 35 m. from Corinto, the chief port of Nicaragua on the Pacific ocean; the Pacific railway connects León with Corinto, Managua and Granada, beyond. León spreads over a large area; its houses, mostly one-storeyed, are of adobe with red tile roofs, and many have fine gardens. The cathedral, the Dominican church in the old Indian suburb of Subtiaba, the palaces of the bishop, the fortified barracks built originally as a Franciscan monastery, the hospital and the university, are fine old historic buildings. The streets and private houses of the old town are picturesquely Spanish, full of charm to the visitor. León is a prosperous, busy centre of an important agricultural region. The local products are sugar, cotton and cacao; there are a cotton factory and small woollen mills, cigar, shoe and saddlery factories, and cattle, chiefly draught animals, are raised and exported to all Central America. Much merchandise is handled by wholesalers in León for the interior points, particularly in the mining regions.

León has an extensive history, closely interwoven with that of the country. It is the recognized "capital" of the Liberal Party, as Granada (*q.v.*) is the "capital" of the Conservatives, and the struggle between these two cities has led many times to revolution and bloodshed. The town antedates the Spanish conquest, for it is on the site (and the Indian section of the town still bears the old name) of Subtiaba, the residence of the cacique Nagrando, and an important Indian shrine. León was first founded on the edge of Lake Managua by Francisco Hernández de Córdoba in 1523, but was moved to the site of the old Indian capital in 1610. It was the capital of the Spanish province and of the Republic of Nicaragua until 1855, although its great commercial rival, Granada, on Lake Nicaragua, 88 m. to the southwest, long disputed the honour, bringing on the bitter feud which resulted in the coming of William Walker (*q.v.*), the American filibuster, and the years of turmoil which followed his landing. Ultimately, Managua (*q.v.*) was established between the two as a compromise capital, and seat of the archbishop, León and Granada each having a bishop. León is the birthplace of Rubén Darío, one of the notable Spanish poets of the late 19th and early 20th centuries, and his remains rest in the cathedral there.

(W. Tho.)

LEÓN, the name of a modern province and of an ancient kingdom, captaincy-general and province in northwestern Spain. The modern province, founded in 1833, is bounded on the north by Oviedo, northeast by Santander, east by Palencia, south by Valladolid and Zamora and west by Orense and Lugo. Pop. (1940) 493,258. Area 5,937 sq.mi. León belongs partly to the river system of the Miño (*see* Spain), partly to that of the Duero or Douro (*q.v.*), these being separated by the Montañas de León, which extend in a continuous wall (with passes at Manzanal and Poncebadon) from north to south-west.

At the time of the Roman conquest, the province was inhabited by the Vettones and Callaici. Among the Christian kingdoms which arose in Spain as the Moorish invasion of the 8th century receded, León was one of the oldest. The title of king of León was first assumed by Ordoño in 913. Ferdinand I. (the Great) of Castile united the crowns of Castile and León in the 11th century; the two were again separated in the 12th, until a final union took place (1230) in the person of St. Ferdinand. The Leónese belong partly to the Castilian section of the Spaniards, partly to the northwestern section which includes the Galicians and Asturians. Near Astorga there dwell a curious people, the Maragatos, sometimes considered to be a remnant of the original Celtiberian inhabitants. As a rule the Maragatos earn their living as muleteers or carriers; they wear a distinctive costume, mix as little as possible with their neighbours and do not marry outside their own group.

To the northwest of the Montañas de León is the richly wooded pastoral and highland district known as the Vierzo, which in its lower valleys produces grain, fruit and wine in abundance. The Tierra de Campos in the west of the province is fairly productive, but in need of irrigation. The whole province is sparsely peopled. Apart from agriculture, stock-raising and mining, its commerce and industries are unimportant. Cattle, mules, butter, leather, coal and iron are exported. The hills of León were worked for gold in the time of the Romans; iron is still obtained, and coal-mining developed considerably towards the close of the 19th century. The only towns with more than 5,000 inhabitants in 1940 were León (*q.v.*), Astorga (14,523), Ponferrada (7,668) and La Bañeza (5,935). The railway from Madrid to Corunna passes through the province, and there are branches. The province was occupied by Franco's insurgents early in the civil war of 1936–39.

LEÓN, an episcopal see and the capital of the Spanish province of León, situated on a hill 2,631 ft. above sea-level, in the angle made by the Torio and Bernesga, streams which unite on the south, and form the river León, a tributary of the Esla. Pop. (1940) 43,260 (mun., 44,755). León is on the main railway from Madrid to Oviedo, and is connected with Astorga by a branch line. León (Arab. *Liyun*) owes its name to the Legio Septima Gemina of Galba, which, under the later emperors, had its headquarters here. About 540 León fell into the hands of the Gothic king Leovigild, and in 717 it capitulated to the Moors. Retaken about 742, it ultimately, in the beginning of the 10th century, became the capital of the kingdom of León (*see* Spain: *History*). About 996 it was taken by Almansur, but on his death soon afterwards it reverted to the Spaniards. It was the seat of several ecclesiastical councils between 1012 and 1288.

The cathedral, founded in 1199 and finished only at the close of the 14th century, is built of a warm cream-coloured stone, and is remarkable for simplicity, lightness and strength. It is one of the finest examples of Spanish Gothic, smaller, indeed, than the cathedrals of Burgos and Toledo, but exquisite in design and workmanship. The chapter library contains some valuable manuscripts. The collegiate church of San Isidoro was founded by Ferdinand I. of Castile in 1063 and consecrated in 1149. The church contains some fine plate, including the shrine of St. Isidore of Seville and a silver processional cross dating from the 16th century, which is one of the most beautiful in the country. The convent and church of San Marcos, founded by Charles V. in 1537, and consecrated in 1541, are Renaissance in style. Nationalist forces captured León in the civil war of 1936–39.

LEONARDO DA VINCI (1452–1519), the great Italian painter, sculptor, architect, musician, mechanician, engineer and natural philosopher, was the natural son of a Florentine lawyer. He was born on April 15, 1452, at Vinci, a *castello* or fortified village in the Florentine territory near Empoli, from which his father's family derived its name. To splendid beauty and activity of person Leonardo joined a winning charm of temper and manners, a tact for all societies, and an aptitude for all accomplishments. An inexhaustible intellectual energy and curiosity lay beneath this amiable surface.

Pupil of Verrocchio 1470–77.—Among the multifarious pursuits to which the young Leonardo set his hand, the favourites at first were music, drawing and modelling. His father showed some of his drawings to an acquaintance, Andrea del Verrocchio, who at once recognized the boy's artistic vocation, and was selected to be his master. Verrocchio, although hardly one of the great creative or inventive forces in the art of his age at Florence, was a first-rate craftsman alike as goldsmith, sculptor and painter and particularly distinguished as a teacher. In his studio Leonardo worked for several years (*c.* 1470–1477) in the company of Lorenzo di Credi and other less celebrated pupils. He had soon learnt all that Verrocchio had to teach—more than all, if we are

to believe the oft-told tale of the figure, or figures, executed by the pupil in the picture of Christ's Baptism designed by the master for the monks of Vallombrosa. The work in question is now in the Uffizi, at Florence. According to Vasari the angel kneeling on the left was put in by Leonardo. The picture, originally painted in tempera, has suffered much from later repaints in oil, rendering exact judgment difficult. The work was probably done in or about 1470, when Leonardo was 18 years old. By 1472 we find him enrolled in the lists of the painters' guild at Florence. Here he continued to live and work for ten or eleven years longer.

Up till 1477 he is still spoken of as a pupil or apprentice of Verrocchio; but in that year he seems to have been taken into special favour by Lorenzo the Magnificent, and to have worked as an independent artist under his patronage until 1482–83. In 1478 we find him receiving an important commission from the signory, and in 1480 another from the monks of San Donato in Scopeto.

Student of Nature.—Leonardo was not one of those artists of the Renaissance who sought the means of reviving the ancient glories of art mainly in the imitation of ancient models. The antiques of the Medici gardens seem to have had little influence on him beyond that of generally stimulating his passion for perfection. By his own instincts he was an exclusive student of nature. From his earliest days he had flung himself upon that study with an unprecedented ardour of delight and curiosity. In drawing from life he had early found the way to unite precision with freedom and fire—the subtlest accuracy of expressive definition with vital movement and rhythm of line—as no draughtsman had been able to unite them before.

He was the first painter to recognize the play of light and shade as among the most significant and attractive of the world's appearances, the earlier schools having with one consent subordinated light and shade to colour and outline. Nor was he a student of the broad, usual, patent appearances only of the world; its fugitive, fantastic, unaccustomed appearances attracted him most of all. Strange shapes of hills and rocks, rare plants and animals, unusual faces and figures of men, questionable smiles and expressions, whether beautiful or grotesque, far-fetched objects and curiosities, were things he loved to pore upon and keep in memory. Neither did he stop at mere appearances of any kind, but, having stamped the image of things upon his brain, went on indefatigably to probe their hidden laws and causes. The laws of light and shade, the laws of "perspective," including optics and the physiology of the eye, the laws of human and animal anatomy and muscular movement, those of the growth and structure of plants and of the powers and properties of water, all these and much more furnished food to his insatiable spirit of inquiry. Lastly, Leonardo is related to have begun work in sculpture about this time by modelling several heads of smiling women and children.

Early Paintings, 1470–82.—Of certified paintings produced by the young genius, during his apprenticeship or in his independent years at Florence (about 1470–82), very few are extant, and the two most important are incomplete. A small and charming strip of an oblong "Annunciation" at the Louvre is generally accepted as his work, done soon after 1470. This is not very compatible in style with another and larger, much debated "Annunciation" at the Uffizi, which manifestly came from the workshop of Verrocchio about 1473–74, and which many critics claim confidently for the young Leonardo. It may have been joint studio-work of Verrocchio and his pupils including Leonardo, who certainly was concerned in it, since a study for the sleeve of the angel, preserved at Christ Church, Oxford, is unquestionably by his hand. The landscape, with its mysterious spiry mountains and winding waters, is very Leonardesque both in this picture and in another contemporary product of the workshop, or as some think of Leonardo's hand, namely a very highly and coldly finished small "Madonna with a Pink" at Munich. The likeness he is recorded to have painted of Ginevra de' Benci used to be traditionally identified with the fine portrait of a matron at the Pitti absurdly known as *La Monaca*: more lately it has been recognized in a rather dull, expressionless Verrocchiesque portrait of a young woman with a fanciful background of pine-sprays in the Liechtenstein gallery at Vienna. Neither attribution can be counted convincing. Several works of sculpture, including a bas-relief at Pistoia and a small terra-cotta model of a St. John at the Victoria and Albert Museum, have also been claimed, but without general consent, as the young master's handiwork. Of many brilliant early drawings by him, the first that can be dated is a study of landscape done in 1473. A magnificent silver-point head of a Roman warrior at the British Museum was clearly done, from or for a bas-relief, under the immediate influence of Verrocchio. A number of studies of heads in pen or silver-point, with some sketches for Madonnas, including a charming series in the British Museum for a "Madonna with the Cat," may belong to the same years or the first years of his independence. A sheet with two studies of heads bears a ms. note of 1478, saying that in one of the last months of that year he began painting the "Two Maries." One of the two may have been a picture of the Virgin appearing to St. Bernard, which we know he was commissioned to paint in that year for a chapel in the Palace of the Signory, but never finished: the commission was afterwards transferred to Filippino Lippi, whose performance is now in the Badia. One of the two heads on this dated sheet may probably have been a study for the same St. Bernard; it was used afterwards by some follower for a St. Leonard in a stiff and vapid "Ascension of Christ," wrongly attributed to the master himself in the Berlin museum. A pen-drawing representing a ringleader of the Pazzi conspiracy, Bernardo Baroncelli, hung out of a window of the Bargello after his surrender by the sultan at Constantinople to the emissaries of Florence, can be dated from its subject as done in December 1479.

Early Drawings.—A number of his best drawings of the next following years are preparatory pen-studies for an altarpiece of the "Adoration of the Magi," undertaken early in 1481 on the commission of the monks of S. Donato at Scopeto. The preparation in monochrome for this picture, a work of extraordinary power both of design and physiognomical expression, is preserved at the Uffizi, but the painting itself was never carried out, and after Leonardo's failure to fulfil his contract Filippino Lippi had once more to be employed in his place. Of equal or even more intense power, though of narrower scope, is an unfinished monochrome preparation for a St. Jerome, found accidentally at Rome by Cardinal Fesch and now in the Vatican gallery; this also seems to belong to the first Florentine period, but is not mentioned in documents.

Studies in Applied Science.—Leonardo was already ardently feeling his way in the work of experimental study and observation in every branch of theoretical or applied science in which any beginning had been made in his age, as well as in some in which he was himself the first pioneer. He was full of new ideas concerning both the laws and the applications of mechanical forces. His architectural and engineering projects were of a daring which amazed even the fellow-citizens of Alberti and Brunelleschi. History presents few figures more attractive to the mind's eye than that of Leonardo during this period of his all-capable and dazzling youth.

Leonardo would even in youth seclude himself for a season in complete intellectual absorption, forgetful of rest and food. But we have to picture him as anon gathering about him a tatterdemalion company, and jesting with them until they were in fits of laughter, for the sake of observing their burlesque physiognomies; anon as eagerly frequenting the society of men of science and learning of an older generation like the mathematician Benedetto Aritmetico, the physician, geographer and astronomer Paolo Toscanelli, the famous Greek Aristotelian Giovanni Argiropoulo; or as out-rivalling all the youth of the city by charm of recitation, by skill in music and by feats of strength and horsemanship; or again as standing radiant in his rose-coloured cloak and his rich gold hair among the throng of young and old on the piazza, and holding them spellbound while he expatiated on the great projects in art and mechanics that were teeming in his mind.

Ludovico Sforza.—He was ready to leave Florence when the chance was offered him of fixed service at the court of Ludovico Sforza (il Moro) at Milan. Soon after that prince had firmly established his power as nominal guardian and protector of his

nephew Gian Galeazzo but really as usurping ruler of the State, he revived a project previously mooted for the erection of an equestrian monument in honour of the founder of his house's greatness, Francesco Sforza. Ludovico employed the talents of a number of court poets and artists, who in public recitation and pageant, in emblematic picture and banner and device, proclaimed the wisdom and kindness of his guardianship and the wickedness of his assailants. That Leonardo was among the artists thus employed is proved both by notes and projects among his mss. and by allegoric sketches still extant. Several such sketches are at Christ Church, Oxford: one shows a horned hag or she-fiend urging her hounds to an attack on the state of Milan and baffled by the Prudence and Justice of Il Moro (all this made clear by easily recognizable emblems).

Engineering and Architectural Plans.—It must have been the pestilence decimating Milan in 1484–85 which gave occasion to the projects submitted by Leonardo to Ludovico for breaking up the city and reconstructing it on improved sanitary principles. To 1485–86 also appears to belong the inception of his elaborate though unfulfilled architectural plans for beautifying and strengthening the *Castello,* the great stronghold of the ruling power in the state. Very soon afterwards he must have begun work upon his plans and models, undertaken during an acute phase of the competition which the task had called forth between German and Italian architects, for another momentous enterprise, the completion of Milan cathedral. Extant records of payments made to him in connection with these architectural plans extend from Aug. 1487 to May 1490: in the upshot none of them was carried out.

From the beginning of his residence with Ludovico his combination of unprecedented mechanical ingenuity with apt allegoric invention and courtly charm had made him the directing spirit in all court ceremonies and festivities. Meanwhile he was filling his note-books as busily as ever with the results of his studies in statics and dynamics, in human anatomy, geometry and the phenomena of light and shade. It is probable that from the first he had not forgotten his great task of the Sforza monument, with its attendant researches in equine movement and anatomy, and in the science and art of bronze casting on a great scale. The many existing sketches for the work (of which the chief collection is at Windsor) cannot be distinctly dated. In 1490, the seventh year of his residence at Milan, after some expressions of impatience on the part of his patron, he had all but got his model ready for display on the occasion of the marriage of Ludovico with Beatrice d'Este, but at the last moment was dissatisfied with what he had done and determined to begin all over again.

In the same year, 1490, Leonardo enjoyed some months of uninterrupted mathematical and physical research in the libraries and among the learned men of Pavia, whither he had been called to advise on some architectural difficulties concerning the cathedral. Here also the study of an ancient equestrian monument (the so-called *Regisole,* destroyed in 1796) gave him fresh ideas for his Francesco Sforza. The following years the ever-increasing gaiety and splendour of the Milanese court gave him continual employment as a masque and pageant-master and in the composition and recitation of jests, tales, fables and "prophecies" (*i.e.,* moral and social satires and allegories cast in the future tense); among his mss. occur the drafts of many such, some of them both profound and pungent.

Bronze of Francesco Sforza.—Meanwhile he was again at work upon the monument to Francesco Sforza, and this time to practical purpose. When ambassadors from Austria came to Milan towards the close of 1493, the finished colossal model, 26 ft. high, was at last in its place in the courtyard of the Castello. Contemporary accounts attest the magnificence of the work and the enthusiasm it excited, but are not precise enough to enable us to judge to which of the two main groups of extant sketches its design corresponded. One of these groups shows the horse and rider in relatively tranquil march, in the manner of the Gattemalata monument put up 50 years before by Donatello at Padua and the Colleoni monument on which Verocchio was now engaged at Venice. Another group of sketches shows the horse galloping or rearing in violent action, in some instances in the act of trampling a fallen enemy. Neither is it possible to discriminate with certainty the sketches intended for the Sforza monument from others which Leonardo may have done in view of another and later commission for an equestrian statue, namely, that in honour of Ludovico's great enemy, Gian Giacomo Trivulzio.

The year 1494 was one of special importance in the prodigiously versatile activities of Leonardo da Vinci. Documents show him, among other things, planning during an absence of several months from the city vast new engineering works for improving the irrigation and water-ways of the Lomellina and adjacent regions of the Lombard plain; ardently studying phenomena of storm and lightning, of river action and of mountain structure; co-operating with his friend, Donato Bramante, the great architect, in fresh designs for the improvement and embellishment of the Castello at Milan; and petitioning the duke to secure him proper payment for a Madonna lately executed with the help of his pupil, Ambrogio de Predis, for the brotherhood of the Conception of St. Francis at Milan. (This is almost certainly the fine, slightly altered second version of the "Virgin of the Rocks," now in the National Gallery, London. The original and earlier version is one of the glories of the Louvre, and shows far more of a Florentine and less of a Milanese character than the London picture.) In the same year, 1494, or early in the next, Leonardo, if Vasari is to be trusted, paid a visit to Florence to take part in deliberations concerning the projected new council-hall to be constructed in the palace of the Signory.

"Last Supper" (Cenacolo).—Recent research has proved that it was in 1494 that Leonardo got to work in earnest on what was to prove not only by far his greatest but by far his most expeditiously and steadily executed work in painting. This was the "Last Supper" undertaken for the refectory of the convent church of Sta. Maria delle Grazie at Milan on the joint commission (as it would appear) of Ludovico and of the monks themselves. This picture, the world-famous "Cenacolo" of Leonardo, has been the subject of much erroneous legend and much misdirected experiment. The intensity of intellectual and manual application which Leonardo threw into the work is proved by the fact that he finished it within four years.

Medium Employed.—He painted the picture on the wall in tempera, not, according to the legend which sprung up within twenty years of its completion, in oil. The tempera vehicle, perhaps including new experimental ingredients, did not long hold firmly to its plaster ground, nor that to the wall. Flaking and scaling set in; hard crusts of mildew formed, dissolved and reformed with changes of weather over both the loosened parts and those that remained firm. Decade after decade these processes went on, a rain of minute scales and grains falling, according to one witness, continually from the surface, till the picture seemed to be perishing altogether. In the 18th century attempts were first made at restoration. They all proceeded on the false assumption, dating from the early years of the 16th century, that the work had been executed in oil. With oil it was accordingly at one time saturated in hopes of reviving the colours. Other experimenters tried various "secrets," which for the most part meant deleterious glues and varnishes. Fortunately not very much of actual repainting was accomplished except on some parts of the garments. The chief operations were carried on by Bellotti in 1726, by Mazza in 1770, and by Barezzi in 1819 and the following years. None of them arrested, some actually accelerated, the natural agencies of decay.

Yet this mere ghost of a picture, this evocation, half vanished as it was, by a great world-genius of a mighty spiritual world-event, remained a thing indescribably impressive. The ghost has now been brought back to much of true life again by the skill of the most scrupulous of all restorers, Cavaliere Cavenaghi, who, found it possible to secure to the wall the innumerable blistered flakes and scales of the original work that yet remained, to clear the surface thus obtained of much of the obliterating accretions and to bring the whole to unity by touching tenderly in with tempera the spots and spaces actually left bare. A further gain

obtained through these operations has been the uncovering, immediately above the main subject, of a beautiful scheme of painted lunettes and vaultings, the lunettes filled by Leonardo's hand with inscribed scutcheons and interlaced plait or knot ornaments (*intrecciamenti*), the vaultings with stars on a blue ground.

Composition.—Leonardo's "Last Supper," for all its injuries, became from the first for all Christendom the typical representation of the scene. Goethe in his famous criticism has said all that needs to be said of it. The painter has departed from precedent in grouping the disciples, with their Master in the midst, along the far side and the two ends of a long, narrow table, and in leaving the near or service side of the table towards the spectator free. The chamber is seen in a perfectly symmetrical perspective, its rear wall pierced by three plain openings which admit the sense of quiet distance and mystery from the open landscape beyond; by the central of these openings, which is the widest of the three, the head and shoulders of the Saviour are framed in. On His right and left are ranged the disciples in equal numbers. The furniture and accessories of the chamber, very simply conceived, have been rendered with scrupulous exactness and distinctness; yet they leave to the human and dramatic elements the absolute mastery of the scene. The serenity of the holy company has within a moment been broken by the words of their Master, "One of you shall betray Me." In the agitation of their consciences and affections, the disciples have started into groups or clusters along the table, some standing, some still remaining seated. There are four of these groups, of three disciples each, and each group is harmoniously interlinked by some natural connecting action with the next. Leonardo, though no special student of the Greeks, has perfectly carried out the Greek principle of expressive variety in particulars subordinated to general symmetry. He has used all his acquired science of linear and aerial perspective to create an almost complete illusion to the eye, but an illusion that has in it nothing trivial, and in heightening our sense of the material reality of the scene only heightens its profound spiritual impressiveness and gravity. The results of his intensest meditations on the psychology and the human and divine significance of the event (on which he has left some pregnant hints in written words of his own) are perfectly fused with those of his subtlest technical calculations on the rhythmical balancing of groups and arrangement of figures in space.

Preparatory Sketches.—Of authentic preparatory studies for this work there remain but few. There is a sheet at the Louvre of much earlier date than the first idea or commission for this particular picture, containing some nude sketches for the arrangement of the subject; another later and farther advanced, but still probably anterior to the practical commission, at Venice, and a ms. sheet of great interest at the Victoria and Albert museum, on which the painter has noted in writing the dramatic motives appropriate to the several disciples. At Windsor and Milan are a few finished studies in red chalk for the heads. A highly-reputed series of life-sized chalk drawings of the same heads, of which the greater portion is at Weimar, consists of early copies, and is interesting though having no just claim to originality. Scarcely less doubtful is the celebrated unfinished and injured study of the head of Christ at the Brera, Milan.

Interior Decorations.—Leonardo had formed a new and close friendship with Luca Pacioli of Borgo San Sepolcro, the great mathematician, whose *Summa de aritmetica, geometrica,* etc., he had eagerly bought at Pavia on its first appearance, and who arrived at the court of Milan about the moment of the completion of the "Cenacolo." The two begin working together on the materials for Pacioli's next book, *De divina proportione.* But he was soon called away by Ludovico to a different undertaking, the completion of the interior decorations, already begun by another hand and interrupted, of certain chambers of the Castello called the *Saletta Negra* and the *Sala Grande dell' Asse,* or *Sala della Torre.* When, in the last decade of the 19th century, works of thorough architectural investigation and repair were undertaken in that building under the superintendence of Senatore Luca Beltrami, a devoted foreign student, Dr. Paul Müller-Walde, obtained leave to scrape for traces of Leonardo's handiwork beneath the replastered and white-washed walls and ceilings of chambers that might be identified with these. In the great *Sala dell' Asse* (or *della Torre*) abundant traces of Leonardo's own hand were found, in the shape of a decoration of intricate geometrical knot or plait work combined with natural leafage; the abstract puzzle-pattern, of a kind in which Leonardo took peculiar pleasure, intermingling in cunning play and contrast with a pattern of living boughs and leaves exquisitely drawn in free and vital growth. Sufficient portions of this design were found in good preservation to enable the whole to be accurately restored. Leonardo was rewarded in 1498 (ready money being with difficulty forthcoming and his salary being long in arrears) by the gift of a suburban garden outside the Porta Vercelli.

Work as Military Engineer.—He was then called away on duty as chief military engineer (*ingegnere camerale*) with the special charge of inspecting and maintaining all the canals and waterways of the duchy. Dangers were accumulating upon Ludovico and the state of Milan. France had become Ludovico's enemy; and Louis XII., the pope and Venice had formed a league to divide his principality among them. Ludovico travelled to Innsbruck, the better to push his interests (Sept. 1499). In his absence Louis XII. invaded the Milanese, and the officers left in charge of the city surrendered it without striking a blow. The French lieutenant in Milan, Gian Giacomo Trivulzio, the embittered enemy of Ludovico, began exercising a vindictive tyranny over the city which had so long accepted the sway of the usurper. Great artists were usually exempt from the consequences of political revolutions, and Trivulzio, now or later, commissioned Leonardo to design an equestrian monument to himself. Leonardo, having remained unmolested at Milan for two months under the new régime, but knowing that Ludovico was preparing a great stroke for the re-establishment of his power, and that fresh convulsions must ensue, thought it best to provide for his own security. In December he left Milan with his friend Luca Pacioli, having first sent some of his modest savings to Florence for investment. His intention was to watch events. They took a turn which made him a stranger to Milan for the next seven years.

Ludovico, at the head of an army of Swiss mercenaries, returned victoriously in Feb. 1500, and was welcomed by a population disgusted with the oppression of the invaders. But in April he was once more overthrown by the French in a battle fought at Novara. Ludovico was taken prisoner and carried to France; the city, which had been strictly spared on the first entry of Louis XII., was entered and sacked; and the model of Leonardo's great statue made a butt (as eye witnesses tell) for Gascon archers. Two years later we find the duke Ercole of Ferrara begging the French king's lieutenant in Milan to let him have the model, injured as it was, for the adornment of his own city; but nothing came of the petition, and within a short time it seems to have been totally broken up.

Work at Milan (1483–99).—Thus, of Leonardo's sixteen years' work at Milan (1483–99) the results actually remaining are as follows:

"Virgin of the Rocks."—The Louvre "Virgin of the Rocks" possibly, *i.e.,* as to its execution; the conception and style are essentially Florentine, carried out by Leonardo to a point of intense and almost glittering finish, of quintessential, almost overstrained, refinement in design and expression, and invested with a new element of romance by the landscape in which the scene is set—a strange watered country of basaltic caves and arches, with the lights and shadows striking sharply and yet mysteriously among rocks, some upright, some jutting, some pendent, all tufted here and there with exquisite growths of shrub and flower. The National Gallery "Virgin of the Rocks" certainly, with help from Ambrogio de Predis; in this the Florentine character of the original is modified by an admixture of Milanese elements, the tendency to harshness and over-elaboration of detail softened, the strained action of the angel's pointing hand altogether dropped, while in many places pupils' work seems recognizable beside that of the master. The "Last Supper" of Sta. Maria delle Grazie, his masterpiece; as to its history and present condition enough has

been said. The decorations of the ceiling of the Sala della Torre in the Castello. Other paintings done by him at Milan are mentioned, and attempts have been made to identify them with works still existing. He is known to have painted portraits of two of the king's mistresses, Cecilia Gallerani and Lucrezia Crivelli. Cecilia Gallerani used to be identified as a lady with ringlets and a lute, depicted in a portrait at Milan, now rightly assigned to Bartolommeo Veneto. More lately she has by some been conjecturally recognized in a doubtful, though Leonardesque, portrait of a lady with a weasel in the Czartoryski collection at Cracow. Lucrezia Crivelli has, with no better reason, been identified with the famous "Belle Ferronnière" (a mere misnomer, caught from the true name of another portrait which used to hang near it) at the Louvre; this last is fine work of one of his pupils. Mention is made of a "Nativity" painted for and sent to the emperor Maximilian, and also apparently of some picture painted for Matthias Corvinus, king of Hungary; both are lost or at least unidentified.

Milan Pupils.—The painters especially recorded as Leonardo's immediate pupils during this part of his life at Milan are the two before mentioned, Giovanni Antonio Boltraffio and Ambrogio Preda or de Predis, with Marco d'Oggionno and Andrea Salai, the last apparently less a fully-trained painter than a studio assistant and personal attendant, devotedly attached and faithful in both capacities. Leonardo's own native Florentine manner had at first been not a little modified by that of the Milanese school as he found it represented in the works of such men as Bramantino, Borgognone and Zenale; but his genius had in its turn reacted far more strongly upon the younger members of the school, and exercised, now or later, a transforming and dominating influence not only upon his immediate pupils, but upon men like Luini, Giampetrino, Bazzi, Cesare da Sesto and indeed the whole Lombard school in the early 15th century. Of sculpture done by him during this period we have no remains, only the tragically tantalizing history of the Sforza monument. Of drawings there are very many, including few only for the "Last Supper," many for the Sforza monument, as well as the multitude of sketches, scientific and other, which we find intermingled among the vast body of his miscellaneous mss., notes and records. In mechanical, scientific and theoretical studies of all kinds it was a period, as these mss. attest, of extraordinary activity and self-development.

The occurrence of the words "Achademia Leonardi Vinci" on certain engravings, done after his drawings, of geometric "knots" or puzzle-patterns (things for which we have already learned his partiality), does not prove the existence of an Academy at Milan in the sense now attached to the word. His many-sided and far-reaching studies in experimental science were mainly his own, conceived and carried out long in advance of his time, and in communion with only such more or less isolated spirits as were advancing along one or another of the same paths of knowledge.

Venice and Florence, 1499.—When Leonardo and Luca Pacioli left Milan in Dec. 1499, their destination was Venice. They made a brief stay at Mantua, where Leonardo was graciously received by the duchess Isabella Gonzaga, the most cultured of the many cultured great ladies of her time, whose portrait he promised to paint on a future day; meantime he made the fine chalk drawing of her now at the Louvre. Arrived at Venice, he seems to have occupied himself chiefly with studies in mathematics and cosmography. In April the friends heard of the second and final overthrow of Ludovico il Moro, and at that news, giving up all idea of a return to Milan, moved on to Florence, which they found depressed both by internal troubles and by the protraction of the indecisive and inglorious war with Pisa. Here Leonardo undertook to paint an altar-piece for the Church of the Annunziata, Filippino Lippi, who had already received the commission, courteously retiring from it in his favour. A year passed by, and no progress had been made with the painting.

Questions of physical geography and engineering engrossed him as much as ever. He writes to correspondents making enquiries about the tides in the Euxine and Caspian Seas. He reports for the information of the *Arte de' Mercanti* on the precautions to be taken against a threatening landslip on the hill of S. Salvatore dell' Osservanza. He submits drawings and models for the canalization and control of the waters of the Arno, and propounds, with compulsive eloquence and conviction, a scheme for transporting the Baptistery of St. John, the "bel San Giovanni" of Dante, to another part of the city, and elevating it on a stately basement of marble.

Annunziata Cartoons.—The Servite brothers of the Annunziata were growing impatient for the completion of their altar-piece. In April 1501 Leonardo had only finished the cartoon, and this all Florence flocked to see and admire. Isabella Gonzaga, who cherished the hope that he might be induced permanently to attach himself to the court of Mantua, wrote about this time to ask news of him, and to beg for a painting from him for her study, already adorned with masterpieces by the first hands of Italy, or at least for a "small Madonna, devout and sweet as is natural to him." In reply her correspondent says that the master is wholly taken up with geometry and very impatient of the brush, but at the same time tells her all about his just completed cartoon for the Annunziata. The subject was the Virgin seated in the lap of St. Anne, bending forward to hold her child who had half escaped from her embrace to play with a lamb upon the ground. The description answers exactly to the composition of the celebrated picture of the Virgin and St. Anne at the Louvre. A cartoon of this composition in the Esterhazy collection at Vienna is held to be only a copy, and the original cartoon must be regarded as lost.

But another of kindred though not identical motive has come down to us and is preserved in the Diploma gallery at the Royal Academy. In this work St. Anne, pointing upward with her left hand, smiles with an intense look of wondering questioning, inward sweetness into the face of the Virgin, who in her turn smiles down upon her child as He leans from her lap to give the blessing to the little St. John standing beside her. Evidently two different though nearly related designs had been maturing in Leonardo's mind. A rough first sketch for the motive of the Academy cartoon is in the British Museum; one for the motive of the lost cartoon and of the Louvre picture is at Venice. No painting by Leonardo from the Academy cartoon exists, but in the Ambrosiana at Milan there is one by Luini, with the figure of St. Joseph added. It remains a matter of debate whether the Academy cartoon or that shown by Leonardo at the Annunziata in 1501 was the earlier. The probabilities seem in favour of the Academy cartoon. This, whether done at Milan or at Florence, is in any case a typically perfect and harmonious example of the master's Milanese manner; while in the other composition with the lamb the action and attitude of the Virgin are somewhat strained, and the original relation between her head and her mother's, lovely both in design and expression, is lost.

In spite of the universal praise of his cartoon, Leonardo did not persevere with the picture, and the monks of the Annunziata had to give back the commission to Filippino Lippi, at whose death the task was completed by Perugino. It remains uncertain whether a small Madonna with distaff and spindle, which the correspondent of Isabella Gonzaga reports Leonardo as having begun for one Robertet, a favourite of the king of France, was ever finished. He painted one portrait, it is said, at this time, that of Ginevra Benci, a kinswoman, perhaps sister, of a youth Giovanni di Amerigo Benci, who shared his passion for cosmographical studies; and probably began another, the famous "La Gioconda," which was only finished four years afterwards. The gonfalionere Soderini offered him in vain, to do with it what he would, the huge half-spoiled block of marble out of which Michelangelo three years later wrought his "David."

Cesare Borgia (1502).—In the spring of 1502 he took service with Cesare Borgia, duke of Valentinois, occupied in consolidating his recent conquests in the Romagna. Between May 1502 and March 1503 Leonardo travelled as chief engineer to Duke Caesar over a great part of central Italy. Starting with a visit to Piombino, on the coast opposite Elba, he went by way of Siena to Urbino, where he made drawings and began works; was thence hastily summoned by way of Pesaro and Rimini to Cesena; spent two months between there and Cesenatico, projecting and direct-

ing canal and harbour works, and planning the restoration of the palace of Frederic II.; thence hurriedly joined his master, momentarily besieged by enemies at Imola; followed him probably to Sinigaglia and Perugia, through the whirl of storms and surprises, vengeances and treasons, which marked his course that winter, and finally, by way of Chiusi and Acquapendente, as far as Orvieto and probably to Rome, where Caesar arrived on the 14th of February 1503. The pope's death and Caesar's own downfall were not destined to be long delayed. But Leonardo apparently had already had enough of that service, and was back at Florence in March. He has left dated notes and drawings made at most of the stations we have named, besides a set of six large-scale maps drawn minutely with his own hand, and including nearly the whole territory of the Maremma, Tuscany and Umbria between the Apennines and the Tyrrhene sea.

Battle-piece for Florence.—At Florence he was at last persuaded, on the initiative of Piero Soderini, to undertake for his native city a work of painting as great as that with which he had adorned Milan. This was a battle-piece to decorate one of the walls of the new council-hall in the palace of the signory. He chose an episode in the victory won by the generals of the republic in 1440 over Niccolo Piccinino near a bridge at Anghiari, in the upper valley of the Tiber. To the young Michelangelo was presently entrusted a rival battle-piece to be painted on another wall of the same apartment; he chose, as is well known, a surprise of the Florentine forces in the act of bathing near Pisa.

In one of the sections of his projected *Treatise on Painting*, Leonardo has detailed at length, and obviously from his own observation, the pictorial aspects of a battle. In his mss. there occur almost as many trenchant sayings on life and human affairs as on art and natural law; and of war he has disposed in two words as a "bestial frenzy" (*pazzia bestialissima*). In his design for the Hall of Council he set himself to depict this frenzy at its fiercest. He chose the moment of a terrific struggle for the colours between the opposing sides; hence the work became commonly known as the "Battle of the Standard." Judging by the accounts of those who saw it, and the fragmentary evidences which remain, the tumultuous medley of men and horses, and the expressions of martial fury and despair, must have been conceived and rendered with a mastery not less commanding than had been the looks and gestures of bodeful sorrow and soul's perplexity among the quiet company on the convent wall at Milan. The place assigned to Leonardo for the preparation of his cartoon was the Sala del Papa at Santa Maria Novella. He for once worked steadily and unremittingly at his task. His accounts with the signory enable us to follow its progress step by step.

Influence on Contemporaries.—He had finished the cartoon in less than two years (1504–05), and when it was exhibited along with that of Michelangelo, the two rival works seemed to all men a new revelation of the powers of art, and served as a model and example of the students of that generation, as the frescoes of Masaccio in the Carmine had served to those of two generations earlier. The young Raphael, whose incomparable instinct for rhythmical design had been trained hitherto on subjects of holy quietude and rapt contemplation according to the traditions of Umbrian art, learnt from Leonardo's example to apply the same instinct to themes of violent action and strife. From the same example Fra Bartolommeo and a crowd of other Florentine painters of the rising or risen generation took in like manner a new impulse. The master lost no time in proceeding to the execution of his design upon the mural surface; this time he had devised a technical method of which, after a preliminary trial in the Sala del Papa, he regarded the success as certain; the colours, whether tempera or other remains in doubt, were to be laid on a specially prepared ground, and then both colours and ground made secure upon the wall by the application of heat. When the central group was done the heat was applied, but it was found to take effect unequally; the colours in the upper part ran or scaled from the wall, and the result was a failure more or less complete. The unfinished and decayed painting remained for some 50 years on the wall, but after 1560 was covered over with new frescoes by Vasari.

The cartoon did not last so long. After doing its work as the most inspiring of all examples for students it seems to have been cut up. When Leonardo left Italy for good in 1516 he is recorded to have left "the greater part of it" in deposit at the hospital of S. Maria Nuova, where he was accustomed also to deposit his moneys, and whence it seems before long to have disappeared. Our only existing memorials of the great work are a number of small pen-studies of fighting men and horses, three splendid studies in red chalk at Budapest for heads in the principal group, one head at Oxford copied by a contemporary of the size of the original cartoon (above life); a tiny sketch, also at Oxford, by Raphael after the principal group; an engraving done by Zacchia of Lucca in 1558 not after the original but after a copy; a 16th-century Flemish drawing of the principal group, and another, splendidly spirited, by Rubens, both copies of copies; with Edelinck's fine engraving after the Rubens drawing.

Mona Lisa (La Gioconda).—During these years, 1503–06, Leonardo also finished the portrait of Madonna Lisa, the Neapolitan wife of Zanobi del Giocondo. In this lady he had found a sitter whose face and smile possessed in a singular degree the haunting, enigmatic charm in which he delighted. He worked, it is said, at her portrait during some portion of four successive years, causing music to be played during the sittings that the rapt expression might not fade from off her countenance. The picture was bought afterwards by Francis I. for 4,000 gold florins, and is now one of the glories of the Louvre. The portrait casts an irresistible spell alike by subtlety of expression, by refinement and precision of drawing, and by the romantic invention of its background. It has been the theme of endless critical rhapsodies, among which that of Pater is perhaps the most imaginative as it is the best known.

Louis XII.—In the spring of 1506 Leonardo, moved perhaps by chagrin at the failure of his work in the Hall of Council, accepted a pressing invitation to Milan, from Charles d'Amboise, Maréchal de Chaumont, the lieutenant of the French king in Lombardy. The leave of absence granted to him by the signory on the request of the French viceroy was for three months only. The period was several times extended, at first grudgingly, Soderini complaining that Leonardo had treated the republic ill in the matter of the battle picture; whereupon the painter honourably offered to refund the money paid, an offer which the signory as honourably refused. Louis XII. sent messages urgently desiring that Leonardo should await his own arrival in Milan, having seen a small Madonna by him in France (probably that painted for Robertet) and hoping to obtain from him works of the same class and perhaps a portrait. The king arrived in May 1507, and soon afterwards Leonardo's services were formally and amicably transferred from the signory of Florence to Louis, who gave him the title of painter and engineer-in-ordinary. In September of the same year troublesome private affairs called him to Florence. His father had died in 1504, apparently intestate.

There are traces of work done during his residence at Florence. A sheet of sketches drawn there in 1508 shows the beginning of a Madonna now lost except in the form of copies, one of which (known as the "Madonna Litta") is at St. Petersburg (Leningrad), another in the Poldi-Pezzoli museum at Milan. A letter from Leonardo to Charles d'Amboise in 1511, announcing the end of his law troubles, speaks of two Madonnas of different sizes that he means to bring with him to Milan. Meantime the master's main home and business were at Milan. He had attached to himself a new and devoted young friend and pupil of noble birth, Francesco Melzi and was a frequent visitor at the villa of the Melzi family at Vaprio.

Rome.—In 1512 the ageing master uprooted himself from Milan, and moved with his chattels and retinue of pupils to Rome, into the service of the house that first befriended him, the Medici. The vast enterprises of Pope Julius II. had already made Rome the chief seat and centre of Italian art. The accession of Giulio de' Medici in 1513 under the title of Leo X. raised on all hands hopes of still ampler and more sympathetic patronage. Leonardo's special friend at the papal court was the pope's youngest brother, Giuliano de' Medici, a youth who combined dissipated

habits with thoughtful culture and a genuine interest in arts and sciences. But the conditions of the time and place proved adverse. The young generation held the field. Michelangelo and Raphael were fresh from the glory of their great achievements in the Sistine Chapel and the Stanze. After a stay of less than two years, Leonardo left Rome. On meeting Francis I., young and brilliant successor to Louis XII., an immediate and strong sympathy sprang up, and Leonardo determined to accept the royal invitation to France, where a new home was offered him with every assurance of honour and regard.

Amboise.—The remaining two and a half years of Leonardo's life were spent at the Castle of Cloux near Amboise, which was assigned, with a handsome pension, to his use. In the spring of 1518 Leonardo had occasion to exercise his old talents as a festival-master when the dauphin was christened and a Medici-Bourbon marriage celebrated. He drew the designs for a new palace at Amboise and was much engaged with the project of a great canal to connect the Loire and Saône. An ingenious attempt has been made to prove, in the absence of records, that the famous spiral staircase at Blois was also of his designing.

Among his visitors was a fellow-countryman, Cardinal Louis of Aragon, whose secretary has left an account of the day. Leonardo, it seems, was suffering from some form of slight paralysis which impaired his power of hand. But he showed the cardinal three pictures, the portrait of a Florentine lady done for Giuliano de' Medici (the Gioconda?), the Virgin in the lap of St. Anne (the Louvre picture; finished at Florence or Milan 1507–1513?), and a youthful John the Baptist. The last, which may have been done since he settled in France, is the darkened and partly repainted, half-length figure in the Louvre. Of the "Pomona" mentioned by Lomazzo as a work of the Amboise time his visitor says nothing. Besides pictures, the master seems also to have shown and explained to his visitors some of his vast store of notes and observations on anatomy and physics. He kept hoping to get some order among his papers, the accumulation of more than forty years, and perhaps to give the world some portion of the studies they contained. But his strength was nearly exhausted. On Easter Eve 1519, feeling that the end was near, he made his will. It made provision for masses to be said and candles to be offered in three different churches of Amboise, first among them that of St. Florentin, where he desired to be buried, as well as for 60 poor men to serve as torch-bearers at his funeral. He received the sacraments of the Church and died on May 2, 1519.

King Francis, then at his court of St. Germain-en-Laye, is said to have wept for the loss of such a servant; that he was present beside the death-bed and held the dying painter in his arms is a familiar but an untrue tale. After a temporary sepulture elsewhere his remains were transported on Aug. 12 to the cloister of St. Florentin according to his wish. He left all his mss. and apparently all the contents of his studio, with other gifts, to Melzi, whom he named executor; to Salai and to his servant Battista Villani a half each of his vineyard outside Milan; gifts of money and clothes to his maid Maturina; one of money to the poor of the hospital in Amboise; and to his half-brothers a sum of 400 ducats lying to his credit at Florence.

Achievements.—History tells of no man gifted in the same degree as Leonardo was at once for art and science. In art he was an inheritor and perfecter, born in a day of great and many-sided endeavours on which he put the crown, surpassing both predecessors and contemporaries. In science, on the other hand, he was a pioneer, working wholly for the future, and in great part alone. That the two stupendous gifts should in some degree neutralize each other was inevitable. The mere attempt to conquer the kingdom of light and shade for the art of painting was destined to tax the skill of generations. Leonardo sought to achieve that conquest and at the same time to carry the old Florentine excellences of linear drawing and psychological expression to a perfection of which other men had not dreamed. The thirst for knowledge had first been aroused in him by the desire of perfecting the images of beauty and power which it was his business to create.

Thence there grew upon him the passion of knowledge for its own sake. In the splendid balance of his nature the Virgilian longing, *rerum cognoscere causas,* could never indeed wholly silence the call to exercise his active powers. But the powers he cared most to exercise ceased by degree to be those of imaginative creation, and came to be those of turning to practical human use the mastery which his studies had taught him over the forces of nature. In science he was the first among modern men to set himself most of those problems which unnumbered searchers of later generations have laboured severally or in concert to solve. A hundred years before Bacon, say those who can judge best, he showed a firmer grasp of the principles of experimental science than Bacon showed, fortified by a far wider range of actual experiment and observation. Galileo, Bacon, Newton, Harvey—he knew what each of them would one day discover. He was Watt's precursor; only he meant steam to project a missile from a cannon; experts aver that, had he at his disposal some power like petrol, he would have completed his mechanic of aviation; he knew a method of remaining a long time under water, but he refused to tell of it because of "the evil nature of man." Had Leonardo left behind him any one with zeal and knowledge enough to extract from the mass of his mss. some portion of his labours in those sciences and give them to the world, an incalculable impulse would have been given to all those enquiries by which mankind has since been striving to understand the laws of its being and control the conditions of its environment. As it was, these studies of Leonardo—"studies intense of strong and stern delight"—seemed to his trivial followers and biographers merely his whims and fancies, *ghiribizzi,* things to be spoken of slightingly and with apology. The mss., with the single exception of some of those relating to painting, lay unheeded and undivulged until the present generation.

So much for the intellectual side of Leonardo's character. As a moral being we are less able to discern what he was like. The man who carried in his brain so many images of subtle beauty, as well as so much of the hidden science of the future, must have lived spiritually, in the main, alone. Of things communicable he was at the same time, as we have said, communicative—a genial companion, a generous and loyal friend, impressing all with whom he was brought in contact by the power and the charm of genius, and inspiring fervent devotion and attachment in friends and pupils. We see him full of tenderness to animals; open-handed in giving, not eager in getting—"poor," he says, "is the man of many wants"; not prone to resentment—"the best shield against injustice is to double the cloak of long-suffering"; zealous in labour above all men—"as a day well spent gives joyful sleep, so does a life well spent give joyful death."

With these instincts and maxims, and with his strength, spent ever tunnelling in abstruse mines of knowledge, his moral experience is not likely to have been deeply troubled. In religion, he regarded the faith of his age and country at least with imaginative sympathy and intellectual acquiescence, if no more. On the political storms which shook his country and drove him from one employment to another, he seems to have looked not with the passionate participation of a Dante or a Michelangelo but rather with the serene detachment of a Goethe. In matters of the heart, if any consoling or any disturbing passion played a great part in his life, we do not know it; we know only (apart from a few passing shadows cast by calumny and envy) of affectionate and dignified relations with friends, patrons and pupils, of public and private regard mixed in the days of his youth with dazzled admiration, and in those of his age with something of reverential awe.

The Drawings of Leonardo.—These are among the greatest treasures ever given to the world by the human spirit expressing itself in pen and pencil. Apart from the many hundreds of illustrative pen-sketches scattered through his autobiographic and scientific mss., the principal collection is at Windsor castle (partly derived from the Arundel collection); others of importance are in the British Museum; at Christ Church, Oxford; in the Louvre, in the Uffizi, the Venice academy, the Royal library at Turin, the museum of Budapest, in the Bayonne museum and in the collection of Lord Melchett Leonardo's chief implements were pen, silverpoint, and red and black chalk (red chalk especially). In silverpoint there are many beautiful drawings of his

earlier time, and some of his later; but of the charming heads of women and young men in this material attributed to him in various collections, comparatively few are his own work, the majority being drawings in his spirit by his pupils Ambrogio Preda or Boltraffio. Leonardo appears to have been left-handed; a contemporary and intimate friend, Luca Pacioli, speaks of his "ineffable left hand"; all the best of his drawings are shaded downward from left to right, which would be the readiest way for a left-handed man; and his habitual eccentric practice of writing from right to left is much more likely to have been due to natural left-handedness than to any desire for mystery or concealment. A full critical discussion and catalogue of the extant drawings of Leonardo are to be found in Berenson's *Drawings of the Florentine Painters.*

The Writings of Leonardo.—The only printed book bearing Leonardo's name until the recent issues of transcripts from his mss. was the celebrated *Treatise on Painting* (*Trattato della pittura, Traité de la peinture*). This consists of brief didactic chapters, or more properly paragraphs, of practical direction or critical remark on all the branches and conditions of a painter's practice. The original ms. draft of Leonardo has been lost, though a great number of notes for it are scattered through the various extant volumes of his mss. The work has been printed in two different forms; one of these is an abridged version consisting of 365 sections; the first edition of it was published in Paris in 1551, by Raphael Dufresne, from a ms. which he found in the Barberini library; the last, translated into English by J. F. Rigaud, in London, 1877. The other is a more extended version, in 912 sections, divided into eight books; this was printed in 1817 by Guglielmo Manzi at Rome, from two mss. which he had discovered in the Vatican library; a German translation from the same ms. has been edited by G. H. Ludwig in Eitelberger's series of *Quellenschriften für Kunstgeschichte* (Vienna, 1882; Stuttgart, 1885). More recent publications of the *Treatise on Painting* are:—*Leonardo da Vinci, Traktat von der Malerei* (Jena, 1909); and *Leonardo da Vinci, Traité de la peinture* (1910). On the history of the book in general *see* Max Jordan, *Das Malerbuch des Leonardo da Vinci* (Leipzig, 1873). The unknown compilers of the Vatican mss. must have had before them much more of Leonardo's original text than is now extant. Only about a quarter of the total number of paragraphs are identical with passages to be found in the master's existing autograph notebooks. It is indeed doubtful whether Leonardo himself ever completed the ms. treatise (or treatises) on painting and kindred subjects mentioned by Fra Luca Pacioli and by Vasari, and probable that the form and order, and perhaps some of the substance, of the *Trattato* as we have it was due to compilers and not to the master himself. In recent years a whole body of scholars and editors have been engaged in giving to the world the texts of Leonardo's existing mss. The history of these is too complicated to be told here in any detail. Francesco Melzi (d. 1570) kept the greater part of his master's bequest together as a sacred trust as long as he lived, though even in his time some mss. on the art of painting seem to have passed into other hands. But his descendants suffered the treasure to be recklessly dispersed. The chief agents in their dispersal were the Doctor Orazio Melzi who possessed them in the last quarter of the 16th century; the members of a Milanese family called Mazzenta, into whose hands they passed in Orazio Melzi's lifetime; and the sculptor Pompeo Leoni, who at one time entertained the design of procuring their presentation to Philip II. of Spain, and who cut up a number of the note-books to form the great miscellaneous single volume called the *Codice Atlantico,* now at Milan. This volume, with a large proportion of the total number of other Leonardo mss. then existing, passed into the hands of a Count Arconati, who presented them to the Ambrosian library at Milan in 1636. In the meantime the earl of Arundel had made a vain attempt to purchase one of these volumes (the *Codice Atlantico?*) at a great price for the king of England. Some stray parts of the collection, including the mss. now at Windsor, did evidently come into Lord Arundel's possession, and the history of some other parts can be followed; while much, it is evident, was lost for good. In 1796 Napoleon swept away to Paris, along with the other art treasures of Italy, the whole of the Leonardo mss. at the Ambrosiana: only the *Codice Atlantico* was afterwards restored, the other volumes remaining the property of the Institut de France. These also have had their adventures, two of them having been stolen by Count Libri and passed temporarily into the collection of Lord Ashburnham, whence they were in recent years made over again to the Institut. The first important step towards a better knowledge of the mss. was made by the beginning, in 1880, of the great series of publications from the mss. of the Institut de France undertaken by C. Revaisson-Mollien; the next by the publication in 1883 of Dr. J. P. Richter's *Literary Works of Leonardo da Vinci* (*see* Bibliography): this work included, besides a history and analytical index of the mss., facsimiles of a number of selected pages containing matter of autobiographical, artistic, or literary interest, with transcripts and translations of their ms. contexts. Since then much progress has been made in the publication of the complete mss.

A brief statement follows of the present distribution of the several mss. and of the form in which they are severally published:—

England.—*Windsor:* Nine mss., chiefly on anatomy, catalogued by Kenneth Clark (Cambridge, 1935), published entire in simple facsimile by Rouveyre (Paris, 1901); partially, with transliterations and introduction by Piumati and Sabachnikoff (Paris 1898, foll.); *Quaderni d'Anatomia* published by Ove Vagensten, A. Fonahn, H. Hopstok with English and German translations (Christiania [Oslo], 1911–17); *British Museum:* one ms., miscellaneous, published by the Reale Commissione Vinciana (Rome, 1925–30); *Victoria and Albert Museum:* ten note-books bound in 3 vols.; facsimile by Rouveyre (Paris, 1901), published by the Reale Commissione Vinciana (Rome, 1930–36); *Holkham* (collection of Lord Leicester): 1 vol., on hydraulics and the action of water; published in facsimile with transliteration and notes by Gerolamo Calvi. France.—*Institut de France:* 17 mss., all published with transliteration and notes by C. Ravaisson-Mollien (6 vols., Paris, 1880–91). Italy.—*Milan, Ambrosiana:* the *Codice Atlantico,* the huge miscellany, of vital importance for the study of the master, put together by Pompeo Leoni; published in facsimile, with transliteration, by the Accademia dei Lincei (1894, foll.); *Milan:* collection of Count Trivulzio; 1 vol., miscellaneous; published and edited by L. Beltrami (1892); *Turin,* the Royal Library; *Treatise on the Flight of Birds,* published and edited by Piumati and Sabachnikoff (Paris, 1892).

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(S. C.; X.)

LEONARDO OF PISA (LEONARDUS PISANUS or FIBONACCI), Italian mathematician of the 13th century. He was educated at Bugia and then travelled extensively around the Mediterranean, during which time he gathered knowledge of mathematics. He returned to Pisa in 1202 and published his famous *Liber abaci.* His work was widely read and secured the introduction of Arabic notation into Europe and provided the basis of works on algebra and arithmetic in the following centuries. In 1220 he published a work on geometry *Practica Geometria.* His fame spread and in 1225 he was presented to the emperor Frederick II., the presentation being accompanied by a mathematical tournament in which

Leonardo solved difficult problems proposed by John of Palermo.

His works were edited by Count B. Boncompagni, *Scritti di Leonardo Pisano* (2 vols., Rome, 1857, 1862).

LEONCAVALLO, RUGGIERO (1858–1919), Italian operatic composer, was born at Naples. He received his musical education at the conservatoire, and for many years led a wandering life, supporting himself by playing at café concerts, while he attempted to obtain the production of more than one opera. His *Pagliacci* was at length performed at Milan in 1892 with immediate success, but neither his *Medici* (produced at Milan 1892) nor *Chatterton* (1896), the libretto of which was adapted from de Vigny's tragedy, obtained any favour. *La Bohème,* performed in 1897 at Venice, was well received, though it suffered by comparison with the more famous work on the same subject by Puccini.

Zaza was produced in 1900 and *Der Roland* in 1904. In all these operas he was his own librettist. None of the more ambitious works was very successful. Leoncavallo is undoubtedly seen at his best in *Pagliacci* and in *Zaza,* shorter works, in which his gift for the theatre stood him well. He died at Montecatini on Aug. 9, 1919.

LEONIDAS, king of Sparta, the 17th of the Agiad line. He succeeded, probably in 489 or 488 B.C., his half-brother Cleomenes, whose daughter Gorgo he married. In 480 he was sent with about 7,000 men to hold the pass of Thermopylae against the army of Xerxes. It seems that the ephors supported the scheme half-heartedly, their policy being to concentrate the Greek forces at the Isthmus.

Leonidas repulsed the frontal attacks of the Persians, but when the Malian Ephialtes led the Persian general Hydarnes by a mountain track to the rear of the Greeks he divided his army, himself remaining in the pass with 300 Spartiates, 700 Thespians and 400 Thebans. Perhaps he hoped to surround Hydarnes' force: if so, the movement failed, and the little Greek army, attacked from both sides, was cut down to a man save the Thebans, who are said to have surrendered. Leonidas fell in the thickest of the fight; his head was afterwards cut off by Xerxes' order and his body crucified.

Our knowledge of the circumstances is too slight to enable us to judge of Leonidas's strategy, but his heroism and devotion secured him an almost unique place in the imagination not only of his own but also of succeeding times.

See Herodotus v, 39–41, vii, 202–225, 238, ix. 10; Diodorus xi, 4–11; Plutarch, *Apophthegm. Lacon.; de malignitate Herodoti,* 28–33; Pausanias, i, 13, iii, 3, 4; Isocrates, *Paneg.* 92; Lycurgus, *c. Leocr.* 110, 111; Strabo i, 10, ix, 429; Aelian, *Var. hist.* iii, 25; Cicero, *Tusc. disput.* i, 42, 49; *de Finibus,* ii, 30; Cornelius Nepos, *Themistocles,* 3; Valerius Maximus iii, 2; Justin ii, 11. *See* THERMOPYLAE. (M. N. T.; X.)

LEONINE VERSE, the name given to a mediaeval form of hexameter and pentameter verses in which the syllables preceding the middle of the line rhymed with the final syllables. It was employed during the period of transition from the ancient to the modern form of verse and may be traced to the Roman poets, examples of leonine verse appearing in the *Epistles* of Ovid. *See* VERSE.

LEON OF MODENA (1571–1648), Jewish scholar, was born in Venice, of a French family which had migrated to Italy after the expulsion of the Jews from France. One of Leon's most effective works was his attack on the Kabbala (*'Ari Nohem,* first published in 1840), for in it he demonstrated that the "Bible of the Kabbalists" (the *Zohar*) was a modern composition. (*See* LEON, MOSES DE.) His *Riti Ebraici* (1637) was widely read by Christians; it was rendered into various languages, and in 1650 was translated into English by Edward Chilmead. He died at Venice.

See Graetz, *History of the Jews* (Eng. trans.) vol. v, ch, iii; *Jewish Encyclopedia,* viii, 6; Geiger, *Leon de Modena.*

LEONTIASIS OSSEA, a rare disease characterized by an overgrowth of the facial and cranial bones. The common form is that in which one or other maxilla is affected, its size progressively increasing both regularly and irregularly, and thus encroaching on the cavities of the orbit, the mouth, the nose and its accessory sinuses.

Exophthalmos gradually develops, going on later to a complete loss of sight due to compression of the optic nerve by the overgrowth of bone. There may also be interference with the nasal respiration and with the taking of food. In the somewhat less common form of this rare disease the overgrowth of bone affects all the cranial bones as well as those of the face, the senses being lost one by one and death finally resulting from cerebral pressure.

There is no treatment other than exposing the overgrown bone, and chipping away pieces, or excising entirely where possible. The cause of the condition is unknown, but the association of the allied disease acromegaly with changes in the pituitary body suggests that it may be of endocrine origin.

LEONTINI, ancient town, southeast Sicily (mod. *Lentini*), 22 mi. north-northwest of Syracuse direct, founded by Chalcidians from Naxos in 729 B.C. The site, originally held by the Sicels, was seized by the Greeks because of its command of the fertile plain on the north. It was reduced to subjection in 498 B.C. by Hippocrates of Gela, and in 476 Hieron of Syracuse established there the inhabitants of Catana and Naxos. Later on Leontini regained its independence. It was mainly the eloquence of Gorgias (*q.v.*) of Leontini which led to the abortive Athenian expedition of 427.

In 422 Syracuse supported the oligarchs against the people and received them as citizens, Leontini itself being forsaken. The exiles of Leontini then joined the envoys of Segesta in persuading Athens to undertake the great expedition of 415. After its failure, Leontini became subject to Syracuse once more. It was finally stormed by M. Claudius Marcellus in 214 B.C. It was destroyed by the Saracens A.D. 848, and almost totally ruined by the earthquake of 1698.

The ancient city is described by Polybius as lying in a bottom between two hills, and facing north. On the west side of this bottom ran a river with a row of houses on its west bank under the hill. At each end was a gate, the northern leading to the plain, the southern, at the upper end, to Syracuse. There was an acropolis on each side of the valley, lying between precipitous hills with flat tops, over which buildings had extended. The eastern hill still has considerable remains of a strongly fortified mediaeval castle (the Castellaccio).

LEONTIUS (*fl.* 6th cent.), theological writer, is variously styled BYZANTINUS, HIEROSOLYMITANUS (as an inmate of the monastery of St. Saba near Jerusalem) and SCHOLASTICUS (the first "schoolman," as the introducer of the Aristotelian definitions into theology; according to others, he had been an advocate, a special meaning of the word *scholasticus*). He himself states that in his early years he belonged to a Nestorian community. Nothing else is known of his life. Most scholars regard as genuine the polemical treatises *Contra Nestorianos et Eutychianos, Contra Nestorianos, Contra Monophysitas, Contra Severum* (patriarch of Antioch); and the Σχόλια, generally called *De Sectis.* An essay *Adversus fraudes Apollinaristarum* and two homilies are referred to other hands, the homilies to a Leontius, presbyter of Constantinople.

Collected works in J. P. Migne, *Patrologia Graeca* lxxxvi; for the various questions connected with Leontius *see* C. Krumbacher, *Geschichte der byzantinischen Literatur* (1897); J. P. Junglas, *Leontius von Byzanz* (1908). For other persons of the name *see* Fabricius, *Bibliotheca Graeca* (ed. Harles), viii, 323.

LEOPARD, PARD or PANTHER (*Panthera pardus*), the largest spotted cat of the old world, except, perhaps, the snow-leopard (*q.v.*). Leopards are characterized by the rosette-like form of the black spots on the body, and by the absence of a central spot from each rosette. They vary considerably in size, but the usual length is from 6–7½ ft. inclusive of the tail. The ground colour of the fur may be any shade between pale fawn and rufous buff; perfectly black (*melanistic*) mutants are not uncommon. In habit the leopard is ferocious, bloodthirsty and cunning. Its movements are quick and graceful. It obtains its prey either by springing upon it from an ambush (frequently the bough of a tree), or by a stealthy stalk.

It will eat any animal it can overcome, being especially fond

of dogs. The geographical range of this animal embraces Africa, and Asia from Palestine to China, Manchuria and Java. In the Pleistocene epoch it inhabited Europe. (*See* CARNIVORA.)

LEOPARDI, ALESSANDRO (d. *c.* 1512), Italian sculptor, was born and died at Venice. His first known work is the imposing mausoleum of the doge Andrea Vendramini, now in the church of San Giovanni e Paolo; in this he had the co-operation of Tullio Lombardo, but the finest parts are Leopardi's. Some of the figures have been taken away, and two in the Berlin museum are considered to be certainly his work. He was exiled on a charge of fraud in 1487, and recalled in 1490 by the senate to finish Verrocchio's colossal statue of Bartolommeo Colleoni. He worked between 1503 and 1505 on the tomb of Cardinal Zeno at St. Mark's, which was finished in 1515 by Pietro Lombardo; and in 1505 he designed and cast the bronze sockets for the three flagstaffs in the square of St. Mark's, the antique character of the decorations suggesting some Greek model.

LEOPARDI, GIACOMO, COUNT (1798–1837), Italian poet, was born at Recanati in the March of Ancona, on June 29, 1798. All the circumstances of his parentage and education conspired to foster his precocious and sensitive genius at the expense of his physical and mental health. His mother was absorbed in mending the family fortunes, having taken over the whole administration from her husband. His father, Count Monaldo Leopardi, secluded himself in his extensive library, to which his nervous, sickly and deformed son had free access, and which absorbed him exclusively in the absence of an intelligent sympathy from his parents, of any companionship except that of his brothers and sister, or of any recreation in the dullest of Italian towns. The lad spent his days over grammars and dictionaries, learning Latin with little assistance, and Greek and the principal modern languages with none at all.

Erudition.—Any ordinarily clever boy would have emerged from this discipline a mere pedant and bookworm. Leopardi came forth a Hellene, not merely a consummate Greek scholar, but penetrated with the classical conception of life, and a master of antique form and style. At 16 he composed a Latin treatise on the Roman rhetoricians of the second century, a commentary on Porphyry's life of Plotinus and a history of astronomy; at 17 he wrote on the popular errors of the ancients, citing more than 400 authors. A little later he imposed upon the first scholars of Italy by two odes in the manner of Anacreon. At 18 he produced the *Appressamento alla Morte,* a vision of the omnipotence of death, modelled upon Petrarch, but more truly inspired by Dante, and in its conception, machinery and general tone, offering a remarkable resemblance to Shelley's *Triumph of Life* (1822). At 19 he experienced his first serious passion for his cousin, Geltrude Cassi, already married and a mother. In 1819 came the great lyrical odes, the ode to Italy, and that on the monument to Dante erected at Florence. They are chaste in diction, close and nervous in style, sparing in fancy and almost destitute of simile and metaphor, antique in spirit, yet pervaded by modern ideas. A third ode, on Cardinal Mai's discoveries of ancient mss., lamented the decadence of Italian literature.

Pessimism.—He found intellectual sympathy in the eminent scholar and patriot Pietro Giordani, to whom he wrote letters of bitter complaint and lamentation. His condition was rendered the more unhappy by bad eyesight which for months made even reading impossible. At length (1822) his father allowed him to spend the winter in Rome, where, though he received literary encouragement from C. C. J. Bunsen and Niebuhr, he found little satisfaction. Dispirited and with exhausted means, he returned to Recanati, where he spent three miserable years, brightened only by the publication of his *Versi* (Bologna, 1824). The most remarkable of these is perhaps the *Bruto Minore,* the epitome of his philosophy of despair.

In 1827 appeared the *Operette Morali,* written some years before and consisting principally of dialogues and his imaginary biography of Filippo Ottonieri, which brought Leopardi fame as a prose writer. Modern literature has few productions so eminently classical in form and spirit, so symmetrical in construction and faultless in style. Lucian is evidently the model; but the wit and irony which were playthings to Lucian are terribly earnest with Leopardi. Leopardi's invention is equal to Lucian's and his only drawback in comparison with his exemplar is that, while the latter's campaign against pretense and imposture commands hearty sympathy, Leopardi's philosophical creed is a repulsive hedonism in the disguise of austere stoicism. *Filippo Ottonieri* is a portrait of an imaginary philosopher, imitated from the biography of a real sage in Lucian's *Demonax.* Lucian has shown us the philosopher he wished to copy, Leopardi has truly depicted the philosopher he was.

On leaving Florence in the autumn of 1827 he went to Pisa, and there wrote some of his finest poems, among them *Il Risorgimento* and *A Silvia.* Want of means drove Leopardi back, in Nov. 1828, to Recanati, where, deaf, half-blind, sleepless, tortured by incessant pain, at war with himself and every one around him except his sister, he spent the two most unhappy years of his unhappy life. In May 1830 he escaped to Florence, where he formed the acquaintance of a young Swiss philologist, de Sinner. To him he confided his unpublished philological writings, with a view to their appearance in Germany. A selection appeared under the title *Excerpta ex schedis criticis J. Leopardi* (Bonn, 1834). The remaining mss. were purchased, after de Sinner's death, by the Italian Government, and, together with Leopardi's correspondence with the Swiss philologist, were partially edited by Aulard.

His Last Years.—In 1831 Leopardi's friends subscribed for the publication of all his poems previously printed, with some additions, *Canti* (Florence, 1831). This volume placed him at once among the greatest lyric poets of the century, and made him famous throughout Europe. Leopardi was now driven from Florence to Rome by an unhappy attachment for Fanny Tozzetti Targioni. He had made acquaintance with a young Neapolitan, Antonio Ranieri, who went with him to Rome, and befriended him thenceforth. Unfortunately, in his old age Ranieri wrote a spiteful account of Leopardi's life in Naples. But at the time he was a good friend. Leopardi accompanied Ranieri and his sister to Naples, and under their care enjoyed four years of comparative tranquillity. He made the acquaintance of the German poet Platen, his sole contemporary rival in the classical perfection of form, and composed *La Ginestra,* the most consummate of all his lyrical masterpieces. He also wrote at Naples *I paralipomeni della Batracomiomachia, The Sequel to the Battle of the Frogs and Mice,* a satire in *ottava rima* on the abortive Neapolitan revolution of 1820, clever and humorous, but obscure because of the local nature of the allusions. He died on June 15, 1837.

Leopardi's lyrics have been studied and re-studied since his death. His genius is incommunicable, but his technique has influenced all his successors.

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English translations of the poems are those by F. H. Cliffe (1893); J. M. Morrison (1900); L. de'Lucchi (1922), and G. L. Bickersteth (Cambridge, 1923). Bickersteth's book contains a life, critical appreciation and full bibliography. There are admirable translations of the essays and dialogues by James Thomson, ed. B. Dobell (1905); by G. C. Edwardes (1882) in vol. xvii. of the *English and Foreign Philosophical Library;* and by P. Maxwell (1905) in the Scots collection of Great Writers series.

Italian studies of Leopardi are very numerous. *See* especially G. Chiarini, *Vita di Giacomo Leopardi* (Florence, 1921); G. Carducci, *Degli spiriti e delle forme nella poesia di Giacomo Leopardi Considerazioni,* in vol. xvi. of G. Carducci's *Opere* (1898); F. de Sanctis, *Studio sul Giacomo Leopardi* (7th ed., 1921). In English *see* the editions referred to above; also W. E. Gladstone, "Giacomo Leopardi" in *Gleanings of Past Years,* vol. ii. (1879); and C. H. Herford in *Shakespeare's Treatment of Love and other Essays* (1921).

LEOPOLD I. (1640–1705), Roman emperor, second son of the emperor Ferdinand III. and his first wife Maria Anna, daughter of Philip III. of Spain, was born on June 9, 1640. Leopold was intended for the church, but the death of his elder brother,

the German king Ferdinand IV., in July 1654, made him his father's heir. In 1655 he was chosen king of Hungary and in 1656 king of Bohemia, and in July 1658, more than a year after his father's death, he was elected emperor at Frankfort. For nearly the whole 47 years of his reign Leopold was pitted against Louis XIV. of France. The emperor was a man of peace, and never directed his armies in person, but the empire was at war for the greater part of his reign. (*See* EUROPE: *History.*) He was the ally of Poland against Charles X. of Sweden until the peace of Oliva (1660). A war against Turkey was brought to a close by the victory of the imperialist general Montecuccoli at St. Gotthard, followed by a twenty years' truce with the sultan. The first war with France (1672–78) was concluded by the treaty of Nijmwegen (1679). The empire was again in a state of war with France in 1682–84, and in 1689 Leopold joined the Grand Alliance against Louis XIV. (*See* GRAND ALLIANCE, WAR OF THE.) Peace was concluded at Ryswick in 1697, though Leopold did not come to terms until some months later. After four years of peace the empire was involved in the war of the Spanish Succession (*q.v.*). The early course of the war was not favourable to the imperialists, but the tide turned with the great victory of Blenheim before Leopold died on May 5, 1705.

During this reign some important changes were made in the constitution of the Empire. In 1663 the imperial diet entered upon the last stage of its existence, and became a body permanently in session at Regensburg; in 1692 the duke of Hanover was raised to the rank of an elector, becoming the ninth member of the electoral college; and in 1700 Leopold greatly in need of help for the impending war with France, granted the title of king of Prussia to the elector of Brandenburg. The net result of these and similar changes was to weaken the authority of the emperor over the members of the Empire, and to compel him to rely more and more upon his position as ruler of the Austrian archduchies and of Hungary and Bohemia, and Leopold was the first who really appears to have realized this altered state of affairs and to have acted in accordance therewith.

Leopold's letters to Marco d'Aviano from 1680 to 1699 were edited by O. Klopp and published at Graz in 1888. Other letters are found in the *Fontes rerum Austriacarum,* Bände 56 and 57 (Vienna, 1903–04). *See* also F. Krones, *Handbuch der Geschichte Österreichs* (1876–79); R. Baumstark, *Kaiser Leopold I.* (1873); A. F. Pribram, *Zur Wahl Leopolds I.* (Vienna, 1888); K. T. von Heigel, *Neue Beiträge zur Charakteristik Leopolds I.* (1890).

LEOPOLD II. (1747–1792), Roman emperor and grand-duke of Tuscany, son of the empress Maria Theresa and her husband, Francis I., was born in Vienna on May 5, 1747. He was a third son, and was at first educated for the priesthood. On the death of his elder brother Charles in 1761 it was decided that he should succeed to his father's grand duchy of Tuscany. This settlement was the condition of his marriage on Aug. 5, 1764 with Maria Louisa, daughter of Charles III. of Spain, and on the death of his father Francis I. in 1765 he succeeded to the grand duchy.

When he succeeded, on the death of his brother Joseph II., to the Austrian lands he made large concessions to the interests offended by his brother's innovations. He recognized the Estates of his different dominions as "the pillars of the monarchy," and pacified the Hungarians, and divided the Belgian insurgents by concessions. When these failed to restore order, he marched troops into the country, and re-established at the same time his own authority, and the historic franchises of the Flemings.

Leopold's reign lasted barely two years (1790–92) and during that period he was hard pressed by peril from west and east alike. Revolution endangered the life of his sister Marie Antoinette, and also threatened his own dominions with the spread of a subversive agitation. From the east he was threatened by the aggressive ambition of Catherine II. of Russia, and by the unscrupulous policy of Prussia. To his sister he gave good advice and promises of help if she and her husband could escape from Paris. The French émigrés were refused audience. Within six weeks of his accession he opened negotiations with England to impose a check on Russia and Prussia. He put pressure on England by threatening to cede his part of the Low Countries to France, and then, when secure of English support, he was in a position to baffle the intrigues of Prussia. A personal appeal to Frederick William II. led to a conference between them at Reichenbach in July 1790, and to an arrangement which was in fact a defeat for Prussia. Leopold's coronation as king of Hungary on Nov. 15, 1790, was preceded by a settlement with the diet in which he recognized the dominant position of the Magyars.

In January Leopold dismissed the count of Artois, afterwards Charles X., king of France, to avoid being entangled in the affairs of France. The insults inflicted on Louis XVI. and Marie Antoinette, however, at the time of their attempted flight to Varennes in June, led him to make a general appeal to the sovereigns of Europe to take common measures in view of events which "immediately compromised the honour of all sovereigns, and the security of all governments." On Aug. 25 he met the king of Prussia at Pillnitz, near Dresden, and they drew up a declaration of their readiness to intervene in France if and when their assistance was called for by the other powers. When Louis XVI. swore to observe the constitution of September 1791, the emperor professed to think that a settlement had been reached in France, and hoped to avoid war. He died suddenly on March 1, 1792.

Several volumes containing the emperor's correspondence have been published. Among these are: *Joseph II. und Leopold von Toskana. Ihr Briefwechsel 1781–1790* (Vienna, 1872), and *Marie Antoinette, Joseph II. und Leopold II. Ihr Briefwechsel* (Vienna, 1866), both edited by A. Ritter von Arneth; *Joseph II., Leopold II. und Kaunitz. Ihr Briefwechsel* (Vienna, 1873); and *Leopold II., Franz II. und Catharina. Ihre Correspondenz nebst einer Einleitung: Zur Geschichte der Politik Leopolds II.* (Leipzig, 1874), both edited by A. Beer; and *Leopold II. und Marie Christine. Ihr Briefwechsel 1781–1792,* edited by A. Wolf (Vienna, 1867). *See* also H. von Sybel, *Über die Regierung Kaiser Leopolds II.* (Munich, 1860); A. Schultze, *Kaiser Leopold II. und die französische Revolution* (Leipzig, 1899); and A. Wolf and H. von Zwiedeneck-Südenhorst, *Österreich unter Maria Theresa, Joseph II. und Leopold II.* (1882–84); K. T. von Heigel, *Deutsche Gesch. vom Tode Friedrichs d. Gr. bis zur Auflösung des alten Reiches* (1899–1911, 2 vols.).

LEOPOLD I. (1790–1865), king of the Belgians, fourth son of Francis, duke of Saxe-Coburg-Saalfeld, and uncle of Queen Victoria of England, was born at Coburg on Dec. 18, 1790. At the age of 18 he entered the military service of Russia, and accompanied the emperor Alexander to Erfurt as a member of his staff. He was required by Napoleon to quit the Russian army, and spent some years in travelling. But in 1813 he took part in the whole of the campaign of that and the following year, distinguishing himself in the battles of Leipzig, Lützen and Bautzen. He entered Paris with the allied sovereigns, and accompanied them to England. He married in May 1816 Charlotte, only child of George, prince regent, afterwards George IV., heiress-presumptive to the British throne. After the death of the princess in 1817 he continued to reside in England. In 1830 he declined the crown of Greece, but was in the following year elected king of the Belgians (June 4, 1831). He accepted, after assuring himself of the support of the great powers. On July 12, he made his entry into Brussels and took the oath to observe the constitution. During the first eight years of his reign he was confronted with the resolute hostility of King William I. of Holland, and it was not until 1839 that the differences between the two States, which until 1830 had formed the kingdom of the Netherlands, were finally settled at the conference of London by the treaty of the 24 Articles. (*See* BELGIUM: *History.*)

From this date until his death, King Leopold spent all his energies in the wise administration of the affairs of the newly formed kingdom. In 1848 the throne of Belgium stood unshaken amidst the revolutions which marked that year in almost every European country. On Aug. 8, 1832, Leopold married, as his second wife, Louise of Orleans, daughter of Louis Philippe, king of the French. This union produced two sons and one daughter—(1) Leopold, afterwards king of the Belgians; (2) Philip, count of Flanders; (3) Marie Charlotte, who married Maximilian of Austria, the unfortunate emperor of Mexico. Leopold I. died at Laeken on Dec. 10, 1865. He was a cultured man, who encouraged art, science and education. His judgment was universally respected by contemporary sovereigns and statesmen, and he was frequently spoken of as "the Nestor of Europe." For his influ-

ence over his niece, Queen Victoria, *see* VICTORIA.

See Th. Juste, *Léopold Ier, roi des Belges, d'après des doc. inéd. 1793–1865* (2 vols., Brussels, 1868), and *Les Fondateurs de la monarchie Belge* (22 vols., Brussels, 1878–80); J. J. Thonissen, *La Belgique sous le règne de Léopold Ier* (Louvain, 1862); Hymans, *Histoire populaire du règne de Léopold I.* (1882); and *Lettres de Léopold I. à Thiers, 1836–1864*, ed. Lanzac de Laborie (1918). *See* also the *Letters* of Queen Victoria (1907).

LEOPOLD II. (LEOPOLD LOUIS PHILIPPE MARIE VICTOR) (1835–1909), king of the Belgians, son of the preceding, was born at Brussels on April 9, 1835. In 1846 he was created duke of Brabant, and entered the army. On Aug. 22, 1853, Leopold married Marie Henriette (1836–1902), daughter of the archduke Joseph of Austria, whose beauty gained for her the sobriquet of "The Rose of Brabant." On Dec. 10, 1865, he succeeded his father. On Jan. 28, 1869, he lost his only son, Leopold (b. 1859), duke of Hainaut. The king's brother Philip, count of Flanders (1837–1905), then became heir to the throne; and on his death his son Albert (b. 1875) (*see* ALBERT I.) became heir-presumptive. During the Franco-Prussian War (1870–1871) the king of the Belgians preserved neutrality in a period of unusual difficulty and danger. The most notable event in Leopold's career was the foundation of the Congo Free State (*q.v.*). He gave the first impulse towards the development of this idea by founding in 1876 the *Association Internationale Africaine*. He enlisted the services of H. M. Stanley (*q.v.*).

Leopold's exploitation of this vast territory, which he administered autocratically, brought him an enormous fortune; it was the subject of acutely hostile criticism (*see* CONGO FREE STATE), and in 1908 the territory was annexed to Belgium. On Nov. 15, 1902, King Leopold's life was attempted in Brussels by an Italian anarchist named Rubino.

LEOPOLD III. (1901–), king of the Belgians, was born on Nov. 3, 1901, the son of Albert I. (*q.v.*), whom he succeeded on Feb. 17, 1934. He married, on Nov. 10, 1926, Princess Astrid of Sweden (1905–1935); and of this marriage were born Princess Josephine Charlotte (Oct. 11, 1927), Prince Baudouin (Sept. 7, 1930), and Prince Albert (June 6, 1934). During German occupation of Belgium in World War II, Leopold was taken prisoner. When the Allies liberated Belgium, parliament in Sept. 1944 named Leopold's brother, Prince Charles, regent of the realm until the king should return.

LEOPOLD II. (1797–1870), of Habsburg-Lorraine, grand-duke of Tuscany, was born on Oct. 3, 1797, the son of the grand-duke Ferdinand III., whom he succeeded in 1824. During the first 20 years of his reign he devoted himself to the internal development of the State. He was the mildest and least reactionary of all the Italian despots of the day; he refused to adopt the Austrian methods of government, allowed liberty to the press, and permitted political exiles from other states to dwell in Tuscany undisturbed. In 1845–46 riots broke out and Leopold granted a number of administrative reforms.

The election of Pope Pius IX., gave fresh impulse to the Liberal movement, and on Sept. 4, 1847 Leopold instituted the National Guard—a first step towards the constitution; shortly afterwards Cosimo Ridolfi was appointed prime minister. The granting of the Neapolitan and Piedmontese constitutions was followed (Feb. 17, 1848) by that of Tuscany, drawn up by Gino Capponi. The revolution in Milan and Vienna aroused a fever of patriotic enthusiasm in Tuscany, where war against Austria was demanded; Leopold, giving way to popular pressure, sent a force to co-operate with Piedmont in the Lombard campaign. His speech on their departure was uncompromisingly Italian and Liberal. "Soldiers," he said, "the holy cause of Italian freedom is being decided to-day on the fields of Lombardy. Already the citizens of Milan have purchased their liberty with their blood and with a heroism of which history offers few examples. . . . Honour to the arms of Italy! Long live Italian independence!" The Tuscan contingent fought bravely, if unsuccessfully, at Curtatone and Montanara. On June 26 the first Tuscan parliament assembled, but the failure of the campaign in Lombardy led to the resignation of the Ridolfi ministry, which was succeeded by that of Gino Capponi. Disorder continued, there was actual civil war in Leghorn, and the democratic party became more influential. Capponi resigned, and Leopold reluctantly agreed to a Montanelli-Guerrazzi ministry.

New elections in 1848 returned a constitutional majority, but it ended by voting in favour of a constituent assembly. There was talk of instituting a central Italian kingdom with Leopold as king, to form part of a larger Italian federation, but the grand-duke, alarmed at the revolutionary and republican agitations in Tuscany and encouraged by the success of the Austrian arms, was, according to Montanelli, negotiating with Field-Marshal Radetzky and with Pius IX., who had now abandoned his Liberal tendencies, and fled to Gaeta. Leopold had left Florence for Siena, and eventually for Porto S. Stefano, leaving a letter to Guerrazzi in which, on account of a protest from the pope, he declared that he could not agree to the proposed constituent assembly. The utmost confusion followed. On Feb. 9, 1849 the republic was proclaimed, and on the 18th Leopold sailed for Gaeta. A third parliament was elected and Guerrazzi appointed dictator. But the defeat of Charles Albert at Novara caused consternation. The majority, while fearing an Austrian invasion, desired the return of the grand-duke, and in April 1849 the municipal council usurped the powers of the assembly and invited him to return. Leopold accepted. The Austrians occupied Lucca and Leghorn, and although Leopold simulated surprise at their action, it has since been proved that Austrian intervention was due to the request of the grand-duke. On May 24 the latter appointed G. Baldasseroni prime minister, on the 25th the Austrians entered Florence, and on July 28, Leopold himself returned. In 1850 he concluded a treaty with Austria sanctioning the continuation for an indefinite period of the Austrian occupation with 10,000 men; in September he dismissed parliament, and the following year established a concordat with the Church of a very clerical character.

He feebly asked Austria if he might maintain the constitution, and the Austrian premier, Prince Schwarzenberg, advised him to consult the pope, the king of Naples and the dukes of Parma and Modena. On their advice he formally revoked the constitution (1852). Political trials were held, Guerrazzi and many others being condemned to long terms of imprisonment, and although in 1855 the Austrian troops left Tuscany, Leopold's popularity was gone. The popular party headed by F. Bartolommei and G. Dolfi realized that only by the expulsion of Leopold could the national aspirations be realized. When in 1859 France and Piedmont made war on Austria, numbers of Tuscan volunteers joined the Franco-Piedmontese forces. Finally the grand-duke's participation in the war was formally demanded. On April 27 the grand-duke and his family departed for Bologna undisturbed. Thus a bloodless revolution was accomplished, and after an interregnum Tuscany was incorporated in the kingdom of Italy. On July 21, Leopold abdicated in favour of his son Ferdinand IV., who never reigned, but issued a protest from Dresden (March 26, 1860). He died in Rome on Jan. 29, 1870.

See G. Baldasseroni, *Leopoldo II.* (Florence, 1871), useful but reactionary in tendency, the author having been Leopold's minister, G. Montanelli, *Memorie sull' Italia* (Turin, 1853); F. D. Guerrazzi, *Memorie* (Leghorn, 1848); Zobi, *Storia civile della Toscana*, vols. iv.–v. (Florence, 1850–52); A. von Reumont, *Geschichte Toscanas* (2 vols., Gotha, 1876–77); M. Bartolommei-Gioli, *Il Rivolgimento Toscano e l'azione popolare* (Florence, 1905); C. Tivaroni, *L'Italia durante il dominio Austriaco*, vol. i. (Turin, 1892), and *L' Italia degli Italiani*, vol. i. (Turin, 1895). *See* BARTOLOMMEI, MARQUIS FERDINANDO; CAPPONI, GINO; RICASOLI, BETTINO; etc.

LEOPOLD II., LAKE, a Central African lake in the Belgian Congo. It is very irregular in shape, its greatest length being 70 m. (north to south) and it is widest (30 m.) at its north end. It is shallow, its banks low, liable to be flooded, marshy and in places densely wooded, and it is simply the remnant of a vast lake which was practically drained when the river Kasai (*q.v.*) broke through, at Kwa mouth, to the Congo. Its chief affluents are Lokoro and Lukenye and its effluent to the Kasai, the Mfini. The chief places on it are Inongo and Kutu. It was discovered in 1882 by Stanley.

LEOTYCHIDES, Spartan king, of the Eurypontid family, in 491 B.C. succeeded Demaratus (*q.v.*), whose title to the throne he had with Cleomenes' aid successfully challenged. He took part in Cleomenes' second expedition to Aegina, on which ten hostages

were seized and handed over to the Athenians for safe custody: for this he narrowly escaped being surrendered to the Aeginetans after Cleomenes' death. In the spring of 479 he commanded the Greek fleet of 110 ships, first at Aegina and afterwards at Delos. In August he attacked the Persian position at Mycale on the coast of Asia Minor opposite Samos, defeated the army, and annihilated the fleet which was drawn up on the shore. Soon afterwards he sailed home with the Peloponnesians, leaving the Athenians to prosecute the siege of Sestos. In 476 he led an army to Thessaly to punish the Aleuadae for helping the Persians and to strengthen Spartan influence in northern Greece, but was bribed to withdraw. For this he was tried at Sparta, and fled to the temple of Athena Alea at Tegea. Sentence of exile was passed, his house was razed and his grandson Archidamus II. ascended the throne (Herod. vi. 65–87, ix. 90–114; Thucydides i. 89; Pausanias iii. 9–10; Plutarch, *De malignitate Herodoti*, 21, p. 859 D; Diodorus xi. 34–37). The chronology of his reign and death is somewhat obscure. He died probably in 469.

See G. Busolt, *Griech. Geschichte*, iii. 83, note; J. B. Bury, *History of Greece*, p. 326; G. Grote, *History of Greece*, new edition 1888, iv. 349, note; also abridged edition 1907, p. 273, note 3.

LEOVIGILD or **LÖWENHELD** (d. 586), restorer of the Visigothic kingdom, king in 568, ruled until 572 over the part of this kingdom which lay to the south of the Pyrenees when his brother Luiva, or Leova, who governed the small part to the north, died and he became sole king. Menaced externally by the Byzantines and Suevi, and internally by the dissensions between the orthodox Christians and Arians, Leovigild began by attacking the Byzantines, whom he defeated; he chastised the Suevi, and took Cordova, capturing before the end of his reign their whole kingdom. Having given peace to his people, he made Toledo his capital, and associated in his rule his two sons, Recared and Hermenegild. Leovigild was an Arian, the last of the Visigothic kings to hold that creed. Hermenegild, however, had been converted to the orthodox faith and he headed a formidable insurrection of the Byzantines and orthodox Christians; defeated and captured, he refused to give up his faith and was executed in 585. He was canonized, at the request of Philip II. of Spain, by Pope Sixtus V. Leovigild died at Toledo on April 21, 586.

LEPANTO, THE BATTLE OF. The battle of Lepanto was fought on Oct. 7, 1571, between the forces of the Christian League and Turkey. The League had been formed mainly by the efforts of Pope Pius V. to whom Venice had appealed against the constant depredations of the Turk, culminating in their seizure of Cyprus; and its naval forces were supplied mainly by Venice and Spain—the former having Barbarigo and Veniero as their principal admirals, the latter the marquis of Santa Cruz; there was also a small squadron from the Papal States, commanded by Colonna, and a Genoese squadron under Andrea Doria. The total Christian force numbered over 300 ships, including eight galleasses and some 208 galleys. The supreme command was given to Don John of Austria. The allies concentrated at Messina, the Turk making no attempt to intercept a Venetian squadron which had to join them from the eastern Mediterranean. Thence they proceeded to the Gulf of Lepanto where the Turkish force from the Aegean awaited them.

The Turks, 300 strong, including over 250 galleys, were drawn up just inside the gulf, stretching nearly from shore to shore. The commander-in-chief, Ali Pasha, was in the centre, and the right and left were commanded by Mahomet Sirocco and Uluch Ali, respectively. The allies had to deploy round the headland on the northern side of the gulf and then, the galleasses leading, descended in line abreast on the Turk. On the two flanks they were not immediately successful. Barbarigo, on the left, came under the full fire of the Turks as he deployed, while Uluch Ali completely outmanoeuvred the Christian right. Pretending to outflank his foe, he induced Andrea Doria to part company with his centre and broke through the gap so created, the situation only being saved by the foresight of Santa Cruz with the reserve squadron. In the centre, however, the Christians achieved great success. Ali Pasha's galley was captured and his squadron utterly beaten. Panic spread to the other Turkish squadrons, and the greater part of their fleet was taken or destroyed, Uluch Ali alone escaping with some of his ships.

The battle is remarkable in two ways. First, as the last great battle in which both sides used oar-propelled vessels; secondly, for its enormous casualties, reckoned at various figures. The Christians had some 8,000 men killed and double that number wounded, while the Turks had about 25,000 killed and an unknown number wounded. Further, some 15,000 Christians in the Turkish galleys were liberated from slavery.

See Sir W. Stirling Maxwell, *Don John of Austria* (1883); Jurien de la Gravière, *La Guerre de Chypre et la bataille de Lepanto* (1888); J. R. Hale, *Famous Sea Fights* (1919). (G. A. R. C.; J. G. B.)

LEPCHA, the name of the aboriginal inhabitants of Sikkim (*q.v.*). They practice polyandry and are polygamous. The father transmits bone to his offspring, while the flesh and blood come from the mother. Marriage is by service coupled with a small payment. A man may cohabit with the younger sisters of his wife. The eldest brother's wife is common to all the brothers, only the youngest having his wife to himself. Unions with blood relatives are punished with banishment. Animistic beliefs colour the numerous folk-tales, while Tibetan Lamaism is the official religion. Ancestral spirits are the Rimi who often die, descend in the shape of a hailstone which impregnates the woman who swallows it. A peculiar part is played by a supernatural "Binthing"—an exorciser. A special alphabet was invented in the 18th century based on a form of Tibetan. The language is of Tibetan affinity.

See *Journal of the Asiatic Society of Bengal*, vol. xxi., 1925, No. 4.

LE PELETIER (or LEPELLETIER), **DE SAINT-FARGEAU, LOUIS MICHEL** (1760–1793), French politician, was born on May 29, 1760, at Paris. He became president of the parlement of Paris and in 1789 he was a deputy of the *noblesse* to the States General. On July 13, 1789 he demanded the recall of Necker. In the Constituent Assembly he won popularity by moving the abolition of the penalty of death, of the galleys and of branding, and the substitution of beheading for hanging. On June 21, 1790 he was made president of the Constituent Assembly. He represented the department of Yonne in the Legislative and in the Convention. His vote for the king's death resulted in his assassination by a member of the king's body-guard on the eve of the king's execution (Jan. 20, 1793).

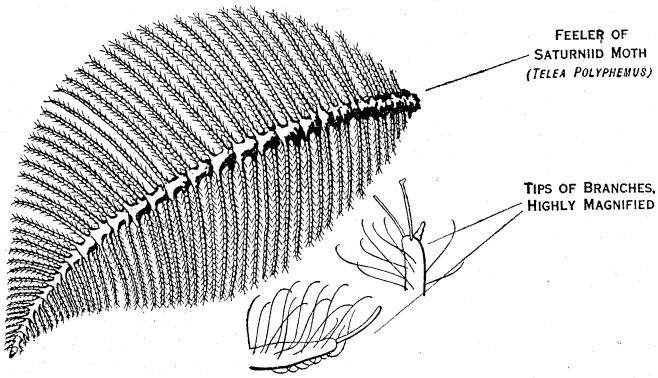
See *Oeuvres de M. de le Peletier de Saint-Fargeau* (Brussels, 1826) with a life by his brother Félix.

LEPIDOLITE or **LITHIA-MICA,** a mineral of the mica group (*see* MICA). It is a basic aluminium, potassium and lithium fluo-silicate, with the approximate formula $KLi[Al(OH,F)_2]Al(SiO_3)_3$. Lithia and fluorine are each present to the extent of about 5%; rubidium and caesium are sometimes present in small amounts. Distinctly developed monoclinic crystals or cleavage sheets of large size are of rare occurrence, the mineral being usually found as scaly aggregates, and on this account it was named lepidolite (from Gr. λεπίς, scale). It is usually of a lilac or peach-blossom colour, but is sometimes greyish-white, and has a pearly lustre on the cleavage surfaces. The hardness is $2\frac{1}{2}$–3 and the sp.gr. 2·8–2·9, the optic axial angle measures 50°–70°. It is found in pegmatite-veins, often in association with pink tourmaline (rubellite). Scaly masses of considerable extent are found at Rozena near Bystritz in Moravia, also at Pala in San Diego county, Calif., where it has been extensively mined for the extraction of lithium and rubidium salts. The mineral occurs in the island of Utö in Sweden and the Oiseau River district in Manitoba. At Alabashka near Mursinka in the Urals large isolated crystals have been found, and from Central Australia transparent cleavage sheets of a fine lilac colour are known.

The lithium-iron mica *zinnwaldite* or *lithionite* is closely allied to lepidolite, differing from it in containing some ferrous iron in addition to the constituents mentioned above. It occurs as greyish silvery scales with hexagonal outlines in the tin-bearing granites of Zinnwald in Bohemia and of Cornwall.

LEPIDOPTERA, the name used in zoological classification for that order of insects which comprises the butterflies and moths. The term (Gr. λεπίς, a scale, and πτερόν, a wing) was first used by Carolus Linnaeus (1735) and has been retained by all

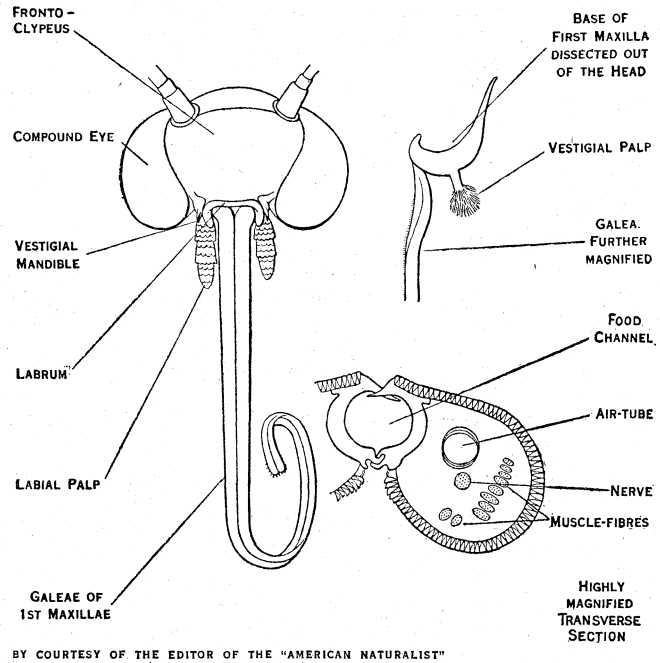
naturalists after him. Lepidoptera are among the most familiar and easily recognizable insects and have long been popular objects for study and collecting, largely because of the great beauty of coloration exhibited by so many of the species, together with the interest that is afforded by following their transformations. Their most easily observable characteristic is the scaly covering of the wings, body and appendages, which comes off on the fingers as a dust



FROM RILEY AND HOWARD, "INSECT LIFE," VOL. 7, U.S. DEPT. AGR.

FIG. 1.—ANTENNA OF A MALE SATURNIID MOTH, SHOWING THE COMB-LIKE BRANCHES, WHICH ARE MUCH LESS DEVELOPED IN THE FEMALE

when these insects are handled, and, if examined under a microscope, this "dust" is seen to be composed of minute scales of definite forms. Most Lepidoptera also possess a coiled "tongue" or haustellum in front of the head. Metamorphosis is complete and the larvae are caterpillars which most frequently have eight pairs of feet; the pupae generally have their appendages more or less glued down to the body and are said to be obtected and are usually enclosed in a silken cocoon or in an earthen cell. At least



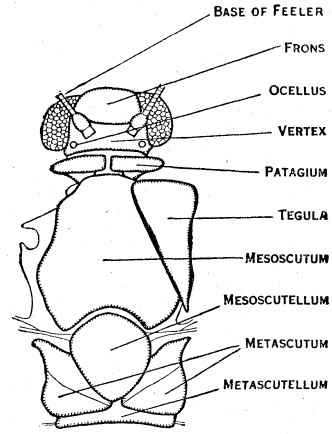
BY COURTESY OF THE EDITOR OF THE "AMERICAN NATURALIST"

FIG. 2.—DIAGRAMMATIC REPRESENTATION OF THE ARRANGEMENT OF THE MOUTH-PARTS IN A TYPICAL MOTH

80,000 species were described by 1945 and of these over 2,000 inhabit the British Isles and about 10,000 occur in America, north of Mexico.

GENERAL STRUCTURE

The Head.—The head is small and subglobular in shape with the compound eyes exceedingly well developed and a pair of simple eyes or ocelli often present on the vertex (fig. 3). The antennae are many-jointed: in numerous moths they are thread-like, in others they bear comb-like processes and are said to be pectinate (fig. 1), a development that is most pronounced in the males; among butterflies the antennae terminate in a club or knob. The mouth-parts (fig. 2) are nearly always adapted for sucking, with the mandibles reduced to vestiges or entirely wanting. The maxillae have their two galeae greatly elongated and interlocked to form a sucking tube, through which the food is imbibed; it is coiled up in a watch-spring-like manner when at rest, but extended straight out when sucking nectar from flowers. Maxillary palpi are generally reduced or wanting and the labium is represented by a small plate generally bearing prominent three-jointed palpi. In some Lepidoptera the mouth-parts are aborted and no food is taken in the adult stage, while at the other extreme in certain hawk moths the haustellum is more than six in. long and adapted for probing the deeply-seated nectaries of tubular flowers. In a few cases the haustellum bears toothed spines at its apex, and those moths which possess this feature are able to lacerate the rind of fruits and suck the juices within.



AFTER IMMS, "GENERAL TEXTBOOK OF ENTOMOLOGY"

FIG. 3.—DORSAL VIEW OF HEAD AND THORAX OF A YELLOW UNDERWING MOTH (AGROTIS PRONUBA) WITH HAIR AND SCALES REMOVED

The Thorax.—The thorax (fig. 3) has its first segment small and usually collar-like, but often bearing lateral processes or *patagia* that are very characteristic of the order. The mesothorax is very large and carries a pair of well-developed plates or *tegulae*, which often overlap the bases of the wings; in almost all species the metathorax is small and inconspicuous. The wings are membranous and clothed with modified hairs termed scales; in many species almost every transition between flattened hairs and broad scales can be detected under a microscope (fig. 4). Most scales are longitudinally striated and there are often tiny cross strioles or connecting bars between the striae. Each scale has a very complex structure of chitinous bars forming a grating in three directions and revealed only by the electron microscope. When spaced at the proper distance (half the wave length of the light concerned) these bars produce brilliant interference colours. Peculiar scales known as *androconia* are found in the wings of the males of certain Lepidoptera; in some cases they occur in "brands" or patches and physiologically they are glandular structures that secrete an odour often very characteristic for particular species. The wings of a side are linked together by a coupling apparatus which exists

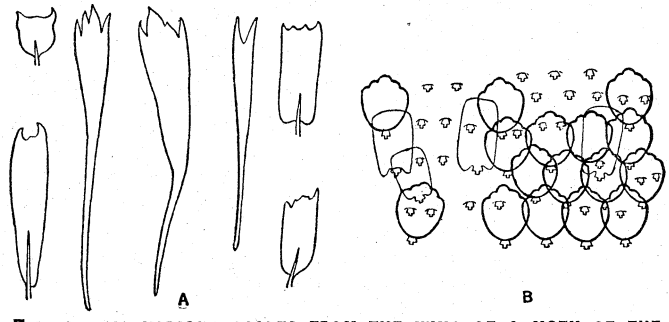
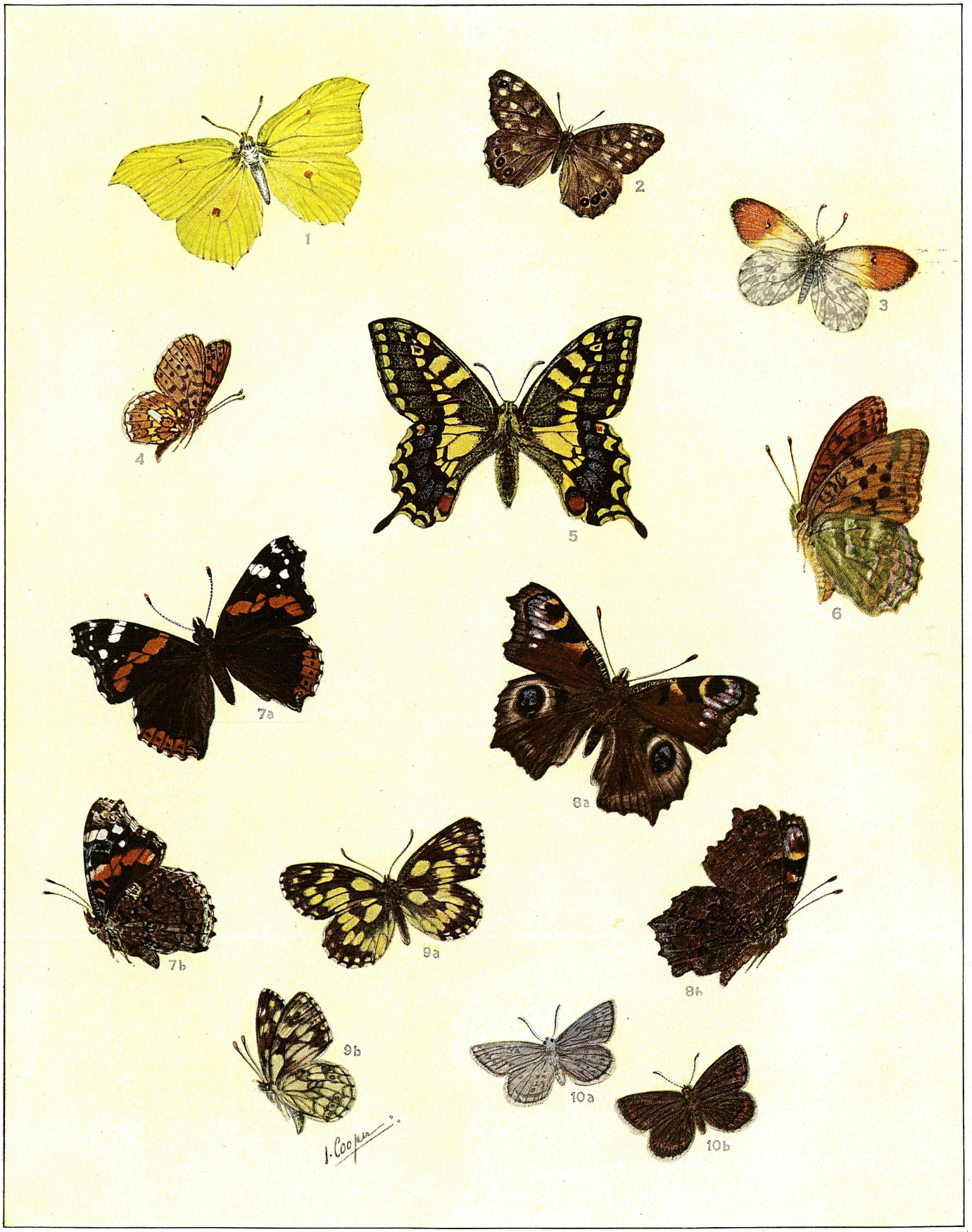


FIG. 4.—(A) VARIOUS SCALES FROM THE WING OF A MOTH OF THE FAMILY URANIIDAE: (B) PORTION OF THE WING OF A FRITILLARY BUTTERFLY (ARGYNNIS) SHOWING ARRANGEMENT OF THE SCALES AND EMPTY SOCKETS WHERE SCALES WERE REMOVED

in several forms (fig. 5). In the primitive swift moths a finger-like process or *jugum* of the forewing grips and overlaps the base of the hind wing when the insect is in flight. In most moths a group of stiff setae, forming the *frenulum*, arises from the base of the hind wing and passes beneath the fore wing where it is retained in position by a catch or *retinaculum;* in the male the setae of the frenulum are usually fused into a single stout bristle, but in the female they remain separate. Among some moths and in butterflies there is no frenulum, and the humeral lobe at the



PAINTED FOR THE ENCYCLOPÆDIA BRITANNICA BY ISABEL COOPER AFTER SPECIMENS IN THE AMERICAN MUSEUM OF NATURAL HISTORY

BUTTERFLIES OF EUROPE

1. *Gonepteryx rhamni*, brimstone butterfly of Europe and Asia. 2. *Pararge aegeria*, speckled wood butterfly, of central Europe. 3. *Anthocharis cardamines*, orange tip butterfly, found in British Isles. 4. *Argynnis euphrosyne*, pearl bordered fritillary, common in Europe. 5. *Papilio machaon*, swallow tail butterfly. Widely distributed. 6. *Argynnis paphia*, silver-washed fritillary, found in Europe and Asia. 7a. *Vanessa atalanta*, red admiral. Widely distributed. 7b. Underwing view of the red admiral *(Vanessa atalanta)*. 8a. *Vanessa io*, peacock butterfly, common in Europe and Asia. 8b. Underwing view of peacock butterfly *(Vanessa io)*. 9a. *Melanargia galathea*, marbled white butterfly of Europe. 9b. Underwing view of marbled white butterfly *(Melanargia galathea)*. 10a. *Lycaena icarus* (male), common blue butterfly of Europe, Asia and Africa. 10b. *Lycaena icarus* (female)

LEPIDOPTERA

PAINTED FOR THE ENCYCLOPÆDIA BRITANNICA BY ISABEL COOPER AFTER SPECIMENS IN THE AMERICAN MUSEUM OF NATURAL HISTORY

BUTTERFLIES OF NORTH AMERICA

1. The Falcate Orange-tip (*Anthocharis genutia*)
2. The Common Sulphur (*Eurymus philodice*)
3. The American Copper (*Heodes hypophlaeas*)
4. The Cabbage Butterfly (*Pieris rapae*)
5. The Tiger Swallow-tail (*Papilio glaucus*): (a) black female, (b) male
6. The Colorado Parnassian (*Parnassius smintheus*)
7. The Great Spangled Fritillary (*Argynnis cybele*)
8. The Mourning Cloak (*Aglais antiopa*)
9. Milbert's Tortoise-shell (*Aglais milberti*)
10. The Viceroy (*Basilarchia archippus*)
11. The Zebra (*Heliconius charithonia*)

base of the hindwing is greatly developed and projects some distance beneath the forewing, where it is held in position.

The Wing-veins.—For practical purposes the wing-veins may be thought of as a loop, enclosing the discal cell (fig. 6) from which a series of branches radiate to the margins, with one free vein (subcosta) in front and one to three (anals) behind it. The original Comstock system (used in this article), the earlier system still sometimes used to designate the main veins and the Herrich-Schaeffer number system correspond as follows:

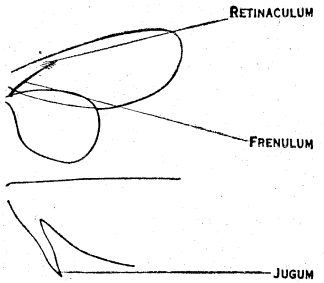


FIG. 5.—ABOVE, DIAGRAM OF THE UNDER SURFACE OF LEFT WING OF A PSYCHID MOTH. BELOW, BASE OF FOREWING OF A SWIFT MOTH

COMSTOCK	EARLIER SYSTEM	HERRICH-SCHAEFFER (Fig. 27)
	MAIN VEINS	
Subcosta (Sc)	Costal (C)	12
Radius (R)	Subcostal	
Media (M)	– – – – –	
Cubitus (Cu)	Median	
1st anal (1stA)	"the fold"	1c
2nd anal (2dA)	Submedian (SM)	1b
3rd anal (3dA)	Anal (hind wing)	1a
	BRANCHES	
5 radials (R_1 to R_5)	5 subcostals	11-7
1st medial (M_1)	Upper radial (UR)	6
2nd medial (M_2)	Lower radial (LR)	5
3rd medial (M_3)	Upper median (M_3)	4
1st cubital (Cu_1)	Middle median (M_2)	3
2nd cubital (Cu_2)	Lower median (M_1)	2

In the hind wing, where four radials are absent in higher moths and butterflies, Herrich-Schaeffer numbers the surviving radial vein seven, and subcosta eight.

The Legs.—The legs characteristically have five-jointed tarsi; the forelegs bear a modified upper spur (the epiphysis), the middle legs two end spurs and hind legs both upper and end spurs. In many butterflies the forelegs are unused and reduced; in a few geometrid moths, the hind legs.

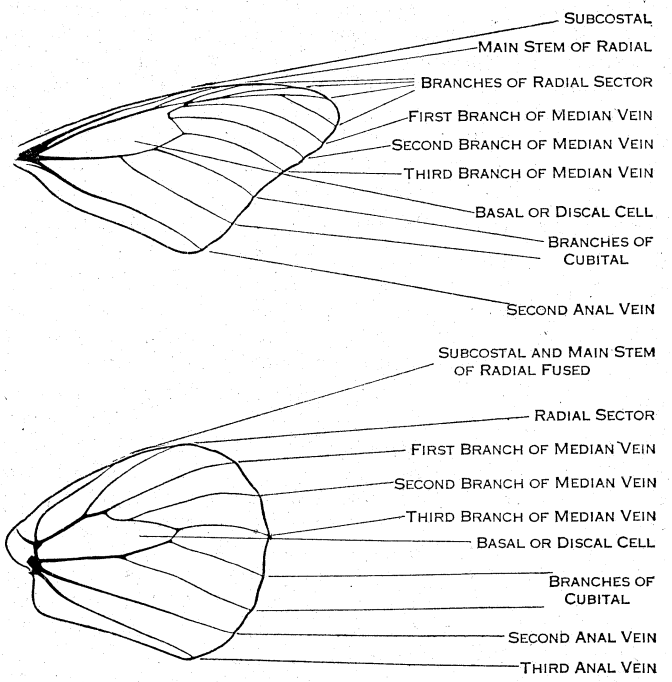


FIG. 6.—VENATION OF A MONARCH BUTTERFLY

Auditory Organs.—The great majority of Lepidoptera carry organs for the perception of vibrations, frequently with resonating structures in the form of air sacs and tightly stretched membranes. Their position is characteristic of the group. In the Noctuoidea this "tympanum" is on the thorax below the base of the hindwing, in the Geometridae and most Pyralididae at the base of the abdomen, below; in the Nymphalid butterflies in the swollen base of the subcostal vein, etc.

Abdominal Segments.—Ten abdominal segments are present in the Lepidoptera, but the sternum of the first is degenerate or modified into the tympanum, and the last two are transformed into the external organs of reproduction. The fundamental structures of the male are shown in fig. 7, and their modifications are of major importance in classification. In the female the ovipositor is never valvate as in primitive insects, but takes many forms, lobed, telescopic, or hard, serrate and piercing, adapted to the manner of laying eggs. In all but a few primitive families there are two reproductive openings, one for copulation and the other for laying eggs.

CLASSIFICATION

The first scientific arrangement of Lepidoptera was that of Linnaeus in 1758. He divided them into three genera, *Papilio*, including the butterflies, *Sphinx* and *Phalaena*. The first and last were subdivided into named groups similar to modern subgenera. His subdivisions of Papilio were abandoned, but his Sphinx, Phalaena Noctua, Geometra, Pyralis, Tortrix and Alucita correspond roughly to the modern families Sphingidae, Noctuidae, Geometridae, Pyralididae, Tortricidae and Pterophoridae. His Bombyx is represented by many families of generally stout, and often weak-tongued and sluggish moths, still loosely referred to as the "Bombyces"; and his Tinea to a similar series of families of small, slender, broad-fringed and soft-scaled moths often called Tineae, or loosely, Tineidae.

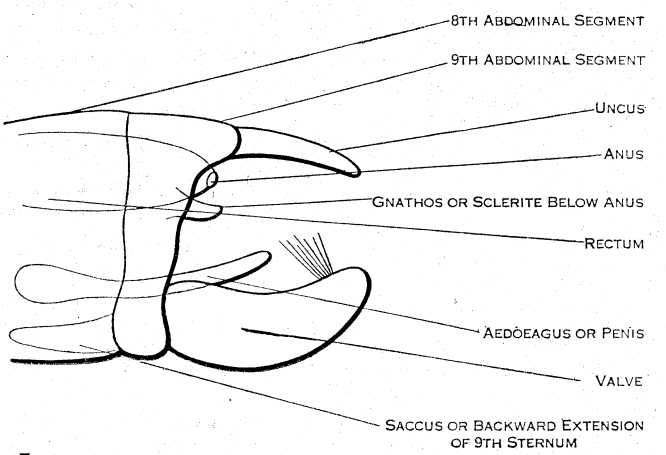


FIG. 7.—DIAGRAM OF THE APEX OF THE ABDOMEN OF A MALE MOTH

The moths are also divided into Microlepidoptera or "Micros," comprising the first groups discussed below (including or excluding the Pyralididae), except those whose build and habits cause them to be classed as "Bombyces"; and the "Macros," including the Lepidoptera above the Pyralididae. Another common subdivision of the higher moths is according to the position of vein media-two (M_2); if this arises low down, so that it is more or less clearly a branch of the cubital stem, at least in the forewing, the moths are called Quadrifidae; if independent, so that cubitus appears to have only three branches, Trifidae. These two terms are also used of the two main subdivisions of the family Noctuidae, basing the names in this case on the condition of the hindwing.

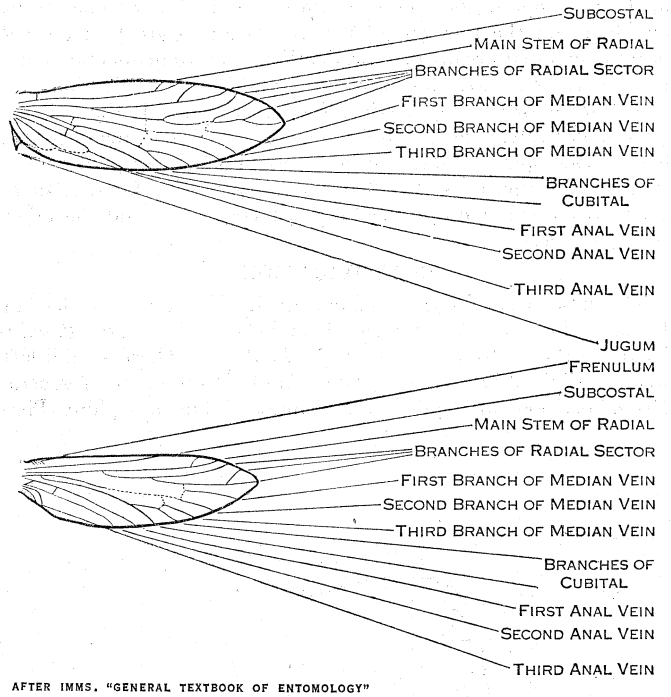
The following arrangement is based on that in W. T. M. Forbes' *Lepidoptera of New York*.

SUBORDER I JUGATAE (HOMONEURA)

Venation of fore and hindwings similar, vein R with four or five branches in both pairs of wings; forewings provided with a jugum (fig. 5)

Of the half-dozen families forming this suborder, only three are found in the north temperate zone, and they are not closely related.

The *Micropterygidae* are very small moths, usually brilliantly coloured and flying by day; with a digestive system suited to eating pollen; with well-developed mandibles (fig. 9), and no sucking tongue. The wings are much like the following family, and also the pupa, but the eggs are laid externally on mosses and liverworts in wet places, on which the larvae feed exposed. The chief northern genera are *Micropteryx* and *Epimartyria,* with the more primitive *Sabatinca* in New Zealand.



AFTER IMMS, "GENERAL TEXTBOOK OF ENTOMOLOGY"

FIG 8.—RIGHT WINGS OF MNEMONICA SUBPURPURELLA (JUGATAE, FAMILY ERIOCRANIIDAE)

The *Eriocraniidae* (fig. 8) are strictly nectar feeders, with a short but spirally coiled tongue like higher moths; the last segment of the abdomen is modified into a piercing ovipositor, by which the eggs are laid in the tissue of leaves, and the larvae, which are unique in structure, feed as leaf miners on woody plants,—birch, chestnut, hazel, etc. The pupa, which is formed in the ground, has enormous crossed mandibles, like a caddis fly pupa, with the help of which it digs its way to the surface before the moth emerges. *Eriocrania* and *Mnemonica* are the chief genera.

The *Hepialidae* or swift moths contrast with the two preceding, being "Bombyces" in build; with no functional mouth-parts, and in the north temperate species, no spurs on the tibiae. They are medium, large or even gigantic moths, and are most widely represented in Australia. The larvae are borers, most frequently in woody plants, although the ghost moth of Europe (*Hepialus humuli*) works in the roots of herbaceous plants.

SUBORDER II FRENATAE (HETERONEURA)

Venations of fore and hindwings markedly different; the hindwing showing only a single free radial vein (or two in a very few primitive types); jugum absent, frenulum normally present

This suborder is generally taken to include the enormous residue of Lepidoptera; but butterflies have a long history of their own, and have some right to be considered a third suborder (the *Rhopalocera*), marked by the combination of loss of the frenulum and clubbed antennae, with the sensory area practically limited to the club; they also have differences in the pupal tracheation (R_{4+5} arising before R_1) and in the egg and larva.

Many of the families can be grouped into superfamilies, but the relationships of others are still uncertain. The following analysis takes early stages as well as adults into consideration, and tries to take a middle position in the delimitation of families, subdividing less than the Washington but more than the Vienna school.

The family Incurvariidae (or *Adelidae,* including the *Prodoxidae*) is the most primitive of Frenate families and has the general structure of the Tineidae (fig. 11), but still preserves the piercing ovipositor of the Eriocraniidae. The larvae are borers,

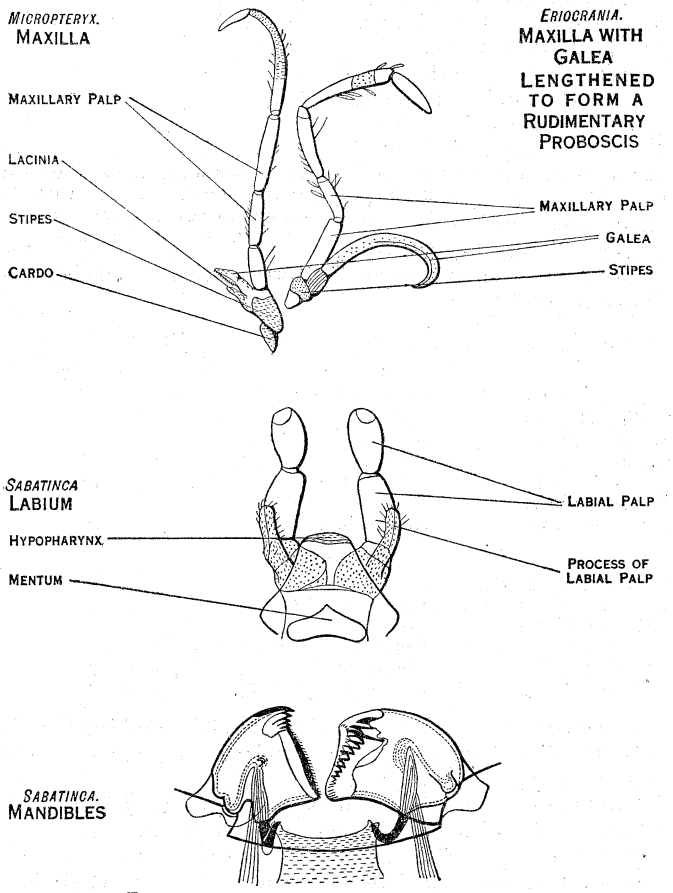
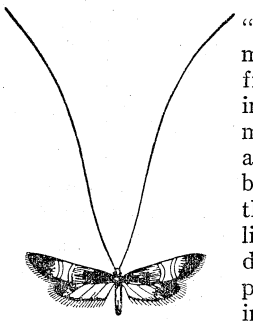


FIG. 9.—MOUTH-PARTS OF MICROPTERYGIDAE

seed feeders, or most frequently live in portable cases (*e.g., Adela,* fig. 10). The most curious habit is that of *Tegeticula* (*see* below, under, *Departure from Usual Life History*). The *Nepticulidae* are a degenerate family of minute moths, and are the smallest of Lepidoptera, some having a wing expanse of only three mm. Most of them are leaf miners, usually forming serpentine mines. These two families appear to be world-wide, but are generally neglected except in Europe and North America.

SUPERFAMILY ZYGAENOIDEA (THE SLUG CATERPILLARS)

Moths of Bombycine build, frequently with proboscis degenerate; with complete venation, including a vein through the cell (the actual base of media) and the first anal preserved; caterpillars very stout and slug-like; pupae short, stout and thin-skinned, dorsally covered with fine spinules



BY COURTESY OF THE TRUSTEES OF THE BRITISH MUSEUM (NATURAL HISTORY)

FIG. 10.—ADELA DEGEERELLA. EUROPE

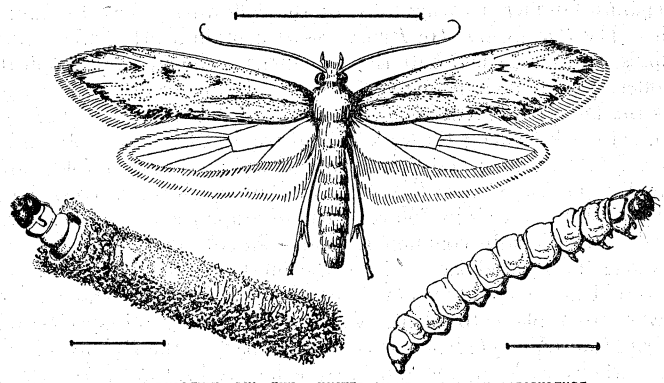
The pupa is an extreme of the so-called "incomplete" type, with most of the segments movable, and capable of emerging from the cocoon with the aid of a pumping motion of the abdomen, before the moth emerges. It is extremely primitive also in venation and thoracic structure, but biologically occupies the same place as the higher (unrelated) "Bombycine" families. Many of the larvae possess sucking disks on the prolegs, in addition to, or in place of the usual hooks. The pupae are in silken cocoons, made of distinctive flat ribbon-like silk, and are usually provided with a lid or trap door for the emergence of the pupa. The *Zygaenidae* include the burnets and foresters. They fly slow-

ly and by day, and are almost limited to the old world. *Zygaena* includes many European kinds, generally black with pale or crimson spots and frequently with blue or green iridescence; the Chalcosiinae dominate in the oriental region, where many enter into Müllerian mimetic groups; in *Himantopterus* the hindwings are drawn out into long filaments. America has only a few dull blackish species. The *Eucleidae* or *Limacodidae* are a large and world-wide family (but relatively few in Europe), adapted to wet climates. The curious slug-like larvae have the head completely drawn into the body, and the prolegs replaced by eight pairs of suckers, without hooks. The majority have spines, and some sting severely like nettles, but a few, like the two European species, are smooth. In the *Megalopygidae* or flannel moths, the larvae have prolegs, and the suckers are also lengthened into false prolegs, seven or eight pairs in all; they also have irritant hairs, and some sting severely. Their distribution is curious, being limited to America and North Africa.

The *Epipyropidae* may be considered an appendage of this superfamily. They are most unusual for Lepidoptera in having a parasitic larva, living externally on nymphs of Fulgoridae. The larva is slug-like, but the moth is more like a Psychid than a Zygaenoid. The few species are found in the U.S., Japan, China and the tropics, but are best represented in Australia. The curious Australian genus *Cyclotorna* may also be related. Its larva is a parasite on Fulgoridae only when young, then undergoes a drastic change of structure and finishes its life as a social parasite in ants' nests. The moth looks more like an unusually smooth Tineid.

Superfamily Tineoidea

This heading may serve to group a varied and ill-defined mass of families more or less related to the Tineidae. Typically the head is rough, maxillary palpi long and folded, labial palpi clumsily shaped and bristled, larva with setae four and five (the two below the spiracle) wide apart, and pupa incomplete, but slender and rather well chitinized. But this structure is only a norm, from which there is divergence in all directions. The *Tineidae* (fig. 11) are a varied family of small moths, whose larvae are mostly scavengers or fungus feeders; one species, discovered in Florida in 1943, makes a gall on Helianthus; the notorious clothes moths are included, but no normal leaf feeders are known. Many larvae, like one of the clothes moths (*Tinea pellionella*), live in portable cases. A few are reported as predacious. The *Psychidae* or bagworm moths cover every possible range of structure from almost normal Tineidae to large heavy-bodied types generally considered "Bombyces." In the higher forms the male body is heavy, the wings small but strong, and frequently almost transparent, while the female is degenerate; ranging from types which are active crawlers, with fully developed legs and antennae, but no wings or mouth-parts, to maggot-like creatures with no appendages, and only a tuft of hair-scales on the end of the body



AFTER MARLATT, IN BULLETIN, DIV. ENT., UNITED STATES DEPT. OF AGRICULTURE

FIG. 11.—CLOTHES MOTH (TINEA PELLIONELLA) WITH LARVA IN AND OUT OF ITS CASE. MAGNIFIED

to show their Lepidopterous origin. These latter never leave the cocoon, but are fertilized within it, and lay their eggs in the pupa shell. All the larvae form portable cases, of silk, usually covered with bits of leaves or other vegetable fragments. They are best represented in the temperate old world, but very few inhabit Great Britain. In the eastern U.S. the most famous is the bagworm, *Thyridopteryx ephemeraeformis*. It is an advanced type, the male with black body and transparent wings, the female maggot-like; and feeds on many trees, both evergreen and deciduous. It is sometimes a serious pest on shade trees, especially in the suburbs of cities and in parks, reaching its northern limit not much above New York city.

In other more or less related families we may mention the trumpet miners (*Tischeria, Tischeriidae*), the ribbed-cocoon makers (*Bucculatrix, Lyonetiidae*) which are leaf miners when young but later skeletonize leaves; the *Gracilariidae,* which have a hypermetamorphosis, the young larvae being sap-feeding leaf miners, with thin knife-like mandibles suitable only for slashing open plant cells and sucking the juices; the late larvae more normal in structure, although lacking the fourth pair of prolegs. *Lithocolletis* are blotch miners of this type, but in about half the species the larva does not feed after its change of structure.

The *Yponomeutidae* are less closely related, having an obtect pupa (*i.e.* with the wings soldered to the first four segments of the abdomen, so that only the following segments, if any, are movable, and the pupa unable to progress out of the cocoon). But they still have an unusually large metathorax, and the larva has several series of hooks on the prolegs. The small ermine moths (*Yponomeuta*) have white wings dotted with black, and the larvae are gregarious in a web. *Plutella maculipennis* is the wide-spread diamondback moth, whose larva is injurious to plants of the cabbage family. It is sometimes made a separate family, *Plutellidae,* marked by straight maxillary palpi.

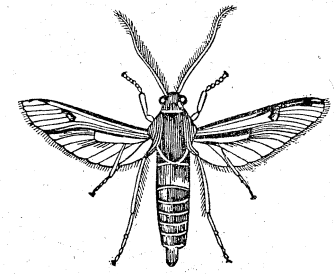


FIG. 12.—CLEAR-WING MOTH (MEMYTHRUS ASILIPENNIS). GEORGIA

The *Aegeriidae* (*Sesiidae*) comprise the clearwing moths (fig. 12), distinguished by the absence of scales over the greater part of the wings, and the fact that the fore and hindwings are locked together by a special series of spines (like the Hymenoptera).

Many bear a remarkable resemblance to wasps, bees or ichneumon flies, and fly like them in the sunshine. Their larvae are stem or wood borers, but usually do not bore deeply in larger limbs. Several are serious pests, such as the currant borer (*Chamaesphecia tipuliformis*); the squash borer (*Melittia satyriniformis,* with its many tropical relatives); and the peach-tree borer (*Conopia exitiosa*).

Superfamily Gelechioidea

Moth of normal Tineoid type but with smooth head, minute maxillary palpi of folded type. Larva with setae four and five close together; pupa obtect, more or less flattened

This is a very large and well characterized group, the two families Gelechiidae and Oecophoridae each containing some 3,000 species. In these two families, and also the Xyloryctidae, Stenomidae, etc., the wings are ample, the hindwing broad and the venation complete, but in the Cosmopterygidae and Lavernidae the hindwings are reduced to a thread, bearing an enormous fringe. Most are plant feeders,—leaf rollers, seed eaters, borers, —but there are some scavengers, especially in the Blastobasidae, and the isolated genus Endrosis is a stored food pest. Many are pests, but the pink bollworm of cotton (*Pectinophora gossypiella*) and the angoumois grain moth (*Sitotroga cerealella*), both Gelechiidae, are perhaps most notorious.

The individual families are frequently world-wide, but the Oecophoridae and Xyloryctidae (fig. 36) are best developed in Australia, the Stenomidae in South America, and the Blastobasidae in North America.

Possibly related to these families are the case-bearers, *Coleophora,* whose larvae are at first leaf miners and later live in portable cases.

Superfamily Tortricoidea

Soft-scaled moths with venation complete or nearly so; the cell commonly divided by the preservation of the base of media, first anal preserved in at least one pair of wings, head commonly somewhat rough, labial palpi blunt and maxillaries rudimentary. Larva with setae four and five close together; pupa incomplete and heavily spined

This is a varied-looking lot of types, but strongly linked together by the very similar early stages; the great majority of the

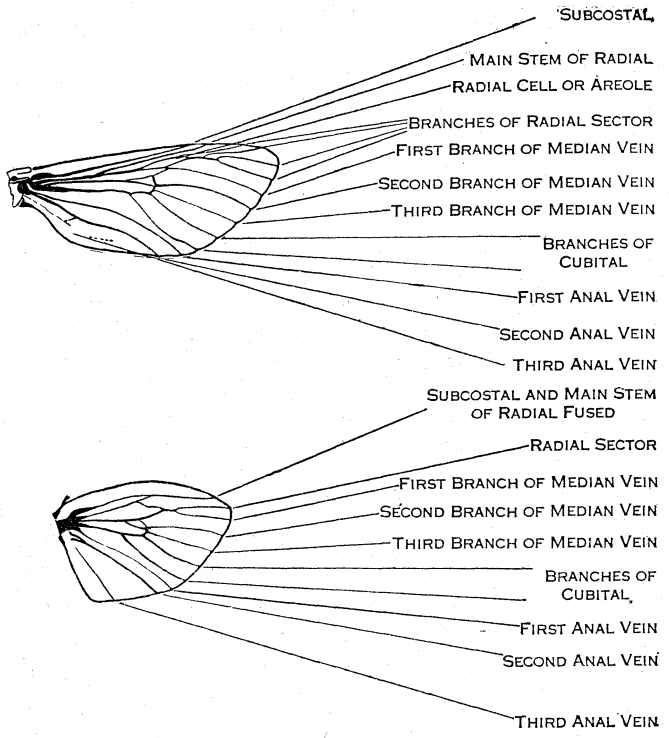


FIG. 13.—VENATION OF PRIONOXYSTUS ROBINIAE (FROM COMSTOCK)

larvae being borers, and the rest (part of the Tortricidae) leaf rollers or folders.

The more normal members are "Micros" but the Cossidae are traditional "Bombyces" and include so far as bulk goes, the largest of moths. The Castniidae are almost identical in larva and pupa, and similar in venation, having preserved first anal and the lower fork of the base of media, like the Tortricidae; but they are butterfly-like in their colouring, habits and clubbed antenna, and were formerly often rated as butterflies. There is little doubt that they are actually related to the ancestor of the butterflies.

The *Tortricidae* are smallish moths, with thin wings, often very broad at the base, giving them the shape of a bell when the wings are folded. There are a good many injurious species, among them the codling moth (*Carpocapsa pomonella,* see Codling Moth) and oriental fruit moth (*Laspeyresia molesta*). There are two subfamilies (raised to families by some). The *Tortricinae,* without a fringe of hair along the base of vein cubitus of the hindwing, have leaf-rolling larvae, among them several injurious apple leaf rollers in America and the well known bright green oak feeding *Tortrix viridana* of Europe. The *Eucosminae* possess a fringe, and include all the injurious boring and fruit feeding species, as well as a few leaf rollers, such as the Hydrangea leaf roller, *Exartema ferriferanum.*

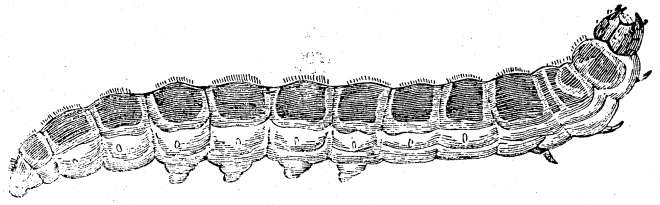


FIG. 14.—LARVA OF GOAT MOTH (COSSUS COSSUS). EUROPE

The *Phaloniidae* are several hundred rather humped-looking moths, with the first anal vein wholly lost, and cubitus-two arising much nearer the end of the cell. They are obscure and little known, all borers, mostly in herbaceous plants.

The *Cossidae* are primitive-looking, very heavy moths, with the mouth-parts and leg-spurs much reduced, but venation very complete (fig. 13), with forked base of medial vein in the cell, and a well-marked areole. All the larvae are borers, many of them in hard wood, and several are serious pests of forest and shade trees. Best known are the leopard moth of Europe, now established at several places on the Atlantic coast of the U.S., (*Zeuzera pyrina*); goat moth of Europe (*Cossus cossus*); carpenter moths of the U.S. (*Prionoxystus robiniae* and *macmurtrei*—figs. 13, 15); red coffee borer of eastern Asia (*Zeuzera coffeae*); and coffee borer of the West Indies (*Xyleutes personalis*).

The *Castniidae* includes a small number of bright-coloured, day-flying moths from tropical America, several from Australia and a couple from Indomalaysia. The adults (fig. 16) are remarkably skipper-like both in looks and habits, but the scales are very loosely attached to their powerful wings, like the Tortricidae, and the larvae are Cossid-like borers, although in Monocotyledonous plants. The gigantic *C. daedalus* is a pest, boring in the trunks of palms; and other species bore in Heliconia (bush banana) and orchids. The eggs of the Castniidae and typical Cossidae are upright and sculptured, like the butterflies, and unlike the Zeuzera group and most Microlepidoptera.

Superfamily Pyralidoidea

Hindwings with veins Sc and R[1] closely parallel or fused beyond the point where R leaves the cell (with few exceptions); first anal vein commonly preserved in hindwing only; tongue commonly scaled at base, like most of the preceding moths; tympanum commonly present, facing forward at ventral base of abdomen. Larva with only two setae on the wart before the first spiracle (like the following moths), with setae four and five close together; pupa obtect

This group has a very distinct array of forms, halfway between the "Micros" and the higher types, and usually disowned by specialists in both. There are more than 10,000 species, mostly of the enormous family Pyralididae, with a few hundred representing half a dozen other families.

The *Pyralididae* are distinguished by always having the characteristic arrangement of subcosta of the hindwing, and two or more radial branches of the forewing strongly stalked (that is, arising as a single vein from the discal cell and then separating before reaching the margin) or totally united. The first anal vein is rarely preserved in the forewing (*Schoenobiinae*), or lost in the hindwing (*Chrysauginae*). The family is divided into a dozen subfamilies, or by some authors is made a smaller number of separate families, treating most of the following groups as families. The *Pyraustinae* (or *Pyraustidae*) contain nearly half of the kinds, and more than half the specimens received from tropical collectors, and include many of the most beautiful of moths, such as the large pale green *Siga liris* of South America, nearly three in. across the wings; the wide-spread tropical bean pest, *Maruca testulalis* (fig. 17); and the black and white grape-leaf folder of the U.S. (*Desmia funeralis*), with its many tropical relatives. The latter forms retreats by folding parts of grape leaves into tunnels, and is occasionally common (*see* also European Corn Borer). Among the Pyralididae we have the most completely aquatic of caterpillars, many of whom form portable cases in which they swim from plant to plant. Caterpillars of several species of *Nymphula* (*Nymphulinae,* or considered part of the *Pyraustidae*), live wholly under water and breathe by tracheal gills. *Acentropus niveus* (*Schoenobiinae*), which is common in Europe, was also discovered in New York and at Montreal, Canada. The meal moth (*Pyralis farinalis, Pyralidinae*), which is widely distributed through commerce, the Mediterranean flour moth and Indian-meal moth (*Ephestia kuehniella* (fig. 18) and *Plodia inter-*

[1]Morphologically these veins should be called Sc+R1 and R2+5; but the incomplete formula seems sufficient for clearness, and will be used hereafter.

PAINTED FOR THE ENCYCLOPÆDIA BRITANNICA BY ISABEL COOPER AFTER SPECIMENS IN THE AMERICAN MUSEUM OF NATURAL HISTORY

MOTHS OF EUROPE

1. *Spilosoma menthastri*, the white ermine. 2. *Zygaena filipendulae*, six-spotted burnet, very common in Europe and Asia. 3. *Acherontia atropos*, the death's-head hawk moth, usually scarce in Europe. 4. *Macroglossa bombyliformis*, the beehawk moth, common in southern England. 5. *Gastropacha quercifolia*, lappet moth of Europe and southern England. 6. *Arctia caja*, common tiger moth, found in Europe, Asia and North America. 7. Side view of *Arctia caja*, common tiger moth. 8. *Catocala fraxini*, a rare species, probably migrated to England from the Continent. 9. *Pygaera bucephala*, buff-tipped moth, plentiful throughout most of Europe. 10. *Eudia pavonia*, the emperor, found in Portugal and central and southern Europe. 11. *Smerinthus ocellatus*, the eyed hawk moth, found in England, Europe and Asia. 12. *Orgyia antiqua*, the vapourer moth, showing the male and wingless female

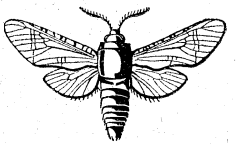
PAINTED FOR THE ENCYCLOPÆDIA BRITANNICA BY ISABEL COOPER AFTER SPECIMENS IN THE AMERICAN MUSEUM OF NATURAL HISTORY

MOTHS OF NORTH AMERICA

1. *Telea polyphemus*, ochre coloured wings, found all over the North American continent. It feeds on oak, birch and other trees. 2. *Utethesia ornatrix bella*, the rattle-box moth, ranging from Quebec to Mexico and Florida. It feeds on cherry, elm and other plants. 3. *Haemorrhagia thysbe*, one of the humming-bird sphinx moths, in eastern North America. It has the unmoth-like habit of flying in bright sunlight. 4. *Actias luna*, the luna moth, considered the most beautiful North American insect. It is about 3 inches long when arrived at maturity. 5. *Automeris io*, known as the Io; the caterpillars spin a silken path for their guidance in seeking food. 6. *Catocala ilia*, known as the ilia underwing, distributed generally throughout the United States and most of Canada. 7. *Citheronia regalis*, the royal walnut moth, found in the southeastern part of the continent. It feeds on walnut, hickory, ash and similar trees. 8. *Apantesis virgo*, the virgin tiger moth, distributed throughout the north Atlantic states and Canada. 9. *Samia cecropia*, the cecropia moth, ranging along the Atlantic seaboard westward to the margin of the great plains. 10. *Alypia octomaculata*, the eight-spotted forester, found in the northern Atlantic states and westward beyond the Mississippi river

punctella, Phycitinae) and *Corcyra cephalonica* of the *Galleriinae* represent wide-spread and important pests of stored foods.

The *Thyrididae* have always lost both first anal veins, and usually have no veins of the forewing stalked. They are almost limited to the tropics, but have a few primitive types in which subcosta and radius of the hindwing are still widely separated (*Thyris* and *Dysodia*) in the temperate zone of both hemispheres. The larvae are stem borers, and often make slender galls.



BY COURTESY OF THE TRUSTEES OF THE BRITISH MUSEUM (NATURAL HISTORY)

FIG. 15.—MACMURTRIE'S GOAT MOTH, N. AMERICA. REDUCED

The *Carposinidae* are a curious little family, which E. Meyrick thought to represent the ancestor of the pyraloids. The larvae are unique, maggot-like, with the last pair of spiracles very large and turned back like a maggot. They live in juicy fruits and one is injurious to plums in China and Japan.

The *Hyblaeidae* are much like the Thyrids, but have enormous maxillary as well as labial palpi, and have preserved a slender first anal vein in the hindwing. They are a very small family, but include the injurious teak leaf roller (*Hyblaea puera*), widespread in the tropics. Some Hyblaeae have the smallest heads of any known Lepidoptera.

The featherwing moths, or plumes, belong to two families, and represent the Phalaena Alucita of Linnaeus. The *Pterophoridae* (fig. 19) have the hindwing almost invariably divided into three feathers and the forewing more or less cleft. They include several hundred species and are world-wide. The *Orneodidae* (fig. 20) are also world-wide, but rather few, and are represented by a single

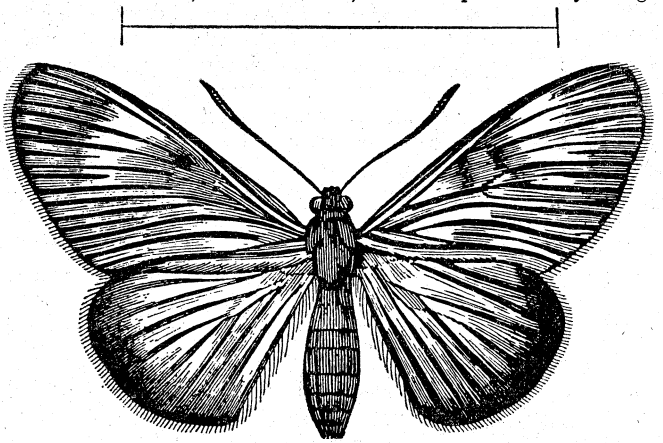


FIG. 16.—CASTNIA ACRAEOIDES, SOUTH AMERICA. MAGNIFIED

rare species in the U.S. They have each wing cleft into six feathers, and therefore are called the 20-plumes, or many-plumes.

THE MACROLEPIDOPTERA

The remaining families constitute the Macrolepidoptera or "Macros." In them the maxillae are never scaled, the maxillary palpi never well developed; the wings never have a well-developed base of the median vein, nor first anal vein, although there may occasionally be vestiges; and their scales are always firmly attached. The larva never have but two setae on the tubercle in front of the first spiracle, and the two setae just below the abdominal spiracles are never as closely associated as in many of the preceding types; the pupae are always obtect, with the wings soldered to the first four segments of the abdomen, and only capable of a squirming motion if any. In this series the "trifid" or "quadrifid" condition of the wing veins, and the frequent loss of the frenulum are important characters, although less than was formerly supposed. In the following subdivision more weight is put on larval characters and the auditory organ.

SUPERFAMILY URANIOIDEA

Tympanum sexually dimorphic; on second segment of abdomen, facing backward in male, forward in the female. Venation much as in the Saturnioidea, but with all radial branches present and the last one closely associated with first media

The *Uraniidae* (fig. 21) are among the most brilliant and butterfly-like of moths. Many, like the one figured, are brilliant black and green, and tailed like a swallowtail; but others are brown, and there is a large old-world white group forming the transition to the Epiplemidae. The Uraniidae lack the frenulum entirely, the white annectent types show a base merely, while the *Epiplemidae* have a normal frenulum. The latter are inconspicuous types, and not limited to the tropics, although absent from Europe. The odd genus *Epicopeia,* from eastern Asia, shows striking mimicry of the Aristolochia swallowtails of the same region.

SUPERFAMILY SATURNIOIDEA

Tympanum absent. Trifidae with at least one radial branch lost, the last one widely separated from the first medial. Hindwing always without frenulum; with subcostal vein leaving the cell abruptly near the base and not again approaching it. Antenna usually unscaled

This group of large or very large and beautiful moths is most popular with the amateur, both because of their beauty and the ease with which they are reared. Most of them are tropical (fig. 22), but a fair number are found in temperate North America and several in the warmer part of Europe. The Saturniidae are also of great economic value to man, for they include all the so-called "wild" or tussur-type silkworms (*see* SILK AND SERICULTURE; AILANTHUS). Aside from a few South American forms they belong to two families, which are well contrasted, but intergrade completely. The *Saturniidae* are silk spinners; the moth has four branches on each segment of the male antenna (fig. 1); the forewing has the first two branches of media grouped together, and the hindwing has only one anal vein. In the *Citheroniidae,* which are almost wholly American, there are only two branches on each segment of the male antenna, the second media arises free, and there are two anals in the hindwing. But the group which contains the Io, and many other American moths, is intermediate; they are also marked by the caterpillars being densely covered with branching nettle-spines, and processionary in habit when young (*see* PROCESSIONARY CATERPILLAR).

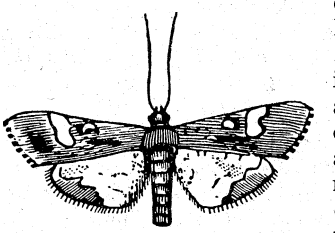
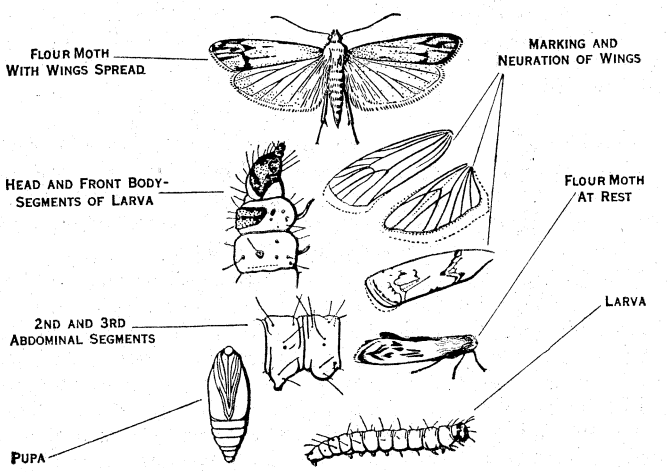


FIG. 17. — MARUCA TESTULALIS. GENERAL IN TROPICS

The *Lacosomidae* are an isolated and purely American family, that may have some relation to the Saturnids. They are instantly



AFTER RILEY AND HOWARD, "INSECT LIFE," VOL. 2, U.S. DEPT. AGR.

FIG 18.—STRUCTURE OF PUPA, LARVA AND ADULT OF MEDITERRANEAN FLOUR MOTH (EPHESTIA KÜHNIELLA)

recognized by the very wide space between the third and fourth branches of radius. The caterpillar is unique in habits, forming a portable case with two similar round doors, one of which is blocked by the caterpillar's head when withdrawn, the other by a circular leathery patch on the end of the tail.

Superfamily Bombycoidea

Tympanum absent. Moths with more normal radial system, frequently with all branches preserved; subcosta separate from cell at base, then again connected to it, so as to enclose a small humeral cell (fig. 23). *Caterpillar densely covered with fine hair, which may be microscopic or conspicuous*

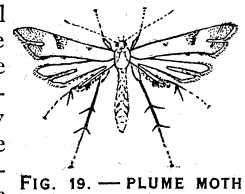


FIG. 19. — PLUME MOTH (PLATYPTILIA EDWARDSII). U.S.

The true *Bombycidae* are a very small group, mainly from eastern Asia, and are famous only for including the Chinese silkworm (fig. 24), probably the most important to man of all Lepidoptera. They are Trifidae, with a tendency to lose the frenulum, and have naked-looking caterpillars with a horn on the tail much like the sphinxes. The *Lasiocampidae* are quadrifids (fig. 23) with the frenulum totally lost; and include the injurious tent or lackey caterpillars and the lappets.

Superfamily Drepanoidea

Tympanum on first abdominal segment, pointing backward. Moths with subcosta and radius associated beyond the cell, like the Pyralids and sphinxes. Caterpillar with end of body raised and last pair of prolegs somewhat reduced or lost

This is a small group, including the *Thyatiridae,* which are Noctuid-like Trifidae (except one Australasian genus) and the *Drepanidae,* or hook-tips, which are geometer-like Quadrifidae. The oriental genus *Cyclidia* or *Euchera* makes the link.

Superfamily Geometroidea

Tympanum on the venter of the first abdominal segment, facing forward, as in the Pyralididae. Trifidae with perhaps a few exceptions; subcosta of hindwing sharply bent at base and connected to base of frenulum by a short brace-vein (fig. 25), *then again approaching or fusing with cell*

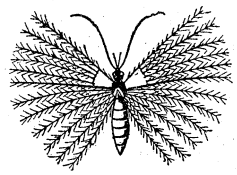


FIG. 20.—MULTIPLE PLUME MOTH. EUROPE

The superfamily practically consists of the enormous family Geometridae, the inchworms or loopers, with more than 10,000 species. The caterpillars are peculiar in having lost all but the last two pairs of prolegs, so that they must travel by a series of loops. Most important are the cankerworms or wintermoths, whose males fly in the frosty weather of late autumn or early spring, while a large proportion of the species have wingless females, who crawl up the trunks of trees to lay their eggs.[1] Some authors divide the Geometridae into about six families, distinguished by points in the venation (figs. 25, 26).

Superfamily Sphingoidea

Tympanum absent. Very heavy swift-flying moths, with subcosta and radius of hindwing closely parallel beyond end of discal cell and connected by a heavy cross vein (really a free bit of R_1*). First segment of palpus enormous, edges of abdominal segments with a series of fine spines*

The caterpillars were the original "sphinxes" because of their way of resting with the front of the body raised high. Most of them are armed with a single strong horn on the tail (eighth segment of abdomen). The moths are called hawk moths from their swift hovering flight, and many of them have very long maxillae, with which they can feed from deep-tubed flowers without alighting. They are believed to be the chief pollenizers of such flowers as petunias and orchids. The superfamily consists essentially of 8 or 900 *Sphingidae,* but it appears likely that the very small Asiatic and African family *Brahmaeidae* are related (Jordan). They have the same thorax and venation, but are Saturnids in appearance and larval characters.

Superfamily Noctuoidea

Tympanum on the thorax under the base of the hindwing, facing down and back, often protected by a hood attached to the abdomen. Hindwing with subcosta closely parallel to cell or fused with it for more or less of its length, but rarely beyond. Egg of upright type, with sculpture centring about the top; larva with hooks on prolegs not alternately of two lengths

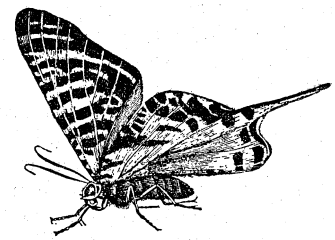


FIG. 21.—TROPICAL MOTH (URANIA BOISDUVALII). CUBA

This is a varied but well-defined group, usually divided into a number of families which, however, are thoroughly linked by transitions. The first three families are "trifids," and have the tympanum facing down; they were often widely separated, but show all other characters of the Noctuoidea.

The *Notodontidae,* or prominents, frequently have the last pair of prolegs of the caterpillar raised and not used, or even modified into slender processes, as in the puss moths, *Cerura, Dicranura* (fig. 28); others have a gland under the neck from which they can throw a jet of formic acid several in., such as the red hump (*Schizura concinna*) in the U.S. and *Anurocampa mingens* in South America. The tropical American *Dioptidae* differ only biologically, being slender, brilliantly coloured day-flyers. Many of them enter mimicry associations. The *Thaumetopoeidae* or processionary caterpillars of the old world (*see* Processionary Caterpillar) have masses of nettle-hairs, and the female moth has a large tuft on the end of the abdomen, whose hairs are plastered over the egg-mass. A Madagascar species (*Anaphe*) is a source of wild silk. The *Lymantriidae* (formerly called *Liparidae*) or tussock moths also have many species with nettle-spines and hairy-tufted females, such as the brown-tail, gold-tail and satin moths, but they are quadrifids with an upright tympanum. However, the caterpillars of the gypsy (*see* Gypsy Moth) and tussock moths are not poisonous. The

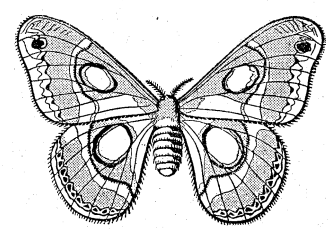


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FIG. 22.—SILK SPINNING MOTH (EPIPHORA BAUHINIAE). WEST AFRICA

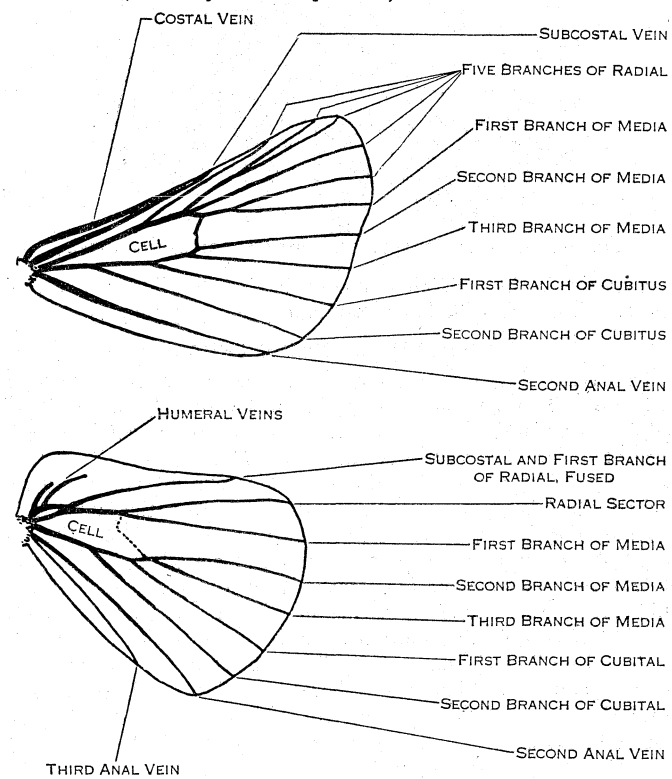

FIG. 23.—VENATION OF LASIOCAMPID MOTH (MALACOSOMA AMERICANA)

[1]The beginning of formal economic entomology in America was William D. Peck's report on the spring cankerworm in 1795.

Noctuidae contain some 15,000 species, and as a family are hard to define technically, but can usually be recognized by their stout bodies, relatively inconspicuous colouring and well-developed mouth-parts and heads. Technically they possess ocelli and have subcosta fused to the cell of the hindwing for a short distance near the base. They are divided into many subfamilies, of which the "trifid" ones (with second media of hindwing weak and widely separated from third media and cubitus) usually have stout, normal-looking caterpillars which pupate in the ground, and often live at or beneath

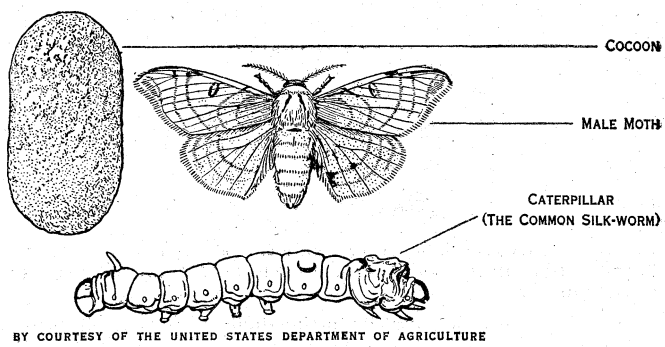

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FIG. 24.—THE COMMON SILKWORM (BOMBYX MORI), CHINA

the surface of the ground (the cutworms or surface caterpillars). Others feed in fruits and seed pods, like the bollworm or corn-ear worm, *Heliothis obsoleta* (fig. 29), while many feed on leaves. In the "quadrifid" subfamilies all are leaf feeders (fig. 30), most of them well off the ground, and the caterpillars have rather generally lost one or two pairs of prolegs, so that they loop like a geometer when they walk, but less perfectly. Most of these latter spin cocoons. The venational figure is of an intermediate type (fig. 27). The *Arctiidae* include the tiger moths (fig. 31) and the ermine moths. Their caterpillars are the woolly bears, and are densely covered with tufts of stiff, barbed hair; in the American subfamily Phegopterinae, some of these tufts are long and pencil-like, causing them to be known as tussocks, like the similar Lymantriid caterpillars. The rattlebox moth (*Utetheisa ornatrix*) is of interest, since the North and South American races blend like proper races of a single species where they meet in the West Indies, while in the zone from Kansas to Texas they meet but remain distinct. The *Euchromi-*

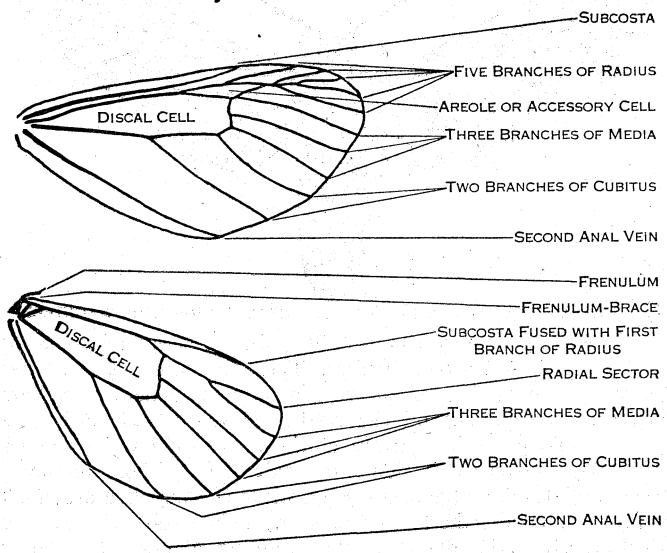

FIG. 25.—VENATION OF A GEOMETRID MOTH (EUDULE MENDICA)

idae (*Syntomidae, Amatidae*) comprise about 2,000 species, mostly brilliantly coloured, day-flying moths (fig. 32); the great majority of them South American. They are distinguished by the loss of Sc of the hindwing as a distinct vein, and the single European genus (*Syntomis* or *Amata*) has lost the tympanum. The *Agaristidae* are hardly distinct from the Noctuidae, but their slightly clubbed antennae cause them to be often mistaken for butterflies. Some of the males of this superfamily can make loud rattles or squeaks, such as *Euchontha* in the Dioptidae; *Heliocheilus paradoxus*, a North American Noctuid; *Thecophora fovea*, a European one; and some Agaristidae.

SUPERFAMILY PAPILIONOIDEA

Antennae clubbed or swollen at their apices and a frenulum wanting

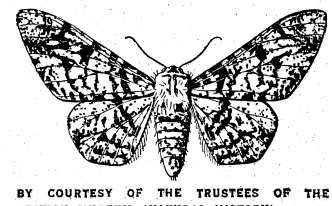

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FIG. 26.—GEOMETRID MOTH (AMPHIDASYS BETULARIA), FEMALE, EUROPE

The Papilionoidea, or butterflies, can readily be separated from the moths, or remainder of the Lepidoptera, by the above-mentioned characters and it is noteworthy that clubbed antennae are also found in certain moths, but in such cases the frenulum is present. The most primitive family of butterflies are the *Hesperiidae*, or "skippers," which have all the veins in the forewings arising separately from the cell. They derive their popular name from their erratic darting flight which is different from the more sustained movements of other butterflies. Their affinities are not wholly clear, but they are probably related to the Castniidae. They are divided into three sub-families which are sometimes regarded as of family rank. The *Hesperiinae*, or true skippers, are a very large group, occurring in most parts of the world, while the giant skippers or *Megathyminae* belong to the tropics of America, and the *Euschemoninae* are Australian. It is noteworthy that the male of *Euschemon* is the only butterfly possessing a frenulum and at one time this genus was placed among moths of the family *Castniidae*.

In the remainder of the butterflies certain of the veins of the forewings are coincident and do not arise separately from the cell.

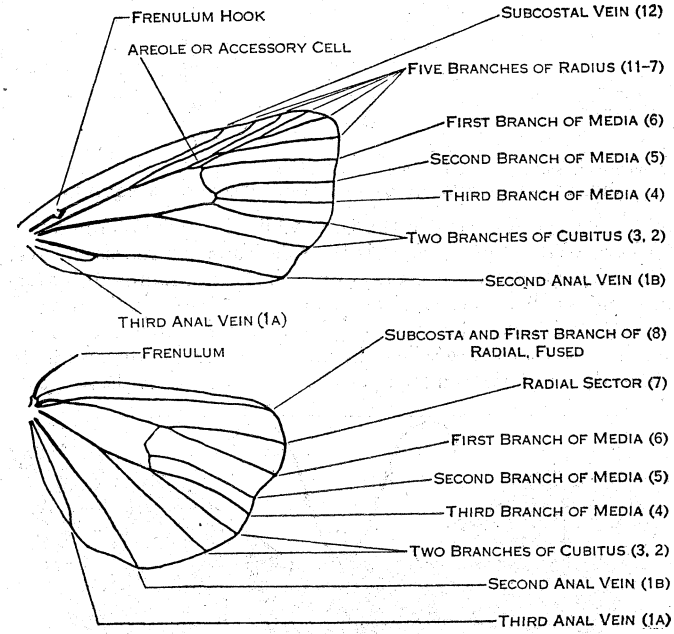


FIG. 27.—VENATION OF A NOCTUID MOTH (LITHACODIA APICOSA)

The *Papilionidae* or swallowtails are large insects, mainly tropical; the majority have tails to the hindwings and they are among the most magnificent of all insects. The forelegs are fully developed in both sexes and the hindwings have only a single anal vein. The larvae are smooth or provided with fleshy tubercles, and there is a dorsal retractile scent organ or osmeterium on the prothorax; the pupae are attached head upwards, by means of a girdle of silk and a cremaster. The genus *Papilio* is world-wide and the species *P. machaon* (fig. 33) is the sole English member of the family. The apollo butterflies (*Parnassius*) are alpine, with translucent wings, and their pupae are exceptional in being enclosed in a loose web among leaves.

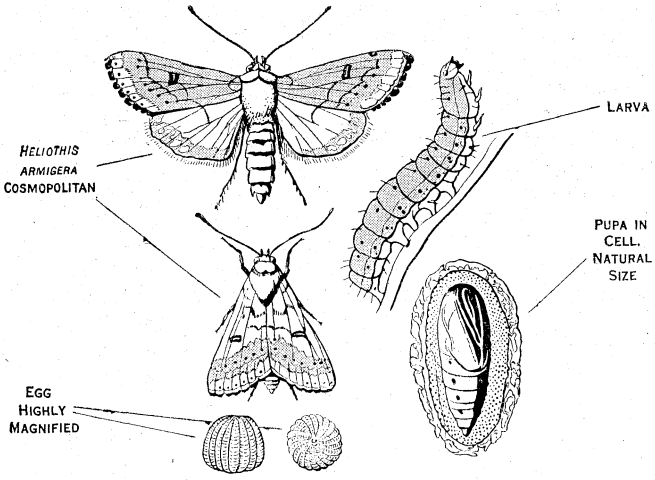
The *Pieridae* include the whites, yellows and orange tips; the forelegs are fully developed in both sexes and these insects

differ from the *Papilionidae* in having two anal veins to the hind-wings. The cabbage white (*Pieris rapae*), common in many parts of the world, is one of the few injurious butterflies, its larvae being destructive to various *Brassica* vegetables. The larvae have fine velvety hair and the pupae have a single horn to the head and are suspended upright by a girdle of silk and a cremaster.

BY COURTESY OF THE TRUSTEES OF THE BRITISH MUSEUM (NATURAL HISTORY)

FIG. 28.—LARVA OF THE PUSS MOTH (CERURA VINULA)

The *Lycaenidae* comprise the blues, coppers and hairstreaks, which have the forelegs normal in the female but the tarsi are shortened in the male, with one or both the claws absent; the antennae are nearly always ringed with white and a white rim encircles each eye. They are mostly rather small butterflies, often with metallic colours above and spotted beneath. Their larvae are very short and almost slug-like and the pupae are devoid of spiny processes. The *Erycinidae*, or *Lemoniidae*, are closely related to the *Lycaenidae* and have the forelegs in the male useless for walking, but they are normally developed in the female. The family is essentially South American:



FROM MALLY, BULL. 24. DIV. ENT. U.S. DEPT. AGR.

FIG. 29.—LIFE HISTORY OF HELIOTHIS OBSOLETA. A NOCTUID

only a few species occur in the U.S., while the Duke of Burgundy fritillary (*Nemeobius lucina*) is the sole European representative.

The *Nymphalidae* (figs. 34, 35) are the largest family of butterflies, and number more than 5,000 species, which have the forelegs in both sexes reduced and useless for walking. Among the various subfamilies, the *Nymphalinae* include the peacock, tortoiseshells, admirals, fritillaries and emperors; as a rule they have spiny

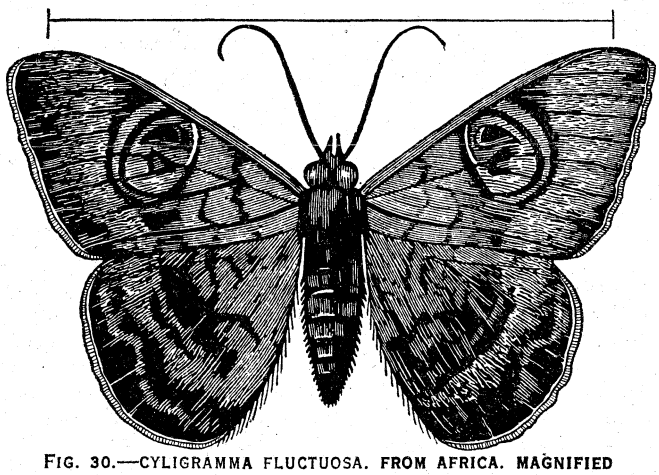
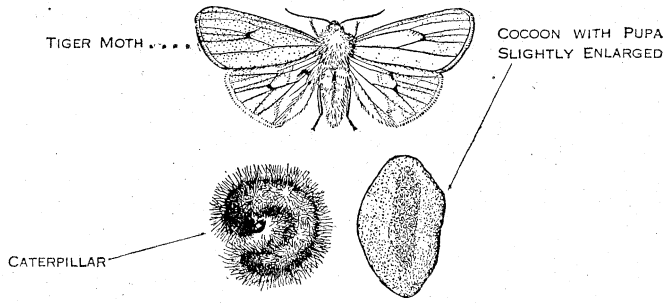


FIG. 30.—CYLIGRAMMA FLUCTUOSA. FROM AFRICA. MAGNIFIED

caterpillars (fig. 38) and the pupae hang head downwards, only supported by a cremaster (fig. 34). The *Satyrinae* include the heaths, graylings, meadow browns; they are mostly sombre-coloured and their larvae are smooth, feeding usually upon grasses. The *Danainae* are only numerous in warm countries, but one of the best known species is the monarch (*Danais archippus*) of North America. Several of the other subfamilies are found mainly in South America, including the splendid metallic blue *Morphinae*.

DEVELOPMENT

The Egg.—The eggs of Lepidoptera are generally of one of two types. They may be ovoid or flattened with the long axis horizontal; or upright, spherical, or hemispherical with the horizontal



AFTER LUGGER, RILEY AND HOWARD, "INSECT LIFE," VOL. 2, U.S. DEPT. AGR.

FIG. 31.—TIGER MOTH (PHRAGMATOBIA FULIGINOSA LINN.) EUROPE AND NORTH AMERICA

axes equal. Both types may have the shell or chorion sculptured in various ways, and in the upright eggs of many butterflies the shell exhibits a beautiful cell-like structure divided by longitudinal ribs (fig. 36). The number of eggs laid is variable and a single female may deposit up to a thousand or more. Some of the swift moths and the antler moth (*Charaeas graminis*) merely drop their eggs at random among the herbage upon which the future caterpillars feed. The lackey or tent caterpillar moths (*Malacosoma*) lay their eggs in necklace like rings around twigs, while the garden white butterflies (*Pieris*) place them singly or in small groups on the undersides of leaves and the brown-tail (*Euproctis chrysorrhaea*) lays them in masses covered with hair derived from the anal tuft at the extremity of the body.

Caterpillars.—The larvae are known as caterpillars, which are characterized by the presence of three pairs of jointed, clawed legs on the thorax and a variable number of abdominal feet, which

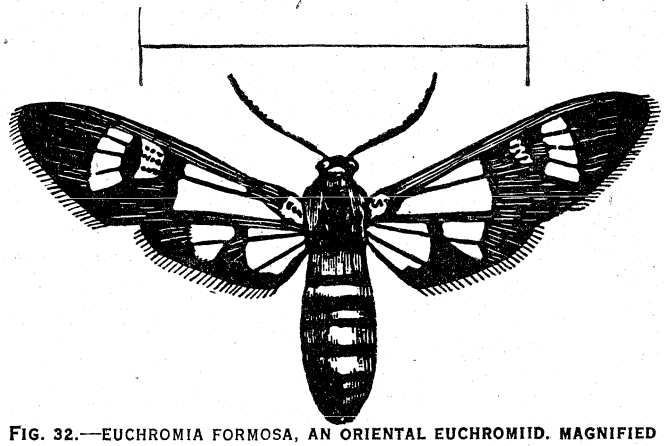


FIG. 32.—EUCHROMIA FORMOSA, AN ORIENTAL EUCHROMIID. MAGNIFIED

are short, fleshy outgrowths provided with a series of hooks or crochets on their grasping surface. These abdominal feet consist typically of five pairs, but in the geometer or looper caterpillars they are only present on the sixth and tenth segments. The head in caterpillars is a firmly chitinized capsule which carries six simple eyes on either side and a pair of very short antennae. The mandibles are large and strong, while the maxillae are small and inconspicuous; the labium bears a median tube or *spinneret* which receives the ducts of the spinning glands. The latter are the modified salivary glands and they produce the silk used in forming the cocoon; in many cases these glands are very long and, in the silkworm about five times as long as the whole caterpillar. Along the sides of the body nine pairs of spiracles are found and they appear as small dots, often easily seen (fig. 24). Caterpillars are armed or protected in various ways either in virtue of their structure or of their behaviour. Some, such as those of tiger moths, are densely hairy, and in the vapourer moths (*Orgyia*) these hairs are grouped into conspicuous

tufts and brushes (fig. 37). Certain caterpillars are efficiently protected by so-called urticating hairs which are very fragile and bristle with needle-like lateral points. Their irritating properties are in part caused by mechanical action and in part by a poisonous secretion; most people who handled hairy caterpillars of various types experienced the effects of such hairs on the skin. In North America and also in the tropics there are caterpillars armed with true poison spines, which are tubes fed with the secretion of special glands in the skin. Such spines are capable of inflicting nasty "stings" and evidently secure for their possessors considerable immunity from attack. Some Notodontid caterpillars can also throw a jet of formic acid, and many have poisonous body fluids.

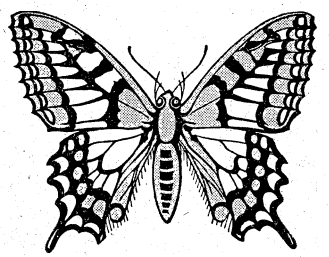


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FIG. 33.—SWALLOWTAIL BUTTERFLY (PAPILIO MACHAON). EUROPE

Among butterflies, the caterpillars of the tortoiseshells and other species of *Vanessa* and of fritillaries (fig. 38) are armed with spiny nonpoisonous outgrowths of the body and very much the same sort of armature is found in those of the great emperor moths (*Saturniidae*). In hawk moth larvae there is usually a single horn near the extremity, while many other caterpillars are entirely smooth (figs. 14 and 39) or only slightly hairy. A very large number of caterpillars protect themselves by feeding only at night; others form cases, webs, or mine into the tissues of leaves, while numerous Tortrices roll leaves into tubular retreats. There are, again, others which obtain a measure of protection by close resemblance to their surroundings. Thus, many geometrid or looper caterpillars bear such a very close resemblance to a midrib of a leaf or to a small twig as to render detection a matter of great difficulty. The larvae of some of the hawk-moths bear a resemblance to portions of foliage, their diagonal lateral stripes being believed to simulate the effects of light and shade. The caterpillars of the moth *Anarta myrtilli*, with their intricate green pattern, are hardly discernible among the heather upon which they live. At times the experiments of E. B. Poulton show that the reflection of light from the immediate surroundings produces a nervous response on the part of the caterpillar which results in a physiological change in the accumulation of the pigment. Thus larvae of the red underwing moth, when subjected to green surroundings, become bluish-green and in a darkly-coloured environment become bluish-gray. Similarly looper caterpillars, if so placed when young, become dark brown among dark twigs and green if placed among leaves.

The Food of Caterpillars.—Caterpillars, it may be added, feed almost entirely upon the higher plants and there is probably not a single family of the latter which does not serve as food for one or more species. Very few are carnivorous and among them are those of some of the Lycaenid butterflies. The caterpillars of the large blue (*Lycaena arion*), after feeding upon wild thyme, finally enter ants' nests and prey upon the grubs; while those of the North American *Feniseca tarquinius* feed upon aphides. Many other Lycaenidae of the old-world tropics have similar habits. In the Mediterranean region and southern Asia species of the Noctuid genus *Eublemma* devour scale insects; and this habit may generally be considered beneficial, but it becomes seriously injurious when the lac insect and the cochineal insect are attacked. Certain other caterpillars are cannibalistic, notably those of the common European moth *Calymnia trapezina*, but this habit is by no means exclusive and such larvae are also regular devourers of foliage. Some additional instances of unusual feeding habits are given in the section devoted to the economic importance of Lepidoptera. Actual parasites are still rarer, but include the family *Epipyropidae* and the young larvae of *Cyclotorna* (family uncertain, perhaps Tineidae) on Fulgoridae; a Pyralid, *Bradypodicola* (*Cryptoses*) on the hair of the three-toed sloth; a Pyralid, *Sthenauge parasiticus* on Saturnid caterpillars of the genus Automeris; and *Euclemensia bassettella*, a Gelechioid of uncertain family, in scale insects of the genus Kermes. The latter is the only one markedly modified for parasitism, having very sharp mandibles, although a similarly modified larva of unknown habits was found in the nests of African termites.

Silk Production.—The production of silk by caterpillars has already been alluded to; it is used for several purposes and the best known is for the formation of the cocoon. The latter attains its greatest perfection in those families which include the silkworm moth (*Bombycidae*) and the emperor moths (*Saturniidae*): in other cases, as in the tiger moths and tussock moths, the cocoon is much less dense and the silk often intermixed with hairs derived from the larva that formed it. Sometimes foreign material largely replaces a cocoon (fig. 11) and the silk is utilized to draw together leaves to form a pupal shelter or to cement soil particles into a compact earthen cell (fig. 29), as in many hawk moths (*Sphingidae*) and owlet moths (*Noctuidae*). Among many butterflies the cocoon is reduced to a slight pad, to which the cremaster is hooked, and to a mere thread encircling the body of the pupa; in such cases these exposed pupae are protected by their close colour resemblance to their surroundings (fig. 40). Silk is also used by caterpillars as a "life line" which is run out through the spinneret as quickly as it is secreted, and by means of this device such creatures elude their enemies or save themselves when blown off or shaken from their food plants, by remaining suspended by the thread until the danger has passed. Other caterpillars, when young, are gregarious and secrete guiding threads over their food-plant, which enable them to maintain their foothold; others go a stage further and construct communal webs, within which they feed, gradually dispersing and becoming solitary as they grow older.

The Chrysalis.—The pupa or chrysalis in the majority of Lepidoptera is of the *obtected* type with the appendages glued down to the body, which presents a hard compact appearance in consequence (fig. 40). Such pupae have little or no power of movement of the abdominal segments and remain in a fixed position, being attached by the *cremaster* (figs. 29, 40) to the cocoon, or to a silken pad in the case of many butterflies. The cremaster consists of a group of hooks or a prominent spine at the caudal extremity of the body and is formed from the last dorsal shield, overlying the vent in the larva. Obtected pupae are found in all the higher groups, from the Pyralicloidea to the butterflies and

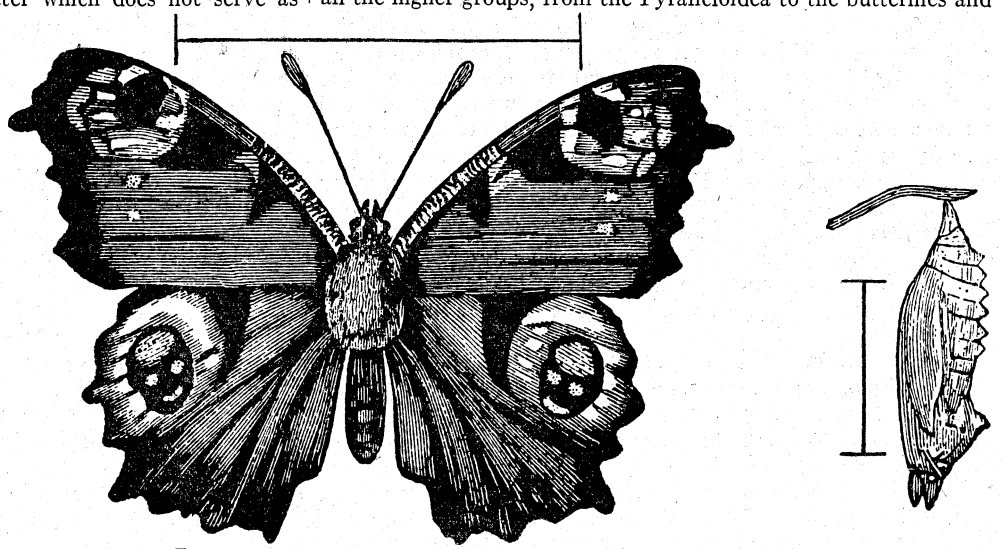
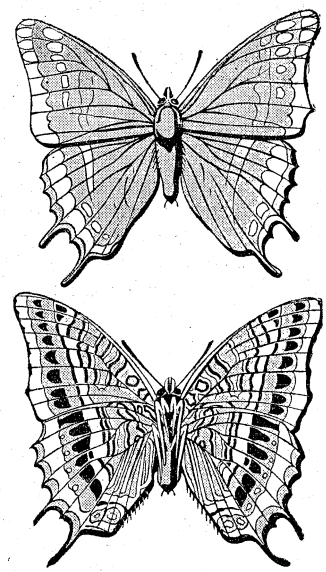


FIG. 34.—PEACOCK BUTTERFLY (AGLAIS IO) AND ITS PUPA. MAGNIFIED

in some Tineae. Among the lower groups, the pupae are termed *incomplete;* they have the appendages partially free from the body, instead of being soldered down, and the abdomen has several of the segments freely movable. The latter feature, aided by girdles of spines, enables such pupae to work their way out of the cocoons or burrows and come to the surface to allow of the exit of the perfect insect. Except in the Pterophoridae the cremaster is absent or but little developed. In the *Micropterygidae* the pupae closely resemble those of the caddis flies (*Trichoptera*) and are of the *free type,* with all the abdominal segments movable and the appendages entirely free from any secondary attachment to the body. Functional mandibles are present which enable these pupae to bite their way through the cocoons when the time for eclosion of the moths approaches. In some cases special devices are present in order to enable the moths to effect their emergence. In a good many moths a fluid is secreted from the mouth which serves to soften or dissolve the silk of the cocoon (reported to be potassium hydroxide in the puss moth, *Cerura vinula*); in many of these and others there is a sharp hook at the base of the wing, which is used to cut the silk, while others have special spines or ridges on the face which serve to break open the cocoon or break a way up through hard, dry soil. The latter are notably developed in arid countries.



BY COURTESY OF THE TRUSTEES OF THE BRITISH MUSEUM (NATURAL HISTORY)

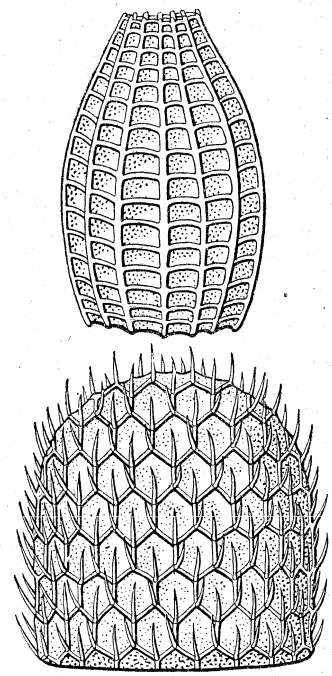
FIG. 35—UPPER AND LOWER SURFACES OF NYMPHALIS JASON, FOUND IN WEST AFRICA

NATURAL HISTORY

In the perfect state Lepidoptera feed principally upon nectar which they derive from flowers and, among other sources of food, honey dew and over-ripe fruit are also resorted to. Decaying fruit, for example, is attractive to the red admiral (*Vanessa atalanta*) and certain other butterflies, while the purple emperor (*Apatura iris*) is well known to visit carrion. Certain flowers are more attractive to Lepidoptera than others, and in Europe the flowers of jasmine, honeysuckle, valerian, heather, ivy, sallow, syringa, privet, petunia and ragwort are much visited by moths, while butterflies are especially partial to bramble, thistle and *Buddleia.* Butterflies and certain moths are diurnal insects, but the majority of the members of the order are crepuscular or nocturnal, among them some tropical butterflies, especially Satyrinae, Brassolinae and a few Skippers. Some moths fly both by day and at night, while others are seldom known on the wing before midnight, and after dark almost the whole of the Noctuidae are attracted to the moth collectors' sugar mixture. During the winter, in cold and temperate lands, most Lepidoptera hibernate either as larvae or pupae; some, such as the hairstreak butterflies, overwinter as eggs, while certain of the *Vanessae* and other butterflies, along with a number of moths, pass the dormant season as perfect insects. Many Lepidoptera are double-brooded in that two complete life cycles are passed through in the year; others, given a sufficiently high temperature, may pass through four or five generations in that period, particularly species infesting stored grain, meal, etc.

Sexual Difference.—The sexual differences in Lepidoptera are often well marked; in some families the antennae are pectinated in the males and simple in the females, or these organs may be pectinated in both sexes, but much more pronounced in the males (fig. 1). The special sensory organs located on the antennae are greatly developed where those appendages are highly pectinated, and give to the males their remarkable power of finding their mates. The phenomenon known as "assembling" is especially prevalent in the so-called Bombyces as well as in some other moths, and is believed to be of the nature of an olfactory response. The females apparently emit an odour attractive to the opposite sex, and under favourable conditions a freshly emerged example will attract many males, which fly up to her against the wind. In many Lepidoptera the sexes differ greatly in size and coloration, as for example in the gypsy moth; among the *Lycaenidae* the males of numerous species are brilliant blue and the females of a brownish hue. In the tropical *Papilionidae* the sexes are often totally different in coloration as well as exhibiting differences in form. Other examples of sexual dimorphism are afforded by those moths whose females are either wingless or have the wings reduced to useless vestiges, the males being fully winged. This peculiarity occurs in distantly related families and was consequently independently evolved. Notable examples are found in the bagworm moths (*Psychidae*), vapourer moths (*Orgyia*) and in about half a dozen genera of geometrid moths.

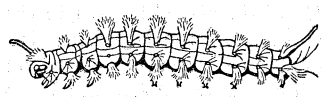
Seasonal Forms.—Another interesting feature is the occurrence of different seasonal forms among certain butterflies: these are so different in coloration that they were regarded as separate species until their relationships were worked out. One of the best known examples is afforded by the European *Araschnia levana,* whose spring form is known as *levana* and its summer form, *prorsa* was first described under that name as a different butterfly. In the tropics certain species occur in definite wet season and dry season forms, and the North American swallowtail *Iphiclides marcellus* has three distinct seasonal forms. Those which emerge from over-wintered pupae in the early spring are of the form *marcellus* and those that appear somewhat later are of the form *telamonides;* the summer butterflies, produced from eggs laid the same season, are different from either of the spring forms and are of the type named *lecontei.* There are, again, other butterflies, such as the African *Papilio dardanus,* which have several and quite different forms in the female which closely mimic other species of Lepidoptera. For a discussion of this and other cases of polymorphism *see* MIMICRY. Extensive experiments were conducted by A. Weismann, F. Merrifield, M. Standfuss, E. Fischer and others upon the effects of temperature on seasonal and other types of coloration. Thus Weismann showed that when pupae destined to produce the summer form *prorsa* of *Araschnia levana* were kept at a low temperature they gave rise to the form *levana* or to a form intermediate between it and *prorsa.* By raising the temperature it proved exceedingly difficult to change the form *levana* into *prorsa* and in most cases it was a failure. Weismann concluded, therefore, that the species was a northern one and that the form *levana* was the older and more constant, and that *prorsa* was a later acquired form, and consequently more readily influenced. By the application of cold, individuals of *Aglais urticae* indistinguishable from the northern variety *polaris* were produced; also, pupae of the summer form of *Pieris napi* when placed on ice gave rise to the winter form of that butterfly. By raising temperature to the requisite extent and applying it at the susceptible period it was possible to change the female coloration of two butterflies, *Parnassius apollo* and *Gonepteryx rhamni* into that of their respective males.



FROM ELTRINGHAM, "BUTTERFLY LORE" (CLARENDON PRESS, OXFORD)

FIG. 36.—ABOVE, EGG OF ORANGE TIP BUTTERFLY (ANTHOCHARIS CARDAMINES); BELOW, EGG OF WHITE ADMIRAL BUTTERFLY (LIMENITIS SIBYLLA). MAGNIFIED

Departure from Usual Life History.—Among the most remarkable departures from the usual life history prevalent in Lepidoptera is that afforded by the Indo-Australian Lycaenid butterfly, *Liphyra brassolis,* whose larva is flattened and covered by a hard cuticle, devoid of evident segmentation. It is found in association with the ant *Oecophylla smaragdina* and is believed to prey upon the brood of the latter, its hard covering serving as a protection against the ants. Pupation occurs in the old larval skin which forms a puparium loosely enclosing the chrysalis within. The newly emerged butterfly is covered with loosely attached white scales, over its orange and brown ordinary scales, which serve as protection against the ants, since they fall off readily and cause those insects evident discomfort if they adhere to them. Another very interesting species is the North American yucca moth *Tegeticula alba,* the females of which have the maxillae provided with a long tentacle specially adapted for collecting the pollen of yucca flowers. After collecting a large mass of pollen she inserts her eggs deep into the ovary of a flower, usually other than that from which the pollen was gathered. After egg-laying she then thrusts the pollen into the stigmatic opening of the flower. By means of this provision the development of the seeds upon which the larvae feed is ensured and any not so devoured secure the perpetuation of the yucca. A third example is afforded by aquatic moths of the genus *Acentropus.* The young larvae live submerged in mines which they excavate in the leaves of water plants; as they grow older they form tunnels of spun leaves and the submerged pupa is enclosed in a similar shelter. The female moths are dimorphic: the long-winged forms are aerial, while those with reduced wings are aquatic, using their alary organs for swimming.



BY COURTESY OF THE TRUSTEES OF THE BRITISH MUSEUM (NATURAL HISTORY)

FIG. 37.—LARVA OF ORGYIA GONOSTIGMA. EUROPE

Sound Production.—A few Lepidoptera possess a capacity for sound production. The death's head moths (*Acherontia*) were long known to emit a shrill chirping note. The method of its production was much discussed and it is believed to be caused by the forcing of air through the haustellum. The caterpillar was also noted to produce sharp cracking notes resembling those emitted during the discharge of successive electric sparks; in this case the sound is brought about by bringing the mandibles forcibly together. Several moths are able to stridulate, and in certain *Agaristidae* the male has a corrugated area beneath the costa of the forewings, and the membrane in that area is distended to form a resonator. It is suggested that the clicking sound observed is caused by the ridged area on the forewings rubbing against the spurs on the legs during flight.

DISTRIBUTION AND MIGRATION

Geographical Distribution.—Lepidoptera have a range practically co-extensive with that of flowering plants and are only absent from the remote and inhospitable regions around the poles. Among butterflies it is interesting to note that at least 46 species extend within the Arctic circle and some range as far north as 80° lat.; but, on the other hand, no resident butterfly is known from Iceland. In the Antarctic, 50° lat. is about their most southerly limit, which is reached by a species of fritillary found on an island near Cape Horn. Some species of Lepidoptera are almost world-wide and exhibit migratory tendencies, notable examples being the hawk moth *Celerio lineata* and the butterfly *Vanessa cardui,* the latter being found in all the continents excepting South America. Several Noctuid moths, notably *Agrotis ypsilon* and *Heliothis obsoleta* (fig. 29) are now cosmopolitan. The blue butterfly *Lampides boeticus* occurs over all the warmer parts of the old world to Australia as well as reaching remote islands in the Atlantic, Pacific and Indian oceans. In some cases human agencies were possibly partially responsible for the wide range enjoyed by such insects by the introduction of suitable food plants in regions where they did not previously exist. While many of the largest families of Lepidoptera are cosmopolitan, certain others are limited to definite areas of the globe. Among moths the *Xyloryctidae* are most at home in Australia, the *Lacosomidae* are confined to the western hemisphere and the *Megalopygidae* have few species elsewhere. Among butterflies, the subfamilies *Ithomiinae, Brassolinae* and *Heliconiinae* of the *Nymphalidae* are confined to tropical America, and *Acraeinae* are mainly centred in Africa. The richest fauna of Lepidoptera, as in most orders of insects, is found in the tropics, and Brazil probably yields more species of butterflies than any other part of the world. More than 600 species were stated to have been taken within an hour's journey of the city of Para alone. Some idea of this wealth of species will be gathered when it is mentioned that only 70 species are recorded from the British Isles.

Migration.—Some species of Lepidoptera have a marked capacity for migrating from one region to another, either individually or in swarms. In North America great companies of the monarch butterfly (*Danais archippus*) form in parts of Canada and the northern U.S. and fly southwards in early autumn, wintering in a zone extending from Florida to southern California; in June and July this butterfly appears in the northern states and the individuals then seen are believed to be re-migrants from the south. In Ceylon C. B. Williams mentions that about 69, out of a total of 234 species of butterflies known in Ceylon, were recorded as taking part in migratory flights. The latter occur at the beginning and at the end of the northeast monsoon and proceed in various directions. At times these flights seem to bear some correlation with seasonal changes and it was suggested that they originate owing to the drying up of the food plants, but the data in 1945 is insufficient for drawing reliable conclusions. The painted lady (*Vanessa cardui*) moves northward in spring in north Africa and south Europe, invading most of central and northern Europe as far as Iceland; individuals found in countries such as England and Germany are entirely emigrants from the south and, in some years, they fail to appear. Migratory swarms of Lepidoptera were often recorded from far out in the ocean. In one case a swarm of the weak-flying moth *Utetheisa pulchella* was observed at sea nearly 1,000 miles from its nearest known habitat. Solitary individuals of various species often fly on board ship at a great distance from land, and are chiefly those of wide geographical range.

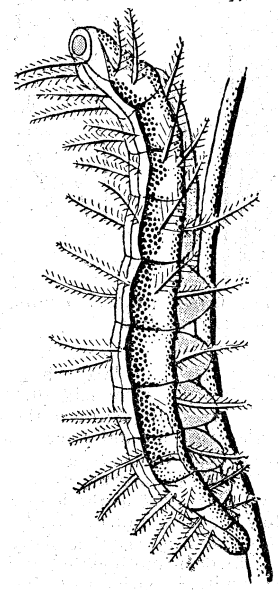
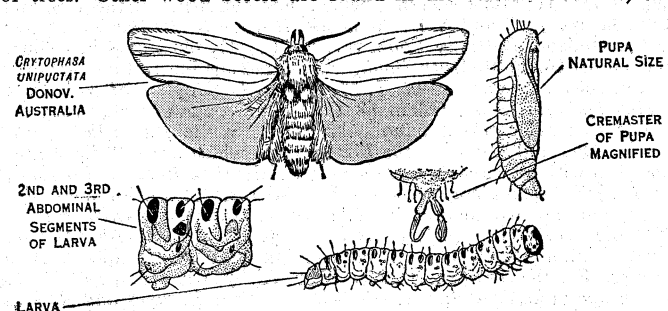


FIG. 38.—LARVA OF SILVER-WASHED FRITILLARY. EUROPE

Geological Distribution.—No undoubted fossil Lepidoptera are known before the commencement of the Tertiary period, although it is probable that the primitive Jugatae existed at an earlier epoch. Butterfly remains are known from the Eocene and Oligocene of North America and a few moths were described from Baltic amber. As a whole, knowledge of the fossil history of Lepidoptera is very scanty, which perhaps is scarcely surprising considering the delicacy of structure exhibited in so many of the species.

Economic Importance.—In the caterpillar stages a large number of species of the order are injurious to crops and forest trees. Among the *Hepialidae* the subterranean larvae are destructive to grass roots and in Australia those of *Leto* and *Charagia* bore into the solid wood of trees. Other wood borers are found in the families *Cossidae,* including the goat and leopard moths, *Xyloryctidae* and *Sesiidae.* The *Tineidae* include the cosmopolitan clothes moths, *Tinea pellionella* and *biselliella* and *Trichophaga tapetiella,* which are destructive in houses, their larvae attacking wool, hair, carpets, feathers and dried skins. Among the *Gelechiidae* are the Angoumois grain moth (*Sitotroga cerealella*) which attacks wheat, maize, etc.; *Pectinophora gossypiella,* the most serious lepidopterous enemy of the cotton plant, found in many lands; and *Hypatima pulverea* which is destructive to lac cultivation in India. In the *yponomeutidae* the diamondback moth (*Plutella maculipennis*) is one of the widest distributed of all moths and very destructive to cruciferous vegetables. The great group known commonly as the *Tortrices* include many species harmful to fruit trees, and its most notable representative is the codling moth (*Cydia pomonella*) of the apple; *Tortrix viridana* is a serious defoliator of the oak in Europe, and species of *Evetria* are very injurious to conifers. Mention needs also to be made of the oriental peach moth (*Laspeyresia molesta*) which, from 1916, became a dangerous enemy of plum, cherry, peach and apple in the U.S., where it is believed to have been introduced from Japan. Of the *Pyralidae*



AFTER EDWARDS, RILEY AND HOWARD'S "INSECT LIFE," VOL. 3, U.S. DEPT. AGR.

FIG. 39.—LIFE HISTORY OF TYPICAL MOTH

the cosmopolitan *Pyralis farinalis* forms silken galleries among stored corn and flour; while the most injurious of the *Pyraustinae* is the European corn borer (*Pyrausta nubilalis*) which, after its entry into North America, became a most dangerous enemy to maize both in the U.S. and Canada. In the *Crambinae* the borer moth (*Diatraea saccharalis*) is one of the chief pests of sugar cane in the Gulf states and Central America. Among the *Phycitinae* are two moths infesting stored foods, viz., the cosmopolitan Mediterranean flour moth (*Ephestia kuhniella*), which is troublesome in flour mills, and the Indian meal moth (*Plodia interpunctella*), which is a pest of almonds, groceries and other stored goods; both species became practically world-wide through commerce. Among the *Noctuidae*, larvae of *Agrotis, Noctua* and other genera are known as cutworms which feed at night, cutting off crop plants before they are very far grown. The army worm (*Cirphis unipuncta*), found throughout the U.S. east of the Rocky mountains and also in other countries, appears in some years in vast numbers in the caterpillar stage. The name is given from the fact that when these larvae have destroyed the vegetation in the area where the eggs were laid they advance in army-like swarms to other fields. In Europe the antler moth (*Charaeas graminis*) behaves in a similar fashion, and a serious outbreak in Great Britain took place in 1917. The *Lymantriidae* include several well-known defoliators of forest and shade trees, as was previously mentioned; while among the *Geometridae* group the looper caterpillars of many species are injurious to fruit trees and bushes.

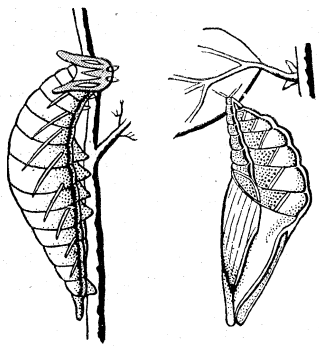


FIG. 40.—LARVA AND EMPTY PUPA CASE OF APATURA ILIA

In contrast, certain *Bombycidae* and *Saturniidae* are commercially valuable in yielding silk. The common silkworm moth (*Bombyx mori*), which belongs to the first mentioned family, is native to China and was introduced into many countries. The usual food of its caterpillars is the leaves of the mulberry and the silk produced is of the highest quality. Among the *Saturniidae* several eastern species yield lower grades of commercial silk, and the varieties of the latter, known as Shantung, Tussore, Eri and Muga silks, are produced by species of *Antheraea* and *Philosamia*. (*See* SILK AND SERICULTURE; AILANTHUS). Very few other Lepidoptera are in any sense useful to man, excepting the showy coloured species which are utilized for ornamentation or mounted for purposes of display. Mention needs also be made of the caterpillars of a few species which prey upon aphides or scale insects, and thereby confer benefit by destroying noxious and pestiferous forms of insect life.

BIBLIOGRAPHY.—The standard bibliography is *Lepidopterorum Catalogus* (published by Junk), about half complete when interrupted by World War II; also *see* Zerny, below. For butterflies of the U.S. and Canada *see:* J. H. and A. B. Comstock, *How to Know the Butterflies;* W. J. Holland, *Butterfly Book,* rev. ed. (1931), illustrated in colour; for moths, Holland's *Moth Book,* with numerous illustrations—mainly of Macrolepidoptera; and W. T. M. Forbes, *Lepidoptera of New York and Neighboring States* (Mem. 68, Cornell univ. agr. exp. sta., 1923).

For England excellent handbooks are R. South, *Butterflies of the British Isles* and *Moths of the British Isles,* which are well illustrated and deal with all except the "Micros"; E. Meyrick, *Revised Handbook of British Lepidoptera,* includes the "Micros," also with keys; the caterpillars are well figured in W. Buckler, *Larvae of British Butterflies and Moths* (Ray society, 1885–99); J. W. Tutt, *British Lepidoptera,* contains much general information and monographs certain groups. For the continent also *see* W. F. Kirby, *Butterflies and Moths of Europe* (1903); A. Spuler, *Die Schmetterlinge Europas und Raupen* (Stuttgart, 1908–10) includes many "Micros."

For Lepidoptera of world-wide distribution, A. Seitz, *Macrolepidoptera of the World,* was complete for the Palaearctic region (Europe and North Asia), also the butterflies of the world, the "Bombyces" were very nearly complete and the Noctuae and Geometrae well advanced, when the work was interrupted. For morphology *see* especially H. Zerny and M. Beier in Kükenthal's *Handbuch der Zoologie,* vol. 4, part 2, pp. 1554–1728, with bibliography and the Vienna classification; for biology and habits, M. Hering, *Biologie der Schmetterlinge* (1926). For coloration *see* especially M. Standfuss, *Handbuch der Paläarktischen Gross-schmetterlinge* (Jena, 1896); E. B. Poulton, *The Colours of Animals* (1890); A. G. Mayer, *Bull. Mus. Comp. Zool., Harvard,* 29 (1896); B. N. Schwanwitsch, "Studies upon the Wing-Pattern of Catagramma . . .," *Trans. Zool. Soc. London* 21, part 2, pp. 107–284 (1930).

For migration *see* C. B. Williams, *The Migration of Butterflies* (1930); C. B. Williams and others, *Trans. Royal Ent. Soc., London* pp. 101-280 (1942); for geographical distribution, A. Pagenstecher, *Die Geographische Verbreitung der Schmetterlinge* (1909); K. Holdhaus in Schroeder's *Handbuch der Entomologie,* vol. II, pp. 592-1058. Other literature on the order is mentioned in A. D. Imms, *General Textbook of Entomology,* 3rd ed. (1934) and *Recent Advances in Entomology,* 2nd ed. (1937). (A. D. I.; W. T. M. F.)

LEPIDUS, the name of a Roman patrician family in the Aemilian gens.

1. MARCUS AEMILIUS LEPIDUS, one of the three ambassadors sent to Egypt in 201 B.C. as guardians of Ptolemy V. He was consul in 187 and 175, censor 179, *pontifex maximus* from 180 onwards, and was six times *princeps senatus.* He died in 152. He distinguished himself in the war with Antiochus III of Syria, and against the Ligurians. He made the Via Aemilia from Ariminum to Placentia, and led colonies to Mutina and Parma.

Livy xl. 42–46, *epit.* 48; Polybius xvi. 34.

2. MARCUS AEMILIUS LEPIDUS, father of the triumvir. In 81 B.C. he was praetor of Sicily. In the civil wars he sided with Sulla. Afterwards he became leader of the popular party, and with the help of Pompey was elected consul for 78, in spite of the opposition of Sulla. On Sulla's death, Lepidus tried to upset the Sullan constitution. His colleague defeated his measures by the use of the tribunician veto, and the situation nearly led to civil war. Lepidus was then ordered by the senate to go to his province, Transalpine Gaul; but he stopped in Etruria on his way from the city and began to levy an army. He was declared a public enemy early in 77, and forthwith marched against Rome. He was defeated in the Campus Martius by Pompey and Catulus. He sailed to Sardinia, to join Sertorius in Spain, and died shortly afterwards.

Plutarch, *Sulla,* 34, 38, *Pompey,* 15; Appian, *B.C.* i. 105, 107; Livy *epit.* 90; Florus iii. 23; Cicero, *Balbus,* 15.

3. MARCUS AEMILIUS LEPIDUS, the triumvir. He joined the party of Julius Caesar in the civil wars, was consul in 46 B.C. In the beginning of 44 B.C. he was sent to Gallia Narbonensis, but before he had left the city with his army Caesar was murdered. Lepidus, as commander of the only army near Rome, became a man of great importance in the troubles which followed. He sided with Antonius when civil war broke out. Antony, after his defeat at Mutina, joined Lepidus in Gaul, and in August 43 Octavian, who had forced the senate to make him consul, effected an arrangement with Antony and Lepidus, and their triumvirate was organized at Bononia. Antony and Octavian soon reduced Lepidus to an inferior position. His province of Gaul and Spain was taken from him; and his inclusion in the renewed triumvirate in 37 was only formal. In 36 he attempted to raise Sicily against Octavian, but his soldiers betrayed him. He was allowed to retain his fortune and the office of *pontifex maximus* but had to retire into private life. According to Suetonius (*Augustus,* 16), he died at Circeii in the year B.C. 13.

See ROME: *History* ii., "The Republic," Period C., *ad. fin.;* Appian *Bell. Civ.* ii.–v.; Dio Cassius xli.–xlix.; Vell. Pat. ii. 64, 80; Orelli's *Onomasticon* to Cicero.

LE PLAY, PIERRE GUILLAUME FRÉDÉRIC (1806–1882), French engineer and economist, was born at La Rivière Saint-Sauveur (Calvados), on April 11, 1806, the son of a custom-house official. He was educated at the École Polytechnique at Paris, and from there he passed into the State Department of Mines, where his powers of observation won him rapid promotion. In 1832, he became co-editor of the *Annales des Mines,* two years later he was appointed head of the permanent committee of mining statistics and in 1840 engineer-in-chief and professor of metallurgy at the School of mines, where he became inspector in 1848. As a representative of the French Government, he reported on the steel and cutlery exhibited in London at the great exhibition of 1851, and at the Paris exhibitions of 1855 and 1862 he was placed in charge of the arrangement and classification of the products. On being created a senator in 1867, he made a brief entry into politics, but after the fall of the senate in 1870, he made no further attempt to re-enter parliament. During his long vacations, which he had systematically spent in travelling in Europe and Asia, Le Play had closely observed the social and economic conditions of the people, and on his retirement in 1870, he devoted himself to the study of similar questions in France. After investigating minutely the economic circumstances of about 300 families, he tabulated the facts with a view to discovering the bases of the welfare of the family, and in 1855 published a selection of 36 of these monographs in *"Les Ouvriers Européens"* (6 vols.). Technically his work in

classifying and tabulating family budgets is excellent. The conclusions at which Le Play arrived relate mainly to the morals of industry, and are of greater value to the statesman than the economist.

For his work in this sphere Le Play was awarded the Monthyon prize of statistics, by the Académie des Sciences. In 1856, Le Play founded the *Société internationale des études pratiques d'Economie sociale*, which has devoted its energies to forwarding social studies on lines laid down by its founder. The two basic contributions of Le Play and his continuators, are their insistence on, and treatment of, primary occupations, and their elaboration of the formula "place, work and folk." In opposition to the school of Comte, they approach sociological questions from physical science and industry, and depend on direct observation of representative families and of communities. In *La Science Sociale*, the main organ of the society, have been published a series of social monographs, which are invaluable both to the economist and sociologist. (*See* SOCIOLOGY.) By his work, therefore, Le Play has become the originator of one of the main schools of sociology. He died in Paris on April 5, 1882.

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LEPONTINE ALPS, that portion of the central Alps which extends from the Simplon to the Splügen, and south of the Furka and Oberalp passes. The eastern portion of this range from the St. Gothard pass to the Spülgen is sometimes named the Adula Alps. The highest peak is Mt. Leone (11,684 ft.). (*See* ALPS.)

LEPROSY (*Lepra Arabum, Elephantiasis Graecorum*), the greatest disease of mediaeval Christendom, identified, on the one hand, with a disease endemic from the earliest historical times (1500 B.C.) in the delta and valley of the Nile, and, on the other hand, with a disease now common in Asia, Africa, South America, the West Indies and certain isolated localities of Europe.

Leprosy is a bacterial disease the cause being *B. leprae*. There are many resemblances between the lesions of leprosy and of tuberculosis and many leprous patients contract tubercle. The essential character of leprosy is the replacement of normal tissue by nodular foci of inflammatory cells (including giant cells) similar to those found in syphilis and tuberculosis. The bacilli are found in these cells, sometimes in small numbers, sometimes in masses. The structures most affected are the skin, nerves, mucous membranes and lymphatic glands.

Symptoms and Effects.—The symptoms vary according to the parts attacked. Three types of disease are usually described—(1) nodular, (2) smooth or anaesthetic, (3) mixed. In the first the skin is chiefly affected, in the second the nerves; the third combines the features of both. This classification is purely a matter of convenience, and is based on the relative prominence of symptoms, which may be combined in all degrees. The incubation period of leprosy may be many years. The invasion is usually slow and intermittent. There are occasional feverish attacks, with the usual constitutional disturbance and other slight premonitory signs, such as changes in the colour of the skin and in its sensibility. Sometimes, but rarely, the onset is acute and the characteristic symptoms develop rapidly. These begin with an eruption which differs markedly according to the type of disease. In the nodular form dark red or coppery patches appear on the face, backs of the hands and feet or on the body; they are generally symmetrical, and vary from the size of a shilling upwards. They come with one of the feverish attacks and fade away when it has gone, but only to return. After a time infiltration and thickening of the skin become noticeable, and the nodules appear. They are lumpy excrescences, at first pink but changing to brown. Thickening of the skin of the face produces a highly characteristic appearance. The tissues of the eye undergo degenerative changes; the mucous membrane of the nose and throat is thickened, impairing the breathing and the voice; the eyebrows fall off; the ears and nose become thickened and enlarged. As the disease progresses the nodules tend to break down and ulcerate, leaving open sores. The patient, whose condition is extremely wretched, gradually becomes weaker, and eventually succumbs to exhaustion or is carried off by some intercurrent disease, usually inflammation of the kidneys or tuberculosis. A severe case may end fatally in two years, but, as a rule, when patients are well cared for, the illness lasts several years. The smooth type is less severe and more chronic. The eruption consists of patches of dry, slightly discoloured skin, not elevated above the surface. These patches are the result of morbid changes affecting the cutaneous nerves, and are accompanied by diminished sensibility over the areas of skin affected. At the same time certain nerve trunks in the arm and leg, and particularly the ulnar nerve, are found to be thickened. In the further stages the symptoms are those of increasing degeneration of the nerves. Bullae form on the skin, and the discoloured patches become enlarged; sensation is lost, muscular power diminished, with wasting, contraction of tendons, and all the signs of impaired nutrition. The nails become hard and clawed; perforating ulcers of the feet are common; portions of the extremities, including whole fingers and toes, die and drop off. Later, paralysis becomes more marked, affecting the muscles of the face and limbs. This form of the disease runs a very chronic course, and may last 20 or 30 years. Recovery occasionally occurs. In the mixed form, which is probably the most common, the symptoms described are combined in varying degrees.

Incidence of the Disease.—Since 1910 a new and more hopeful era in the 3,000-year-old leprosy problem has been opened up by the discovery of an improved treatment of at least the earlier stages of the disease. It still remains a great scourge, recent estimates placing the world's lepers, including early little recognized cases, at two to three millions, the great majority being in tropical and subtropical Asia and Africa, the last having the highest numbers in proportion to population.

Leprosy is most prevalent in hot damp climates, and least in very dry areas, humidity being apparently favourable to the survival of the lepra bacillus and its transmission to others, usually through long and close contact, 40% of traced infections being due to living in the same house and 30% more to sleeping in the same bed with a leper. Children and young adults are most susceptible. The disease is less infectious than tuberculosis, and many advanced crippled nerve cases lose their infectivity. One-third of the isolated lepers in South African institutions were recently released on this account, with great reduction in expenditure. This policy is in opposition to segregation, which is only necessary in infective stages, and has resulted in the reduction of the lepers in Norway to only 5% of the numbers known in 1856, when it was introduced there. Sweden and Iceland show similar results. Under the more difficult conditions in poor tropical countries such as Hawaii and the Philippines, and in the absence of an effective treatment, the effects of segregation have not been so good and it has led to hiding of the earlier and more amenable cases, from whom infections may arise before they are discovered and isolated.

Treatment.—Numerous suggested remedies, including nastin, having failed to fulfil their early promise, only the old Indian drug, chaulmoogra oil, was known to have some power of retarding the progress of the disease by such doses as could be taken orally on account of its nauseating properties. But slightly better results were obtained by Victor G. Heiser in the Philippines by prolonged painful courses of intramuscular injections of the oil, which few patients would submit to. Real advance was made in 1916–17 when L. Rogers injected the soluble sodium salts of the fatty acids of chaulmoogra and other oils intramuscularly, and still better intravenously. This produced febrile and local reactions, accompanied by extensive destruction of the lepra bacilli in the diseased tissues, with subsequent absorption and eventually complete disappearance of the nodules and the organisms in a considerable proportion of not very advanced cases.

Dean and Hollmann at Honolulu soon after introduced the practically important modification of using intramuscular injections of ethyl esters in place of the more troublesome intravenous ones of

the sodium salts, enabling a larger number of cases to be treated. The result was that in the last four recorded years the number of cases discharged as recovered by a board of medical experts has numbered 53% of the 399 admissions during the same period, and the total lepers, including advanced incurable cases among whom the mortality is high, are being reduced at a rate which will nearly solve the problem in Hawaii within about 25 years. In India Dr. Muir adopted a new substance, sodium hydnocarpate, as part of the routine treatment, and found it cheap, easy to administer and very effective. The British Empire Leprosy Relief Association distributes very large quantities of the drug and had supplied hydnocarpus seed for cultivation so that in a few years most of the British possessions affected would have their own supplies.

Further, at the great Culion leper settlement of the Philippines, of 4,000 cases in all stages recently treated 645 have already cleared up and are bacteriologically negative. Good progress is also being made in many other countries. Many early cases are now coming forward, for the first time in the age-long history of leprosy, in the early amenable stages and asking for admission to the leper institutions in order to obtain the new treatment. They consequently recover before they have reached the more infective stages, cutting short numerous foci of infection in the houses. Active research work, still further to improve the treatment, is going forward in several important centres. The disheartening old asylums for hopelessly advanced and often quite harmless uninfective lepers are giving place to agricultural colonies, much on the lines of tuberculosis sanatoria for the infective cases amenable to treatment.

Hospital clinics are being established to enable the early uninfective cases to be treated as out-patients without the cost and disadvantages of separation from friends and relatives, and only sufficient funds and organization are required to reduce this loathsome disease to negligible proportions in many parts of the world within a few decades.

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LEPSIUS, KARL RICHARD (1810–1884), German Egyptologist, was born at Naumburg-am-Saale on Dec. 23, 1810. He studied at Leipzig, and at Göttingen, where, under the influence of Otfried Müller, he finally decided to devote himself to the archaeological side of philology. After graduating doctor in Berlin in 1833, he went to Paris, where he was commissioned by the duc de Luynes to collect material from the Greek and Latin writers for his work on the weapons of the ancients. In 1834 he took the Volney prize with his *Paläographie als Mittel der Sprachforschung*. Befriended by Bunsen and Humboldt, Lepsius took up Egyptological studies, which, since the death of Champollion in 1832, had attracted no scholar of eminence and weight. After four years spent in studying the Egyptian collections of Italy, Holland and England, he returned to Germany, where Humboldt and Bunsen secured for his projected visit to Egypt the status of a scientific expedition with royal support. For three years Lepsius and his party explored the region from the Sudan above Khartum to the Syrian coast. At the end of 1845 they returned home, bringing with them casts, drawings and squeezes of inscriptions and scenes, maps and plans collected with the utmost thoroughness, as well as antiquities and papyri.

In 1846 Lepsius received a chair in Berlin University. In 1859 the 12 volumes of his vast *Denkmäler aus Ägypten und Äthiopien* were finished, supplemented later by a *text* prepared from the note-books of the expedition; they comprise its entire archaeological, palaeographical and historical results. In 1866 Lepsius again went to Egypt, and discovered the famous Decree of Tanis or Table of Canopus, an inscription of the same character as the Rosetta Stone, in hieroglyphic, demotic and Greek. In 1873 he was appointed keeper of the Royal Library, Berlin, which, like the Berlin Museum, owes much to his care. He died at Berlin on July 10, 1884. Besides the colossal *Denkmäler* and other publications of texts such as the *Todtenbuch der Ägypter* (*Book of the Dead*, 1842) his other works, amongst which may be specially named his *Königsbuch der Ägypter* (1858) and *Chronologie der Ägypter* (1849), retain permanent value.

See *Richard Lepsius*, by Georg Ebers (New York, 1887), and art. EGYPT: *Archaeology and Art*.

LEPTIS, the name of two towns in ancient Africa. The first, Leptis Magna (Λεπτίμαγνα), the modern Lebda, was in Tripolitana between Tripolis and Mesrata, at the mouth of the Cinyps; the second, Leptis Parva (Λέπτις ἡ μικρά), known also as Leptiminus or Leptis minor, the modern Lamta, was a small harbour of Byzacena between Ruspina (Monastir) and Thapsus (Dimas).

1. LEPTIS MAGNA was one of the oldest and most flourishing of the Phoenician emporia established on the coasts of the greater Syrtis, the chief commercial entrepôt for the interior of the African continent. It was founded by the Sidonians who were joined later by the people of Tyre. Herodotus enlarges on the fertility of its territory. It was tributary to Carthage to which it paid a contribution of a talent a day. After the Second Punic War Massinissa made himself master of it. During the Jugurthine War it appealed for protection to Rome. Though captured and plundered by Juba, it maintained its allegiance to Rome, supported the senatorial cause, received Cato the younger with the remains of the Pompeian forces after Pharsalus in 48 B.C. After his victory Julius Caesar imposed upon it an annual contribution of 300,000 measures of oil. Nevertheless, it preserved its position as a free city governed by its own magistrates. It received the title of *municipium*, and was subsequently made a *colonia* by Trajan while under Nerva the coast-road from Tacape (Gabes) to Leptis was constructed. Septimius Severus, who was born there, beautified the place and conferred upon it the *Ius Italicum* and the place as it stands is his creation. The ruins of Leptis are among the most imposing Roman remains in North Africa, and have been excavated in part by the Italians since 1911. The city walls have only been traced in a few places on the west, where what is visible is comparatively late; while on the north, towards the sea, there were no walls at all, so that the fresh breezes could, as at Oea (Tripoli) have access to the town. The ancient harbour, with its quays (well preserved and of several types) round a large basin, lay at the mouth of the small stream known as Wady Lebda; on the western promontory a breakwater supported a lighthouse; on the eastern stood a tower and a temple.

Before the recent excavations, the most prominent ruins in the town were attributed to the Imperial palace, but they have turned out to be the forum, surrounded by a peristyle with an inscription of Septimius Severus: on the east of the open space is a large basilica, some 300 ft. long and 125 wide, with an apse at each end with finely carved pilasters. To the south-west three arches faced the entrance to a monumental street running north-east, past the forum, to the coast, and to the south is a large mass of concrete with niches, perhaps a *nymphaeum* or monumental fountain.

To the north are streets on a more or less regular plan, and a theatre, another *nymphaeum* of the period of Severus, and a church of the Byzantine period. The *thermae* (baths) which lie to the south of the forum, were completed in A.D. 127. They are

extremely well preserved, and their plan is interesting and well thought out: a large number of statues were found in them. To the south of them again is a large group of cisterns: while a road led from the north-west angle of the baths to a four-way arch, or Janus, which is of the time of Severus and probably belonged to the city walls of the imperial period. Some way off to the east, along the shore, is a large circus, and the site of the amphitheatre is close by.

The coins of Leptis Magna, like the majority of the emporia in the neighbourhood, present a series from the Punic period. They are of bronze with the legend לפק (*Lepqi*).

See J. Toutain, "Le Limes Tripolitanus en Tripolitaine," in *Bulletin archéologique du comité des travaux historiques* (1905); P. Romanelli, *Leptis Magna* (Rome, 1926); R. Bartoccini, *Guida di Lepcis* (Rome, 1927).

2. LEPTIS PARVA (Lamta), 10 m. from Monastir, which is often confused by modern writers with Leptis Magna in their interpretations of ancient texts, and 24 m. S.W. of Hadrumetum (Sousse). A French engineer, A. Daux, has discovered a probable line of ramparts. Like Hadrumetum, Leptis Parva declared for Rome after the last Punic War. Also after the fall of Carthage in 146 it preserved its autonomy. Julius Caesar made it the base of his operations before the battle of Thapsus in 46. Under the empire Leptis Parva became extremely prosperous; its bishops appeared in the African councils from 258 onwards. In Justinian's reorganization of Africa Leptis Parva was with Capsa one of the two residences of the *Dux Byzacenae*. The ruins extend along the sea-coast to the north-west of Lamta; the remains of docks, the amphitheatre, cisterns and a Byzantine fort can be distinguished; a Christian cemetery has furnished tombs adorned with curious mosaics.

See *Bulletin de la Soc. archéol. de Sousse* (1905; plan of the ruins of Lamta) and refs.

LE PUY or LE PUY EN VELAY, a town of south-eastern France, capital of the department of Haute-Loire, 90 m. S.W. of Lyons on the Paris-Lyon railway. Pop. (1936) 21,232. Towards the end of the 4th or beginning of the 5th century Le Puy became the capital of the Vellavi, at which period the bishopric, originally at Revession, now St. Paulien, was transferred hither. Gregory of Tours speaks of it by the name of Anicium, because a chapel "ad Deum" had been built on the mountain, whence the name of Mt. Adidon or Anis, which it still retains. In the 10th century it was called Podium Sanctae Mariae, whence Le Puy. The city rises in the form of an amphitheatre from a height of 2,050 ft. above sea-level upon Mont Anis. Narrow steep streets ascend from the new town in the valley of the Dolézon to the old feudal and ecclesiastical town. Mt. Corneille, 433 ft. above the Place de Breuil (in the lower town), is a steep rock of volcanic breccia, from which a good view is obtained of the town and of the adjacent volcanic mountains. The Romanesque cathedral of Notre-Dame (early 12th cent.) has a particoloured façade of white sandstone and black volcanic breccia.

Le Puy possesses remains of its old line of fortifications, among them a machicolated tower and a few mediaeval houses. In front of the hospital there is a fine mediaeval porch under which a street passes. The museum, named after Charles Crozatier, contains antiquities, engravings, a collection of lace and ethnographical and natural history collections. The church of St. Michel d'Aiguilhe, beside the gate of the town, stands on an isolated rock and is reached by a staircase of 271 steps; it dates from the end of the 10th century and its chancel is still older. The steeple is of the same type as that of the cathedral. Three miles from Le Puy are the ruins of the Château de Polignac, one of the most important feudal strongholds of France. Le Puy is the seat of a bishopric under the archbishop of Bourges, a prefect and a court of assizes, and has tribunals of first instance and of commerce, a board of trade arbitrators and a chamber of commerce. The principal manufacture is that of lace and guipure.

LE QUEUX, WILLIAM TUFNELL (1864–1927), English novelist and traveller, was born on July 2, 1864, in London. He was educated privately, and after studying art in Paris went on a walking tour through France and Germany. From 1891 to 1893 he was foreign editor of the *Globe*, but then gave up journalistic work for novel writing. During the following years he travelled widely in Algeria, the Balkans, the Arctic and the Sudan. During the Balkan war he again took up journalism and became correspondent of the *Daily Mail*. He has made a valuable collection of mediaeval manuscripts. His wide knowledge of secret service methods both in England and on the continent gives additional interest to his many novels. He died Oct. 14, 1927.

His works include: *Secrets of Monte Carlo* (1899); *An Observer in the Near East* (1907); *German Spies in England* (1915); *Rasputin, the Rascal Monk* (1920); *Landru* (1921); *Things I Know* (1923); *Hidden Hands* (1925); *The Fatal Face* (1926); *Blackmailed* (1927), and many others.

LERDO DE TEJADA, SEBASTIAN (1825–1889), president of Mexico, was born at Jalapa on April 25, 1825. He was educated as a lawyer and became a member of the supreme court. He became known as a liberal leader and a supporter of President Juarez. He was minister of foreign affairs for three months in 1857, and became president of the chamber of deputies in 1861. During the French intervention and the reign of the emperor Maximilian, he continued loyal to the liberal party, and had an active share in conducting the national resistance. As minister of foreign affairs to President Juarez, he showed an implacable resolution in carrying out the execution of Maximilian at Querétaro. When Juarez died in 1872, Lerdo succeeded him in office in the midst of a confused civil war. He achieved some success in pacifying the country, and began the construction of railways. He was re-elected on July 24, 1876, but was expelled in January of the following year by Porfirio Diaz. He had made himself unpopular by the means he took to secure his re-election and by his disposition to limit State rights in favour of a strongly centralized Government. He fled to the United States and died in obscurity at New York in 1889.

LERICI, a village of Liguria, Italy, on the N.E. side of the Gulf of Spezia, about 12 mi. E.S.E. of Spezia, and 4 mi. W.S.W. of Sarzana by road, 17 ft. above sea level. Pop. (1936) 4,148 (town); 11,448 (commune). Its small harbour is guarded by an old castle, said to have been built by Tancred; in the middle ages it was the chief place on the gulf. S. Terenzo, a hamlet belonging to Lerici, was the residence of Shelley during his last days. Farther northwest the bay of Pertusola has lead-smelting works.

LÉRIDA, a province of northern Spain, formed in 1833 of districts previously included in the ancient province of Catalonia, and bounded N. by France and Andorra, E. by Gerona and Barcelona, S. by Tarragona and W. by Saragossa and Huesca. Pop. (1940) 297,440; area 4,691 sq.mi. The northern half of Lérida belongs entirely to the Mediterranean or eastern section of the Pyrenees, and comprises some of the finest scenery in the whole chain, including the valleys of Aran and La Cerdaña, and large tracts of forest. It is watered by many rivers, the largest of which is the Segre, a left-hand tributary of the Ebro. Lérida is traversed by the main railway from Barcelona to Saragossa, and by a line from Tarragona to the city of Lérida. In 1904 the Spanish government agreed with France to carry another line to the mouth of an international tunnel through the Pyrenees, and this was inaugurated in 1928. Insurgents occupied the province in the spring of 1938. There is a thriving trade in wine, oil, wool, timber, cattle, mules, horses and sheep, but agriculture is far less prosperous than in the maritime provinces. Lérida (*q.v.*) is the capital and the only town besides Tárrega (5,891) and Balaguer (5,991) with more than 5,000 inhabitants. Seo de Urgel, near the headwaters of the Segre, is an episcopal see, with a close historical connection with Andorra (*q.v.*).

LÉRIDA, capital of the Spanish province of Lérida, on the river Segre and the Barcelona-Saragossa and Lérida-Tarragona railways. Pop. (1940) 35,061 (mun. 41,464). Lérida is the *Ilerda* of the Romans, and was the capital of the people whom they called *Ilerdenses* (Pliny) or *Ilergetes* (Ptolemy). By situation the key of Catalonia and Aragon, it was from a very early period an important military station.

In the Punic Wars Lérida sided with the Carthaginians and suffered much from the Romans. Here Hanno was defeated by

Scipio in 216 B.C., and here Caesar struggled with Pompey's generals Afranius and Petreius in the first year of the civil war (49 B.C.). It was already a *municipium* in the time of Augustus, and enjoyed great prosperity under later emperors. Under the Visigoths it became an episcopal see. Under the Moors *Lareda* became one of the principal cities of the province of Saragossa; it became tributary to the Franks in 793, but was reconquered in 797. In 1149 it fell into the hands of Ramon Berenguer IV. In modern times it has come through numerous sieges, having been taken by the French in 1707 and again in 1810. Its fall to the Nationalists in April 1938 greatly weakened the government's position. The older parts of the city, on the right bank of the river, are a maze of narrow streets, surrounded by ruined walls and a moat, and commanded by the ancient citadel. On the left bank are the modern suburbs, well laid out and connected with the older city by fine bridges. The old cathedral, last used for public worship in 1707, is a very interesting late Romanesque building, with Gothic and Mauresque additions. The Romanesque town hall, founded in the 13th century, has been several times restored. Leather, paper, glass, silk, linen and cloth are manufactured.

LERMONTOV, MIKHAIL YUREVICH (1814–1841), Russian poet and novelist, often styled the poet of the Caucasus, was born in Moscow on Oct. 3, 1814, of Scottish descent, but belonged to a respectable family of the Tula government, and was brought up in the village of Tarkhanui (in the Penza government). From the academic gymnasium in Moscow Lermontov passed in 1830 to the university, but there his career was cut short for insubordination. From 1832 to 1834 he attended the school of cadets at St. Petersburg, and became an officer in the Guards. To his own and the nation's anger at the loss of Pushkin (1837) the young soldier gave vent in a passionate poem (*On the Death of the Poet*), addressed to the tsar. Lermontov was forthwith arrested, court-martialled, expelled from the Guards, and sent off to the Caucasus to a line regiment. He had been in the Caucasus with his grandmother as a boy of ten, and he found himself at home by reason of yet deeper sympathies than those of childish recollection. His exile lasted only a year, however. He was in St. Petersburg in 1838 and 1839, and in the latter year wrote the work, *A Hero of Our Times* (Eng. trans. by R. I. Lipmann, 1886, and by J. S. Phillimore, *A Hero of Nowadays,* 1920). He had fought more than one duel, and in 1841 quarrelled with his old school-fellow, Mastinov. The rivals met near Piatigorsk, on July 15 (O.S.) and Lermontov was killed.

Lermontov published only one small collection of poems in 1840. Three volumes, much mutilated by the censor, were issued in 1842 by Glazunov; and full editions of his works were published in 1860 and 1863. To Bodenstedt's German translation of his poems (*Michail Lermontov's poetischer Nachlass,* 1842, 2 vols.) which indeed was the first satisfactory collection, he is indebted for a wide reputation outside Russia as one of the greatest Russian romantic poets. English translations of some of his poems are to be found in C. T. Wilson's *Russian Lyrics* (1887) and in J. Pollen's *Rhymes from the Russian* (1891). Among his best-known poems are "Ismail-Bey," "Hadji Abrek," "Valerik," "The Novice" and, remarkable as an imitation of the old Russian ballad, "The song of the tsar Ivan Vasilivitch, his young body-guard, and the bold merchant Kalashnikov."

See Taillandier, "Le Poète du Caucase," in *Revue des deux Mondes* (Feb. 1855), reprinted in *Allemagne et Russie* (1856); Duduishkin's "Materials for the Biography of Lermontov," prefixed to the 1863 edition of his works; E. Duchesne, *Michel Iourievitch Lermontov, sa vie et ses oeuvres* (1910); *The Demon,* translated by A. C. Stephen (1875) and by E. Richter (1910).

LEROUX, PIERRE (1798–1871), French philosopher and economist, was born at Bercy near Paris, the son of an artisan. His education was interrupted by the death of his father, which compelled him to support his mother and family. Having worked first as a mason and then as a compositor, he joined P. Dubois in the foundation of *Le Globe* which became in 1831 the official organ of the Saint-Simonian community, of which he became a prominent member. In November of the same year, when Enfantin preached the enfranchisement of women and the functions of the *couple-prêtre,* Leroux with Bazard and J. Regnaud separated himself from the sect. In 1838, with J. Regnaud, he founded the *Encyclopédie nouvelle* of which only eight volumes appeared (1838–41). Amongst the articles which he inserted in it were *De l'égalité* and *Réfutation de l'éclectisme,* which afterwards appeared as separate works. In 1840 he published his treatise *De l'humanité* (2nd ed. 1845), which contains the fullest exposition of his system, and was regarded as the philosophical manifesto of the Humanitarians. In 1841 he established the *Revue indépendante,* with the aid of George Sand, over whom he had great influence. Her *Spiridion,* which was dedicated to him, *Sept cordes de la lyre, Consuelo,* and *La Comtesse de Rudolstadt,* were written under the Humanitarian inspiration. In 1843 he established at Boussac (Creuse) a printing association organized according to his systematic ideas, and founded the *Revue sociale.* After the outbreak of the revolution of 1848 he was elected to the Constituent Assembly, and in 1849 to the Legislative Assembly, where his speeches on behalf of the extreme socialist wing were of an abstract and mystical character. After the *coup d'état* of 1851 he settled with his family in Jersey, where he pursued agricultural experiments and wrote his socialist poem *La Grève de Samarez.* On the definitive amnesty of 1869 he returned to Paris, where he died in April 1871, during the Commune.

The system of Leroux was a singular medley of doctrines borrowed, not only from Saint-Simonian, but from Pythagorean and Buddhistic sources. In philosophy his fundamental principle is what he denominates the "triad"—a triplicity which he finds to pervade all things, which in God is "power, intelligence and love," in man "sensation, sentiment and knowledge." In social economy he would preserve the family, country and property, but finds in all three, as they now are, a despotism which must be eliminated.

See Raillard, *Pierre Leroux et ses oeuvres* (1899); Thomas, *Pierre Leroux: sa vie, son oeuvre, sa doctrine* (1904); L. Reybaud, *Études sur les réformateurs et socialistes modernes;* article in R. H. Inglis Palgrave's *Dictionary of Pol. Econ.*

LE ROY, a village of Genesee county, N.Y., U.S.A., 25 mi. S.W. of Rochester. It is served by the Baltimore and Ohio, Erie, and New York Central railways. Pop. (1940) 4,413. It has limestone quarries, refrigerated warehouses and a canning factory; manufactures include porcelain insulators, steel chests, food products, silk hosiery and agricultural implements. It is the centre of a rich agricultural and fruit section.

LEROY-BEAULIEU, ANATOLE (1842–1912), French publicist, was born at Lisieux, on Feb. 12, 1842. He visited Russia to collect documents on the political and economic organization of the Slav nations, and on his return published in the *Revue des deux mondes* a series of articles, which were the foundation of his great work on Russia, *L'Empire des tsars et les Russes* (1881–82, 4th ed., revised in 3 vols., 1897–1898). *Un homme d'état russe* (1884) gave the history of the emancipation of the serfs by Alexander II. Other works are *Les Catholiques libéraux, l'église et le libéralisme* (1890), *La Papauté, le socialisme et la démocracie* (1892), *Les Juifs et l'antisémitisme; Israël chez les nations* (1893), *Les Arméniens et la question arménienne* (1896), *L'Antisémitisme* (1897), *Études russes et européennes* (1897). In 1881 Leroy-Beaulieu was elected professor of contemporary history and eastern affairs at the École Libre des Sciences Politiques, becoming director of this institution on the death of Albert Sorel in 1906, and in 1887 he became a member of the Académie des Sciences Morales et Politiques. He died in Paris on June, 15, 1912.

LEROY-BEAULIEU, PIERRE PAUL (1843–1916). French economist and political scientist, brother of the preceding, was born at Saumur on Dec. 9, 1843. He studied in France, England and Germany, and became an editor of the *Journal des Débats* in 1871, professor at the École Libre des Sciences Politiques in 1872, founder of the Economiste Français in 1873, professor at the Collège de France in 1880.

Leroy-Beaulieu achieved international reputation by popular presentation of conservative economic dogma and political theory. Like other members of the so-called "école libérale" in France, he was a rightist in political life. Some of his writings present a somewhat modified version of classical economics. He was generally opposed to high tariffs, advocated state support for large

families and saw advantages in colonial expansion. His attitude on government loans and public expenditures was not as dogmatically negative as that of most of his contemporary French economists. His opposition to progressive taxation, his distrust of the voting masses, his criticism of republican processes gave Leroy-Beaulieu a political label.

Leroy-Beaulieu's beliefs were indicative of the hopes and aspirations of the French intelligentsia during the period preceding World War I, sons of the upper bourgeoisie, trained in the École Libre des Sciences Politiques. He was the spokesman of a class that disappeared with World War II.

His principal works are:—*L'état moral et intellectuel des classes ouvrières et de son influence sur le taux des salaires* (1868); *L'Administration locale en France et en Angleterre* (1872); *Le Travail des femmes au dix-neuvieme siècle* (1873); *Traité de la science des finances* (1877); *La Question ouvrière au XIX siècle* (2nd ed., 1882); *Essai sur la repartition des richesses* (1882); *Le Collectivisme* (1884); *L'Algérie et la Tunisie* (1888); *L'État moderne et ses fonctions* (1889); *Le Sahara, le Soudan et les Chemins de fer Transsahariens* (1905); *De la colonisation chez les peuples modernes* (6th ed., 2 vols., 1908); *Le Collectivisme, examen critique du nouveau socialisme et l'évolution du socialisme depuis 1895. Le Syndicalisme* (5th ed., 1909); *Traité théorique et pratique d'économie politique* (5th ed., 5 vols., 1910); *L'Art de placer et gérer sa fortune* (1912); *La Question de la population* (1913); *La Guerre de 1914* (2 vols., 1915–16).

(H. S. Bh.)

LERROUX, ALEJANDRO (1864–), Spanish statesman, was born at La Rambla (Cordoba) in 1864. In 1898 he went to Barcelona, where he practised as a barrister. He became leader of the advanced republicans, and in 1901 was elected to the Cortes. His republican views led to his exile in 1907, when he fled to the Argentine. During World War I he ardently supported the Allies. He played a big part in bringing the republic into existence, and in 1931 became its first foreign minister. He was prime minister from 1933 to Aug. 1934, and from Oct. 1934 until 1935. In Oct. 1934 he announced the abolition of the autonomous rights granted to Catalonia in 1931.

LERWICK, the only small burgh of county Zetland, Scotland, and the most northerly town in the British Isles. Pop. (est. 1938) 5,084. It is on Bressay sound, a natural harbour on the east coast of the island called Mainland, 115 mi. N.E. of Kirkwall, in Orkney, and 340 mi. from Leith by steamer. The town dates from the beginning of the 17th century, and the older part consists of a flagged causeway called Commercial street, running for 1 mi. parallel with the sea (in which the gable ends of several of the quaint-looking houses stand), and so narrow in places as not to allow two vehicles to pass each other. At right angles to this street, lanes ascend the hillside to Hillhead, where the more modern houses and buildings stand. At the north end stands Fort Charlotte, erected by Cromwell, repaired by Charles II and altered by George III, after whose queen it was named. It is now used as a coast guard station. The Anderson institute, at the south end, was constructed as a secondary school in 1862 by Arthur Anderson, a native, who also presented the Widows' asylum in the same quarter. The town hall, built in 1881, contains several stained glass windows. Lerwick's main industries are connected with the fisheries, of which it is an important centre. There are docks, wharves, piers, curing stations, warehouses and an esplanade, along the front. The town is also the chief distributing centre for the islands, and carries on some business in knitted woollen goods. The Uphellya mumming festival, held in January, is of ancient origin. One mile west of Lerwick is Clickimin Loch, separated from the sea by a narrow strip of land. On an islet in the lake stands a ruined "broch" or round tower.

LE SAGE, ALAIN RENÉ (1668–1747), French novelist and dramatist, was born at Sarzeau in Brittany, on May 8, 1668. He went to school with the Jesuits at Vannes and was called to the bar in Paris in 1692. In 1694 he turned to literature. He found a valuable patron in the abbé de Lyonne, who gave him an annuity of 600 livres, and recommended him to exchange the classics for Spanish literature, of which he was himself a student and collector. Le Sage began by translating plays from Rojas and Lope de Vega. He was nearly 40 before he obtained anything like decided success. But in 1707 his admirable farce of *Crispin rival de son maître* was acted with great applause; and *Le Diable boiteux* was published. Notwithstanding the success of *Crispin,* the actors did not like Le Sage, and refused a small piece of his called *Les Étrennes* (1707). He thereupon altered it into *Turcaret,* his theatrical masterpiece, and one of the best comedies in French literature. This appeared in 1709.

The first two parts of *Gil Blas de Santillane* appeared in 1715. Strange to say, it was not so popular as *Le Diable boiteux.* Le Sage did not bring out the third part till 1724, nor the fourth till 1735. Notwithstanding the great merit and success of *Turcaret* and *Crispin,* the Théâtre Français did not welcome him, and in the year of the publication of *Gil Blas* he began to write for the Théâtre de la Foire—the comic opera held in booths at festival time. According to one computation he produced, either alone or with others, about a hundred pieces, varying from strings of songs with no regular dialogues, to comediettas only distinguished from regular plays by the introduction of music. He was also industrious in prose fiction.

Besides finishing *Gil Blas* he translated the *Orlando innamorato* (1721), rearranged *Guzman d'Alfarache* (1732), published two more or less original novels, *Le Bachelier de Salamanque* and *Estévanille Gonzales,* and in 1733 produced the *Vie et aventures de M. de Beauchesne,* which resembles certain works of Defoe. Le Sage was also the author of *La Valise trouvée,* a collection of imaginary letters, and of some minor pieces, of which *Une journée des parques* is the most remarkable. This laborious life he continued until 1740. At Boulogne Le Sage spent the last seven years of his life, dying on Nov. 17, 1747. His last work, *Mélange amusant de saillies d'esprit et de traits historiques les plus frappants,* had appeared in 1743.

HIS PLACE IN LITERATURE

Le Sage is an important figure in European literature. His work may be divided into three parts. The first contains his Théâtre de la Foire and his few miscellaneous writings, the second his two remarkable plays *Crispin* and *Turcaret,* the third his prose fictions. In the first two he swims within the general literary current in France; he can and must be compared with others of his own nation. But in the third he emerges altogether from merely national comparison. He formed no school in France; he followed no French models. His work is a parenthesis in the general development of the French novel. His literary ancestors are Spaniards, his literary contemporaries and successors are Englishmen. In mere form Le Sage is not original. He does little more than adopt that of the Spanish picaroon romance of the 16th and 17th century. Often, too, he prefers merely to rearrange and adapt existing work, and still oftener to give himself a kind of start by adopting the work of a preceding writer as a basis. But he never, in any work that pretends to originality at all, is guilty of anything that can fairly be called plagiarism. He is, on the contrary, fond of suggesting indebtedness when he is really dealing with his own funds. Thus the *Diable boiteux* borrows the title, and for a chapter or two the plan and almost the words, of the *Diablo Cojuelo* of Luis Velez de Guevara. But after a few pages Le Sage leaves his predecessor alone. Even the plan of the Spanish original is entirely discarded, and the incidents, the episodes, the style, are as independent as if such a book as the *Diablo Cojuelo* had never existed. The case of *Gil Blas* is still more remarkable. It was at first alleged that Le Sage had borrowed it from the *Marcos de Obregon* of Vincent Espinel; but though this book furnished Le Sage with separate incidents and hints for more than one of his books, *Gil Blas* as a whole is not in the least indebted to it. Afterwards Father Isla asserted that *Gil Blas* was a mere translation from an actual Spanish book—an assertion at once incapable of proof and disproof, inasmuch as there is no trace whatever of any such book. Le Sage has not only the characteristic, which Homer and Shakespeare have, of absolute truth to human nature as distinguished from truth to this or that national character, but he has also what has been called the quality of detachment. He never takes sides with his characters as Fielding (whose master, with Cervantes, he certainly was) sometimes does. Asmodeus and Don Cleofas, Gil Blas and the Archbishop and Doctor Sangrado, are produced by him with exactly the same impartiality of attitude. Except that he brought into novel writing this highest quality of artistic truth, it perhaps cannot be said that Le Sage did much to advance prose fiction in itself. But in individual excellence his works have few rivals. Nor should it be forgotten, as it sometimes is, that Le Sage was a great master of French style, the greatest unquestionably between the classics of the 17th century and the classics of the 18th.

See Barbaret, *Lesage et le Théâtre de la Foire* (1888); L. Claretier, *Lesage romancier* (1890); E. Lintilhac, *Le Sage* (1893) in the series of *Grands Ecrivains français;* Galli, *Le réalisme pittoresque chez Lesage* (1910).

LES ANDELYS, a town of France, capital of an arrondissement in the department of Eure about 30 mi. S.E. of Rouen by rail. Pop. (1936) 4,659. Les Andelys is formed by the union of

Le Grand Andely and Le Petit Andely. Grand Andely has a church (13th, 14th and 15th centuries) partly Gothic and partly Renaissance. Petit Andely sprang up at the foot of château Gaillard, now in ruins, but formerly one of the strongest fortresses in France, built by Richard Coeur de Lion at the end of the 12th century to protect the Norman frontier. It was captured by the French in 1204. It manufactures organs, tiles, wool and has tanyards and glass-works. It has trade in cattle, grain and flour.

LES BAUX, a village of France, in the department of Bouches-du-Rhône, 11 mi. N.E. of Arles. Pop. (1931) 69. In the middle ages Les Baux was the seat of a powerful family which owned the Terre Baussenques, extensive domains in Provence and Dauphiné. The influence of the seigneurs de Baux in Provence declined before the power of the house of Anjou, to which they abandoned many of their possessions. In 1632 the château and the ramparts were dismantled. Les Baux, which in the middle ages was a flourishing town, is now almost deserted. The remains exist of a huge château, once the seat of a celebrated "court of love."

LESBONAX, of Mytilene, Greek sophist and rhetorician, flourished in the time of Augustus. According to Photius (*cod.* 74) he was the author of 16 political speeches, of which two are extant, a hortatory speech after the style of Thucydides, and a speech on the Corinthian War (edition by F. Kiehr, *Lesbonactis quae supersunt,* Leipzig, 1907). Some erotic letters are also attributed to him. The Lesbonax described in Suidas as the author of philosophical works is probably much earlier; the author of a small treatise Περὶ Σχημάτων (ed. Rudolf Müller, Leipzig, 1900), is probably later.

LESBOS, an island in the Aegean sea, 7–10 mi. from the coast of Mysia, north of the Gulf of Smyrna, formerly a sanjak in the archipelago vilayet of Turkey, annexed in 1912 to Greece. Pop. (1928, last census before World War II) 161,557. Lesbos is roughly triangular; the three points are Argennum on the north-east, Sigrium (Sigri) on the west, and Malea (Maria) on the south-east. It is divided into three districts, Mytilene or Kastro in the east, Molyvo in the north, and Calloni in the west. The Euripus Pyrrhaeus (Calloni) is a deep gulf on the S.W. between Sigrium and Malea with a small port at Sigri; the gulf of Hiera (Yero) or Olivieri (from its surroundings) lies behind Mytilene town: both have difficult entrances (Yero, however, is of naval value), and commerce is concentrated at the small safe harbour of Mytilene. The surface is rugged, the highest point, Mount Olympus (Hagios Elias) being 3,080 ft. The country is however very fertile in wine, oil and grain. Its chief produce and principal export is olives. Soap, skins and valonea are also prepared, mules and cattle are bred, the sardine fishery is important, and antimony, marble and coal are found. The island has suffered from periodical earthquakes. There is a telegraph on the island, and a cable to the mainland and to Greece.

The chief town, Mytilene, pop. (1928 census) 27,870, was originally built on an island close to the eastern coast: afterwards it was joined to Lesbos by a causeway; and the city spread along the coast. There was a harbour on each side of the island; the southern forms the mediaeval and modern port. The island is now occupied only by the ruined mediaeval fortress. There are now 14 mosques and 7 churches, including a cathedral. Besides the five cities which gave the island the name of Pentapolis (Mytilene, Methymna, Antissa, Eresus, Pyrrha), there was a town called Arisba, perhaps Palaikastro, north-east of Calloni, destroyed by an earthquake in the time of Herodotus. Pyrrha (also Palaikastro) lay south-east of Calloni. Antissa on the north coast near Sigri, was destroyed by the Romans in 168 B.C. Eresus was on the south coast near Sigri. Methymna on the north, on the site of Molyvo, is still the second city of the island. Town walls and other buildings are on all these sites.

History.—The position of Lesbos near the old trade-route to the Hellespont marks it as an important site at all times. Greek tradition represented it as inhabited by aboriginal Pelasgi and immigrant Ionians. In historic times it was peopled by Aeolians who claimed to have migrated about 1050 B.C. from Boeotia; its nobles traced their pedigree to Agamemnon who conquered it in the Trojan War. Lesbos was the most prominent Aeolian settlement. Its commercial activity is attested by colonies in Thrace and the Troad, and by participation in the settlement of Naucratis in Egypt; it was by its good harbour that Mytilene became the political capital. The climax of its prosperity was about 600 B.C., when Pittacus, appointed as *aesymnetes* (dictator), by his wise administration and legislation won a place among the Seven Sages of Greece. The lyric poetry of Greece owed much to Lesbians of the 7th century, the musician Terpander and the dithyrambist Arion, and culminated under Pittacus' contemporaries Alcaeus and Sappho (*qq.v.*). Other distinguished Lesbians were the cyclic poet Lesches, the historian Hellanicus and the philosophers Theophrastus and Cratippus. In the 6th century the island declined, through protracted struggle with Athens for Sigeum on the Hellespont, and a naval defeat by Polycrates of Samos. The Lesbians readily submitted to Persia after the fall of Croesus of Lydia, and although hatred of their tyrant Coës, a Persian protégé, drove them into the Ionic revolt (499–493), they displayed poor spirit at the decisive battle of Lade. In the 5th century Lesbos long remained a privileged member of the Delian League (*q.v.*), with full self-administration, and the sole obligation of assisting Athens with a naval contingent. Nevertheless, early in the Peloponnesian War the oligarchy of Mytilene forced on a revolt, which was ended after a two years' siege of that town (429–427). The Athenians recalled their hasty resolve on a wholesale execution, but killed the ringleaders, confiscated the land and established a garrison. Thereafter Lesbos was repeatedly attacked by the Peloponnesians, and in 405 Mytilene witnessed a naval battle between Callicratidas and Conon. In 389 most of the island was recovered for the Athenians by Thrasybulus; in 377 it joined the Second Delian League, and remained throughout a loyal member, although its democracy was for a while supplanted by a tyranny. In 334 Lesbos served as a base for the Persian admiral Memnon against Alexander the Great; for Perseus against Rome in the Third Macedonian War; and for Mithradates VI. of Pontus in 88 B.C. Mytilene, nevertheless, was raised by Pompey to the status of a free city, thanks no doubt to his confidant Theophanes, a native of it.

Antissa, Eresus and Pyrrha possess no separate history. Methymna in the 5th and 4th centuries sometimes was a rival of Mytilene. During the Byzantine age the island flourished. In 1091 it fell to the Seljuks; in the next century repeatedly to the Venetians; in 1224 it was recovered by the Byzantine emperors, who in 1354 gave it to the Genoese family Gattilusio. Prospering under them Mytilene passed in 1462 under Turkish control, and had an uneventful history till its annexation to Greece, in 1912.

BIBLIOGRAPHY.—*See* Herodotus ii. 178, iii. 39, vi. 8, 14; Thucydides iii. 2–50; Xenophon, *Hellenica,* i., ii.; Strabo xiii., pp. 617–619; S. Plehn, *Lesbiacorum Liber* (Berlin, 1828); C. T. Newton, *Travels and Discoveries in the Levant* (London, 1865); B. V. Head, *Historia Numorum* (Oxford, 1887), pp. 487–488; E. L. Hicks and G. F. Hill, *Greek Historical Inscriptions* (Oxford, 1901), Nos. 61, 94, 101, 139, 164; Conze, *Reise auf der Insel Lesbos* (1865); Koldewey, *Antike Baureste auf Lesbos* (Berlin, 1890).

LESCHES (Lescheos in Pausanias x. 25. 5), the reputed author of the *Little Iliad* (Ἰλιὰς μικρά), one of the "cyclic" poems. According to tradition, he was a native of Pyrrha in Lesbos, and flourished about 660 B.C. The *Little Iliad* took up the story of the *Iliad,* and carried it down to the fall of Troy (Aristotle, *Poetics,* 23), or the admission of the wooden horse.

See F. G. Welcker, *Der epische Cyclus* (1865–82); Müller and Donaldson, *Hist. of Greek Literature,* i. ch. 6.

LESCHETIZSKY, THEODOR (1830–1915), Polish pianist and teacher, was born at Lancut, then in Austrian Poland, on June 22, 1830. He was a pupil of Czerny, and had a wide reputation as a pianist. He taught for some years (1864–78) at the St. Petersburg Conservatorium. His fame, however, chiefly rests upon his establishment of the Leschetizsky school of pianoforte playing at Vienna which earned a world-wide reputation for the soundness of its methods and the number of eminent artists whom it produced. Among his pupils may be mentioned Paderewski, Mark Hambourg and Moiseiwitsch. Leschetizsky died at Vienna on Nov. 17, 1915. His second wife Annette Essipoff (1880–92) was one of his most distinguished pupils.

See A. Hullah, *Theodor Leschetizsky* (1906), and E. Newcombe.

Leschetizky as I knew him (New York and London, 1921).

LESCURE, LOUIS MARIE JOSEPH, MARQUIS DE (1766–1793), French soldier and anti-revolutionary, took part in the defence of the Tuileries (Aug. 10, 1792). He was arrested and imprisoned with all his family, as one of the promoters of the rising in La Vendée. He was set at liberty by the Royalists, and became one of their leaders, fighting at Thouars, taking Fontenay and Saumur (May–June 1793), and, after an unsuccessful attack on Nantes, joining la Rochejaquelein, another famous Vendean leader. Their peasant troops finally gained a victory between Tiffauges and Cholet on Sept. 19, 1793. The struggle was then concentrated round Chatillon, which was time after time taken and lost by the Republicans. Lescure was killed on Oct. 15, 1793 near the château of La Tremblaye between Einée and Fougères.

See Marquise de la Rochejaquelein (Lescure's widow, who afterwards married La Rochejaquelein), *Mémoires* (1817); Jullien de Courcelles, *Dictionnaire des généraux français*, tome vii. (1823); T. Muret, *Histoire des guerres de l'ouest* (1848); and J. A. M. Crétineau-Joly, *Guerres de Vendée* (1834).

LESDIGUIÈRES, FRANÇOIS DE BONNE, DUC DE (1543–1626), constable of France, was born at Saint-Bonnet de Champsaur, on April 1, 1543. He was educated at Avignon under a Protestant tutor, and had begun the study of law in Paris when he enlisted as an archer. He joined the Huguenot troops in Dauphiné, and distinguished himself in mountain warfare. In 1575 he became the acknowledged leader of the Huguenot resistance in the district with the title of commandant general, confirmed in 1577 by Marshal Damville, by Condé in 1580, and by Henry of Navarre in 1582. He seized Gap by a lucky night attack on Jan. 3, 1577, re-established the reformed religion there, and fortified the town. He refused to acquiesce in the treaty of Poitiers (1578) which involved the surrender of Gap, and after two years of fighting secured better terms for the province. Nevertheless in 1580 he was compelled to hand the place over to Mayenne and to see the fortifications dismantled.

He took up arms for Henry IV. in 1585, capturing Chorges, Embrun, Châteauroux and other places, and after the truce of 1588–1589 secured the complete submission of Dauphiné. In 1590 he beat down the resistance of Grenoble, and was now able to threaten the leaguers and to support the governor of Provence against the raids of Charles Emmanuel I. of Savoy. He defeated the Savoyards at Esparron in April 1591, and in 1592 began the reconquest of the marquessate of Saluzzo which had been seized by Charles Emmanuel. After his defeat of the Spanish allies of Savoy at Salebertrano in June 1593 there was a truce, during which Lesdiguières was occupied in maintaining the royal authority against Éperon in Provence. The war with Savoy proceeded intermittently until 1601. Henry IV. made him a marshal of France in 1609.

Lesdiguieres took no part in the intrigues which disturbed the minority of Louis XIII., and he moderated the political claims made by his co-religionists under the terms of the Edict of Nantes. In 1622 he formally abjured the Protestant faith; he now became constable of France, and received the order of the Saint Esprit. He had long since lost the confidence of the Huguenots, but he nevertheless helped the Vaudois against the duke of Savoy. His last campaign, fought in alliance with Savoy to drive the Spaniards from the Valtelline, was the least successful of his enterprises. He died of fever at Valence on Sept. 21, 1626.

The life of the Huguenot captain has been written in detail by Ch. Dufuyard, *Le Connétable de Lesdiguières* (Paris, 1892). His first biographer was his secretary Louis Videl, *Histoire de la vie du connestable de Lesdiguières* (Paris, 1638). Much of his official correspondence, with an admirable sketch of his life, is contained in *Actes et correspondance du connétable de Lesdiguières*, edited by Comte Douglas and J. Roman in *Documents historiques inédits pour servir à l'histoire de Dauphiné* (Grenoble, 1878). Other letters are in the *Lettres et mémoires* (Paris, 1647) of Duplessis-Mornay.

LESGHIANS or **LESGHIS,** the collective name for a number of tribes who, with their kinsfolk the Chechenzes, have inhabited Daghestan from time immemorial. They spread southward into the Transcaucasian circles Kuba, Shemakha, Nukha, and Sakatali. They are mentioned as Lēchai by Strabo and Plutarch along with the Gēlai (perhaps the modern Galgai, a Chechenzian tribe), and their name occurs frequently in the chronicles of the Georgians, whose territory was exposed to their raids for centuries, until, on the surrender (1859) to Russia of the Chechenzian chieftain Shamil, they became Russian subjects. The most important of the Lesghian tribes are the Avars (*q.v.*), the Kasimukhians or Lakians, the Darghis and the Kurins or Lesghians proper. Komarov (ethnological map of Daghestan) gives the total number of the tribes as 27, all speaking distinct dialects. The Lesghians are tall, powerfully built, and their hybrid descent is suggested by the range of colouring, some of the tribes exhibiting quite fair, others quite dark individuals. In some there is an obvious mongoloid strain. They live a semi-savage life on their mountain slopes, mainly by hunting and stock-breeding. They are for the most part fanatical Mohammedans.

LESION, an injury, hurt, damage. In Scots law the term enorm lesion is used of damage suffered by a party, in entering into a contract, sufficient to enable him to bring an action for setting it aside. It is pleadable as a ground of reduction only in conjunction with the party's minority or other partial incapacity at the time of making the contract.

In pathology, the chief use, the word is applied to any morbid change in the structure of an organ, whether shown by visible changes or by disturbance of function.

LESKOV, NIKOLAI SEMENOVICH (1831–1895), Russian novelist, was born at Orel on Feb. 16, 1831, became estate-agent to an Englishman who managed the estates of the Counts Perovsky, and in this way learned to know Russian village life. About 1862 he settled in St. Petersburg, where he spent most of the rest of his life. His first important novel, issued in 1864, under the pseudonym of Stebnitski, *The Blind Alley*, was fiercely criticized by the radicals, as was his *Ostrovityane* (The Islanders). In a long series of tales and novels, he shows, says Prince Mirsky, "a greater and fuller knowledge of the Russian character and an infinitely wider range of observation than any other Russian novelist; he knows all classes, from the very highest to the very outcasts—vagabonds, convicts, tramps." Some of his shorter tales, tragic or humorous, are masterpieces of narrative. Leskov is best known in Western Europe by translations of his *Soboryane* (1872; Eng. trans. by I. Hapgood, *Cathedral Folk*, 1924), which contains some excellent types, but is hardly characteristic of the bulk of his work. The directness and simplicity of Leskov's stories and their orthodox and anti-revolutionary tendency account for the delay in the appreciation of them from the purely literary point of view in spite of the wide circulation of his novels during his life-time. He was for a short time a civil servant, but in spite of the accusation of reactionary views by his contemporaries, did not find himself in agreement with the government, and resigned. He died in St. Petersburg, on March 5, 1895.

Leskov's works appeared in a collected edition (12 vols., 1897). Other works of his are a novel: *The Enchanted Wanderer* (1873), Eng. trans. A. G. Paschkoff, 1926; and a collection of short stories, *The Sentry* (Eng. trans., 1922).

LESKOVAC, a town in Serbia, Yugoslavia, occupied by Germany in 1941. Pop. (1931) 17,615. It is the headquarters of the Serbian hemp industry, the extensive plain in which the town lies growing the best flax and hemp in the Balkans, and excellent tobacco. Five valleys converge on the plain, and the inhabitants of the villages in them are all occupied in growing flax and hemp. There are several textile factories. It was captured by the Serbs in the Russo-Turkish war of 1877–8 and assigned to Serbia by the treaty of Berlin (1878).

LESLEY, JOHN (1527–1596), Scottish bishop and historian, natural son of Gavin Lesley, rector of Kingussie, was educated at the University of Aberdeen. In June 1546 he was made an acolyte in the cathedral church of Aberdeen, of which he was afterwards appointed a canon and prebendary. He also studied at Poitiers, at Toulouse and at Paris, where he was made doctor of laws in 1553. In 1558 he took orders and was appointed Official of Aberdeen, and inducted into the parsonage and prebend of Oyne. At the Reformation Lesley became a champion of Catholicism. He was present at the disputation held in Edinburgh in 1561, when Knox and Willox were his antagonists. He was one of the commissioners sent the same year to bring over

the young Queen Mary to take the government of Scotland. He returned in her train, and received the bishopric of Ross and other preferments. He was one of the 16 commissioners appointed to revise the laws of Scotland.

The bishop was one of the most steadfast friends of Queen Mary. He was one of the commissioners at the conference at York in 1568, and he appeared as her ambassador at the court of Elizabeth. He projected a marriage for her with the duke of Norfolk, which ended in the execution of that nobleman. For this he was imprisoned in the Tower of London. During his confinement he collected materials for his history of Scotland, by which his name is now chiefly known.

In 1573 he was liberated from prison, but was banished from England. For two years he attempted unsuccessfully to obtain the assistance of Continental princes in favour of Queen Mary. While at Rome in 1578 he published his Latin history *De Origine, Moribus, et Rebus Gestis Scotorum.* In 1579 he went to France, and was made suffragan and vicar-general of the archbishopric of Rouen. In 1593 he was made bishop of Coutances in Normandy, and had licence to hold the bishopric of Ross till he should obtain peaceable possession of the former see. He retired to an Augustinian monastery near Brussels, where he died on May 31, 1596.

The chief works of Lesley are as follows: *A Defence of the Honour of . . . Marie, Queene of Scotland, by Eusebius Dicaeophile* (1569), reprinted, with alterations, at Liége in 1571, under the title, *A Treatise concerning the Defence of the Honour of Marie, Queene of Scotland, made by Morgan Philippes, Bachelar of Divinitie; Piae afflicti animi consolationes, ad Mariam Scot. Reg.* (Paris, 1574); *De origine, moribus et rebus gestis Scotorum libri decem* (Rome, 1578; reissued 1675); *De illustrium feminarum in republica administranda authoritate libellus* (Reims, 1580; a Latin version of a tract on "The Lawfulness of the Regiment of Women:" *cf.* Knox's pamphlet); *De titulo et iure Mariae Scot. Reg., quo regni Angliae successionem sibi iuste vindicat* (Reims, 1580; translated in 1584). The history of Scotland from 1436 to 1561 owes much, in its earlier chapters, to the accounts of Hector Boece (*q.v.*) and John Major (*q.v.*). In the later sections he gives an independent account (from the Catholic point of view) which is a valuable supplement and a corrective in many details, to the works of Buchanan and Knox.

A Scots version of the history was written in 1596 by James Dalrymple of the Scottish Cloister at Regensburg. It has been printed for the Scottish Text Society (2 vols., 1888–95). A slight sketch by Lesley of Scottish history from 1562 to 1571 has been translated by Forbes-Leith in his *Narrative of Scottish Catholics* (1885), from the original ms. now in the Vatican.

LESLEY, J. PETER (1819–1903), American geologist, was born in Philadelphia Sept. 17, 1819. He was educated for the ministry at the University of Pennsylvania, where he graduated in 1838. Sub-assistant on the first geological survey of Pennsylvania under Professor H. D. Rogers, he was afterwards engaged in a special examination of the coal regions. On the termination of the survey in 1841, he renewed his theological studies at Princeton seminary, at the same time giving his leisure to assisting Professor Rogers in preparing the final report and map of Pennsylvania. He was licensed to preach in 1844; paid a visit to Europe, and entered on a short course of study at the University of Halle. Returning to America, he worked two years for the American Tract Society. At the close of 1847 he again joined Professor Rogers in preparing geological maps and sections at Boston. In 1851 he left the ministry and entered into practice as a consulting geologist. In the course of his work he made elaborate surveys of the Cape Breton coal-field, and other coal and iron regions. From 1855 to 1859 he was secretary of the American Iron Association; for 27 years (1858–85) he was secretary and librarian of the American Philosophical Society; from 1872–78 he was professor of geology and dean of the faculty of science in the University of Pennsylvania, and from 1874–93 he was in charge of the second geological survey of the State. He then retired to Milton, Mass., where he died June 1, 1903. He published *Manual of Coal and its Topography* (1856); *The Iron Manufacturer's Guide to the Furnaces, Forges and Rolling Mills of the United States* (1859).

See memoir by Sir A. Geikie in *Quart. Journ. Geol. Soc.* (May 1904); and memoir (with portrait) by B. S. Lyman, printed in advance with portrait, and afterwards in abstract only in *Trans. Amer. Inst. Mining Engineers,* xxxiv. (1904), p. 726.

LESLIE, CHARLES (1650–1722), Anglican nonjuring divine, son of John Leslie (1571–1671), bishop of Raphoe and afterwards of Clogher, was born in July 1650 in Dublin, and was educated at Enniskillen school and Trinity college, Dublin. He firmly supported the Stuart dynasty, and, having declined at the Revolution to take the oath, was deprived of his benefice. In 1689 he withdrew to England, where he engaged in numerous polemics against the Quakers, Jews, Socinians and Roman Catholics, and especially against the Deists. A warrant having been issued against him in 1710 for his pamphlet *The Good Old Cause or Lying in Truth,* he left England and joined the Pretender at Bar-le-Duc. After the failure of the Stuart cause in 1715, Leslie accompanied his patron to Italy, where he remained until 1721, when he obtained permission to return to his native country. He died at Glaslough, Monaghan, on April 13, 1722.

His best-known work is *A Short and Easy Method with the Deists, wherein the certainty of the Christian Religion is Demonstrated by Infallible Proof from Four Rules* (1697). Others are *The Snake in the Grass* (1696), against the Quakers; *Gallienus Redivivus* (an attack on William III., 1695); *The Socinian Controversy Discussed* (1697); *The True Notion of the Catholic Church* (1703); and *The Case Stated between the Church of Rome and the Church of England* (1713).

His *Theological Works* were published in 2 vols. in 1721; a later edition, slightly enlarged, appeared at Oxford in 1832 (7 vols.).

LESLIE, CHARLES ROBERT (1794–1859), English subject painter, was born in London on October 19, 1794. His parents were American, and when he was five years of age he returned with them to their native country. They settled in Philadelphia, where their son was educated and afterwards apprenticed to a bookseller. Desiring however to study art he left for London in 1811, and was admitted as a student of the Royal Academy, where he carried off two silver medals. His earliest important subject depicted Saul and the Witch of Endor; but he soon discovered his true aptitude and became a painter of cabinet-pictures, dealing with scenes from the great masters of fiction, from Shakespeare, Cervantes, Addison, Molière, Swift, Sterne, Fielding and Smollett. In 1821 Leslie was elected A.R.A., and in 1826 R.A. In 1833 he left for America to teach drawing at West Point, but after some six months he returned to England. He died on May 5, 1859.

Leslie also wrote a *Life* of his friend Constable (1843) and *Handbook for Young Painters,* a volume embodying the substance of his lectures as professor of painting to the Royal Academy, in 1855. In 1860 Tom Taylor edited his *Autobiography and Letters.*

LESLIE, DAVID: *see* NEWARK, DAVID LESLIE, LORD.

LESLIE, SIR JOHN (1766–1832), Scottish mathematician and physicist, was born of humble parentage at Largo, Fifeshire, on April 10, 1766, and was educated at the university of St. Andrews. In 1805 he was elected to succeed John Playfair in the chair of mathematics at Edinburgh, and in 1819 succeeded to that of natural philosophy. Leslie's main contributions to physics were on radiation. He wrote *An Experimental Enquiry into the Nature and Properties of Heat* (1804). He compared the emissive, absorptive and reflecting powers of various substances to radiant heat. This work was carried out with the help of his "differential thermometer" and a "Leslie cube." The substances tested were made to cover a face of the cube or the bulb of a differential thermometer. He used the latter instrument in a great variety of investigations, connected especially with photometry, hygroscopy and the temperature of space. In 1820 he was elected a corresponding member of the Institute of France, and was knighted in 1832. He died at Coates, near Largo, on Nov. 3, 1832.

LESLIE, THOMAS EDWARD CLIFFE (1825?–1882), English economist, was born in Co. Wexford, Ireland, probably in 1825. He had a brilliant university career at Trinity college, Dublin, was called to the bar in 1848, and in 1853 became professor of political economy and jurisprudence in Queen's college, Belfast. From this time he devoted himself to the study of economic and social questions, pursuing his investigations both on the Continent, where he became acquainted with L. de Lavergne and E. de Lave-

leye, and in London. He was one of the founders of the English historical school of political economy. He died at Belfast on Jan. 27, 1882. His most important works are:—*Land systems and Industrial economy of Ireland, England and Continental Countries* (1870); *The Land system of France* (1870); *Financial Reform* (1871); *Essays in Political and Moral Philosophy* (1879).

LESLIE, a small burgh of the county of Fife, Scotland. Pop. (est. 1938) 2,691. Area, 40 ac. It lies on the Leven, the vale of which is overlooked by the town, 4 mi. W. of Markinch by the L.N.E. railway. The industries include papermaking, flax spinning and bleaching. The old church claims to be the "Christ's Kirk on the Green" of the ancient ballads of that name. Leslie house, the seat of the earl of Rothes, rivalled Holyrood in magnificence, and was noted for its tapestry and pictures. It was damaged by fire in 1763.

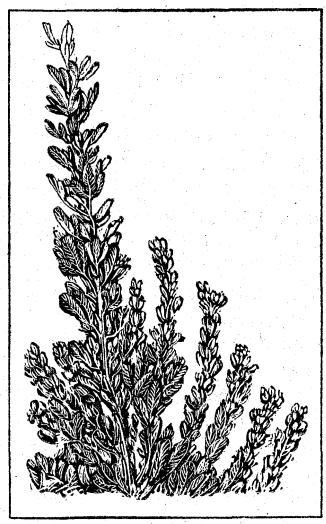
Markinch (pop., est. 1938, 2,226; area, 124 ac.), a small burgh between Conland Burn and the Leven, 7¼ mi. N.E. of Kirkcaldy by the L.N.E. railway, is a place of great antiquity, believed to have been a residence of the earlier kings. Its industries comprise bleaching, wool and flax spinning, papermaking and coal mining. At Balfour castle were born Cardinal Beaton and his uncle and nephew, the archbishops of Glasgow.

LESPEDEZA. The genus lespedeza of the family of leguminosae is represented by 125 species all natives of eastern Asia and eastern North America. This peculiar distribution has given rise to the theory that these forms developed in eastern Asia from which some migrated in past geologic time by way of a land connection in the north to North America and so down the east coast. This is believed to have occurred before the emergence of the western part of the North American continent. Later, the species established on the eastern border were prevented from moving west by the barrier of desert and mountains.

Of the known species, about 20 are natives of North America. None of the American species occurs in the orient and none of the oriental species is indigenous to America. The lespedezas may be roughly grouped as annuals, herbaceous perennials, and shrubs. Where the current growth is not cut down by winter cold, the latter may attain a height of 10 ft. or more. Some of these shrubs, as *L. bicolor* and *L. japonica* in the United States and *L. delavayi* in France, have long been known as ornamentals. Most of the known species, including those indigenous to America, are herbaceous perennials. In these the stems die after seeding and new growth comes each year from the crown.

Only two species are annuals, *L. striata* and *L. stipulacea,* and these two with one herbaceous perennial, *L. cuneata,*[1] are the only ones useful in agriculture.

The Economically Important Species: Lespedeza striata.—The common lespedeza, formerly called Japan clover, is believed to have been brought to the United States in the early years of the 19th century. It probably came with a cargo of tea from China or Japan and escaped at Charleston or Savannah. The plant was first recognized at Monticello, Ga., in 1846. The plant then collected is still in the Gray herbarium at Harvard. Lespedeza spread rapidly during the war between the states and was well known in Alabama and Mississippi in 1867. In 1880, it was commercially used for hay in Louisiana. In 1870, it was known in parts of Tennessee and in 1887 in northern Virginia. The earlier maturing strains have since carried the species farther north and it is now established as far north as central Indiana.



COURTESY, BUREAU OF PLANT INDUSTRY, SOILS AND AGRICULTURAL ENGINEERING

FIG. 1.—FLOWERING BRANCH OF SERICEA LESPEDEZA, LESPEDEZA CUNEATA

L. striata is a slender plant with trifoliolate leaves. The leaflets are oval to oblong, about ½ in. long by ⅛ to 3/16 in. wide, and slightly rounded at the end. Three varieties of *L. striata* are recognized: the common or unimproved; the Kobe, a variety with larger leaves and seed, and coarser growth, found in Japan in 1920; and Tennessee 76. The last named was selected by the late S. J. Essary of the University of Tennessee as the best of a number of selections. It is erect in habit, tall, and a heavy yielder of hay. In leaf and seed, it is indistinguishable from the common.

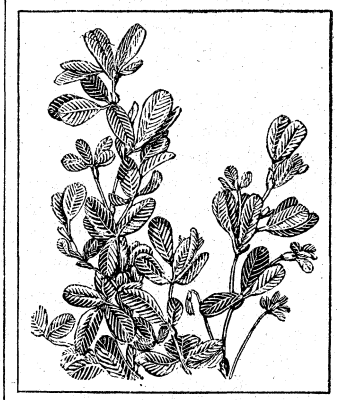


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FIG. 2.—LESPEDEZA STRIATA—THE COMMON LESPEDEZA—FORMERLY CALLED JAPAN CLOVER

L. stipulacea, known as Korean lespedeza, is a much later introduction and has enjoyed a phenomenal popularity. The seed was sent by Dr. Ralph Mills, an American missionary in Korea, to the U.S. department of agriculture in 1919 and was first distributed in 1922. Spreading slowly at first, the species rapidly became popular and today most of the lespedeza acreage in the chief belt of production is planted to Korean lespedeza.

Korean lespedeza is a strong growing plant with larger and broader leaflets than those of *L. striata* and makes a larger growth. Isolated plants are spreading in habit. It matures about one month earlier than *L. striata* and is therefore suited to a more northern range.

The seeding habit also differs from that of *L. striata.* While in the latter seeds are borne in the axils of leaves or branches all along the stem, in Korean lespedeza seeds are borne in the leaf axils at the ends of branchlets only. At maturity the leaves on these branchlets turn forward so that the tip of the branch resembles a small cone. Besides the standard Korean, three varieties of *L. stipulacea* are recognized, although none of them is much used. The Harbin is an extra early dwarf variety which has matured seed as far north as Winnipeg, Canada. An early Korean maturing two weeks earlier than the standard has been introduced into northern Illinois and Iowa, and a late Korean, maturing two weeks later than the standard, is under trial in the south.

L. cuneata was first tried in the United States by Gerald McCarthy of the North Carolina Agricultural Experiment station in 1896. He condemned the plant as without value. In 1899, seed was sent to the department of agriculture by Dr. Seaman Knapp, an agricultural explorer, but though the species was grown on the experimental farm no use was made of the plants.

In 1924, a new introduction was made and a few years later seed was distributed by the U.S. department of agriculture and the species was introduced into agriculture.

L. cuneata is the only perennial lespedeza that has come into agricultural use. This is an erect plant with the general habit of alfalfa, but is larger. The stems and branches are very leafy, more than 60% of the total dry weight consisting of leaves. The leaflets are long and narrow and gray-green in colour. Two forms have been distributed by the U.S. department of agriculture under number, but they differ only in date of maturing, one being slightly earlier than the other. *L. cuneata* is popularly known as sericea or sericea lespedeza.

Culture.—The culture of the annual lespedeza is very simple. Seeded in early spring alone or on grain, the plants are ready for grazing between June 1 and July 1, according to latitude. A volunteer stand in the extreme south may be ready for grazing early in April. When grazed, the plants will produce seed enough to provide a heavy volunteer crop the following year. When cut for hay, care must be taken to cut at a time that will permit a second growth for seed or the crop must be handled in some other way so as to permit of seed production. When a hay crop is wanted or

[1]In accordance with the International Code of Botanical Nomenclature the name of *Lespedeza sericea* has been changed to *Lespedeza cuneata* (Don de Cours.) G. Don. The common name sericea lespedeza is still used, however.

when the field is to be grazed to full capacity, 25 to 40 lb. of seed, depending on variety, are sown per acre. When a light stand is wanted to produce a volunteer stand the following year, as little as 5 lb. per acre is sufficient.

L. cuneata is seeded in spring, using 20 lb. of scarified seed per acre. In some localities, the unscarified seed may be seeded in fall. Growth the first season is small and often disappointing, but it resists the competition of weeds and will come strong from the crown the following spring. A good stand will thereafter effectively suppress summer weeds.

Agricultural Utilization.—Lespedezas are used extensively in the United States only. In Japan and Korea, some use has been made of the shrubby species for hillside planting to control soil erosion, but as a regular farm crop, they are used in no country other than the United States of America. In southeastern United States, west to eastern Texas, Oklahoma, and Kansas, and north to central Illinois, one, or both, of the annual lespedezas occupies a place of the first importance as a hay and pasture crop. The part of this general area in which the annual lespedezas have become most important consists of a belt covering the Piedmont region of Georgia and Alabama north to the Ohio river, but including southern Illinois and the whole of Missouri.

The total production of hay reported for the United States for 1942 was 7,330,000 tons. Of this, 1,800,000 tons were produced in Missouri and 1,500,000 tons in Tennessee. The chief producing states next in order were Kentucky, Arkansas, Virginia and North Carolina.

No statistics are available covering the acreage in lespedeza used for grazing. It is, however, known to be vastly greater than that cut for hay. Lespedeza is the most generally grown forage plant in southeastern United States, and, especially in the chief production belt as already described, is grown on nearly every farm. The total estimated acreage for lespedeza in the United States for 1942 was 30,000,000 ac. The three species mentioned are used for hay and pasturage, for soil improvement, and as an aid in the control of soil erosion. It has been shown that crops of corn or cotton can be increased 25 to 50% by turning under a crop of annual lespedeza or even by turning under the stubble from a hay crop.

Use in Soil Erosion Control.—A growing realization of the importance of soil erosion control has led specialists and farmers to turn to the lespedezas as aids in this control on the low fertility soils of the south.

The annual lespedezas serve to control erosion in the summer. The soil loss from a field in lespedeza has been recorded as 1.18 tons of soil per acre during the months of June to September inclusive, as compared to 17.87 tons from an adjacent field of cotton. Even the debris from a lespedeza field has materially aided in checking erosion during winter. *Lespedeza cuneata* makes so dense a canopy during the growing season that the heaviest rains cannot beat upon the bare ground. During winter the great root system and the living crowns hold the soil. The ability of this species to grow on soils already badly eroded places it in the first rank of plants useful to the soil conservationist. It is used in buffer strips on sloping cultivated fields as a permanent cover on land too badly eroded to be worth cultivating, for the control and healing of gullies, and for the control of critical slopes.

Relation to Soil Fertility and Lime.—The lespedezas are not competitors of the clovers, but are suited to soils of a lower fertility level. Many of the fields now in lespedeza formerly grew red clover but declining fertility due to improper cropping and erosion has resulted in such frequent clover failures that this crop has been replaced by lespedeza.

Lespedeza is not so dependent on lime as red clover, but on soils that are decidedly acid, it will respond to applications of lime. Most southern soils are also deficient in phosphates and lespedezas respond markedly to an application of superphosphate. Indeed on the poor soils of the coastal plains, the common lespedeza does not make a profitable crop without the application of phosphate.

While economic conditions made it necessary for farmers in the lespedeza territories to turn to this crop in order to save their lands, it should not be forgotten that a continuance of careless farming with lespedeza will lower the fertility level still more. Every crop takes something from the soil in which it is grown and lespedeza, when removed as hay or pasturage also removes from the land some lime, phosphorus and potash. If these are not replaced, the time will come when even lespedeza will not thrive. Lespedeza has revolutionized the agriculture of a great region and saved thousands of farmers from economic ruin. It can continue this service only if proper attention is paid to the need of the crops and soils for plant food.

Hay Production.—Well cured hay of the annual lespedezas is of nearly the same feeding value as alfalfa. The average yield over the entire United States is about one ton per acre, although two or even three tons per acre have been cut under favourable conditions. While the lespedezas are quite drought resistant, good hay production is possible only under conditions of abundant rainfall or on low moist ground. The amount of growth made is directly proportional to the moisture available. On high dry ground, the lespedezas make growth enough for grazing, but not for hay. Hay is cut when the plants are in full bloom. For Korean this will be from the first to the middle of August or a little later in the northern part of its range. Earlier cutting in July will favour a second growth which may be taken for hay or seed. The earlier cut hay is also of superior quality. *L. striata,* being later, is cut somewhat later in the season.

A first volunteer stand usually makes the most and best hay. In older fields, the weeds tend to invade and the hay becomes of lower grade. Good hay can be made from *L. cuneata,* but the plants should be cut when the spring growth is about one foot high. Cut at this stage, the hay is palatable, tender and of high quality. Later the stems tend to become woody, the leaves shatter more readily and the hay is of inferior quality. *L. cuneata* contains tannin, which, in the mature plant, may be as much as 10% of the total weight. In the early stages of growth the tannin content is low and the protein content is high. With advancing age these positions are reversed, as the protein content falls the tannin content rises. For the best hay, therefore, the plants should be cut when young. The lespedezas contain less water than alfalfa and must not be left long in the swath. On good drying days, lespedeza can be cut in the morning and housed before night.

For Pasturage.—The chief use for the annual lespedezas is for summer pasturage and most of the vast acreage is utilized in this way. Lespedeza is mixed with such grasses as Bermuda in the south and orchard grass farther north. It does not succeed with Kentucky bluegrass where the latter does well. Where the stand of bluegrass is thin, lespedeza will occupy the vacant places.

More important is the use of pure lespedeza for summer pasturage. Used in this way, cattle are grazed on grass early in the season and in July when the grass becomes semi-dormant, they are moved to a field of lespedeza. There they remain until fall when the grass renews growth.

Rotation Pastures.—One of the most significant developments from the standpoint of soil erosion control has been the use of lespedeza with grain. In this system, the lespedeza is seeded on grain which is allowed to ripen or is cut for hay. It may also be grazed. Later the lespedeza is grazed until much of the seed has ripened, when it is heavily disked and grain seeded again. The lespedeza volunteers in the next year's grain and the rotation may be continued for as many years as desirable. The ground is constantly covered with vegetation which prevents erosion and leaching, two crops are produced each year and where barley can be used as the grain crop, the acreage of corn needed for stock feeding on the farm can be reduced materially.

Seed Production.—Seed is freely produced by all the lespedezas and is harvested throughout the territory where lespedeza is grown. The statistics of seed production are eloquent of the rise and spread of Korean lespedeza. Seed of this species is mainly produced in North Carolina, Tennessee, Kentucky and Missouri. The chief producing areas of *L. striata* are North Carolina, Mississippi, Louisiana and Tennessee. Up to 1928, statistics showed

production only in the last named three states and the total production in 1928 was about 4,500,000 pounds. Korean lespedeza was distributed in a small way in 1922 and in 1929, North Carolina and Kentucky entered the list of producing states. In 1932, Virginia, and in 1935, Missouri and Illinois were added. Seed production rose rapidly except in Mississippi and Louisiana where only *L. striata* seed is grown. In those states production declined.

In 1928, seed production was recorded from only three states; in 1938, ten states produced enough seed to warrant inclusion in the crop report. The total production rose from 4,500,000 lb. in 1928 to 189,210,000 in 1938. The increased production was almost wholly due to the spread of the newly introduced varieties. The total reported lespedeza seed production in the United States for 1942 was 179,700,000 lb. Of this, 38,800,000 lb. were produced in North Carolina, 30,500,000 lb. in Tennessee, 29,700,000 lb. in Missouri and 24,400,000 lb. in Kentucky.

Harvesting.—Seed of *L. striata* is harvested with a "pan." This is a shallow metal pan attached to the rear of the mower cutter bar and provided with a perforated cover. The lespedeza as cut is raked over the pan, the seed shatters off and falls through the holes. The straw may later be threshed if more seed is wanted. Seed of *L. stipulacea* does not shatter readily and the plants are cut, windrowed, and later passed through a thresher. A similar procedure is followed in the case of *L. cuneata.*

Seed Weight and Number of Seeds per Pound.—In North Carolina and Arkansas, the legal weight of *L. striata* seed is 25 lb. per bushel. This weight is generally accepted even where not confirmed by legislation. The actual weight, however, depends upon how well the seed has been cleaned. Clean seed of *L. striata* weighs 29 lb. per bushel; that of Kobe lespedeza, 30 lb.; of *L. stipulacea,* 45 lb.; and that of unhulled *L. cuneata,* 34 pounds. When hulled, all weigh about 60 lb. per bushel.

In common lespedeza, there are about 343,000 seeds per pound; in Kobe, 185,000; in Korean, 240,000; and in hulled *L. cuneata,* about 350,000 seeds per pound.

Use for Wild Life.—All the lespedezas are valuable for wild life, especially birds. Quail are fond of the seeds and many thousands of acres are seeded especially for wild life. In addition, *L. cuneata* forms an ideal cover for birds.

The American species inhabit waste ground, the margins of woodland, and similar places. They never occur in dense stands, but as single plants or small groups of plants. Their only known value is for wild life. Quail and other birds make extensive use of the seed.

For more detailed information, consult U.S. Department of Agriculture Circulars 534, 536, and Farmers Bulletin 1852. (A. J. Pr.; X.)

LESPINASSE, JULIE DE (1732–1776), French author, was born at Lyons. A natural child of the comtesse d'Albon, she was brought up as the daughter of Claude Lespinasse of Lyons. On leaving her convent school she became governess in the house of her mother's legitimate daughter, Mme. du Deffand. The latter, recognizing her extraordinary gifts, persuaded her to come to Paris as her companion. The alliance lasted ten years (1754–64), until Mme. du Deffand became jealous of the younger woman's increasing influence. Mlle. de Lespinasse set up a salon of her own which was joined by many of the most brilliant members of Mme. du Deffand's circle. D'Alembert was one of the most assiduous of her friends and eventually came to live, without scandal, under the same roof. Although she had neither beauty nor rank, her ability as a hostess made her reunions the most popular in Paris. She owes her lasting fame, however, to two volumes of *Lettres,* published in 1809, which displayed her as the victim of a passion of rare intensity. In virtue of this ardent, intense quality, Sainte-Beuve and other of her critics placed her letters in the limited category to which belong the letters of Héloïse and those of the Portuguese Nun. Her first passion, a reasonable one, was for the marquis de Mora, son of the Spanish ambassador in Paris. He died in 1774. Her letters to the comte de Guibert, the worthless object of her infatuation, begin from 1773. From the struggle between her affection for de Mora and her passion for Guibert, they go on to describe her partial disenchantment on Guibert's marriage and her final despair. She died May 23, 1776, her death being apparently hastened by the agitation and misery of her attachment to Guibert. In addition to the *Lettres* she wrote two chapters intended as a kind of sequel to Sterne's *Sentimental Journey.*

Her *Lettres* . . . were published by Mme. de Guibert in 1809 (modern ed. by J. Janin 1847; new ed. 1877); a spurious additional collection appeared in 1820. *See* also *Lettres inédites de Mademoiselle de Lespinasse à Condorcet, à D'Alembert, à Guibert, au comte de Crillon,* ed. Charles Henry (1887); *Letters of Mlle. de Lespinasse* with notes on her life and character by D'Alembert, Marmontel, de Guibert, etc. and an introduction by C. A. Sainte-Beuve, trans. by K. P. Wormeley (1902); *Correspondence entre Mademoiselle de Lespinasse et le comte de Guibert* ed. comte de Villeneuve-Guibert (1906); Marquis de Ségur, *Julie de Lespinasse* (1905; Eng. trans. 1907); Mrs. Humphrey Ward's novel, *Lady Rose's Daughter,* owes something to the character of Mlle. de Lespinasse.

LES SABLES-D'OLONNE, a seaport of western France, capital of an arrondissement of the department of Vendée, on an inlet of the Atlantic seaboard, 23 mi. S.W. of La Roche-sur-Yon by rail. Pop. (1936) 14,436. Sables was founded by Basque or Spanish sailors and invaded by the Normans in 817. Louis XI in 1472 granted the inhabitants various privileges, improved the harbour, and fortified the entrance. The town was captured and recaptured during the Wars of Religion and became a nursery of hardy sailors and privateers. In 1696 Sables was bombarded by the combined English and Dutch fleets. The town stands between the sea on the south and the port on the north, while on the west it is separated by a channel from the suburb of La Chaume. There is a fine beach. To the north of Sables extend salt marshes and oyster parks, yielding 6,000,000 to 8,000,000 oysters per annum. Sables has a 17th century church. The lighthouse of Barges stands a mile out at sea to the west. The inhabitants are employed largely in sardine and tunny fishing; there are imports of coal, wood and petroleum. Boatbuilding and sardine preserving are carried on. The town has a sub-prefecture.

LES SAINTES-MARIES, coast village of France in the department of Bouches-du-Rhône, 24 mi. S.W. of Arles by rail. Pop. (1936) 615. It is the object of an ancient pilgrimage due to the tradition that Mary, sister of the Virgin, and Mary, mother of James and John, together with their black servant Sara, Lazarus, Martha, Mary Magdalen and St. Maximin fled thither to escape persecution in Judaea. The relics of the two Maries, said to have been buried at Saintes-Maries, are in the apse of the fortress-church, a 12th century building. Two festivals are held, one in October, the other in May, unique for its gathering of gypsies who came to do honour to the tomb of their patroness Sara.

LESSE, a river rising at Ochamps in the Ardenne, and flowing in a northwesterly course, reaches the Meuse at Anseremme, a few miles above Dinant. The river is only 49 mi. long, but meanders very much. In the 12 mi. from Houyet to Anseremme the river is confined between high walls of cliff. Here were discovered in 1864 in the caves of Furfooz, near Walzin, the bones of prehistoric men. Another curious natural feature of the Lesse is that at Han the river disappears through fissures in the rock into the subsoil and reappears about half a mile below the village. By its underground course the Lesse has created the celebrated Grottos of Han, renowned for their stalactites and stalagmites. One of the grotto chambers is 505 ft. long and 446 ft. wide. The Lesse receives in its short course the water of 13 tributaries.

LESSEPS, FERDINAND DE (1805–1894), French diplomatist and maker of the Suez canal, was born at Versailles on Nov. 19, 1805. Descended from a family who had long distinguished themselves in the service of the state, he followed the tradition by entering the consular service in 1825, when he became assistant vice-consul at Lisbon. Two years later he occupied a similar post in Tunis, and in 1832 he was sent to Alexandria. Here the reading of Lapère's memoir on the Suez canal and his friendship with Mehemet Ali, and with the latter's son, Said Pasha, led him to hope that he might one day finish what Lapère had begun. For the time, however, nothing was accomplished. From 1833 to 1837, Lesseps was consul at Cairo, where he gained distinction by his courage and energy in combating an outbreak of plague. Two years later he was transferred to Rotterdam. Subse-

quently he served at Malaga and Barcelona, where he was promoted to the grade of consul-general, and from 1848 to 1849 he was minister of France at Madrid. In the latter year he was sent by the Government of the French republic to negotiate with the existing Government in Rome, but the French elections, which occurred shortly after his departure, led to a change in foreign policy, and Lesseps was recalled in disgrace. He was given no opportunity to justify his actions, and therefore retired from the service. An invitation from Said Pasha, now viceroy of Egypt, revived in him his early ambitions. On Nov. 30, 1854 Said Pasha signed the concession authorizing M. de Lesseps to pierce the isthmus of the Suez.

A first scheme, indicated by him, was immediately drawn out by M. Linant Bey and Mougel Bey, providing for direct communication between the Mediterranean and the Red sea; and, after being slightly modified, it was adopted by an international commission of engineers in 1856. Encouraged by this approval, Lesseps allowed no obstacles to retard the work, and he succeeded in rousing the French people to subscribe more than half the capital needed to form the company, which was organized in 1858. The first blow of the pickaxe was given by Lesseps at Port Said on April 25, 1859, and on Nov. 17, 1869, the canal was officially opened by the khedive, Ismail Pasha. (*See* SUEZ CANAL.) On the acquisition of the Suez shares by Lord Beaconsfield, Lesseps co-operated loyally with the British, and facilitated the consolidation of interests thus formed.

Although desirous of keeping out of politics, Lesseps became a candidate at Marseille in 1869, but was defeated by Gambetta, and he afterwards declined the candidatures for the senate (1876) and the Chamber (1877). He maintained his interest in current affairs, however, and in 1879, when the Geographical Society at Paris, under the presidency of Admiral de la Roncière de Noury, voted in favour of the construction of the Panama canal, public opinion designated Ferdinand de Lesseps as the head of the enterprise. (*See* PANAMA CANAL and FRANCE: *History.*) Although 74 years of age, he undertook to carry out the project, but his despotic temper and absoluteness of thought made him fail to realize the difficulties of the task. Determined to construct the canal without locks, he refused to be dissuaded when confronted with the Culebra and the Chagres, the mountain and stream which barred the route. For eight years he struggled against them, but in 1888, when the Panama company was wound up, he was obliged to acknowledge defeat. Seeking to discredit the Government, the enemies of the French republic attacked the directors of the company, and the Government were obliged to take proceedings against them, but Charles de Lesseps (1849–1923) the son of Ferdinand, succeeded in diverting the storm to his own head, to prevent it reaching his father, who died at La Chenaie on Dec. 7, 1894.

Lesseps was a member of the French Academy, of the Academy of Sciences and of numerous scientific societies. He was also decorated with the Grand Cross of the Legion of Honour and the Star of India, and received the freedom of the City of London. His great gifts, coupled with his supreme unselfishness and social charm, made him everywhere respected, and the "scandal" which clouded the last years of his life, has done nothing to tarnish his reputation. He remains for all time one of the most powerful embodiments of the creative genius of the 19th century.

See G. Barnett Smith, *The Life and Enterprises of Ferdinand de Lesseps* (London, 1893); *Souvenirs de quarante ans,* by Ferdinand de Lesseps (trans. by C. B. Pitman Bridier, *Les de Lesseps*) (1900); Birk, *Der Suezkanal* (1925).

LESSING, GOTTHOLD EPHRAIM (1729–1781), German critic and dramatist, was born at Kamenz in Upper Lusatia (Oberlausitz), Saxony, on Jan. 22, 1729. His father, Johann Gottfried Lessing, was *pastor primarius* or chief pastor of Kamenz. After attending the Latin school of his native town, Gotthold was sent in 1741 to the famous school of St. Afra at Meissen. In 1746 he entered the University of Leipzig, nominally as a theological student. He was most interested, however, in the philological lectures of Johann Friedrich Christ (1700–56) and Johann August Ernesti (1707–81), and in the philosophical disputations presided over by his friend A. G. Kästner. Among Lessing's chief friends in Leipzig were C. F. Weisse (1726–1804) the dramatist, and Christlob Mylius (1722–54), who had made some name for himself as a journalist. He was particularly attracted by the theatre then directed by the talented actress Karoline Neuber (1697–1760), who even accepted for performance Lessing's first comedy, *Der junge Gelehrte* (1748), which he had begun at school. His father disapproved of these activities and summoned him home. He was allowed to return to Leipzig only on condition that he devote himself to the study of medicine. Some medical lectures he did attend, but as long as Frau Neuber's company kept together the theatre had an irresistible fascination for him.

In 1748, however, the company broke up, and Lessing, who had allowed himself to become surety for some of the actors' debts, was obliged to leave Leipzig too, in order to escape their creditors. He went to Wittenberg, and afterwards, towards the end of the year, to Berlin, where his friend Mylius was already established. In Berlin Lessing now spent three years, during which he developed his lucid prose style, and his admirable critical faculty. He translated three volumes of Charles Rollin's *Histoire ancienne,* wrote several plays—*Der Misogyn, Der Freigeist, Die Juden*—and in association with Mylius, began the *Beiträge zur Historie und Aufnahme des Theaters* (1750), a periodical—which soon came to an end—for the discussion of matters connected with the drama. Early in 1751 he became literary critic to the *Vossische Zeitung.* At the end of 1751 he was in Wittenberg again, where he spent about a year engaged in unremitting study and research and took his master's degree. He then returned to Berlin, and the next three years were among the busiest of his life. Besides translating for the booksellers, he issued several numbers of the *Theatralische Bibliothek,* and continued his work as critic to the *Vossische Zeitung.*

In 1753 Lessing issued an edition of his collected writings (*Schriften,* 6 vols., 1753–55). They included his lyrics and epigrams, most of which had already appeared during his first residence in Berlin in a volume of *Kleinigkeiten,* published anonymously. Much more important were the papers entitled *Rettungen,* in which he vindicated writers of the Reformation period, such as Cochlaeus and Cardanus—who had been misunderstood or falsely judged by preceding generations. The *Schriften* also contained Lessing's early plays, and one new one, *Miss Sara Sampson* (1755), a landmark in the history of the German drama, which was at that time imitative of contemporary French drama. This play, based more or less on Lillo's *Merchant of London,* and influenced in its character-drawing by the novels of Richardson, is the first *bürgerliches Trauerspiel,* or "tragedy of common life" in German. It was performed for the first time at Frankfort-on-Oder in the summer of 1755, and received with great favour. Among Lessing's chief friends during his second residence in Berlin was the philosopher Moses Mendelssohn, with whom he wrote in 1755 an admirable treatise. *Pope ein Metaphysiker!* tracing sharply the lines which separate the poet from the philosopher. He was also on intimate terms with C. F. Nicolai (1733–1811), a Berlin bookseller and rationalistic writer, and with the "German Horace" K. W. Ramler (1725–98); he had also made the acquaintance of J. W. L. Gleim (1719–1803), the Halberstadt poet, and E. C. von Kleist, a Prussian officer, whose fine poem, *Der Frühling,* had won for him Lessing's warm esteem.

In Oct. 1755 Lessing settled in Leipzig with a view to playwriting. He then started on a foreign tour as companion to Gottfried Winkler, a wealthy young merchant, but the travellers turned back at Amsterdam at the outbreak of the Seven Years' War. At this time Lessing began the study of mediaeval literature to which attention had been drawn by the Swiss critics, Bodmer and Breitinger, and wrote occasional criticisms for Nicolai's *Bibliothek der schönen Wissenschaften.* In Leipzig Lessing saw much of Kleist, whose regiment was stationed there, and a warm affection sprang up between them. In 1758 Kleist's regiment being ordered to new quarters, Lessing returned to Berlin. Kleist was mortally wounded in 1759 at the battle of Kunersdorf.

In Berlin Lessing contributed to the *Briefe, die neueste Literatur*

betreffend (1759–65), a series of critical essays—written in the form of letters to a wounded officer—on contemporary literature. He insisted especially on the necessity of truth to nature in the imaginative presentation of the facts of life, and in one letter he courageously asserted the superiority of Shakespeare to Corneille, Racine and Voltaire; other notable essays were on Wieland and Klopstock, and he edited with Ramler a selection from the writings of F. von Logau, an epigrammatist of the 17th century, and introduced to the German public the *Lieder eines preussischen Grenadiers,* by J. W. L. Gleim. In 1759 he published *Philotas,* a prose tragedy in one act, and also a complete collection of his fables, preceded by an essay on the nature of the fable. The latter is one of his best essays on criticism, defining with perfect lucidity what is meant by "action" in works of the imagination, and distinguishing the action of the fable from that of the epic and the drama.

In 1760 Lessing went to Breslau, as secretary to General Tauentzien, governor of Breslau, and director of the mint. During the four years which Lessing spent in Breslau, he collected a large library, and, after the conclusion of the Seven Years' War, in 1763, he resumed more enthusiastically than ever his partially interrupted studies. He investigated the early history of Christianity and penetrated more deeply than any contemporary thinker into the significance of Spinoza's philosophy. He also found time for the studies which were ultimately to appear in the volume entitled *Laokoon,* and in fresh spring mornings he sketched in a garden the plan of *Minna von Barnhelm.*

Laokoon.—In 1765 he returned to Berlin, but could gain no public appointment because Frederick had not forgotten his criticism of Voltaire. Lessing was restless and unhappy during the two years (1765–67) in Berlin, yet it was during this period that he published two of his greatest works, *Laokoon, oder über die Grenzen der Malerei und Poesie* (1766) and *Minna von Barnhelm* (1767). *Laokoon* is a European classic. It aimed at defining by analysis the limitations of poetry and the plastic arts. His conclusions have not all been maintained by later writers on aesthetics; indeed they have often been fiercely contradicted. But Lessing was a pioneer; he indicated more decisively than any of his predecessors the fruitful principle that each art is subject to definite conditions, and that it can accomplish great results only by limiting itself to its special function. The most valuable parts of the work are those which relate to poetry, of which he had a much more intimate knowledge than of sculpture and painting. His exposition of the methods of Homer and Sophocles is especially suggestive, and he may be said to have marked an epoch in the appreciation of these writers, and of Greek literature generally. The power of *Minna von Barnhelm,* Lessing's greatest drama, was also immediately recognized. Tellheim, the hero of the comedy, is an admirable study of a manly and sensitive soldier, with somewhat exaggerated ideas of conventional honour; and Minna, the heroine, is one of the brightest and most attractive figures in German classic comedy.

In 1767 Lessing settled in Hamburg, where he had been invited to take part in the establishment of a national theatre. At the same time he joined J. C. Bode (1730–93), in starting a printing establishment. The theatre, however, was soon closed, and the printing establishment failed, leaving behind it a heavy burden of debt. In despair, Lessing determined towards the end of his residence in Hamburg to quit Germany, believing that in Italy he might find congenial labour that would suffice for his wants. The *Hamburgische Dramaturgie* (1767–68), Lessing's commentary on the performances of the National Theatre, is the first modern handbook of the dramatist's art. By his original interpretation of Aristotle's theory of tragedy, he delivered German dramatists from the yoke of the classic tragedy of France, and directed them to the Greek dramatists and to Shakespeare. Another result of Lessing's labours in Hamburg was the *Antiquarische Briefe* (1768), a series of masterly letters in answer to Christian Adolf Klotz (1738–71), a professor of the University of Halle, who, after flattering Lessing, had attacked him, and sought to establish a kind of intellectual despotism by means of critical journals which he directly or indirectly controlled. In connection with this controversy Lessing wrote his brilliant little treatise, *Wie die Alten den Tod gebildet* (1769), contrasting the mediaeval representation of death as a skeleton with the Greek conception of death as the twin-brother of sleep.

Instead of settling in Italy, as he intended, Lessing accepted in 1770 the office of librarian at Wolfenbüttel, offered to him by the hereditary prince of Brunswick. The debts which he had contracted in Hamburg weighed heavily on him, and he missed his friends; his health, too, which had hitherto been excellent, gradually gave way. In 1775 he travelled for nine months in Italy with Prince Leopold of Brunswick, and in the following year he married Eva König, the widow of a Hamburg merchant, with whom he had been on terms of intimate friendship. But their happiness lasted only for a brief period; in 1778 she died in childbed.

Soon after settling in Wolfenbüttel, Lessing found in the library the manuscript of a treatise by Berengarius of Tours on transubstantiation in reply to Lanfranc. This was the occasion of Lessing's powerful essay on Berengarius, in which he vindicated the latter's character as a serious and consistent thinker. In 1771 he published his *Zerstreute Anmerkungen über das Epigramm, und einige der vornehmsten Epigrammatisten.* No other critic has offered so many pregnant hints as to the laws of epigrammatic verse, or defended with so much force and ingenuity the character of Martial. In 1772 he published *Emilia Galotti,* a tragedy handling a subject suggested by the Roman legend of Virginia, but conceived in the spirit of the "tragedy of common life." Lessing then occupied himself for some years almost exclusively with the treasures of the Wolfenbüttel library. The results of these researches he embodied in a series of volumes, *Zur Geschichte und Literatur,* the first being issued in 1773, the last in the year of his death.

Theological Works.—The last period of Lessing's life was devoted chiefly to theological controversy. He published extracts from the *Apologie oder Schutzschrift für die vernünftigen Verehrer Gottes* of H. S. Reimarus, a book written from the deistic standpoint, in his *Zur Geschichte und Literatur* in 1774–78. These extracts, the authorship of which was not publicly avowed, were known as the *Wolfenbütteler Fragmente.* They created great excitement among orthodox theologians, and Lessing was bitterly condemned for having published them. His most formidable and unscrupulous assailant was Johann Melchior Goeze (1717–86), the chief pastor of Hamburg. To him, therefore, Lessing addressed in 1778 his most elaborate answers—*Eine Parabel, Axiomata,* 11 letters with the title *Anti-Goeze,* and two pamphlets in reply to an inquiry by Goeze as to what Lessing meant by Christianity. These papers are full of thought and learning; they are written with a grace, vivacity and energy that give them permanent value.

The Brunswick Government having, in deference to the consistory, confiscated the *Fragments* and ordered Lessing to discontinue the controversy, he resolved, as he wrote to Elise Reimarus, the author's daughter, to try "whether they would let him preach undisturbed from his old pulpit, the stage." In *Nathan der Weise,* written in the winter of 1778–79, he gave poetic form to the ideas which he had already developed in prose. Its governing conception is that noble character may be associated with the most diverse creeds, and that there can, therefore, be no good reason why the holders of one sect of religious principles should not tolerate those who maintain wholly different doctrines. The play, which is written in blank verse, is too obviously a continuation of Lessing's theological controversy to rank high as poetry, but the representatives of the three religions—the Mohammedan Saladin, the Jew Nathan and the Christian Knight Templar—are finely conceived, and show that Lessing's dramatic instinct had, in spite of other interests, not deserted him. In 1780 appeared *Die Erziehung des Menschengeschlechts,* the first half of which he had published in 1777 with one of the *Fragments.* This work, composed of 100 brief paragraphs, was the last, and is one of the most suggestive of Lessing's writings. The doctrine on which its argument is based is that no dogmatic creed can be regarded as final, but that every historical religion had its share in the development of the spiritual life of mankind. Lessing also

maintains that history reveals a definite law of progress, and that occasional retrogression may be necessary for the advance of the world towards its ultimate goal.

These ideas formed a striking contrast to the principles both of orthodox and of sceptical writers in Lessing's day, and gave a wholly new direction to religious philosophy. Another work of Lessing's last years, *Ernst und Falk* (a series of five dialogues, of which the first three were published in 1777, the last two in 1780), also sets forth many new points of view. Its nominal subject is freemasonry, but its real aim is to plead for a humane and charitable spirit in opposition to a narrow patriotism, an extravagant respect for rank and exclusive devotion to any particular church.

Lessing's theological opinions exposed him to much petty persecution, and he was in almost constant straits for money. His health had been undermined by excessive work and anxiety, and after a short illness he died at Brunswick on Feb. 15, 1781. "We lose much in him," wrote Goethe after Lessing's death, "more than we think." It may be questioned whether there is any other writer to whom the Germans owe a deeper debt of gratitude. He was succeeded by poets and philosophers who gave Germany for a time the first place in the intellectual life of the world, and it was Lessing, as they themselves acknowledged, who prepared the way for their achievements. Without attaching himself to any particular system of philosophical doctrine, he fought error incessantly, and in regard to art, poetry and the drama and religion, suggested ideas which kindled the enthusiasm of aspiring minds, and stimulated their highest energies.

BIBLIOGRAPHY.—The first edition of Lessing's collected works, edited by his brother Karl Gotthelf Lessing (1740–1812), J. J. Eschenburg and F. Nicolai, appeared in 26 vols. between 1791 and 1794, as a continuation of the *Vermischte Schriften*, edited by Lessing himself in 4 vols. (1771–85); the *Sämtliche Schriften*, edited by Karl Lachmann, were published in 13 vols. (1825–28), this edition being subsequently re-edited by W. von Maltzahn (1853–57), by F. Muncker (21 vols., 1886 ff.) and by J. Petersen and W. von Olshausen (25 vols., 1925). The more important biographies of Lessing are by K. G. Lessing (his brother) (1793–95, a reprint in Reclam's *Universal-bibliothek*); J. Sime, *Lessing, his Life and Works* (2 vols., 1877); E. Schmidt, *Lessing, Geschichte seines Lebens und seiner Schriften* (2 vols., 1884–92, 4th ed., revised by F. Schultz, 1923)—this is the most complete biography; T. W. Rolleston, *Lessing* (in "Great Writers," 1889); R. M. Werner, *Lessing* (1917). *See* also K. Fischer, *Lessing als Reformator der deutschen Literatur dargestellt* (2 vols., 1881, 2nd ed., 1888); B. A. Wagner, *Lessing-Forschungen* (1881); J. W. Braun, *Lessing im Urteile seiner Zeitgenossen* (2 vols., 1884); G. Kettner, *Lessings Dramen im Lichte ihrer und unserer Zeit* (1904); C. Pitollet, *Contribution à l'état de l'Hispanisme de G. E. Lessing* (1909); G. Fitthogen, *Die Religion Lessings* (Leipzig, 1923). Translations of Lessing's *Dramatic Works* (2 vols., 1878) edited by E. Bell, and of *Laokoon, Dramatic Notes and the Representation of Death by the Ancients*, by E. C. Beasley and H. Zimmern (1 vol., 1879), will be found in Bohn's "Standard Library."

LESSON, part of a book appointed to be read aloud, or learnt for repetition, hence anything learnt or studied (Lat. *lectio*, reading). Selections from the Bible or other religious writings appointed to be read at divine service are called lessons. In the Church of England most of the Old Testament is read through during the year as the First Lesson at Morning and Evening Prayer, and as the Second Lesson the whole of the New Testament, with the exception of parts of Revelation. (*See* LECTION, LECTIONARY.)

LESTE, a hot, dry dust-bearing wind of Madeira resembling the Leveche (*q.v.*). It is usually not experienced in summer, but at any other season it may strike the islands from directions varying between N.E. and S.E. and may reduce the relative humidity locally to below 20%.

L'ESTRANGE, SIR ROGER (1616–1704), English pamphleteer on the royalist and court side during the Restoration epoch, was born at Hunstanton, Norfolk, on Dec. 17, 1616. He was a zealous Cavalier, and spent four years in Newgate on a charge of espionage. He was pardoned by Cromwell in 1653, and lived in retirement until the Restoration, when he was appointed licenser of the press. In 1663 (*see* NEWSPAPERS) he commenced the publication of the *Public Intelligencer* and the *News*, from which eventually developed the *London Gazette* in 1665. In his *Observator* (1679) he discredited the Popish Plot. In 1687 he discontinued the *Observator* from his unwillingness to advocate James II.'s Edict of Toleration, although he had previously gone all lengths in support of the measures of the court. The Revolution cost him his office as licenser. He died in 1704. L'Estrange translated Josephus, Cicero, Seneca, Quevedo and other standard authors.

LE SUEUR, EUSTACHE (1616–55), one of the founders of the French Academy of painting, was born on Nov. 19, 1616, at Paris, where he passed his whole life, and where he died on April 30, 1655. He was the son of Cathelin Le Sueur, a turner and sculptor in wood, who placed his son with Vouet. Admitted at an early age into the guild of master-painters, he left them to take part in establishing the academy of painting and sculpture, and was one of the first 12 professors of that body. Some paintings, illustrative of the Hypnerotomachia Polyphili, which were reproduced in tapestry, brought him into notice, and his reputation was further enhanced by a series of decorations (Louvre) in the mansion of Lambert de Thorigny, which he left uncompleted. He also painted many pictures for churches and convents, some of which are now in the Louvre. His most important works are "St. Paul preaching at Ephesus" (Louvre), painted for the goldsmith's corporation in 1649; and his famous series of the "Life of St. Bruno" (Louvre), executed in the cloister of the Chartreux. These last have more personal character than anything else which Le Sueur produced, and much of the originals survives in spite of injuries and restorations and removal from the wall to canvas. The Louvre also possesses many fine drawings, chiefly executed in black and white chalk. His pupils, who aided him much in his work, were his wife's brother, Th. Goussé, and three brothers of his own, as well as Claude Lefebvre and Patel the landscape painter.

He was a charming draughtsman. His graceful facility in composition was always restrained by a very fine taste. He had too frequent recourse to conventional types, and he rarely saw colour except with the cold and clayey quality proper to the school of Vouet; though his art was the work of a sincere and sentimental disposition.

See L. Vitet, *Eustache Le Sueur* (1853).

LESUEUR, JEAN FRANÇOIS (1760–1837), French musical composer, was born on Jan. 15, 1760 at Drucat-Plessiel, near Abbeville. He was a choir boy in the cathedral of Amiens, and then became musical director at various churches. In 1786 he obtained by open competition the musical directorship of Notre-Dame, Paris, where he gave performances of sacred music with a full orchestra. This post he resigned in 1787; and, after a retirement of five years in a friend's country house, he produced *La Caverne* and two other operas at the Théâtre Feydeau in Paris. At the foundation of the Paris Conservatoire (1795) Lesueur was appointed one of its inspectors of studies, but was dismissed in 1802, owing to his disagreements with Méhul. Lesueur succeeded G. Paisiello as *Maestro di cappella* to Napoleon, and produced (1804) his *Ossian* at the Opéra. He also composed for the emperor's coronation a mass and a Te Deum. Louis XVIII., who had retained Lesueur in his court, appointed him (1818) professor of composition at the Conservatoire. He died on Oct. 6, 1837. Lesueur composed eight operas and several masses, and other sacred music. All his works are written in a style of rigorous simplicity.

See O. Fouqué, *J. F. Lesueur, précurseur de Berlioz* (1883), and monographs by W. Busch Kötter (1912) and F. Lamy (1912).

LESZNO (German LISSA), a town of Poland in the province of Poznan. The chief buildings are the palace, the mediaeval town hall and the churches. Its manufactures consist chiefly of shoes, machinery, liqueurs and tobacco; it also possesses a large steam flour mill, and carries on a brisk trade in grain and cattle. Pop. (1931) 19,258.

Leszno was formerly the seat of the family of Leszczynski, and owes its fame to the settlement there of a band of Moravian Brothers in the 16th century. Their settlement received municipal rights in 1561, and, reinforced by fresh refugees during the Thirty Years' War, became an important commercial and cultural centre and the chief seat of the Moravians in Poland. Johann Amos

Comenius was long rector of the celebrated Moravian school there. Leszno was occupied by Germany in 1939.

See Voigt, *Aus Lissas erster Blütezeit* (Lissa, 1905), and Sanden, *Geschichte der Lissaer Schule* (Lissa, 1905).

LETCHWORTH, an urban district of Hertfordshire, England, 2½ mi. N.E. of Hitchin on the L.N.E.Ry. Pop. (1938) 15,990. Area, 9.23 sq.mi. This was the first "garden city" created in England and was founded by a company known as First Garden City Limited, in 1903. It is on a plateau about 320 ft. above sea level, surrounded by a permanent agricultural belt of about 3,000 ac. Public houses are not allowed. The rubble and flint church of Our Lady dates from *c.*1150. The museum (reorganized in 1932) contains a fine collection of Roman and pre-Roman antiquities. The town is a centre of the corset manufactory, and there are also motor car, rubber and engineering works.

LE TELLIER, MICHEL (1603–1685), French statesman, was born in Paris on April 19, 1603. In 1677 he was made chancellor of France and he was one of those who influenced Louis XIV to revoke the Edict of Nantes. He died on Oct. 30, 1685, a few days after the revocation had been signed. Le Tellier, who amassed great wealth, left two sons, one the famous statesman Louvois and another who became archbishop of Reims. His correspondence is in the Bibliothèque nationale in Paris. *See* L. Caron, *Michel Le Tellier, intendant d'armée au Piémont* (Paris, 1881).

LETHABY, WILLIAM RICHARD (1857–1931), English architect, was born at Barnstaple in 1857. In 1879 he won the Soane travelling studentship of the R.I.B.A.; and soon afterwards entered the office of Norman Shaw, remaining with him for 12 years. In 1892 he started a practice on his own account. The influence of Shaw, William Morris and Philip Webb shaped and coloured Lethaby's design and work. In 1906 he was appointed surveyor to the fabric of Westminster abbey. With Sir G. Frampton he was responsible, on behalf of the London County council, for the establishment of the Central School of Arts and Crafts, of which he was principal from 1893 to 1911. He was professor of design at the Royal College of Art from 1900 to 1918.

His many publications include *Mediaeval Art,* based on a study of French cathedrals (1908); *Greek Buildings, represented by fragments in the British Museum* (1908); *Architecture, an introduction to the history and theory of the Art* (1912); *National Architecture and Modernism* (1918–21).

LETHARGY, drowsiness, torpor. In medicine the term is used of a morbid condition of deep and lasting sleep from which the sufferer can be with difficulty and only temporarily aroused. The term Negro or African lethargy was formerly applied to the disease now generally known as "sleeping sickness" (*q.v.*). (*See* also ENCEPHALITIS LETHARGICA.)

LETHE, "Oblivion," in Greek mythology, the daughter of Eris (Hesiod, *Theog.* 227). Lethe is also the name of a river (or plain, Aristophanes, *Frogs,* 186) in the infernal regions. Orphism (*see* the Petilia tablet, Kern, *Orphic. frag.,* 32) distinguished a spring of memory and one of oblivion, and near Lebadeia, at the oracle of Trophonius, which was counted an entrance to the lower world, the two springs Mnemosyne and Lethe were shown (Pausanias ix. 39. 8).

LETO (Latin, *Latona*), a Titaness, the daughter of Coeus and Phoebe, and mother of Apollo and Artemis. The chief seats of her legend were Delos and Delphi, and the generally accepted tradition is a union of the legends of these two places. Leto, pregnant by Zeus, sought a place of refuge to be delivered. After long wandering she reached the barren isle of Delos, which, according to Pindar (Frag. 87, 88), was a wandering rock borne about by the waves till it was fixed to the bottom of the sea for the birth of Apollo and Artemis. In the oldest forms of the legend Hera is not mentioned; but afterwards the wanderings of Leto are ascribed to the jealousy of that goddess, enraged at her amour with Zeus. The foundation of Delphi follows immediately on the birth of the god; and on the sacred way between Tempe and Delphi the giant Tityus offers violence to Leto and is immediately slain by the arrows of Apollo and Artemis (*Odyssey,* xi. 576–81; Apollodorus i. 23). Such are the main facts of the Leto legend in its common literary form, which is due especially to the two Homeric hymns to Apollo. But Leto is a real goddess, not a mere mythological figure. She has been plausibly identified with the Lycian goddess Lada, and in Lycia graves are frequently placed under her protection, and she is also known as a goddess of fertility and as *Kourotrophos* ("rearer of youths"). It is to be observed that she appears far more conspicuously in the Apolline myths than in those which grew round the great centres of Artemis worship, the reason being that the idea of Apollo and Artemis as twins is one of later growth on Greek soil.

See Wilamowitz-Moellendorf, *Apollo* (Oxford, 1908), p. 31.

LE TRÉPORT, a maritime town of northern France in the department of Seine-Inférieure, on the English channel, at the mouth of the Bresle, 114 mi. N.N.W. of Paris on the Northern railway. Pop. (1936) 4,783. Le Tréport (the ancient *Ulterior Portus*) was a port of some note in the middle ages and suffered from English invasions. It is a favourite watering place of the Parisians. The mouth of the Bresle forms a small port, comprising an outer tidal harbour and an inner dock accessible to vessels drawing from 13 to 16 feet. The fisheries with their dependent industries, shipbuilding and glass-making, are the chief industries. There is general trade. The church of St. Jacques (16th cent.) has finely carved vaulting. About 1 mi. N.E. of Le Tréport is the small bathing resort of Mers. The Eu-Tréport canal, uniting the two towns, has a length of about 2 mi., and is navigable by vessels drawing 11 to 12 feet.

LETTER, a character or symbol expressing any one of the elementary sounds into which a spoken word may be analysed, one of the members of an alphabet (through Fr. *lettre* from Lat. *littera* or *litera,* letter of the alphabet; the origin of the Latin word is obscure). As applied to things written, the word follows mainly the meanings of the Lat. plur. *litterae,* the most common being that of an epistle (*q.v.*). For transmission of letters *see* POST AND POSTAL SERVICES. The word is also applied to many legal and formal documents, as in letters patent, letters rogatory and dismissory, etc. "Letters," in the sense of literature (*q.v.*) or learning, also follows the Latin use.

LETTER OF MARQUE. The name given to the commission issued by a belligerent state to a private shipowner giving him leave to employ his vessel as a ship of war. A ship so used is termed a privateer. At the Congress of Paris, 1856, all the powers present agreed to a declaration (Art. I. of the Declaration of Paris) that "privateering is and remains abolished." This declaration bound only the powers then present, or those who subsequently agreed to it, but privateering became obsolete with the framing at The Hague convention of 1907 of international rules for the conversion of merchant ships into warships. (*See* INTERNATIONAL LAW, PUBLIC; DECLARATION OF PARIS.)

LETTER OR BILL OF CREDIT, a written order from a banker to his agent abroad, or a banker in one country to a banker in another, authorizing payment, to the person named in the document, of a definite sum of money or of amounts not greater than a definite sum named. A letter of credit is not a negotiable instrument and can only be honoured on the personal presentation of the one named in it.

A letter of credit is either general or special. It is general when addressed to merchants or other persons in general, requesting an advance to a third person, and special when addressed to a particular person by name requesting him to make such an advance. When a letter of credit is given for the purchase of goods, the letter of credit usually states the particulars of the merchandise against which bills are to be drawn, and shipping documents (bills of lading, invoices, insurance policies) are usually attached to the draft for acceptance.

LETTERS PATENT. It is here proposed to consider only the characteristics of letters patent generally. The law relating to letters patent for inventions is dealt with under the heading PATENTS; *see* also MONOPOLY.

Letters patent (*litterae patentes*) are letters addressed by the sovereign "to all to whom these presents shall come," reciting the grant of some dignity, office, monopoly, franchise or other privilege to the patentee. They are not sealed up, but are left open (hence the term "patent"), and are recorded in the patent rolls

in the Record Office, or in the case of very recent grants, in the Chancery Enrolment office, so that all subjects of the realm may read and be bound by their contents. In this respect they differ from certain other letters of the sovereign directed to particular persons and for particular purposes, which not being proper for public inspection, are closed up and sealed on the outside, and are thereupon called *writs close* (*litterae clausae*) and are recorded in the close rolls. Letters patent are used to put into commission various powers inherent in the Crown—legislative powers, as when the sovereign entrusts to others the duty of opening parliament or assenting to bills, judicial powers, *e.g.*, of gaol delivery; executive powers, as when the duties of treasurer and lord high admiral are assigned to commissioners of the Treasury and Admiralty (Anson, *Const.* ii. 211). Letters patent are also used to incorporate bodies by charter, to grant a *congé d'élire* to a dean and chapter to elect a bishop, or licence to convocation to amend canons, and to confer certain offices and dignities. No exemption from income tax, etc., can be effectively granted by letters patent to any city, borough or town (Income Tax Act, 1918, s. 213). Among grants of offices, etc., made by letters patent the following may be enumerated: offices in the Heralds' college; the dignities of a peer, baronet and knight bachelor; the appointments of custos rotulorum of counties, judge of the high court or lord justice of appeal (Supreme Court of Judicature Consolidation Act, 1925, s. 11), king's counsel, Crown livings; the offices of attorney and solicitor-general. The fees payable in respect of the grant of various forms of letters patent are fixed by orders of the lord chancellor, dated June 20, 1871, July 18, 1871, and Aug. 11, 1881. (These orders are set out at length in the *Statutory Rules and Orders Revised* [ed. 1904], vol. ii. *tit,* "Clerk of the Crown in Chancery," pp. i. *et seq.*) Formerly each colonial governor was appointed and commissioned by letters patent under the great seal of the United Kingdom. But since 1875, the practice has been to create the office of governor or governor-general in each colony or dominion by letters patent, and then to make each appointment to the office by commission under the Royal Sign Manual and to give to the governor so appointed instructions in a uniform shape under the Royal Sign Manual. The letters patent, commission and instructions, are commonly described as the Governor's commission (*see* Jenkyns, *British Rule and Jurisdiction beyond the Seas,* p. 100; the forms now in use are printed in App. iv.; also the *Statutory Rules and Codes Revised,* ed. 1904, and subsequent years, under the title of the colony to which they relate). The following modern instances may be given: letters patent of Sept. 11, 1913 (Mauritius); Dec. 6, 1922 (Irish Free State); Jan. 28, 1924 (Sierra Leone); April 9, 1924 (Windward Islands); June 6, 1924 (Trinidad and Tobago); Aug. 18, 1924 (Straits Settlements). The Colonial Letters Patent Act, 1863, provides that letters patent shall not take effect in the colonies or possessions beyond the seas until their publication there by proclamation or otherwise (s. 2), and shall be void unless so published within nine months in the case of colonies east of Bengal or west of Cape Horn, and within six months in any other case. Colonial officers and judges holding offices by patent for life or for a term certain, are removable by a special procedure—"amotion"—by the governor and council, subject to a right of appeal to the king in council (Leave of Absence Act, formerly cited as "Burke's Act," 1782); see *Montagu* v. *Governor of Van Diemen's Land,* 1849, 6 Moo. P.C. 491; *Willis* v. *Gipps,* 1846, 6 St. Trials (N.S., 311).

The construction of letters patent differs from that of other grants in certain particulars: (i.) Letters patent, contrary to the ordinary rule, are construed in a sense favourable to the grantor (viz., the Crown) rather than to the grantee; although this rule is said not to apply so strictly where the grant is made for consideration, or where it purports to be made *ex certâ scientiâ et mero motu.* (ii.) When it appears from the face of the grant that the sovereign has been mistaken or deceived, either in matter of fact or in matter of law, as, *e.g.,* by false suggestion on the part of the patentee, or by misrecital of former grants, or if the grant is contrary to law or uncertain, the letters patent are void, and may still, it would seem, be cancelled (except as regards letters patent for inventions, which are revoked by a special procedure, regulated by ss. 24–27 of the Patents Act, 1907), by the procedure known as *scire facias,* an action brought against the patentee in the name of the Crown with the fiat of the attorney-general.

See Bacon's *Abridgment* ("Prerogative," F.); Chitty's *Prerogative;* Hindmarsh on *Patents* (1846); Anson, *Law and Custom of the Const.* ii. (3rd ed., Oxford and London, 1907–08). (A. W. R.)

LETTISH LANGUAGE. The Lettish language is very closely related to Lithuanian (*q.v.*). Their phonetic systems are the same, except that Lettish has undergone some changes in which Lithuanian has had no share. Lettish has two systems of orthography; in the older one, the language is written as if it were German (the Letts learned writing from the Teutonic Knights); in the newer one (the result of several successive reforms), most of the letters have the same values as in Lithuanian. Books and newspapers continue for the most part to be printed in the old orthography, with the same ("Gothic") fount of type as German books and newspapers, to which a few new letters have had to be added. For manuscript the Letts use only the Latin alphabet. Long vowels are indicated in the old orthography by the addition of *h,* e.g., *mahte* and *māte* are respectively the old and the new spellings of the word for "mother" (pronounced *māte,* with *ā* as in English *far* and *e* as *ay* in *outlay,* but short). In the old orthography *ee* is pronounced *ia* or *ie* (somewhat as in English *dear*), and in both orthographies *o* is pronounced *uo* or *ua* (*cf.* English *poor*). The following are the chief phonetic differences from Lithuanian. The Indo-European *ā* (*e.g.,* Lat. *māter*) is not changed to *ō,* as in Lithuanian *motē,* but remains *ā* (Lett. *mate*). Where Lithuanian has *š* and *ž,* Lettish has *s, z* (as in Eng. *so, zero*): *e.g.,* Lithuanian *šimtas* "a hundred," Lettish *simts;* Lithuanian *žemē* "country," Lettish *zeme.* Before *e* and *i* Lettish changes *k* into *c* (pronounced *ts*) and *g* into *dz, e.g.,* Lithuanian *sakyti* "to say," Lettish *sacīt;* Lithuanian *gerti* "to drink," Lettish *dzert.* Lithuanian short vowels in end-syllables disappear in Lettish (except *u*): Lithuanian *akis* "eye," Lettish *acs* (pronounced *ats*); Lithuanian long vowels in end-syllables become short in Lettish: Lithuanian *sakō* "he says," Lettish *saka.* The nasal *n* cannot stand before a consonant in Lettish: Lithuanian *pinti* "to weave," *jungas* "yoke," *ranka* "hand," and *bendras* "comrade," become Lettish *pīt, jūgs, roka* (pronounced *ruoka*) and *biedrs* (in the old orthography *beedrs*). The consonant *j* (=Eng. *y* in *you*) coalesces with a preceding consonant, but the result is not the same as in Lithuanian: *svetjā* (Lith. *svečio* "of a guest") becomes Lettish *sveša; medjā* (Lith. *medžio* "of a tree") becomes Lettish *meža.* Some other consonants suffer similar changes, as a result of which Lettish possesses a set of palatal consonants, denoted in the old orthography by crossed forms of k, g, r, l, n, and in the new by ķ, ģ, ŗ, ļ, ņ. The declensions and conjugations are on much the same lines as in Lithuanian. The dual is almost, but not quite, obsolete. In the conjugations Lettish makes a more extended use of auxiliary verbs.

The stress is on the first syllable of every word. In addition there are distinctions of intonation, but their effect on the ear is not the same as in Lithuanian. Lettish, for instance, has in certain syllables the glottal catch (the Danish *Stödton,* heard also in the Scotch dialect pronunciation of *butter—bu'er*), which is not heard in Lithuanian. Analysis has, however, revealed the principles according to which the Lettish intonations correspond to the Lithuanian, even when not identical with them, and in this way Lettish has become an important witness in questions of Baltic accentuation.

Lettish is spoken in numerous dialects, which for many years have been dying out owing to the general adoption of a common form of Lettish, based on a single dialect.

The oldest Lettish text is a translation of the *Catechismus Catholicorum* (1585) which was found in 1911 in Uppsala university library. A translation of Luther's Catechism was printed in 1586.

The Lettish vocabulary differs considerably from the Lithuanian. From the common stock of Baltic words the two languages have sometimes made a different selection, *e.g.,* the *ox* is called Lettish *govs* (*cf.* Lat. *bos,* Grk. *bous,* Engl. *cow*), but Lithuanian

jautis (*cf.* Skt. *yauti* "he yokes"); a *son* is Lettish *dēls* (*cf.* Lat. *filius*), Lithuanian *sūnus* (*cf.* Skt. *sūnus*). Sometimes a suffix common to the two languages has acquired a different meaning in each, *e.g.*, Lithuanian *-okas*=English *-ish* (*gerokas*=*goodish*), but Lettish *-āks* is the ending of the Comparative (Lett. *labāks*=*better*). Loan-words have passed into Lettish from German, (chiefly Middle Low German words borrowed from the Teutonic Knights, whose influence on the Letts was much stronger than on the Lithuanians, but also in later times High German words), from Russian (part of the church terminology, *e.g.*, *krusts* "cross" from Old Russian *křstŭ*, dates from the time, before the Teutonic influence, when the Letts were almost converted to Greek Christianity), and from Livonian, a Finno-Ugrian language once widely spoken in Livonia and Kurland, but now spoken only by some 800 persons on the headland to the west of Riga. The German words are very numerous, the Russian and Livonian words rarer, but some of the commonest words are Livonian, *e.g.*, *vajaga* "it is necessary, one must," *maksāt* "to pay," *pestīt* "to free," *puisis* "lad," *sulainis* "servant." The Finnish languages do not tolerate a group of consonants at the beginning of a word (*e.g.*, Old Norse *straumr* "stream" on Finnish lips became *rauma*). When, therefore, we find in Lettish an initial *s-* unexpectedly prefixed to another consonant, as in *stopzēgelis* "topsail" (borrowed from Low German), such words owe their *s-* to Livonian speakers who failed to distinguish in foreign words between *st-* and *t-*, *sp-* and *p-*, etc. The Finno-Ugrian influence on Lettish continues at the present day, the northern neighbours of the Letts being the Esthonians, who speak a Finno-Ugrian language closely related to Livonian and to Finnish itself.

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The few surviving Old-Prussian texts will be found, together with a grammar and etymological vocabulary, in R. Trautmann, *Die Altpreussischen Sprachdenkmäler* (Göttingen, 1910). Some special researches are contained in N. van Wijk, *Altpreussische Studien* (Haag, 1918). The proper names contained in charters, etc., are collected in G. Gerullis, *Die Altpreussischen Ortsnamen* (Berlin-Leipzig, 1922), and R. Trautmann, *Die Altpreussischen Personennamen* (Göttingen, 1925). (R. McK.)

LETTISH LITERATURE: *see* LITHUANIAN AND LETTISH LITERATURE.

LETTOW-VORBECK, PAUL VON (1870–), German general, was born at Saarlouis on March 20, 1870, the son of General Paul von Lettow-Vorbeck (1832–1919). He took part in the China expedition in 1900 and in 1904 in German South-West Africa; in 1911 he was appointed commander of the colonial troops in Cameroon, and in 1914 to the corresponding command in German East Africa. There he conducted a four years' struggle against the British forces, earning general admiration by the remarkable way in which he contrived to move his men and to elude his adversary through tropical jungles and regions which had only been partially explored. The remainder of his force finally withdrew to Portuguese East Africa. In 1919 he returned to Germany, and was made leader of the corps which bore his name in the organization of the *Reichswehr* before the disarmament clauses of the Treaty of Versailles were fully enforced. He finally left the service in March 1920. He published in 1919 *Meine Erinnerungen aus Deutsch-Ostafrika.*

See A. Schirge, *Mit Lettow-Vorbeck durch Ostafrika 1914–19* (1919); L. Deppe, *Mit Lettow-Vorbeck durch Afrika* (1919).

LETTRES DE CACHET. Considered solely as French documents *lettres de cachet* may be defined as letters signed by the king of France, countersigned by one of his ministers, and closed with the royal seal (*cachet*). They contained an order emanating directly from the king, and executory by himself. In the case of organized bodies *lettres de cachet* were issued for the purpose of enjoining members to assemble or to accomplish some definite act; the provincial estates were convoked in this manner, and it was by a *lettre de cachet* (called *lettre de jussion*) that the king ordered a parlement to register a law in the teeth of its own remonstrances. The best-known *lettres de cachet,* however, were those by which the king sentenced a subject without trial and without an opportunity of defence to imprisonment in a State prison or an ordinary gaol, confinement in a convent or a hospital, transportation to the colonies, or relegation to a given place within the realm.

The power thus exercised was recognized by old French law, and can be traced to a maxim which furnished a text of the *Digest* of Justinian: "Rex solutus est a legibus." This meant that when the king intervened directly in the administration proper, or in the administration of justice, by a special act of his will, he could decide without heeding the laws, and even in a sense contrary to the laws. In early times the order in question was simply verbal; thus some letters patent of Henry III. of France in 1576 state that François de Montmorency was "prisoner in our castle of the Bastille in Paris by verbal command" of the late king Charles IX. But in the 14th century the principle was introduced that the order should be written, and hence arose the *lettre de cachet.* The *lettre de cachet* belonged to the class of *lettres closes,* as opposed to *lettres patentes,* which expressed the legal and permanent will of the king and were sealed by the chancellor with the seal of State. The *lettres de cachet* were signed simply by a secretary of State for the king; they bore merely the imprint of the king's privy seal, from which circumstance they were often called, in the 14th and 15th centuries *lettres de petit signet* or *lettres de petit cachet,* and were entirely exempt from the control of the chancellor. While serving the government as a silent weapon against political adversaries or dangerous writers, and as a means of punishing culprits of high birth without the scandal of a trial, the *lettres de cachet* had other uses. They were employed by the police in dealing with prostitutes, and on their authority lunatics were shut up. They were also often used by heads of families as a means of correction, *e.g.* for protecting the family honour from the disorderly or criminal conduct of sons; wives, too, used them to curb the profligacy of husbands and vice versa. They were issued by the intermediary on the advice of the intendants in the provinces and of the lieutenant of police in Paris. In reality, the secretary of State issued them in a completely arbitrary fashion, and in most cases the king was unaware of their issue. In the 18th century the letters were often issued blank, *i.e.* without containing the name of the person against whom they were directed; the recipient, or mandatary, filled in the name in order to make the letter effective.

Protests against the *lettres de cachet* were made continually by the parlement of Paris and by the provincial parlements, and often also by the States General. It was not, however, until the reign of Louis XVI. that a reaction against this abuse became clearly perceptible. At the beginning of that reign Malesherbes during his short ministry endeavoured to infuse some measure of justice into the system, and in March 1784 the baron de Breteuil, a minister of the king's household, addressed a circular to the intendants and the lieutenant of police with a view to preventing its abuses. In Paris, in 1779, the *Cour des Aides* demanded their suppression, and in March 1788 the parlement of Paris made some energetic remonstrances. The crown, however, in a declaration to the States General in the royal session of June 23, 1789 (art. 15) did not renounce it absolutely. *Lettres de cachet* were abolished by the Constituent Assembly, but Napoleon re-established their equivalent by a political measure in the decree of March 9, 1801. This was one of the acts brought up against him by the *sénatus-consulte* of April 3, 1814, which pronounced his fall "considering that he has violated the constitutional laws by the decrees on the State prisons."

See Honoré de Mirabeau *Des Lettres de cachet et des prisons d'état* (Hamburg, 1782), written in the dungeon at Vincennes into which his father had thrown him by a *lettre de cachet,* one of the ablest and most eloquent of his works, which had an immense circulation, and was translated into English with a dedication to the duke of Norfolk in 1788; André Chassaigne, *Les Lettres de cachet sous l'ancien régime* (1903); Frantz Funck-Brentano, *Les Lettres de cachet à Paris* (1904);

Philippe Negrin, *La Reforme de la lettre de cachet au XVIIIe siècle* (1906); and *Les Lettres de Cachet* (1926). (J. P. E.)

LETTUCE, *Lactuca sativa,* thought to have developed from the wild species *L. scariola,* is a member of the Compositae family and is widely grown as a salad plant. It is a relatively hardy annual which quickly produces seedstalks at high temperatures. Thus, relatively low temperatures (60°–65°F.) favour the development of firm heads of good quality in the heading types and a stocky growth in the loose-leaved types.

There are four botanical varieties in use: var. *angustana,* Asparagus lettuce with narrow leaves whose midribs form the edible portion; var. *capitata,* Head or Cabbage lettuce with the leaves folded into a compact head; var. *crispa,* Leaf or loose-heading lettuce with a loose rosette of curled and finely cut leaves; and var. *longifolia,* Cos or Romaine lettuce with tall, oblong, loosely formed heads. A distinction is often made in the heading types between the butterhead varieties which have thick, oily leaves and the crisphead varieties which have leaves of brittle texture. Within each of these groups are horticultural varieties which differ in their seasonal adaptability, and resistance to certain diseases. Asparagus lettuce is grown but little except in private gardens. Leaf lettuce is popular for culture under glass and in the open. Cos lettuce finds a good market with many consumers. Head lettuce, however, is by far the most important commercially, and in the United States the crisphead varieties are rapidly replacing the butterhead varieties. In England and on the Continent, lettuce-growing for market is confined largely to market-gardens in the vicinity of cities. The mild winters permit the growth of lettuce under sash during the winter months. Plantings in the open are made with the advent of spring. Similarly, in the United States, market gardeners located near centres of population transplant lettuce into hotbeds and cold frames very early in the spring. Later, crops are transplanted or seeded in the ground.

The quantity of lettuce so grown in the United States is relatively insignificant in comparison with that grown for shipment in refrigerated cars to markets thousands of miles away. These producing sections are selected for their adaptability to lettuce-growing at certain seasons of the year. Thus, California, with regions differing widely in climate, is able to ship lettuce throughout the year to markets on the Atlantic Coast. This State devotes about 100,000ac. yearly to the production of lettuce. It is not uncommon to see fields of several hundred acres in extent with only a few days' difference between the planting dates of the oldest and youngest sowings. Arizona ranks next to California in importance as a lettuce producing State. Approximately 150,000ac. of land are used each year in the United States for lettuce production in the 14 States in which the crop is grown on an extensive scale for shipment to distant markets. (J. E. K.)

LEU, the monetary unit of Rumania. Originally worth 19.295 cents, so that 25.22 lei equalled one pound sterling, it depreciated greatly during the World War and subsequent years. In 1929 it was stabilized and revalued on a basis of 813.6 lei to the pound sterling; a further valuation was effected in Nov. 1936, and during 1938 the price fluctuated between 650 and 690 lei to the pound sterling.

See RUMANIA.

LEUCADIA or **LEUCAS:** *see* SANTA MAURA.

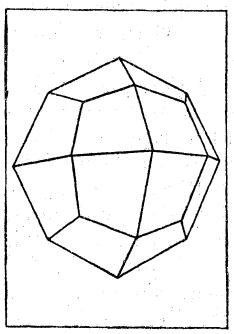
LEUCIPPUS, Greek philosopher, born at Miletus (or Elea), founder of the Atomistic theory, contemporary of Zeno, Empedocles and Anaxagoras.

Epicurus (Diog. Laërt. X. 7), followed in modern times by E. Rohde, denied his very existence, though distinguishing him from Democritus; and Aristotle and Theophrastus expressly credit him with the invention of Atomism.

See DEMOCRITUS. On the Rohde-Diels controversy as to the existence of Leucippus, *see* F. Lortzing in Bursian's *Jahresbericht,* vol. cxvi. (1904); also J. Burnet, *Early Greek Philosophy* (3rd ed., 1920); T. Gomperz, *Greek Thinkers,* vol. i. (Eng. trans., 1901); H. Diels, *Die Fragmente der Vorsokratiker,* Bd. 2 (4th ed., 1922). Full bibliography in Überweg, *Grundriss der Gesch. der Phil.,* Bd. 1 (1926).

LEUCITE, a rock-forming mineral composed of potassium and aluminium metasilicate $KAl(SiO_3)_2$. Crystals have the form of cubic icositetrahedra {211}, but, as first observed by Sir David Brewster in 1821, they are not optically isotropic. They consist of a complex intergrowth of orthorhombic or monoclinic individuals, which are optically biaxial and repeatedly twinned, giving rise to twin-lamellae and to striations on the faces. When the crystals are raised to a temperature of about 500° C they become optically isotropic, the twin-lamellae and striations disappearing, reappearing, however, when the crystals are again cooled. This pseudo-cubic character of leucite is exactly the same as that of the mineral boracite (*q.v.*).

The crystals are white (hence the name from λευκός) or ash-grey in colour, and are usually dull and opaque, but sometimes transparent and glassy; they are brittle and break with a conchoidal fracture. The hardness is 5½, and the specific gravity 2·5. Enclosures of other minerals, arranged in concentric zones, are frequently present in the crystals.



A LEUCITE CRYSTAL, SOMETIMES KNOWN AS THE LEUCITOHEDRON

Since leucite contains a considerable amount of potash (H_2O 21·5%), many attempts have been made to extract potash commercially from this mineral, and in Italy the crude mineral is used as a fertilizer. (L. J. S.)

LEUCITE ROCKS. Igneous rocks bearing leucite, though quantitatively scarce are of wide distribution, and occur in every quarter of the globe, apparently excepting Britain. Taken collectively they exhibit a considerable variety of type and are of great petrographic importance. Their principal developments are of Tertiary or Recent age and include those of the Roman region and the East Indies (Java, Celebes, Borneo). In pre-Tertiary rocks leucite is uncommon, since it readily undergoes change to other products as analcime, zeolites, etc. The majority of leucite-bearing rocks are surface lavas or thin dykes; plutonic rocks carrying leucite are known from only two or three localities. In these latter types the instability of leucite, cooled slowly under deep-seated conditions, is seen in the frequent occurrence of pseudo-leucite, a paramorph consisting of aggregates of orthoclase and nepheline, or its alteration products (muscovite, sodalite, etc.). This transformation may be chemically expressed in the equation:

$$2[(KNa)AlSi_2O_6] = KAlSi_3O_8 + NaAlSiO_4.$$

Nepheline, sodalite, nosean, haüyne, melanite-garnet and melilite are frequent associates of leucite, but with rare exceptions it is not found together with free silica. The mineral is readily recognized by the trapezohedral character of its crystals, its colour and rough cleavage. Leucite rocks belong chemically to a potash-rich suite of rocks which includes potash syenites, monzonites, shonkinites and latites; in contrast to the sodic Atlantic and calcic Pacific suites, this group is sometimes referred to as the Mediterranean suite, from their relative abundance in the Italian region bordering the Mediterranean.

Formation.—The conditions governing the formation of leucite in rocks are still obscurely understood. Some are chemically identical with certain potassic lamprophyres, while others correspond closely in composition to nepheline syenites. It is not improbable that, provided sufficient potash be present, the water content of the magma and the physical condition of pressure may be controlling factors. The escape of this volatile constituent from a magma enriched in orthosilicate mica molecules may result in a concentration of the metasilicate molecule sufficient to precipitate leucite. Such a condition may be produced by extrusion of the magma on the surface. It is well known that mica, fused in an open crucible, yields leucite as a transformation product. Here may, perhaps, be discovered the reason for the rare occurrence of deep-seated leucite-bearing rocks, the leucite molecule being desilicified to the orthosilicate molecule in the presence of water under cover. The recently demonstrated incongruent melting of orthoclase with separation of leucite is clearly, too, of special petrographic importance, for the occurrence of leucite in comparatively silica-rich glasses or in ground masses containing free silica is thus comprehended. (*See* PETROLOGY.)

Plutonic Rocks Bearing Leucite.—The rare coarse-grained or plutonic rocks carrying leucite are practically limited to occurrences in Arkansas, Montana and Brazil, or occur as cognate xenoliths in leucite lavas, as in those of the Roman region. These rock types include leucite-syenite, leucite-shonkinite, arkite and missourite. The first consists of leucite (or pseudo-leucite), ortho-

clase, nepheline, diopside and aegirine-diopside, melanite and biotite. Leucite-shonkinite, a melanocratic type known from the Highwood mountains, Mont., and in ejected blocks from Monte Somma, consists of augite, orthoclase and leucite, while arkite and missourite are almost felspar-free rocks in which the chief constituents are leucite-nepheline, aegirine-diopside and melanite (arkite), and leucite, olivine augite and biotite (missourite). The former occurs at Magnet Cove, Ark., and the latter in the Highwood mountains. Hypabyssal rocks carrying leucite belong to the tinguaite and monchiquite groups. The leucite tinguaites are usually pale grey or green and consist principally of nepheline, alkali-felspar and aegirine, together with leucite. Rocks of this group are known from the Laacher See and Kaiserstuhl districts, Serra de Monchique (Portugal), north-west Madagascar, Umptek (Russia), Magnet Cove (Ark.), Bear Paw mountains (Mont.), Alaska, Greenland and Rio de Janeiro. Leucite monchiquites are fine-grained dark rocks consisting of olivine, titaniferous augite and iron oxides, with a glassy ground-mass in which small rounded crystals of leucite are scattered. They are known from Czechoslovakia (Bohemian Mittelgebirge) and the Kaiserstuhl (Baden).

Lavas Bearing Leucite.—The lavas are the most abundant of the igneous rocks bearing leucite. They include leucite trachytes and phonolites, and leucitophyres, leucite basanites and tephrites, leucite basalts and leucitites.

The leucite trachytes and phonolites carry sanidine in abundance; they are common in the vicinity of Rome (L. Bracciano, L. Bolsena) and in the tuffs in the region of Naples, and occur in north-west Madagascar (Bezavona mass), the Celebes and Alaska.

In the leucitophyres sanidine is in subordinate amount, these rocks being the effusive equivalents of the leucite syenites. They often contain much nepheline, which is typically absent in the leucite phonolites. Haüyne, nosean, melanite and aegirine also occur. Leucitophyres are known from various parts of the volcanic districts of the Rhine (Eifel, Kaiserstuhl), and from São Paulo, Brazil, where they are of Carboniferous age.

The leucite basanites and tephrites are basaltic lavas carrying leucite, plagioclase and augite, the former with olivine, the latter olivine-free. Leucite is often present in two sets of crystals, porphyritic and as a constituent of the ground mass. The pyroxene is usually titaniferous and aegirine is uncommon. Accessory minerals include biotite, brown hornblende and haüyne. Melanite and nepheline may also occur. The leucite basalts and leucitites are free from plagioclase felspar. The former contain olivine and the latter are olivine-free. Otherwise they resemble the basanites and tephrites. Melilite may be an abundant constituent, as in the leucitite of Capo di Bove, near Rome. In this rock the melilite forms irregular tetragonal plates enclosing many small rounded crystals of leucite. The volcanic region of central Italy provides the finest and best known examples of basaltic lavas carrying leucite. In the Roman region leucite tephrites and leucitites occur in the Alban hills, south of Rome, and in southern Etruria, north of Rome, at Lake Bracciano, Viterbo and Lake Bolsena. In the Neapolitan area these rocks are represented at Roccamonfina, Monte Vulture, Phlegrean Fields (and Islands) and at Vesuvius. Leucite basanites also occur in these districts. The tephrites and basanites are also known from Sardinia, Czechoslovakia, in East Africa, at Kilimanjaro, and other places, in the Celebes and Java. Leucitites occur also in the East Indies, Montana, and the Kimberley district of Western Australia. In East Africa they are the products of the volcanoes Wissoke, Mikeno, Niragongo, etc., and of the volcano Etinde in the Cameroons. The more basic leucite basalts rich in olivine occur in great force in the Eifel, in Czechoslovakia, and accompany tephrites or leucitites in the Celebes, Java, Montana and Sardinia. Leucite basalt occurs at the Gaussberg (Antarctica) and in the western plains of New South Wales. A small group of leucite-bearing rocks is recorded from the Philippines, and from Utsuryôtô, in the Sea of Japan, a variety of leucite tephrite has been recently described. Peculiar leucitic lavas of lamprophyric affinities occur in the Leucite hills of Wyoming and at Jumilla, Murcia Province (Spain). The Wyoming lavas carry phlogopite, diopside and katophorite, with or without sanidine felspar, and constitute the rocks known as orendite and wyomingite.

As a constituent of pyroclastic rocks, leucite is abundant in the ashes and tuffs known as "peperino" in the Roman region; this is externally quarried for building and paving purposes.

Composition.—The following analyses represent the composition of typical leucite-bearing rocks from various regions:

	SiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	CaO	Na_2O	K_2O	TiO_2
1.	54·62	22·85	1·51	1·08	0·36	3·00	5·25	11·19	tr
2.	52·91	19·49	4·78	2·05	0·29	2·47	7·13	7·88	..
3.	52·51	21·37	2·15	1·04	0·11	2·16	7·21	8·97	0·32
4.	45·99	16·56	4·17	5·38	5·30	10·47	2·18	8·97	0·37
5.	43·58	8·08	5·00	5·77	12·91	8·88	0·90	5·99	4·64
6.	51·85	19·08	4·25	2·69	1·48	5·81	4·46	6·61	0·66
7.	54·17	10·16	3·34	0·65	6·62	4·19	1·21	11·91	2·67

1. Leucite syenite, Monte Somma (Vesuvius).
2. Leucite tinguaite, Magnet Cove, Ark.
3. Leucitophyre, Olbrück Laacher. *See* EIFEL.
4. Leucitite, Capo di Bove, Rome.
5. Leucite basalt, El Capitan, New South Wales.
6. Leucite tephrite, Gillinan river, Mt. Mouriah, Java.
7. Orendite, North Table Butte, Wyoming. (C. E. T.)

LEUCTRA, BATTLE OF, 371 B. C. Leuctra, a village of Boeotia in the territory of Thespiae, is chiefly noticeable in the annals of general history for the battle fought in its neighbourhood in 371 B.C. between the Thebans and the Spartans and their allies. But in military history it is far more than noticeable—in fact, epoch-making. For here the "oblique order" was born which came to maturity under Alexander the Great, and was resurrected in modern times with equally startling success by Frederick the Great. And apart from its originality, at Leuctra Epameinondas's manoeuvre was in some ways more unconventional in its execution than those of his more famous successors. This is the more remarkable when we judge him by the criterion of his time, and remember that he was flagrantly breaking with the tradition of centuries of warfare.

A Peloponnesian army, about 10,000 strong, which had invaded Boeotia from Phoecis, was confronted by a Boeotian levy of perhaps 6,000 soldiers under Epaminondas (*q.v.*). In spite of inferior numbers and the doubtful loyalty of his Boeotian allies, Epameinondas offered battle on the plain before the village.

The Peloponnesian army formed up in the traditional manner, with the Spartans on the right under their king, Cleombrotus, who was in command of the whole. Instead of following suit and placing his best on the right, Epameinondas not merely reversed this procedure but massed a 50-deep column of Theban infantry on his left wing, with the famous Sacred Band at its head and cavalry protecting its flank. He sent forward this body in advance of his centre and right wing, thus by "refusing" the latter, saving it from the otherwise inevitable overlapping which would have occurred on contact with the enemy. After a cavalry engagement in which the Thebans drove their opponents off the field, the decisive issue was fought out between the Theban and Spartan foot. The latter, though fighting well, could not sustain in their 12-deep formation the cumulative impact of their opponents' column, and were hurled back with a loss of about 2,000 men, of whom 700 were Spartan citizens, including the king Cleombrotus. Seeing their right wing beaten, the rest of the Peloponnesians retired and left the enemy in possession of the field. Owing to the arrival of a Thessalian army under Jason of Pherae, whose friendship they did not trust, the Thebans were unable to exploit their victory. But the battle is none the less of great significance in Greek history. Its political effects were far-reaching, for the loss in material strength and prestige which the Spartans here sustained deprived them for ever of their supremacy in Greece. But by its influence on tactics it was still more far-reaching, for it was to affect vitally the outcome of the struggle between Greece and Persia and both indirectly and directly the destiny of modern Europe. It is the first known instance of a deliberate concentration of strength against a vital point of the enemy's formation as a means, first, to offset an inferiority on the whole front by a local superiority at the decisive point, and, secondly, to obtain a decision by dislocating

instead of merely wearing down the enemy's body. This is the true art of war. And it is specially significant that Epameinondas directed his concentration against the enemy's command, the moral objective, because the seat of his will to victory.

See Xenophon, *Hellenica,* vi. 4, 3–15; Diodorus xi. 53–56; Plutarch, *Pelopidas,* ch. 20–23; Pausanias ix. 13, 2–10; H. Delbrück, *Geschichte der Kriegskunst* (1900), i. 130 *ff.*

LEUK (Fr. *Loèche Ville*), an ancient little town in the Swiss canton of the Valais. It is built above the right bank of the Rhone, and is about 1 m. from the Leuk-Susten station (15½ m. E. of Sion and 17½ m. W. of Brig) on the Simplon railway. In 1939 it had 1,966 inhabitants, all but wholly German-speaking and Catholics. About 10½ mi. by a narrow gauge railway N. of Leuk, and near the head of the Dala valley, at a height of 4,629 ft. above the sea-level, and overshadowed by the cliffs of the Gemmi Pass (7,641 ft.) leading over to the Bernese Oberland, are the Baths of Leuk (*Leukerbad* or *Loèche les Bains*). They ordinarily have permanent inhabitants, and are frequented in summer by visitors (largely French and Swiss) attracted by the hot mineral springs, which have a temperature from 117°–124°. The village is exposed to avalanches, by which it was destroyed in 1518, 1719 and 1756, but it is now protected by a strong embankment from a similar catastrophe.

LEUTHEN, a village of Silesia, Germany, 10 mi. W. of Breslau, memorable as the scene of Frederick the Great's victory over the Austrians on December 5, 1757. The high road from Breslau to Lüben crosses the marshy Schweidnitz Water at Lissa, and immediately enters the rolling country about Neumarkt. Leuthen itself stands some 4,000 paces south of the road, and a similar distance south again lies Sagschütz, while Nypern, on the northern edge of the hill country, is 5,000 paces from the road. On Frederick's approach the Austrians took up a line of battle resting on the two last-named villages. Their whole position was strongly garrisoned and protected by obstacles, and their artillery was numerous though of light calibre. A strong outpost of Saxon cavalry was in Borne to the westward. Frederick had the previous day surprised the Austrian batteries at Neumarkt, and his Prussians, 33,000 to the enemy's 82,000, moved towards Borne and Leuthen early on the 5th. The Saxon outpost was rushed at in the morning mist, and, covered by their advanced guard on the heights beyond, the Prussians wheeled to their right. Prince Charles of Lorraine, the Austrian commander-in-chief, on Leuthen Church tower, could make nothing of Frederick's movements, and the commander of his right wing (Lucchesi) sent him message after message from Nypem and Gocklerwitz asking for help, which was eventually despatched. But the real blow was to fall on the left under Nadasdy. While the Austrian commander was thus wasting time, the Prussians were marching against Nadasdy in two columns, which preserved their distances with an exactitude which has excited the wonder of modern generations of soldiers; at the due place they wheeled into line of battle obliquely to the Austrian front, and in one great *échelon,*—the cavalry of the right wing foremost, and that of the left "refused,"—Frederick advanced on Sagschütz. Nadasdy, surprised, put a bold face on the matter and made a good defence, but he was speedily routed, and, as the Prussians advanced, battalion after battalion was rolled up towards Leuthen until the Austrians faced almost due south. The fighting in Leuthen itself was furious; the Austrians stood, in places, 100 deep, but the disciplined valour of the Prussians carried the village. For a moment the victory was endangered when Lucchesi came down upon the Prussian left wing from the north, but Driesen's cavalry, till then "refused," charged him in flank and scattered his troopers in wild rout. This stroke ended the battle. The retreat on Breslau became a rout almost comparable to that of Waterloo, and Prince Charles rallied, in Bohemia, barely 37,000 out of his 82,000. Ten thousand Austrians were left on the field, 21,000 taken prisoners (besides 17,000 in Breslau a little later), with 116 cannon. The Prussian loss in all was under 5,500.

See Carlyle, *Frederick,* bk. xviii. cap. x.; V. Ollech, *Friedrich der Grosse von Kolin bis Leuthen* (Berlin, 1858); Kutzen, *Schlacht bei Leuthen* (Breslau, 1851); and bibliography under SEVEN YEARS' WAR.

LEUTZE, EMANUEL (1816–1868), American artist, was born at Gmünd, Württemberg, on May 24, 1816, and as a child was taken by his parents to Philadelphia, where he early displayed talent as an artist. At the age of 25 he had earned enough to take him to Düsseldorf to study at the Royal Academy. In 1860 he was commissioned by the U.S. Congress to decorate a stairway in the Capitol at Washington, for which he painted a large composition, "Westward the Star of Empire takes its Way." His best-known work, popular through engraving, is "Washington crossing the Delaware," a large canvas containing a score of life-sized figures; it is now owned by the Metropolitan Museum of Art, New York. He died at Washington, D.C., on July 18, 1868.

LEVA, the monetary unit of Bulgaria, equivalent at par to a franc, is based upon gold, a gold currency being adopted in 1893. Notes are issued by the Bulgaria national bank, and early in the current century were maintained on a par with gold. Defeat in the World War caused the collapse of the leva, and when the rout was stopped in 1924, it was worth 0·725 cents. It remained at that level until the end of 1927.

The note issue expanded in conjunction with the leva's fall in value. In 1913, 189,000,000 leva were outstanding. By 1920, the volume had arisen to 3,354 millions, and by 1924 to 4,530 millions. With *de facto* stabilization, a contraction followed to 3,902 millions at the end of 1927; in Nov. 1928 the leva was finally stabilized at the new value of 673·659 to the £, and by Jan. 1939 the outstanding note issue amounted to 2,694,000,000 levas. During most of 1938 the leva was steady at 405, but in Nov. it fell to 370 and on Dec. 31 was 385.

LEVANT, a name for the Mediterranean coastlands of Asia Minor and Syria, sometimes including the coast line from Greece to Egypt (from the Fr. participle of *lever,* to rise, meaning the East). In the 16th and 17th centuries the term "High Levant" was used of the Far East.

LEVANTER (occasionally confused with the Leveche), the name for a steady easterly wind experienced at Gibraltar and other parts of South Spain. A more general term for the wind is *Solano.*

LEVASSEUR, PIERRE EMILE (1828–1911), French economist, geographer and statistician, was born in Paris on Dec. 8, 1828. Educated in Paris, he taught in various high schools until 1872, when he was appointed professor of geography, history and statistics in the Collège de France; later he became also professor at the Conservatoire des arts et métiers and at the École libre des sciences politiques. Levasseur was one of the founders of the study of commercial geography, and became a member of the council of public instruction, president of the French society of political economy and honorary president of the French geographical society. He died on July 10, 1911. He wrote a series of important works on the history of the French working-classes.

LEVECHE, the Spanish local name for the *sirocco* (*q.v.*). It is a hot, dry wind varying from south-east to south-west and is chiefly experienced along the south-east coast from Valencia to Malaga; its worst effects usually extend some 10 m. inland.

LEVÉE, a reception or assembly held by the British sovereign or his representative in the forenoon or early afternoon, at which men only are present. (Fr. *lever,* to rise.) Under the *ancien régime* in France the *lever* of the king was regulated, especially under Louis XIV., by elaborate etiquette, and the various divisions of the ceremonial followed the stages of the king's rising from bed. The *petit lever* began when the king had washed and said his daily offices, to this were admitted the princes of the blood and certain high officers of the household; then followed the *première entrée,* to which came the secretaries and other officials and those having the *entrée;* these were received by the king in his dressing-gown. Finally, at the *grand lever,* the remainder of the household, the nobles and gentlemen of the court were received; the king by that time was shaved, had changed his linen and was in his wig.

The word is also applied to a natural or artificial embankment which keeps a river in its channel. *See* LAND RECLAMATION; RIVER AND RIVER ENGINEERING; and MISSISSIPPI RIVER.

LEVELLERS, an important political party in England during the period of the Civil War and the Commonwealth. The germ of the Levelling movement must be sought for among the Agitators (*q.v.*), men of strong republican views. The name Leveller first appears in a letter of Nov. 1 1647: "They have given themselves a new name; viz., Levellers, for they intend to sett all things straight, and rayse a parity and community in the kingdom."

The Levellers first became prominent in 1647 during the protracted and unsatisfactory negotiations between the King and the Parliament, and while the relations between the latter and the army were very strained. They were mainly found among soldiers; they were opposed to the existence of kingship, and they feared that Cromwell and the other Parliamentary leaders were too complaisant in their dealings with Charles. Led by John Lilburne (*q.v.*) they presented a manifesto, *The Case of the Army truly stated,* to the commander-in-chief, Lord Fairfax, in Oct. 1647. In this they demanded a dissolution of Parliament within a year and substantial changes in the constitution of future Parliaments, which were to be regulated by an unalterable "law paramount." In a second document, *The Agreement of the People,* they expanded these ideas, which were discussed by Cromwell, Ireton, and other officers on the one side, and by John Wildman, Thomas Rainsborough, and Edward Sexby for the Levellers on the other. But no settlement was made, and in Nov. 1647, just after Charles's flight from Hampton Court to Carisbrooke, the Levellers were responsible for the mutiny of two regiments at Corkbush Field, near Ware, which was promptly suppressed by Cromwell.

Early in 1649, just after the death of the King, the Levellers renewed their activity. In a pamphlet, *England's New Chains,* Lilburne asked for the dissolution of the council of State and for a new and reformed parliament. He followed this up with the *Second Part of England's New Chains;* his writings were declared treasonable by Parliament, and in March 1649 he and three other leading Levellers, Richard Overton, William Walwyn and Prince were arrested. The discontent which was spreading in the army was fanned when certain regiments were ordered to proceed to Ireland, and in April 1649 there was a meeting in London; but this was quickly put down by Fairfax and Cromwell, and its leader, Robert Lockyer, was shot. Risings at Burford and at Banbury were also suppressed without any serious difficulty, and the trouble with the Levellers was practically over. The distinguishing mark of the Leveller was a sea-green ribbon.

Another form of the same movement was the assembling of about 50 men on St. George's Hill near Oatlands in Surrey. In April 1649 these "True Levellers" or "Diggers," as they were called, took possession under the direction of Winstanley of some unoccupied ground which they began to cultivate. They were, however, soon dispersed, and their leaders were arrested and brought before Fairfax, when they took the opportunity of denouncing landowners.

In 1724 there was a rising against enclosures in Galloway, and a number of men who took part therein were called Levellers or Dykebreakers (A. Lang, *History of Scotland,* vol. iv.). The word was also used in Ireland during the 18th century to describe a secret revolutionary society similar to the Whiteboys.

LEVELLING: *see* SURVEYING.

LEVEN, ALEXANDER LESLIE, 1ST EARL OF (*c.* 1580–1661), Scottish general, was the son of George Leslie, captain of Blair-in-Athol. He fought under Sir Horace Vere in the Low Countries, and afterwards (1605) under Charles IX. and Gustavus Adolphus of Sweden. In 1626 Leslie had risen by merit to the rank of lieutenant-general, and had been knighted by Gustavus. In 1628 he defended Stralsund against Wallenstein, and in 1630 seized the island of Rügen in the name of the king of Sweden. Leslie was present at Gustavus's last battle at Lützen. Leslie cherished his old commander's memory to the day of his death. He continued as a general officer in the Swedish army for some years, was promoted in 1636 to the rank of field marshal, and continued in the field until 1638, when events recalled him to his own country. He had married long before this—in 1637 his eldest son was made a colonel in the Swedish army—and he had managed to keep in touch with Scottish affairs.

As the foremost Scottish soldier of his day he was naturally nominated to command the Scottish army in the impending war with England, a post which, resigning his Swedish command, he accepted with a glad heart, for he was an ardent Covenanter and had caused "a great number of our commanders in Germany subscryve our covenant" (Baillie's *Letters*). On leaving Sweden he brought back his arrears of pay in the form of cannon and muskets for his new army. One of his first exploits was to take the castle of Edinburgh by surprise, without the loss of a man. He commanded the Scottish army at Dunse Law in May of that year, and in 1640 he invaded England, and defeated the king's troops at Newburn on the Tyne, which gave him possession of Newcastle and of the open country as far as the Tees.

At the treaty with the king at Ripon, Leslie was one of the commissioners of the Scottish parliament, and when Charles visited Edinburgh Leslie entertained him magnificently. Charles created him, by patent dated Holyrood, October 11, 1641, earl of Leven and Lord Balgonie, and made him captain of Edinburgh Castle and a privy councillor. The parliament recognized his services by a grant, and, on his resigning the lord generalship, appointed him commander of the permanent forces. Leven used his great influence in support of a proposal to raise a Scottish army to help the elector palatine in Germany, but the Ulster massacres gave this force, when raised, a fresh direction, and Leven himself accompanied it to Ireland as lord general. He did not remain there long, for the Great Rebellion (*q.v.*) had begun in England, and negotiations were opened between the English and the Scottish parliaments for mutual armed assistance. Leven accepted the command of the new forces raised for the invasion of England.

The military operations preceding Marston Moor are described under GREAT REBELLION, and the battle itself under its own heading. After the battle the allied forces separated, Leven bringing the siege of Newcastle to an end by storming it. In 1645 the Scots were less successful, though their operations ranged from Westmorland to Hereford. Leven's difficulties became pronounced when in 1646 Charles took refuge with the Scottish army. The king remained with Leven until he was handed over to the English parliament in 1647, and Leven constantly urged him to take the covenant and to make peace. Leven was now old and infirm, and though retained as nominal commander-in-chief saw no further active service. When he did resign he was appointed lord general of all new forces that might be raised for the defence of Scotland. The occasion soon came, for Cromwell annihilated the Scottish invaders at Preston and Uttoxeter, and thereupon Argyll assumed political and Leven military control at Edinburgh. But he resigned the effective command to his subordinate (*see* NEWARK, DAVID LESLIE), in whom he had entire confidence.

After the execution of Charles I. the war broke out afresh, and this time the "godly" party acted with the royalists. Leven at last fell into the hands of a party of English dragoons in August 1651, and with some others was sent to London. He remained incarcerated in the Tower for some time, till released on finding securities for £20,000, upon which he retired to his residence in Northumberland. While on a visit to London he was again arrested, for a technical breach of his engagement, but by the intercession of the queen of Sweden he obtained his liberty. He was freed from his engagements in 1654, and retired to his seat at Balgonie in Fifeshire, where he died at an advanced age in 1661.

See Sir W. Fraser, *The Melvilles, Earls of Melville, and the Leslies, Earls of Leven* (1890); and the *Leven and Melville Papers,* edited by the Hon. W. H. Leslie-Melville for the Bannatyne Club (1843).

LEVEN, small burgh, Fifeshire, Scotland. Pop. (est. 1938) 8,201. It is situated on the Firth of Forth, at the mouth of the Leven, $5\frac{3}{4}$ mi. N.E. of Thornton Junction by the L.N.E.R. The old town cross has been erected in the grounds of the peoples' institute. The industries are numerous, comprising flax spinning, papermaking, seed crushing and ropemaking, besides saltworks, engineering works, a sawmill and a bone dust mill. The town is a holiday resort, and the golf links extending for 2 mi. to Lundin are among the best in Scotland. There are collieries in the neigh-

bourhood. Innerleven, on the opposite side of the Leven, is in the small burgh of Buckhaven and Methil. Two miles N.E. is Lundin Mill and Drumochie, usually called Lundin, at the mouth of Kiel Burn, with a station on the Links. Early occupation is suggested by three fine monoliths, and in the vicinity are the remains of an old house of the Lundins, dating from the reign of David II. One mi. east of Lundin lies Largo (pop. of civil parish 2,299 in 1931), consisting of Upper Largo, or Kirkton of Largo, and Lower Largo. A statue of Alexander Selkirk, or Selcraig (1676–1721), the prototype of "Robinson Crusoe," who was born there, was erected in 1886. Sir John Leslie (1766–1832), the natural philosopher, Admiral Sir Philip Durham, commander in chief at Portsmouth from 1836 to 1839, and Sir Andrew Wood, who sailed the "Great Michael," the largest ship of its time, were natives of Largo. When the last named was past active service he had a canal cut from his house to the parish church, to which he was rowed every Sunday in an eight-oared barge.

LEVEN, LOCH, a lake of Kinross-shire, Scotland. It is $3\frac{2}{3}$ m. long and $2\frac{2}{3}$ m. broad, and is situated near the south and east boundaries of the shire, 350 ft. above sea-level. The mean depth is less than 15 ft., with a maximum of 83 ft., the lake being thus one of the shallowest in Scotland. It drains the county and is itself drained by the Leven. It is famous for the Loch Leven trout. The loch contains seven islands. Upon St. Serf's, the largest, which commemorates the patron saint of Fifeshire, are the ruins of the Priory of Portmoak—so named from St. Moak, the first abbot—the oldest Culdee establishment in Scotland. Some time before 961 it was made over to the bishop of St. Andrews, and shortly after 1144 a body of canons regular was established on it in connection with those at St. Andrews. On Castle Island is a castle, dating from the 13th century and occasionally used as a royal residence, which is said to have been in the hands of the English for a time, from whom it was delivered by Wallace. It replaced a still earlier stronghold.

After successfully withstanding Edward Baliol's siege in 1335, it was granted by Robert II. to Sir William Douglas of Lugton and was the prison at various periods of Robert II.; of Alexander Stuart, earl of Buchan, "the Wolf of Badenoch"; Archibald, earl of Douglas (1429); Patrick Graham, archbishop of St. Andrews (who died, still in bondage, on St. Serf's island in 1478), and of Mary, queen of Scots. She signed her abdication within its walls on July 4, 1567, and effected her escape on May 2, 1568. The keys of the castle, which were thrown into the loch during her flight, were found and are preserved at Dalmahoy in Midlothian. Support of Mary's cause had involved Thomas Percy, 7th earl of Northumberland (b. 1528). He too was lodged in the castle in 1569, and after three years' imprisonment was handed over to the English, by whom he was beheaded at York in 1572. The proverb that "Those never got luck who came to Loch Leven" sums up the history of the castle. The causeway connecting the isle with the mainland was long submerged too deeply for use, but reclamation operations in 1826–36 almost brought it into view again.

LEVEN AND MELVILLE, EARLS OF. The family of Melville which holds these two earldoms is descended from Sir John Melville of Raith, Fifeshire, who was executed for high treason on Dec. 13, 1548; he left with other children a son Robert (1527–1621), who in 1616 was created a lord of parliament as Lord Melville of Monymaill. Melville had represented Mary, queen of Scots, at the English court, and he had filled several important offices in Scotland under her son James VI. George (*c.* 1634–1707), 4th lord, was implicated in the Rye House plot, took refuge in the Netherlands in 1683, but returned to England after the revolution of 1688 and was appointed secretary for Scotland by William III. in 1689, being created earl of Melville in the following year. He was president of the Scottish privy council, but he was deprived of his office by Anne. His son David, 2nd earl of Melville (1660–1728), fought for William at Killiecrankie and elsewhere, and as commander-in-chief of the troops in Scotland he dealt promptly and effectively with the attempted Jacobite rising of 1708. In 1712, however, his office was taken from him, and he died on the 6th of June 1728.

LEVER, CHARLES JAMES (1806–1872), Irish novelist of English descent, second son of James Lever, a Dublin architect and builder, was born in the Irish capital on Aug. 31, 1806. His escapades at Trinity college, Dublin (1823–28), whence he took the degree of M.B. in 1831, form the basis of that vast cellarage of anecdote from which all the best vintages in his novels are derived. The inimitable Frank Webber in *Charles O'Malley* (spiritual ancestor of Foker and Mr. Bouncer) was a college friend, Robert Boyle, later on an Irish parson. Lever and Boyle sang ballads of their own composing in the streets of Dublin, after the manner of Fergusson or Goldsmith, filled their caps with coppers and played many other pranks embellished in the pages of *O'Malley, Con Cregan* and *Lord Kilgobbin.* Before seriously embarking upon the medical studies for which he was designed, Lever visited Canada as an unqualified surgeon on an emigrant ship, and has drawn upon some of his experiences in *Con Cregan, Arthur O'Leary* and *Roland Cashel.* Arrived in Canada he plunged into the backwoods, was affiliated to a tribe of Indians and had to escape at the risk of his life, like his own Bagenal Daly.

Back in Europe, he travelled in the guise of a student from Göttingen to Weimar (where he saw Goethe), thence to Vienna; he loved the German student life with its beer, its fighting and its fun, and several of his merry songs, such as "The pope he loved a merry life" (greatly envied by Titmarsh), are on *Student-lied* models. His medical degree admitted him to an appointment from the Board of Health in Co. Clare and then as dispensary doctor at Port Stewart, but the liveliness of his diversions as a country doctor seems to have prejudiced the authorities against him. In 1833 he married his first love, Catherine Baker, and in Feb. 1837, after varied experiences, he began running *The Confessions of Harry Lorrequer* through the pages of the recently established *Dublin University Magazine.* Before *Harry Lorrequer* appeared in volume form (1839), Lever had settled on the strength of a slight diplomatic connection as a fashionable physician in Brussels (16, Rue Ducale). *Lorrequer* was merely a string of Irish and other stories good, bad and indifferent, but mostly rollicking, and Lever, who strung together his anecdotes late at night after the the serious business of the day was done, was astonished at its success. "If this sort of thing amuses them, I can go on for ever." Brussels was indeed a superb place for the observation of half-pay officers, such as Major Monsoon (Commissioner Meade), Captain Bubbleton and the like, who terrorized the *tavernes* of the place with their endless peninsular stories, and of English society a little damaged, which it became the specialty of Lever to depict. He sketched with a free hand, wrote, as he lived, from hand to mouth, and the chief difficulty he experienced was that of getting rid of his characters who "hung about him like those tiresome people who never can make up their minds to bid you good night." Lever had never taken part in a battle himself, but his next three books, *Charles O'Malley* (1841), *Jack Hinton* and *Tom Burke of Ours* (1843), written under the spur of the writer's chronic extravagance, contain some of the most animated battle-pieces on record. Condemned by the critics, Lever had completely won the general reader from the Iron Duke himself downwards.

In 1842 he returned to Dublin to edit the *Dublin University Magazine,* and gathered round him a typical coterie of Irish wits (including one or two hornets) such as the O'Sullivans, Archer Butler, W. Carleton, Sir William Wilde, Canon Hayman, D. F. McCarthy, McGlashan, Dr. Kenealy and many others. At his house at Templeogue he entertained Thackeray, and the Waterloo episode in *Vanity Fair* is said to have been suggested by the conversation there. But the "Galway pace," the display he found it necessary to maintain at Templeogue, the stable full of horses, the cards, the friends to entertain, the quarrels to compose and the enormous rapidity with which he had to complete *Tom Burke, The O'Donoghue* and *Arthur O'Leary* (1845), made his native land an impossible place for Lever to continue in. In 1845 he resigned his editorship and went back to Brussels, whence he started upon an unlimited tour of Central Europe in a family coach. Now and again he halted for a few months, and entertained to the limit of his resources in some ducal castle

or other which he hired for an off season. Thus at Riedenburg, near Bregenz, in Aug. 1846, he entertained Charles Dickens and his wife and other well-known people. Like his own *Daltons* or *Dodd Family Abroad* he travelled continentally, from Carlsruhe to Como, from Como to Florence, from Florence to the Baths of Lucca and so on, and his letters home are the litany of the literary remittance man, his ambition now limited to driving a pair of novels abreast without a diminution of his standard price for serial work ("£20 a sheet"). In the *Knight of Gwynne,* a story of the Union (1847), *Con Cregan* (1849), *Roland Cashel* (1850) and *Maurice Tiernay* (1852) we still have traces of his old manner; but he was beginning to lose his original joy in composition.

Lever's *fond* of sadness began to cloud the animal joyousness of his temperament. Formerly he had written for the happy world which is young and curly and merry; now he grew fat and bald and grave. But, depressed in spirit as he was, his wit was unextinguished; he was still the delight of the *salons* with his stories, and in 1867, after a few years' experience of a similar kind at Spezia, he was cheered by a letter from Lord Derby offering him the more lucrative consulship of Trieste. "Here is six hundred a year for doing nothing, and you are just the man to do it." The six hundred could not atone to Lever for the lassitude of prolonged exile in a place he came to dislike heartily. He had unscrupulous friends who assured him that his last efforts were his best. They include *The Fortunes of Glencore* (1857), *Tony Butler* (1865), *Luttrell of Arran* (1865), *Sir Brooke Fosbrooke* (1866), *Lord Kilgobbin* (1872) and the table-talk of *Cornelius O'Dowd,* originally contributed to Blackwood. His depression, partly due to incipient heart disease, was confirmed by the death of his wife (April 23, 1870), to whom he was tenderly attached. He died at Trieste on June 1, 1872.

Trollope praised Lever's novels highly when he said that they were just like his conversation. He was a born raconteur, and had in perfection that easy flow of light description which without tedium or hurry leads up to the point of the good stories of which in earlier days his supply seemed inexhaustible. With little respect for unity of action or conventional novel structure, his brightest books, such as *Lorrequer, O'Malley* and *Tom Burke,* are in fact little more than recitals of scenes in the life of a particular "hero," unconnected by any continuous intrigue. The type of character he depicted is for the most part elementary. His women are mostly rouées, romps or Xanthippes; his heroes have too much of the Pickle temper about them and fall an easy prey to the serious attacks of Poe or to the more playful gibes of Thackeray in *Phil Fogarty* or Bret Harte in *Terence Deuville.* This last is a perfect bit of burlesque. Terence exchanges 19 shots with the Hon. Captain Henry Somerset in the glen. "At each fire I shot away a button from his uniform. As my last bullet shot off the last button from his sleeve, I remarked quietly, 'You seem now, my lord, to be almost as ragged as the gentry you sneered at,' and rode haughtily away." And yet these careless sketches contain such haunting creations as Frank Webber, Major Monsoon and Micky Free, "the Sam Weller of Ireland." Falstaff is alone in the literature of the world; but if ever there came a later Falstaff, Monsoon was the man. As for Baby Blake, is she not an Irish Di Vernon? The critics may praise Lever's thoughtful and careful later novels as they will, but *Charles O'Malley* will always be the pattern of a military romance.

The chief authorities are the *Life,* by W. J. Fitzpatrick (1879), and the *Letters,* ed. in 2 vols. by Edmund Downey (1906), neither of which, however, enables the reader to penetrate below the surface. *See* also Dr. Garnett in *Dict. Nat. Biog.; Dublin Univ. Mag.* (1880), 465 and 570; Anthony Trollope's *Autobiography* (1883); *Blackwood* (Aug. 1862); *Fortnightly Review,* vol. xxxii.; Andrew Lang, *Essays in Little* (1892); W. E. Henley, *Views and Reviews* (1890); Hugh Walker, *Literature of the Victorian Era* (1910); *The Bookman Hist. of English Literature* (1906), p. 467; *Bookman* (June 1906; portraits). A library edition of the novels in 37 vols. appeared 1897–99 under the superintendence of Lever's daughter, Julie Kate Neville. (T. S.; X.)

LEVER, a mechanical device for raising bodies (*see* MECHANICS).

LEVER BROTHERS & UNILEVER LIMITED. This British joint stock company came into existence in 1937 as a result of an amalgamation between the soap manufacturing business which was founded under the name Lever Brothers Limited by the late William Hesketh Lever, first Viscount Leverhulme (*q.v.*), and Unilever Limited, formerly Margarine Union Limited, which in turn was an amalgamation of the margarine manufacturing business carried on in Great Britain by the Jurgens and Van den Bergh companies.

In 1887 Lever had bought 52ac. of land near Birkenhead and founded Port Sunlight. In 1889 manufacture was begun in the first soapery, a comparatively small factory; in 1928 the Port Sunlight works covered an area of 287ac. and employed about 7,000 people. By acquiring land for the cultivation of the cocopalm in the Solomon Islands, a concession in the Belgian Congo, and the Niger Company Limited, the business made itself independent of outside sources of raw material.

In 1939 the company, through its subsidiary and associated companies, did much more than manufacture soap and margarine. Its interests were divided into three main parts: (1) the production of all kinds of soap and allied products, of margarine and all kinds of edible fats, oils and cattle cake; (2) the production of raw materials, including the produce of tropical plantations and whaling expeditions; (3) edible produce, including fish, canned goods and ice-cream, and sundry products including paper and packing materials.

At December 31, 1938, the paid up capital of the company was £67,445,925 and in addition there was £5,086,531 of debenture stock. Taking into account subsidiary and allied companies the total capital employed in the business was more than £105,000,000. The turnover is about £95,000,000 a year.

The activities of the company are confined to the British Empire. Closely associated with the company is Lever Brothers & Unilever N.V. of Holland, which owns in the rest of the world soap, margarine and other interests of a similar nature to those owned by the British company within the empire. The paid up capital of the Dutch company (1938) was Fl.304,766,000, and taking into account subsidiary and allied companies, the turnover was about Fl.525,000,000.

The Boards of the two companies consist of the same directors.

There is an agreement between the two companies for the equalization of the dividends on their ordinary capitals and for the pooling of their assets in the event of a winding-up, the underlying principle being that each unit of ownership in the British company evidenced by £1 of ordinary capital and each unit of ownership in the Dutch company evidenced by Fl.12 of ordinary capital should as nearly as possible be the same as if each unit formed part of the ordinary capital of one and the same company, and the same principle applies to future issues of ordinary capital by either company. (L. C. M.; X.)

LEVERET: *see* HARE.

LEVERHULME, WILLIAM HESKETH LEVER, 1ST VISCOUNT (1851–1925), British man of business born at Bolton, Lancs, on Sept. 19, 1851, was the son of James Lever, a grocer. His education, received at the Bolton Church Institute, was cut short in 1867 when he went into his father's wholesale warehouse as an apprentice. In 1877, having foreseen that important economies in transport of goods could be effected by opening a branch of the business in Wigan, he established a centre there, which ultimately became more profitable than the Bolton headquarters. By 1884 this had ceased to interest him; the fact that he chose soap for his activities was an accident of his early upbringing; salesmanship in itself was what interested him. He leased a small and unsuccessful soapworks at Warrington, and turned it into a nation-wide business. His success was largely due to widespread advertising and a flair for the requirements of the consumer, whose point of view he never forgot. He found a site for the necessary expansion of the business near Bebington, Cheshire, where on Bromborough Pool Mrs. Lever on March 3, 1888, cut the first sod for the foundations of Port Sunlight, the now famed model industrial village, a conspicuous example of successful town planning.

The firm's expansion overseas has become world-wide by his system of associated companies, which in 1925 numbered 250

Through Bromborough Pool and the Mersey, Lord Leverhulme had from Port Sunlight secured access by water to London and to British ports generally for home trade, and to the waterways of the world for his exports, as well as to the sources of the raw materials for soap manufacture. Mr. Lever and his brother, before they moved to Port Sunlight, had determined that their employees should share in their prosperity. The prosperity sharing pledge was primarily redeemed in the creation of Port Sunlight village with its abundant amenities, in the spaciousness of the factory area and in the arrangements now comprehended in the term "factory workers' welfare." Those who lived in the village further enjoyed "prosperity-sharing rents," based on the cost of maintenance repairs and renewals, the interest on the capital expended being a charge on the company's profits. The same principle was applied to works welfare expenses, beginning with a pensions scheme called the Employes' Benefit Fund, long service awards, cottage hospital, holiday club, but including in later days the co-partnership scheme and the many benefits flowing from it, *e.g.*, free insurance policies, unemployment and sickness benefits, staff college training and scholarships.

In 1906 an attack was directed by a powerful Press organization against an arrangement made by Mr. Lever with some other soap makers, which was mistakenly denounced as a soap trust. Legal action was taken, and the imputations withdrawn. In 1906 he became Liberal M.P. for Wirral.

In 1909 Lever launched his scheme of co-partnership with employees. This scheme was typical of the man, and perhaps hardly a practicable model for general use. The complete autocrat, his generosity stopped short of any share in management. The scheme amounted to an annual gift out of his own pocket as sole ordinary shareholder. In 1911 he was made a baronet; in 1913 Lady Lever died; she is commemorated by the Lady Lever Memorial art gallery.

He was raised to the peerage in 1917 as Baron Leverhulme of Bolton-le-Moors. He received a viscounty in 1922.

In 1918 Lord Leverhulme advocated the running of machinery in factories in double shifts of six hours in order to absorb the unemployed and to increase production at a lower cost. (*See* his book *The Six-Hour Day and Other Industrial Questions.*) He now bought from Col. Duncan Matheson the Island of Lewis, acquiring later North and South Harris also. He spent large sums in a sincere effort to extend and develop the fishing industry and to help the islanders in other ways, but lack of support led to the abandonment of his schemes as far as Lewis was concerned; and he gave the town of Stornoway, including Lewis Castle and its grounds, to the people of Stornoway. He continued his developments in Harris, where more local appreciation was shown, until his death. One of Leverhulme's personal enterprises for the economic development of his Hebridean properties was the opening or acquisition in 1919 of numerous retail fish shops, to serve as an outlet for the fishing industry of Lewis and Harris.

He died on May 7, 1925.

See *Viscount Leverhulme,* by his son (1925).

LEVERRIER, URBAIN JEAN JOSEPH (1811–1877), French astronomer, was born at St. Lô in Normandy on March 11, 1811. His father made great efforts to send him to Paris, where a brilliant examination gained him, in 1831, admittance to the École Polytechnique. The distinction of his career there was rewarded with a free choice amongst the departments of the public service open to pupils of the school. He selected the administration of tobaccos, and gave striking proof of ability in two papers on the combinations of phosphorus with hydrogen and oxygen, published in *Annales de Chimie et de Physique* (1835 and 1837). The place of teacher of astronomy at the École Polytechnique falling vacant in 1837, it was offered to and accepted by Leverrier, who, "docile to circumstance," instantly abandoned chemistry, and directed the whole of his powers to celestial mechanics. Pursuing the investigations of Laplace, he demonstrated with greater rigour the stability of the solar system, and calculated the limits within which the eccentricities and inclinations of the planetary orbits vary. This remarkable début excited much attention, and, on the recommendation of F. Arago, he took in hand the theory of Mercury, producing, in 1843, vastly improved tables of that planet. The perturbations of the comets discovered, the one by H. A. E. A. Faye in 1843, the other by Francesco de Vico a year later, were minutely investigated by Leverrier. Recalled once more, by the summons of Arago, to planetary studies, he was this time invited to turn his attention to Uranus. Step by step he advanced to the great discovery which has immortalized his name. Carefully sifting all the known causes of disturbance, he showed that one previously unknown had to be reckoned with, and on Sept. 23, 1846, the planet Neptune was discerned by J. G. Galle (d. 1910) at Berlin, within one degree of the spot Leverrier had indicated. (*See* NEPTUNE.)

This memorable achievement was greeted with an outburst of public enthusiasm. Academies vied with each other in enrolling Leverrier among their members; the Royal society awarded him the Copley medal; the king of Denmark sent him the order of the Dannebrog; he was named officer in the Legion of Honour, and preceptor to the comte de Paris; a chair of astronomy was created for his benefit at the Faculty of Sciences; he was appointed adjunct astronomer to the Bureau of Longitudes. On Jan. 30, 1854, he succeeded Arago as director of the Paris observatory. The institution had fallen into a state of inefficiency and Leverrier placed it on a totally new footing. His uncompromising measures and unconciliatory manner of enforcing them raised a storm only appeased by his removal on Feb. 5, 1870. On the death of his successor Delaunay (1816–1872), he was reinstated by Thiers, but with authority restricted by the supervision of a council. In the midst of these disquietudes, he executed a task of gigantic proportions. This was nothing less than the complete revision of the planetary theories, followed by a laborious comparison of results with the most authentic observations, and the construction of tables representing the movements thus corrected. Three weeks after he had affixed his signature to the printed sheets of the theory of Neptune he died at Paris on Sept. 23, 1877. Leverrier's aim was the elaboration of the scheme of the heavens traced out by Laplace in *Mécanique céleste,* and the discovery of Neptune with which his name is popularly identified was only incidental. He twice received the gold medal of the Royal Astronomical society, London (1868, 1876).

Leverrier is credited with one of the most important developments in modern meteorology through his demonstration, in 1854, that the paths of storms could be traced and even predicted by means of daily telegraphic weather reports collected from stations scattered over a large area. The French navy suffered severe losses during the Crimean War in 1853 in a storm in the Black sea. Leverrier, then a hero of the scientific world, was asked to investigate the possibility of predicting this storm. He showed that by plotting on a map the observations taken at the same time each day at the stations then in existence, the course of the storm could have been charted as it moved across Europe. Later the telegraph came into general use and it was possible to collect the observations in time to make weather forecasts. Thus the synoptic chart or weather map was born. Leverrier in later years had the pleasure of participating in the formation of co-operating national meteorological services in Europe for the telegraphic collection and dissemination of daily weather reports and forecasts.

The *Annales de l'Observatoire de Paris,* the publication of which was set on foot by Leverrier, contain, in vols. i.–vi. (*Mémoires*) (1855–61) and x.–xiv. (1874–77), his theories and tables of the several planets. In vol. i. will be found, besides his masterly report on the observatory, a general theory of secular inequalities, in which the development of the disturbing function was carried further than had previously been attempted. His planetary and solar tables were adopted by the *Nautical Almanac,* as well as by the *Connaissance des temps.*

The memoirs and papers communicated by him to the Academy were summarized in *Comptes rendus* (1839–76), and the more important published in full either separately or in the *Conn. des temps* and the *Journal des mathématiques.* That entitled *Développemens sur différents points de la théorie des perturbations* (1841), was translated in part xviii. of Taylor's *Scientific Memoirs.*

LEVERTIN, OSCAR IVAN (1862–1906), Swedish poet and man of letters, was born of Jewish parents at Norrköping on July 17, 1862. He received his doctorate in letters at Upsala in 1887, and was subsequently *docent* at Upsala, and later professor of literature at Stockholm. He began by being an extreme follower of the naturalist school, but on his return in 1890 from a two years' residence in Davos he wrote, in collaboration with the poet C. G. Verner von Heidenstam (b. 1859) a novel, *Pepitas bröllop* (1890), which was a direct attack on naturalism. His later volumes of short stories, *Rococonoveller* and *Sista noveller,* are fine examples of modern Swedish fiction. The lyrical beauty of his poems, *Legender och visor* (1891), placed him at the head of the romantic reaction in Sweden. In his poems entitled *Nya Dikter* (1894) he drew his material partly from mediaeval sources, and a third volume of poetry in 1902 sustained his reputation. His last poetical work (1905) was *Kung Salomo och Morolf,* poems founded on an eastern legend. As a critic he first attracted attention by his books on the Gustavian age of Swedish letters: *Teater*

och drama under Gustaf III. (1889), etc. At the time of his death (Sept. 22, 1906) he was working on his *Linné,* posthumously published, a fragment of a great work on Linnaeus.

LEVI, SYLVAIN (1863–1935), French orientalist, was born in Paris on March 28, 1863. Educated at the University of Paris, in 1886 he was appointed a lecturer at the school of higher studies in Paris. As special lecturer in Sanskrit he taught at the faculty of letters from 1889 to 1894 when he was appointed to a professorship at the Collège de France. In 1897 and 1898 he made tours of scientific research in India and Japan, and from 1921 to 1923 he travelled in India, Indo-China, Japan, Korea, Siberia and Russia. Prof. Levi became a director at the school of higher studies and a member of numerous societies, including the Royal Asiatic Society, the Linguistic Society and the Society of Jewish Studies. His works include *Le théâtre indien* (1890); *La doctrine du sacrifice dans les Brahmanas* (1898); *Le Népal* (1905–08); *Dans l'Inde* (1925); *L'Inde et le monde* (1925).

LEVIATHAN, the Hebrew name of a gigantic animal, apparently the sea or water equivalent of behemoth (*q.v.*). In Job xli. 15 it would seem to represent the crocodile, in Isaiah xxvii. 1 it is a crooked and piercing serpent, the dragon of the sea; *cf.* Psalms civ. 26. Apart from its scriptural usage, the word is applied to any gigantic marine animal. Hobbes adopted the name as the title of his principal work, applying it to "the multitude so united in one person . . . called a commonwealth. . . ."

LEVICO, town, province of Trento, Italy, 25 mi. east of the town of Trento by rail, 1,660 ft. above sea level. Pop. (1936) 3,454 (town) 5,431 (commune). It is in the valley of the Brenta which is known as the Val Sugana. Arsenical springs for both drinking and bathing rise on the Monte Fronte, 4,700 feet above sea level, and are brought down by pipes. Six mi. E. is Roncegno with similar springs. Both places lie in beautiful surroundings: they were damaged during World War I but were rebuilt.

LEVIRATE. In ancient Hebrew usage when a man died without sons, his brother was required to marry the widow and get a son by her, who was counted the son of the dead man and so carried on the line. An analogous custom existed in Vedic times for it appears clearly "in the burial ritual of the Rigveda, that the brother-in-law of the dead man should marry the widow, probably only in cases where the dead had left no son and it was therefore imperative that steps should be taken to secure him offspring; for the Rigveda recognizes to the full the keen desire of the Vedic Indian for a child to perform his funeral rites" (*Cambridge History of India,* vol. i., p. 89, A. B. Keith, 1922). In the view of Sir James Frazer, the levirate is complementary to the sororate (*q.v.*), and originated in a particular form of group marriage, namely, in the marriage of a group of brothers to a group of sisters, but survived and assumed a different character in changed surroundings. (*Folklore of the Old Testament,* vol. ii. p. 339.) This view has been examined by Professor Westermarck who admits that it is very widespread but is so easily explained by existing conditions that it ought not to be regarded as a survival at all, for wives are inherited like other belongings. This is in accord with the view of people practising the custom: and in the beliefs attached to the importance of male issue, both on religious and on social grounds, we may find the explanation and the justification of the custom, without hypothetical reconstructions of the social history of mankind from the distorted, imperfectly understood and even, it is feared, inaccurately recorded customs of backward peoples whose chequered history is hid from us.

See Westermarck, *History of Human Marriage,* vol. iii. (1921).

LÉVIS (formerly Pointe Levi), the chief town of Lévis county, Quebec, Canada, situated on the precipitous south bank of the St. Lawrence, opposite Quebec city. Pop. (1941) 11,991. It is on the Canadian National railway. It contains the Lorne dock, a Dominion government 1,150-ft. graving dock which can accommodate any ship afloat.

Levis is an important centre of the river and transatlantic trade, and is connected by steam ferries with the city of Quebec. It is named after the maréchal duc de Lévis, the last commander of the French troops in Canada.

LEVITATION, the raising of a body in the air without mechanical means. The tradition of the levitation of the human body is ancient and wide-spread. In the *Puranas* of India there is an exact Sanskrit equivalent, *laghiman* (from *laghu,* light, Lat. *levis*), defined as "the preternatural power of making oneself light at will." The Buddhist *Suttas* describe a similar power. Salverte, in *The Philosophy of Magic,* says: "The enthusiastic disciples of Iamblichus (d. at Chalcis, *c.* A.D. 333) affirmed that when he prayed he was raised to the height of ten cubits from the ground." The most remarkable modern report of levitation is the story of Joseph of Cupertino (1603–1663), so named from a village in S. Italy between Brindisi and Otranto. After he was admitted to the Franciscan order it was said of him that "frequently he would be raised from his feet and remain suspended in the air. Since such occurrences in public caused much admiration and also disturbance in a community, Joseph for 35 years was not allowed to attend choir, but was ordered to remain in his room, where a private chapel was prepared for him." He practised extreme mortification and fasting. Of Daniel Dunglas Home (1833–1886) Mr. (later Sir William) Crookes F.R.S. writes in the *Quarterly Journal of Science* (Jan. 1874), of which he was editor: "On three separate occasions have I seen him raised completely from the floor of the room. . . . There are at least a hundred recorded instances of Home's rising from the ground, in the presence of as many separate persons, and I have heard from the lips of the three witnesses to the most striking occurrence of this kind (the Earl of Dunraven, Lord Lindsay and Captain C. Wynne) their own most minute accounts of what took place. . . . The accumulated testimony establishing Mr. Home's levitations is overwhelming." This striking occurrence took place at Ashley house, London, on Dec. 16, 1868. Home, believed to be in a trance, was carried out through one window and into another seven feet away, and 70 feet from the ground. Dr. R. Chambers and Dr. Lockhart Robinson were also convinced.

The appearance of levitation has been imitated by many stage magicians, Robert-Houdin among others, but obviously under wholly different conditions.

LEVITES, or sons of Levi (son of Jacob by Leah), a sacred caste in ancient Israel, the guardians of the temple service at Jerusalem.

Place in Ritual.—In the developed hierarchical system the ministers of the sanctuary are divided into distinct grades. All are "Levites" by descent, and are thus correlated in the genealogical and other lists, but the true priesthood is confined to the sons of Aaron, while the mass of the Levites are subordinate servants who are not entitled to approach the altar or to perform any strictly priestly function. All access to the Deity is restricted to the one priesthood and to the one sanctuary at Jerusalem; the worshipping subject is the nation of Israel as a unity, and the function of worship is discharged on its behalf by divinely chosen priests. The ordinary individual may not intrude under penalty of death; only those of Levitical origin may perform service, and they are essentially the servants and hereditary serfs of the Aaronite priests (*see* Num. xviii.). But such a scheme finds no place in the monarchy; it presupposes a hierocracy under which the priesthood increased its rights by claiming the privileges which past kings had enjoyed; it is the outcome of a complicated development in Old Testament religion in the light of which it is to be followed (*see* HEBREW RELIGION).

We may distinguish three stages in this development. (*a*) An early period in which there was no *tribal* restriction on the priesthood or on offices connected with the sanctuary. Thus we find Micah consecrating one of his own sons as priest (Jud. xvii. 5), and Samuel seems to have been an Ephraimite by birth. The more menial offices connected with Solomon's temple were performed by the royal body-guard or by slaves especially dedicated ("Nethinim")—usually foreigners. At the same time there is evidence which suggests a distinct preference for Levites (*cf.* Jud. xvii. 13).

(*b*) A period in which all Levites, and Levites only, were eligible for the priesthood. This is represented in the literature of the Old Testament by Deuteronomy and Ezekiel. Both use the phrase "the priests. the Levites," though Ezekiel makes a distinction

between those who had ministered at the local sanctuaries (to him, as a Jerusalem priest, an illicit cult), and the sons of Zadok who were the proper attendants of the sanctuary at Jerusalem. The former are condemned to menial offices, while the higher duties are reserved for the latter (Ezek. xliii. 19, xliv. 10, 15). This is the position which would naturally follow on the centralisation of sacrifice in Jerusalem. Though we have no direct evidence to prove that Ezekiel's attempt to limit the priesthood proper to the family of Zadok succeeded, it is quite possible that this condition persisted till the promulgation of P.

(*c*) The last stage, in which the priesthood was confined to the family of Aaron. This is usually traced back to the time of Ezra, and was certainly the rule for the whole of the Greek and Roman periods. The term "Levite" now includes (through some fictitious genealogy) the former menial attendants, and the whole body of non-Aaronic Levites is now placed on the same level.

Origin of the Levites.—Biblical tradition is practically unanimous in tracing back the Levites to the third son of Jacob and Leah. But the earliest reference to the tribe as a tribe is found in Gen. xlix. 5–7, where, along with Simeon (*q.v.*), it is condemned as bloodthirsty and cruel. To the same traditional element probably belongs the story of the slaughter of the Shechemites by these two brothers (Gen. xxxiv. 25–30), and the language of Gen. xlix. 7 suggests that the tribe disappeared in the same way as Simeon. Further, certain Minaean inscriptions have been found in north Arabia (at El-Öla) in which the cognate word *lawi'a* (together with a feminine form) occurs in the simple sense of "priest." It has, then, been conjectured that the term originally implied occupation and not descent.

At the same time the tradition of a common descent is so persistent that it is difficult to disregard it, and the Minaean parallel may be accidental. There seems no real reason to doubt the tradition which makes Moses and Aaron members of this tribe, and its special devotion to Yahweh, the God introduced by Moses to Israel, is illustrated by the story of the vengeance they took on the calf-worshippers at Sinai (Ex. xxxii. 26 *sqq.*). Since Moses seems to have derived his knowledge of the cult of Yahweh, not in Israel, but among the tribes of the north of the Sinai peninsula (Midianites, Kenites, etc.), it has been suggested that the Levites, as a tribe, belonged to a group which entered the country from the south, along with the Kenites and Danites, independently of the great invasion of the Israelites under Joshua. It accords with this theory that the first mention of a Levitical sanctuary in the north connects its establishment with the migration of the tribe of Dan.

(S.A.C.; T.H.R.)

LEVITICUS, in the Bible, the third book of the Pentateuch. The name is derived from that of the Septuagint version (*το λευ[ε]ιτικόν*) (*sc. βιβλίον*), though the English form is due to the Latin rendering *Leviticus* (sc. *liber*). As a descriptive title *Leviticus,* "the Levitical book," is not inappropriate to the contents of the book, which exhibits an elaborate system of sacrificial worship. In this connection, however, the term "Levitical" is used in a perfectly general sense, since there is no reference in the book itself to the Levites themselves.

The book of Leviticus presents a marked contrast to the two preceding books of the Pentateuch in that it is derived from one document only, viz., the Priestly Code (P), and contains no trace of the other documents J, E, or D (*see* BIBLE: *Old Testament: Higher and Historical Criticism*). The dominant interest is priestly, and the contents are almost wholly legislative, not historical. But they are by no means homogeneous, and the occurrence of repetitions and divergencies, the variations of standpoint and practice, and, at times, the linguistic peculiarities, point no less clearly to diversity of origin.

I. **The Laws of Sacrifice.** Chap. i.–vii. This group of laws clearly formed no part of the original narrative of P since it interrupts the connection of chap. viii. with Exod. xl. This conclusion does not necessarily involve a late date for the laws themselves, many of which have the appearance of great antiquity, though their original form has been considerably modified. The collection falls into two divisions, (*a*) i.–vi. 7 (Heb. v. 26) and (*b*) vi. 8 (Heb. vi. 1)–vii., the former being addressed to the people and the latter to the priests. The laws contained in (*a*) refer to (1) burnt-offerings, i.; (2) meal-offerings, ii.; (3) peace-offerings, iii.; (4) sin-offerings, iv.; (5) trespass-offerings, v. 14–vi. 7 (Heb. v. 14–26). The laws in (*b*) cover practically the same ground, with the addition of certain regulations as to the shares of the priests. Originally the two groups must have been independent, for (*a*) the order is different, and (*b*) the laws in vi. 8–vii. are regularly introduced by the formula "This is the law of. . . ." Most probably the second group was excerpted by the editor of chaps. i.–vii. from another collection for the purpose of supplementing the laws of i.–v., more especially on points connected with the functions and dues of the officiating priests. Both groups of laws, however, contain heterogeneous elements and their present form is the result of a long process of development.

Chaps. viii.–x. form the original sequel to Exod. xl. They describe (*a*) the consecration of Aaron and his sons, a ceremony which lasted seven days (viii.), and (*b*) the public worship on the eighth day, at which Aaron and his sons officiated for the first time as priests (ix.); then follow (*c*) an account of the death of Nadab and Abihu for offering strange fire (x. 1–5); (*d*) various regulations affecting the priests (12–15), and (*e*) an explanation, in narrative form, of the departure in ix. 15 from the rules for the sin-offering given in vi. 30 (16–20).

Chap. ix. describes the first solemn act of worship after the consecration of Aaron and his sons. The ceremony consists of (*a*) the offerings for Aaron, and (*b*) those for the congregation; then follows the priestly blessing (*v.* 22), after which Moses and Aaron enter the sanctuary, and on reappearing once more bless the people. The ceremony terminates with the appearance of the glory of Yahweh, accompanied by a fire which consumes the sacrifices on the altar. Apart from a few redactional glosses the chapter as a whole belongs to P. The punishment of Nadab and Abihu by death for offering "strange fire" (x. 1–5) forms a natural sequel to chap. ix. To this incident a number of disconnected regulations affecting the priests have been attached, of which the first, viz., the prohibition of mourning to Aaron and his sons (*vv.* 6, 7), alone has any connection with the immediate context. The second passage (*vv.* 8, 9), which prohibits the use of wine and strong drink to the priest when on duty, is clearly a later addition. In x. 16–20, we have an interesting example of the latest type of additions to the Hexateuch. According to ix. 15 (*cf.* v. 11) the priests had burnt the flesh of the sin-offering which had been offered on behalf of the congregation, although its blood had not been taken into the inner sanctuary (*cf.* iv. 1–21, vi. 26). Such treatment, though perfectly legitimate according to the older legislation (Exod. xxix. 14), seemed to a later redactor to demand an explanation, and this is furnished in the present section.

II. **The Laws of Purification.**—Chaps. xi.–xv. This collection of laws comprises four main sections relating to (1) clean and unclean beasts (xi.), (2) childbirth (xii.), (3) leprosy (xiii., xiv.), and (4) certain natural secretions (xv.). These laws, or *tōrōth,* are so closely allied to each other by their contents and literary form that they must originally have been one collection. The collection, however, has clearly undergone more than one redaction before reaching its final form. For chap. xii. which in *v.* 2 presupposes chap. xv. must originally have followed after that chapter, while the contents of the different sections exhibit clear traces of repeated revision. At the same time, it seems, like chaps. i.–vii., xvii.–xxvi., to have been formed independently of P and to have been added to that document by a later editor; for in its present position it interrupts the main thread of P's narrative, chap. xvi. forming the natural continuation of chap. x.; and, further, the inclusion of Aaron as well as Moses in the formula of address (xi. 1, xiii. 1, xiv. 33, xv. 1) is contrary to the usage of P.

Chap. xi. consists of two main sections, of which the first (*vv.* 1–23, 41–47) contains directions as to the clean and unclean animals which may or may not be used for food, while the second (*vv.* 24–40) treats of the defilement caused by contact with the carcasses of unclean animals (in *v.* 39 contact with clean animals after death is also forbidden), and prescribes certain rites of purification. Many scholars maintain that the first section is a mis-

placed portion of the Law of Holiness, but the evidence only justifies the assignment of *vv.* 43–45 to that code. The close resemblance of xi. 2–23 to Deut. xiv. 4–20 is best explained on the theory that both passages were derived separately from an earlier source. Chap. xii. prescribes regulations for the purification of a woman after the birth of (*a*) a male and (*b*) a female child. It has already been pointed out that this chapter would follow more suitably after chap. xv., with which it is closely allied in regard to subject-matter. The closing formula (*v.* 7) shows clearly that, as in the case of *vv.* 7–13 (*cf.* i. 14–17), the concessions in favour of the poorer worshipper are a later addition. In chaps. xiii., xiv., the regulations concerning leprosy fall readily into four main divisions: (*a*) xiii. 1–46*a*, an elaborate description of the symptoms common to the earlier stages of leprosy and other skin diseases; (*b*) xiii. 47–59, a further description of different kinds of mould or fungus-growth affecting stuffs and leather; (*c*) xiv. 1–32, the rites of purification to be employed after the healing of leprosy; and (*d*) xiv. 33–53, regulations dealing with the appearance of patches of mould or mildew on the walls of a house.

It may be regarded as certain that chap. xvi. consists of three main elements, only one of which was originally connected with the ceremonial of the Day of Atonement, and that it has passed through more than one stage of revision. The chapter consists of three independent sections: (1) *vv.* 1–4, 6, 12, 13, 34*b* (probably *vv.* 23, 24 also form part of this section), regulations to be observed by Aaron whenever he might enter "the holy place within the veil." These regulations are the natural outcome of the death of Nadab and Abihu (x. 1–5), and their object is to guard Aaron from a similar fate; the section thus forms the direct continuation of chap. x.; (2) *vv.* 29–34*a*, rules for the observance of a yearly fast day, having for their object the purification of the sanctuary and of the people; (3) *vv.* 5, 7–10, 14–22, 26–28, a later expansion of the blood ritual to be performed by the high priest when he enters the Holy of Holies, with which is combined the strange ceremony of the goat which is sent away into the wilderness to Azazel. No mention is made of the Day of Atonement in the pre-exilic period, and it is a plausible conjecture that the present law arose from the desire to turn the spontaneous fasting of Neh. ix. 1 into an annual ceremony; in any case directions as to the annual performance of the rite must originally have preceded *vv.* 29 *seq.* Possibly the omission of this introduction is due to the redactor who combined (1) and (2) by transferring the regulations of (1) to the ritual of the annual Day of Atonement. At a later period the ritual was further developed by the inclusion of the additional ceremonial contained in (3).

III. **The Law of Holiness.**—Chaps. xvii.–xxvi. The group of laws contained in these chapters has long been recognized as standing apart from the rest of the legislation set forth in Leviticus. For, though they display undeniable affinity with P, they also exhibit certain features which distinguish them from that document. The most noticeable of these is the prominence assigned to certain leading ideas and motives, especially to that of *holiness*. The idea of holiness, indeed, is so characteristic of the entire group that the title "Law of Holiness," first given to it by Klostermann (1877), has been generally adopted. The term "holiness" in this connection consists positively in the fulfilment of ceremonial obligations, and negatively in abstaining from the defilement caused by heathen customs and superstitions, but it also includes obedience to the moral requirements of the religion of Yahweh. On the literary side also the chapters are distinguished by the paraenetic setting in which the laws are embedded and by the use of a special terminology, many of the words and phrases occurring rarely, if ever, in P (for a list of characteristic phrases *cf.* S. R. Driver, *Lit. of O.T.*, p. 49). Further, the structure of these chapters, which closely resembles that of the other two Hexateuchal codes (Exod. xx. 22–xxiii. and Deut. xii.–xxviii.), may reasonably be adduced in support of their independent origin. All three codes contain a somewhat miscellaneous collection of laws; all alike commence with regulations as to the place of sacrifice and close with an exhortation. Lastly, some of the laws treat of subjects which have already been dealt with in P (*cf.* xvii. 10–14 and vii. 26 f., xix. 6–8 and vii. 15–18). It is hardly doubtful also that the group of laws which form the basis of chaps. xvii.–xxvi., besides being independent of P, represent an older stage of legislation than that code. For the sacrificial system of H (=Law of Holiness) is less developed than that of P, and in particular shows no knowledge of the sin- and trespass-offerings; the high priest is only *primus inter pares* among his brethren, xxi. 10 (*cf.* Lev. x. 6, 7, where the same prohibition is extended to all the priests); the distinction between "holy" and "most holy" things (Num. xviii. 8) is unknown to Lev. xxii. (Lev. xxi. 22 is a later addition). On the other hand the points of resemblance with P which this code presents us are mainly due to the compiler who combined H with P. But though it may be regarded as certain that H existed as an independent code, it cannot be maintained that the laws which it contains are all of the same origin or belong to the same age. The evidence rather shows that they were first collected by an editor before they were incorporated in P. Thus there is a marked difference in style between the laws themselves and the paraenetic setting in which they are embedded; and it is not unnatural to conjecture that this setting is the work of the first editor. It is generally recognized that H, in its present form, is incomplete. The original code must, it is felt, have included many other subjects now passed over in silence. These, possibly, were omitted by the compiler of P, because they had already been dealt with elsewhere, or they may have been transferred to other connections. Several other sections of P have, in fact, been assigned by scholars to H, but, with the exception of xi. 43 ff. and Num. xv. 37–41, the evidence is not sufficient to warrant their inclusion in that collection.

The exact relation of H to Deuteronomy is hard to determine. That chaps. xvii.–xxvi. display a marked affinity to Deuteronomy cannot be denied. Like D, they lay great stress on the duties of humanity and charity both to the Israelite and to the stranger (Deut. xxiv.; Lev. xix.; compare also laws affecting the poor in Deut. xv.; Lev. xxv.), but in some respects the legislation of H appears to reflect a more advanced age than that of D, *e.g.*, the rules for the priesthood (chap. xxi.), the feasts (xxiii. 9–20, 39–43), the Sabbatical year (xxv. 1–7, 18–22), weights and measures (xix. 35 f.). It must be remembered, however, that these laws have passed through more than one stage of revision and that the original regulations have been much obscured by later glosses and additions; it is, therefore, somewhat hazardous to base any argument on their present form, and, on the whole, it is more probable that the two codes are independent of one another. The relation of H to Ezekiel is also remarkably close, the resemblances between the two being so striking that many writers have regarded Ezekiel as the author of H. Such a theory, however, is excluded by the existence of even greater differences of style and matter, so that the main problem to be decided is whether Ezekiel is prior to H or vice versa. The following considerations undoubtedly suggest the priority of H: (1) there is no trace in H of the distinction between priests and Levites first introduced by Ezekiel; (2) Ezekiel xviii., xx., xxii., xxiii., appear to presuppose the laws of Lev. xviii–xx.; (3) the calendar of Lev. xxiii. represents an earlier stage of development than the fixed days and months of Ezek. xlv.; (4) the sin- and trespass-offerings are not mentioned in H (*cf.* Ezek. xl. 39, xlii. 13, xliv. 29, xlvi. 20); (5) the parallels to H, which are found especially in Ezek. xviii., xx., xxii., include both the paraenetic setting and the laws; and lastly, (6) a comparison of Lev. xxvi. with Ezekiel points to the greater originality of the former.

Chap. xvii. comprises four main sections which are clearly marked off by similar introductory and closing formulae: (1) *vv.* 3–7, prohibition of the slaughter of domestic animals, unless they are presented to Yahweh; (2) *vv.* 8, 9, sacrifices to be offered to Yahweh alone; (3) *vv.* 10–12, prohibition of the eating of blood; (4) *vv.* 13, 14, the blood of animals not used in sacrifice to be poured on the ground. The chapter as a whole is to be assigned to H. At the same time it exhibits many marks of affinity with P, a phenomenon most easily explained by the supposition that older laws of H have been expanded and modified by later

hands in the spirit of P. What remains after the excision of later additions, however, is not entirely uniform, and points to earlier editorial work on the part of the compiler of H. Chap. xviii. contains laws on prohibited marriages (*vv.* 6–18) and various acts of unchastity (*vv.* 19–23) embedded in a paraenetic setting (*vv.* 1–5 and 24–30), the laws being given in the 2nd pers. sing., while the framework employs the 2nd pers. plural. Chap. xix. is a collection of miscellaneous laws, partly moral, partly religious, of which the fundamental principle is stated in *v.* 2 ("Ye shall be holy"). The various laws are clearly defined by the formula "I am Yahweh," or "I am Yahweh your God," phrases which are especially characteristic of chaps. xviii.–xx. The first group of laws (*vv.* 3 f.) corresponds to the first table of the decalogue, while *vv.* 11–18 are analogous to the second table. Chap. xx. prohibits Molech worship, *vv.* 2–5, witchcraft, *vv.* 6 and 27, unlawful marriages and acts of unchastity, *vv.* 10–21. As in chap. xviii., the main body of laws is provided with a paraenetic setting, *vv.* 7, 8 and 22–24; it differs from that chapter, however, in prescribing the death penalty in each case for disobedience.

Chaps. xxi., xxii. contain a series of laws affecting the priests and offerings, viz., (1) regulations ensuring the holiness of (*a*) ordinary priests, xxi. 1–9, and (*b*) the chief priest, *vv.* 10–15; (2) a list of physical defects which exclude a priest from exercising his office, *vv.* 16–24; (3) the enjoyment of sacred offerings limited to (*a*) priests, if they are ceremonially clean, xxi. 1–9, and (*b*) members of a priestly family, *vv.* 10–16; (4) animals offered in sacrifice must be without blemish, *vv.* 17–25; (5) further regulations with regard to sacrifices, *vv.* 26–30, with a paraenetic conclusion, *vv.* 31–33. The fact that these chapters exhibit many striking points of context with P and the later strata of P can be best explained by the supposition that we have here a body of old laws which have been subjected to more than one revision. The nature of the subjects with which they deal is one that naturally appealed to the priestly schools, and owing to this fact the laws were especially liable to modification and expansion at the hands of later legislators who wished to bring them into conformity with later usage. Signs of such revision may be traced back to the compiler of H, but the evidence shows that the process must have been continued down to the latest period of editorial activity in connection with P.

Chap. xxiii., a calendar of sacred seasons, consists of two main elements which can easily be distinguished from one another, the one being derived from P and the other from H. To the former belongs the fuller and more elaborate description of *vv.* 4–8, 21, 23–28; to the latter, *vv.* 9–20, 22, 39–44. Characteristic of the priestly calendar are (1) the enumeration of "holy convocations," (2) the prohibition of all work, (3) the careful determination of the date by the day and month, (4) the mention of "the offerings made by fire to Yahweh," and (5) the stereotyped form of the regulations. The older calendar, on the other hand, knows nothing of "holy convocations," nor of abstinence from work; the time of the feasts, which are clearly connected with agriculture, is only roughly defined with reference to the harvest (*cf.* Exod. xxiii. 14 *sqq.*, xxxiv. 22; Deut. xvi. 9 *sqq.*). The calendar of P comprises (*a*) the Feast of Passover and the Unleavened Cakes, *vv.* 4–8; (*b*) a fragment of Pentecost, *v.* 21; (*c*) the Feast of Trumpets, *vv.* 23–25; (*d*) the Day of Atonement, *vv.* 26–32; and (*e*) the Feast of Tabernacles, *vv.* 33–36, with a subscription in *vv.* 37, 38. With these have been incorporated the older regulations of H on the Feast of Weeks, or Pentecost, *vv.* 9–20, which have been retained in place of P's account (*cf. v.* 21), and on the Feast of Tabernacles, *vv.* 39–44, the latter being clearly intended to supplement *vv.* 33–36.

Chap. xxiv. affords an interesting illustration of the manner in which the redactor of P has added later elements to the original code of H. For the first part of the chapter, with its regulations as to (*a*) the lamps in the Tabernacle, *vv.* 1–4, and (*b*) the Shewbread, *vv.* 5–9, is admittedly derived from P, *vv.* 1–4, forming a supplement to Exod. xxv. 31–40 and Num. viii. 1–4, Num. viii. 1–4, and *vv.* 5–9 to Exod. xxv. 30. The remainder of the chapter contains old laws (*vv.* 15*b*–22) which are derived from H on blasphemy, manslaughter and injuries to the person, to which the redactor has added an historical setting (*vv.* 10–14, 23) as well as a few glosses. Chap. xxv. lays down regulations for the observance of (*a*) the Sabbatical year, *vv.* 1–7, 19–22, and (*b*) the year of Jubilees, *vv.* 8–18, 23, and then applies the principle of redemption to (1) land and house property, *vv.* 24–34, and (2) persons, *vv.* 35–55. The rules for the Sabbatical year (*vv.* 1–7) are admittedly derived from H, and *vv.* 19–22 are also from the same source. Their present position after *vv.* 8–18 is due to the redactor who wished to apply the same rules to the year of Jubilee. But though the former of the two sections on the year of Jubilee (*vv.* 8–18, 23) exhibits undoubted signs of P, the traces of H are also sufficiently marked to warrant the conclusion that the latter code included laws relating to the year of Jubilee, and that these have been modified by R^P and then connected with the regulations for the Sabbatical year. Both on historical and on critical grounds, however, it is improbable that the principle of restitution underlying the regulations for the year of Jubilee was originally extended to *persons* in the earlier code. For it is difficult to harmonize the laws as to the release of Hebrew slaves with the other legislation on the same subject (Exod. xxi. 2–6; Deut. xv.), while both the secondary position which they occupy in this chapter and their more elaborate and formal character point to a later origin for *vv.* 35–55. Hence these verses in the main must be assigned to R^P. In this connection it is noticeable that those passages which show the characteristic marks of H bear no special relation to the year of Jubilee, but merely inculcate a more humane treatment of those Israelites who are compelled by circumstances to sell themselves either to their brethren or to strangers. It is probable, therefore, that they form no part of the original legislation of the year of Jubilee, but were incorporated at a later period. The present form of *vv.* 24–34 is largely due to R^P who has certainly added *vv.* 32–34 (cities of the Levites) and probably *vv.* 29–31.

Chap. xxvi. The concluding exhortation. After reiterating commands to abstain from idolatry and to observe the Sabbath, *vv.* 1, 2, the chapter sets forth (*a*) the rewards of obedience, *vv.* 3–13, and (*b*) the penalties incurred by disobedience to the preceding laws, *vv.* 14–46. The discourse, which is spoken throughout in the name of Yahweh, is similar in character to Exod. xxiii. 20–33 and Deut. xxviii., more especially to the latter. That it forms an integral part of H is shown both by the recurrence of the same distinctive phraseology and by the emphasis laid on the same motives. At the same time it is hardly doubtful that the original discourse has been modified and expanded by later hands, especially in the concluding paragraphs. It must be admitted that Ezekiel has many striking parallels with chap. xxvi. and in particular makes use, with that chapter, of several expressions which do not occur elsewhere in the Old Testament. But there are also points of difference both as regards phraseology and subject-matter, and in view of these latter it is impossible to hold that Ezekiel was either the author or compiler of this chapter.

Chap. xxvii. On the commutation of vows and tithes. The chapter as a whole must be assigned to a later stratum of P, for while *vv.* 2–25 (on vows) presuppose the year of Jubilee, the section on tithes, *vv.* 30–33, marks a later stage of development than Num. xviii. 21 *sqq.* (P).

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LEVKAS: *see* SANTA MAURA.

LEVOČA (LÖCSE), a town in Slovakia, on a tributary of the Hernad. Founded by Saxon colonists in the 13th century it was under Hungarian rule until 1920. It acquired considerable local importance by the 16th century but suffered greatly at the hands of the Transylvanian princes. Its interests are confined to bee-keeping, the raising of garden produce, tanning and spirit-distilling. Pop. (1930), 8,935.

LÉVY-BRÜHL, LUCIEN (1857–1939), French philosopher and ethnologist, was born in Paris on April 10, 1857. From

1899 to 1927 he was professor of philosophy at the Sorbonne. His chief publications are *Lettres inédites de J. S. Mill à A. Comte* (1899); *Hist. of Modern Philosophy in France* (Eng. trans. 1899); *La Philosophie d'Auguste Comte* (1900, Eng. trans. 1903); *Les Fonctions mentales dans les Sociétés inférieures* (1910, Eng. trans. 1926); *La Mentalité primitive* (1922, Eng. trans. 1923) and *L'Âme primitive* (1927); *La mythologie primitive* (1935).

LEWALD, FANNY (1811–1889), German author, was born at Königsberg in East Prussia on March 24, 1811, of Jewish parentage. When 17 years of age she embraced Christianity, and after travelling in Germany, France and Italy, settled in 1845 at Berlin. Here, in 1854, she married the author, Adolf Wilhelm Theodor Stahr (1805–1876), and removed after his death in 1876 to Dresden, where she died on Aug. 5, 1889. Fanny Lewald is famous as one of the earliest German feminists and for her scathing satire on the sentimentalism of Ida Hahn-Hahn, whose work she parodied in *Diogena, Roman von Iduna Gräfin H. . . . H. . . .* (2nd ed., 1847). The best of her many novels are: *Klementine* (1842); and *Jenny* (1834); in the latter she describes her own struggle between religion and love. Her feminist writings include: *Osterbriefe für die Frauen* (1863) and *Für und wider die Frauen* (1870) are conspicuous.

See her autobiography, *Meine Lebensgeschichte* (6 vols., 1861–62); K. Frenzel, *Erinnerungen und Strömungen* (1890).

LEWANIKA (*c.* 1860–1922), paramount chief of the Barotse and subject tribes occupying the greater part of the upper Zambezi basin, was the 22nd of a long line of rulers, whose founder invaded the Barotse valley about the beginning of the 17th century, and according to tradition was the son of a woman named Buya Mamboa by a god. Lewanika was born on the upper Kabompo, where his father—Letia, a son of a former ruler—lived in exile during the interregnum of a foreign dynasty (Makololo), which remained in possession from about 1830 to 1865, when the Makololo were practically exterminated in a night by a well-organized revolt. Once more masters of their own country, the Barotse invited Sepopa, an uncle of Lewanika, to rule over them. Eleven years of brutality and licence resulted in the tyrant's expulsion and subsequent assassination, his place being taken by Ngwana-Wina, a nephew. Within a year abuse of power brought about this chief's downfall (1877), and he was succeeded by Lobosi, who assumed the name of Lewanika in 1885. The early years of his reign were also stained by many acts of blood, until in 1884 the torture and murder of his own brother led to open rebellion, and it was only through extreme presence of mind that the chief escaped with his life into exile.

Lewanika's cousin, Akufuna or Tatela, was then proclaimed chief. It was during his brief reign that François Coillard, the missionary, arrived at Lialui, the capital. The following year Lewanika, having collected his partisans, deposed the usurper and re-established his power. Ruthless revenge not unmixed with treachery characterized his return to power, but under the influence of Coillard he ruled tolerantly from 1887 onward. In 1890 Lewanika concluded a treaty with the British South Africa Company, acknowledging its supremacy and conceding to it certain mineral rights. In 1897 R. T. Coryndon took up his position at Lialui as British agent, and the country to the east of 25° E. was thrown open to settlers, that to the west being reserved to the Barotse chief. In 1905 the king of Italy's award in the Barotse boundary dispute with Portugal deprived Lewanika of half of his dominions. In 1902 Lewanika attended the coronation of Edward VII. as a guest of the nation. His recognized heir was his eldest son Letia.

See BAROTSE, BAROTSELAND, and the works there cited, especially François Coillard, *On the Threshold of Central Africa* (1897); also D. E. C. R. Stirke, *Barotseland: eight years among the Barotse* (1922).

LEWES, CHARLES LEE (1740–1803), English actor, son of a London hosier, found his first important part as "Young Marlow" in *She Stoops to Conquer* in 1773, when he delivered an epilogue specially written for him by Goldsmith. He remained a member of the Covent Garden company till 1783, appearing in many parts, among which were "Fag" in *The Rivals*, which he "created," and "Sir Anthony Absolute" in the same comedy. In 1783 he removed to Drury Lane, where he assumed the Shakespearian rôles of "Touchstone," "Lucio" and "Falstaff." For a short time in 1792 Lewes assisted Stephen Kemble in the management of the Dundee theatre; in the following year he went to Dublin, but he was financially unsuccessful and suffered imprisonment for debt. He employed his time in compiling his *Memoirs*. Lewes died on July 23, 1803.

See John Genest, *Some Account of the English Stage* (Bath, 1832).

LEWES, GEORGE HENRY (1817–1878), British philosopher and literary critic, was born in London, the grandson of Charles Lee Lewes, the actor. He was educated in London, Jersey, Brittany, and finally at Dr. Burney's school in Greenwich. Between 1841 and 1850 he appeared several times on the stage, but finally devoted himself to literature, science and philosophy. In 1838 he went to Germany, probably with the intention of studying philosophy. In 1840 he married a daughter of Swynfen Stevens Jervis and during the next ten years contributed to various reviews on a wide variety of subjects, notably on the drama. His essays on this subject were collected as *The Spanish Drama* (1846) and *Actors and Acting* (1875). Other works of this period are his *Biographical History of Philosophy* (1845–46), two novels, and a series of papers contributed to the *Leader* founded in 1850.

In 1851 he became acquainted with Marian Evans (George Eliot) and in 1854 left his wife. For his happy life with George Eliot *see* ELIOT, GEORGE.

Lewes's best known work is his excellent *Life of Goethe* (1855, published in the Everyman Series, 1908), which is a biographical classic. He also wrote many popular works on science, which contain valuable suggestions. They are *Seaside Studies* (1858), *Physiology of Common Life* (1859), *Studies in Animal Life* (1862), and *Aristotle, a Chapter from the History of Science* (1864). He developed the doctrine of the functional indifference of the nerves, and suggested that what are known as the specific energies of the optic, auditory and other nerves are simply differences in their mode of action due to the differences of the peripheral structures or sense-organs with which they are connected. His final conclusions were given in *The Problems of Life and Mind*, possibly the crowning work of his life. His sudden death on Nov. 28, 1878 cut short the work, yet it is complete enough to allow us to judge of the author's matured conceptions on biological, psychological and metaphysical problems.

Lewes's views in psychology, partly opened up in the earlier volumes of the *Problems*, are more fully worked out in the last two volumes (3rd series). He claims against Comte and his followers a place for introspection in psychological research. In addition to this subjective method there must be an objective, which consists partly in a reference to nervous conditions and partly in the employment of sociological and historical data. Biological knowledge, or a consideration of the organic conditions, would only help us to explain mental *functions*, as feeling and thinking; it would not assist us to understand differences of mental *faculty* as manifested in different races and stages of human development. The idea of dealing with mental phenomena in their relation to social and historical conditions is probably Lewes's most important contribution to psychology.

LEWES (lū′wĕz or lōō′wĕs), a market-town and municipal borough and the county town of Sussex, England, 50 mi. S. from London by the S.R. Pop. (1938) 11,960. Area, 3.1 sq.mi.

Stone and bronze implements and numerous tumuli and earthworks found around Lewes indicate its remote origin. Lewes was in the Saxon royal demesne and in the time of Aethelstan had a mint with two moneyers; by the reign of Edward the Confessor, and probably before, Lewes was a borough and market centre. William I granted the whole honour, or barony, of Lewes, including the revenue arising from the town, to William de Warenne, who built the castle. His descendants continued to hold the barony until 1361, when it passed to Richard, earl of Arundel; on the death of his grandson's wife in 1439, it was divided between the duke of Norfolk, baroness Bergavenny and Edmund Lenthall. In 1447, however, Lenthall's portion came into the hands of the other two. In the 11th century Lewes was important as a port and a market town. A guild merchant is mentioned in a charter of Regi-

nald de Warenne, about 1148, restoring to the burgesses the privileges they had enjoyed in the time of his grandfather and father. By the mid-16th century Lewes was governed by a "Fellowship" of 12 and a council of 24, the chief officials being the two constables. By the early 18th century this body had been replaced by the jury of the court leet. Lewes was finally incorporated in 1881. The borough seal dates from the 15th century. The town returned two representatives to parliament from 1295 until deprived of one member in 1867. It became part of a county-division in 1885.

Fairs and markets have been held since 1066. Fairs are now held on July 20 for wool and July 11, Aug. 7 and Sept. 4, 5, and 25 for Southdown sheep. A corn market is held every Tuesday, and a stock market every Monday. The trade in wool has been important since the 13th century.

Lewes is situated on the slope of a chalk down falling to the river Ouse. Ruins of the old castle rise from the height. There are two mounds which bore shell keeps, an uncommon feature; the ruins of one remain, together with the barbican. The castle guarded the pass through the downs formed by the valley of the Ouse. A bomb fell in the castle precincts during World War II. In Barbican house is the collection of the Sussex Archaeological society. St. Michael's church contains old brasses and monuments; St. Anne's church is a transitional Norman structure; St. Thomas-at-Cliffe is Perpendicular; St. John's, Southover, of mixed architecture, preserves some early Norman portions, and has some relics of the Warenne family. In the grounds of the Cluniac priory of St. Pancras, founded in 1078, the leaden coffins of William de Warenne and Gundrada his wife were dug up during an excavation for the railway in 1845. There is a free grammar school dating from 1512.

The industries include the manufacture of agricultural implements and cement, brewing, iron and brass founding, printing and market gardening.

The Battle of Lewes.—Lewes was the scene of the battle fought on May 14, 1264, between King Henry III. and the rebel barons under Simon de Montfort, earl of Leicester. While London was the "keep" of the baronial party, they held important "outworks" in the Midland towns of Northampton, Leicester and Nottingham Led by the king and his son, the future Edward I., the royalists moved from Oxford against these centres and subdued them in turn. Then, however, instead of moving against London when his enemies' morale was depressed, the king passed round it in a wide sweep to relieve the royal garrison in Rochester. Thence he marched southward through Kent and along the coast west into Sussex, halting at Lewes, a stronghold of his brother-in-law, Earl de Warenne. His army had been weakened by arduous marching and by the harassing of its rear by the foe. Meanwhile, reinforced by a large body of Londoners, de Montfort quitted London and reached Fletching, a village and clearing in the dense forest of the Weald on May 13. Efforts at reconciliation having failed he led his army by an indirect route against the town, which he hoped to surprise, early on the following day. His plan was to direct his main attack against the priory of St. Pancras, which sheltered the king and his brother Richard, earl of Cornwall, king of the Romans, while causing the enemy to believe that his principal objective was the castle, where Prince Edward was. But the surprise was not complete and the royalists rushed from the town to form up and meet the enemy in the open field. Edward led the right "battle" against the baronial left composed of Londoners, put them to flight, pursued them for several miles, and killed a great number of them. He also captured the standard of Montfort which with its escort was behind the baronial army. Montfort's ruse, however, had been successful. He was not with his standard as his foes thought, but with a fourth "battle" which he seems to have held in rear as a reserve. His centre and right "battles," reinforced by his own "battle," overthrew their opponents, and took prisoner both the king and his brother. Before Edward returned from his chase the earl was in possession of the town. In its streets the prince strove to retrieve his fortunes, but in vain. Many of his men perished in the river, but others escaped, one band, consisting of Earl Warenne and others, taking refuge in Pevensey Castle. The fortunes of the day were settled entirely by the mounted men, and the foot seem merely to have been a target. It was to be left for Edward himself, who here by his impetuosity was the cause of defeat, from the experience of his Welsh War to endow them with a weapon—the bow which changed the balance of mediaeval military supremacy. Edward himself took sanctuary and on the following day peace was made between the king and the earl.

For its sequel *see* EVESHAM.

LEWES, a town of Sussex county, Delaware, U.S.A., in the southeastern part of the state, on Delaware bay; a port of entry in the Philadelphia customs district. It is served by the Pennsylvania railway. The population was 2,246 in 1940. On Cape Henlopen, 2 mi. east, was a steel-framed lighthouse, erected in 1925 to replace one of the oldest lighthouses in the U.S.

This lighthouse was afterwards replaced by a radio direction station.

The first settlement in the state of Delaware by Europeans was made near Lewes in 1631, by Dutch colonists led by Peter Heyes, sent by a company organized by David Pieterszen de Vries and others. They called the place Zwaanendael. The colony was soon entirely destroyed by Indians, but it was important because it prevented the English from uniting the Delaware country with Maryland. In 1658 the Dutch established an Indian trading post, and in 1659 erected a fort at Zwaanendael. After the region passed into the hands of William Penn (1682) the settlement received its present English name. It was pillaged by French pirates in 1698; was the scene of one of the last naval battles of the Revolutionary War, on April 8, 1782; and in March 1813, was bombarded by a British frigate.

LEWIS, SIR GEORGE CORNEWALL, BART. (1806–1863), English statesman and man of letters, was born in London on April 21, 1806. Young Lewis was educated at Eton and at Christ Church, Oxford. He then entered the Middle Temple, and was called to the bar in 1831. In 1835 he published an *Essay on the Origin and Formation of the Romance Languages* (re-edited in 1862), the first effective criticism in England of Raynouard's theory of a uniform romance tongue, represented by the poetry of the troubadours.

In 1836 he accompanied John Austin to Malta, to examine the condition of the island and frame a code of laws. On his return to England Lewis succeeded his father as one of the principal poor-law commissioners. In 1844 Lewis married Lady Maria Theresa Lister, sister of Lord Clarendon, and settled in London at Kent House, Knightsbridge. In 1847 Lewis resigned his office. He was then returned for the county of Hereford, and Lord John Russell appointed him secretary to the Board of Control, but a few months afterwards he became under-secretary to the Home Office. He introduced two important bills, one for the abolition of turnpike trusts and the management of highways by a mixed county board, the other for the purpose of defining and regulating the law of parochial assessment. In 1850 he succeeded Hayter as financial secretary to the treasury.

On the dissolution of parliament which followed the resignation of Lord John Russell's ministry in 1852, Lewis was defeated for Herefordshire and then for Peterborough. Excluded from parliament he accepted the editorship of the *Edinburgh Review,* and remained editor until 1855. During this period he served on the Oxford commission, and on the commission to inquire into the government of London. But its chief fruits were the *Treatise on the Methods of Observation and Reasoning in Politics,* and the *Enquiry into the Credibility of the Early Roman History,* in which he vigorously attacked the theory of epic lays and other theories on which Niebuhr's reconstruction of that history had proceeded. In 1855 Lewis succeeded his father in the baronetcy. He was at once elected member for the Radnor boroughs, and Lord Palmerston made him chancellor of the exchequer. He had a war loan to contract and heavy additional taxation to impose, but his industry, method and clear vision carried him safely through. After the change of ministry in 1859 Sir George became home secretary under Lord Palmerston, and in 1861, much against his wish, he succeeded Sidney Herbert (Lord Herbert of Lea) at

the War Office. The closing years of his life were marked by increasing intellectual vigour. His later works include: *Essay on Foreign Jurisdiction and the Extradition of Criminals* (1859), and *Dialogue on the Best Form of Government* (1863). He died in April 1863.

A reprint from the *Edinburgh Review* of his long series of papers on the *Administration of Great Britain* appeared in 1864, and his *Letters to various Friends* (1870) were edited by his brother Gilbert, who succeeded him in the baronetcy.

LEWIS, SIR GEORGE HENRY, 1ST BART. (1833–1911), English solicitor, was born at Ely Place, Holborn, on April 21, 1833. Educated at University College, London, he was articled in 1856 and became head of the firm of Lewis and Lewis. He was engaged in many famous cases, including the Bravo poisoning case, the Hatton Garden diamond robbery, and the Overend-Gurney and other banking prosecutions. He was solicitor (1887) for Parnell and the Irish party in the Parnell Commission. Lewis was for many years the most prominent man in his profession, and had a unique practice, especially in advising on difficult family affairs. He died in London on Dec. 7, 1911.

LEWIS, HENRY CARVILL (1853–1888), American geologist, was born in Philadelphia Nov. 16, 1853. Educated in the University of Pennsylvania he took the degree of M.A. in 1876. He became attached to the geological survey of Pennsylvania in 1879, serving for three years as a volunteer member. During his term he became greatly interested in the study of glacial phenomena. In 1880 he was chosen professor of mineralogy in the Philadelphia academy of Natural Sciences, and in 1883 was appointed to the chair of geology in Haverford College, Pa. In 1884 his *Report on the Terminal Moraine in Pennsylvania and New York* was published: a work containing much information on the limits of the North American ice-sheet. In Britain he sought to trace in like manner the southern extent of the terminal moraines formed by British ice-sheets, but before his conclusions were matured he died at Manchester July 21, 1888. The results of his observations were published in 1894, entitled *Papers and Notes on the Glacial Geology of Great Britain and Ireland,* edited by Dr. H. W. Crosskey.

LEWIS, ISAAC NEWTON (1858–1931), U.S. soldier and inventor, was born at New Salem, Pa., on Oct. 12, 1858. On graduating from the U.S. military academy, in 1884, he was given a commission in the artillery. From 1894 to 1898 he was a member of the board on the regulation of coast artillery fire in New York harbour. In 1898 he became recorder of the board of ordnance and fortification in Washington, and in the same year made a study of ordnance in Europe which led to the rearmament of the U.S. field artillery. He is the inventor of a number of range-finding and other mechanical and electrical instruments used for artillery fire control purposes in U.S. coast defenses. From 1904 to 1911 he was instructor and director of the coast artillery school at Ft. Monroe, becoming lieutenant-colonel in 1911. In 1913 he retired from active service with rank of colonel. That year a machine gun of his invention (the Lewis gun) was accepted by the British, French and Belgian governments after it had been rejected in America. Throughout World War I the Lewis machine gun was one of the most effective weapons possessed by the Allies and was constantly in use by thousands in their aeroplanes, in their armoured tanks and with the fighting troops on both land and sea. After the United States entered the war the Lewis gun was manufactured and issued to U.S. troops, but Col. Lewis declined to accept royalties.

LEWIS, JOHN LLEWELLYN (1880–), U.S. labour leader, was born in Lucas, Ia., on Feb. 12, 1880. He started work in coal mines and in union organization simultaneously, and in 1920 was elected president of the United Mine Workers' Union. In 1935 Lewis, dissatisfied with the craft unionism of the American Federation of Labor, organized the Committee for Industrial Organization which, in the next two years, succeeded for the first time in unionizing the steel and automobile industries. In 1936 the C.I.O. was expelled from the A.F. of L. Lewis converted the committee into the Congress of Industrial Organizations and became its first president. After the 1940 presidential election, he kept his promise to resign if Roosevelt, whom he supported in 1932 and 1936 but thereafter opposed, was returned.

In May, 1942, he led the U.M.W. out of the C.I.O., and later back into the A.F. of L. Lewis was widely criticized for calling miners' strikes in wartime and during postwar reconversion, but retained the miners' support. Under his leadership their wages tripled in 25 years, and working conditions were greatly improved.

(ER. H.)

LEWIS, MATTHEW GREGORY (1775–1818), English romance-writer and dramatist, often referred to as "Monk" Lewis, was born in London on July 9, 1775). He was educated for a diplomatic career and in 1794 he proceeded to The Hague as attaché to the British embassy. His stay there lasted only a few months, but was marked by the composition, in ten weeks, of his famous romance *Ambrosio, or the Monk* (1795).

The Castle Spectre (1796, a musical drama of no great literary merit, but which enjoyed a long popularity on the stage), *The Minister* and *Rolla* (translations), with numerous other operatic and tragic pieces, appeared in rapid succession. *The Bravo of Venice,* a romance translated from the German, was published in 1804; next to *The Monk* it is the best known work of Lewis. By the death of his father he succeeded to a large fortune, and in 1815 embarked for the West Indies to visit his estates; in the course of this tour, the *Journal of a West Indian Proprietor,* published posthumously in 1833, was written. He died on the homeward voyage from a second visit, May 14, 1818.

LEWIS, MERIWETHER (1774–1809), American explorer, was born near Charlottesville, (Va.), on Aug. 18, 1774. A militiaman in the "Whisky Insurrection," officer under Gen. Anthony Wayne, and from 1801 to 1803 the private secretary of President Jefferson, he became famous as leader of the first American expedition overland to the Pacific. Preparations for this were pushed by Jefferson before the Louisiana Purchase, but the actual leadership was vested in Lewis and his old friend and army comrade, Lieut. William Clark. Late in 1803 they and their subordinates went into winter quarters near St. Louis. On May 14, 1804, the party "hoisted Sail and Set out in high Spirits for the Western Expedition," and by Nov. 2 they had made the difficult ascent of the Missouri to a site near the present Bismarck, where, among the Mandan Indians, they passed the second winter. Early in April 1805 the ascent of the Missouri was continued as far as the three forks of the river, the stream they named the Jefferson being followed to its source in the south-western part of what is now the State of Montana. Procuring a guide and horses from the Shoshone Indians, the party pushed westward through the Rocky Mountains and embarked in canoes on a tributary of the Columbia river, the mouth of which they reached on Nov. 15. They had travelled upwards of 4,000m. from their starting-point, had encountered various Indian tribes never before seen by whites, had made valuable scientific collections and observations, and were the first explorers to reach the Pacific by crossing the continent north of Mexico. After spending the winter on the coast they started on March 23, 1806, on their return journey, and, after crossing the divide, Lewis with one party explored Maria's river, and Clark with another the Yellowstone. They reunited near the junction of the Yellowstone and the Missouri, and on Sept. 23 reached St. Louis. In spite of exposure, hardship and peril only one member of the party died, and only one deserted. Few feats of exploration excel this in romantic interest. The expedition was commemorated by the Lewis and Clark Centennial Exposition at Portland (Ore.), in 1905. The leaders and men of the exploring party were rewarded with grants of land from the public domain, and in March 1807 Lewis was made governor of the northern part of the Louisiana Territory. His death near Nashville (Tenn.), on Oct. 11, 1809, has remained shrouded in mystery, suicide and more plausibly foul play being advanced as explanations for it.

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Allen's *History of the Expedition under the Command of Captains Lewis and Clark* (1814) is a condensation of the original journals. The best reprint is that of Elliott Coues (1893). As a final authority consult R. G. Thwaites (ed.), *The Original Journals of the Lewis and Clark Expedition* (1904–05) and the journals of Lewis and Sergeant Ordway edited by M. M. Quaife (*Wisconsin Historical Collections,* xxii.). For popular accounts *see* W. R. Lighton, *Lewis and Clark* (1901); O. D. Wheeler, *The Trail of Lewis and Clark* (1904); and Noah Brooks, *First across the Continent* (1901).

LEWIS, SINCLAIR (1885–), American author, was born at Sauk Center, Minn., on Feb. 7, 1885. He graduated from Yale university in 1907, and was for a time a reporter, afterward serving in an editorial capacity for several publishing houses and magazines. At this time he began to write fiction, but his work, in spite of the promise of *Our Mr. Wrenn* (1914), the *The Trail of the Hawk* (1915), attracted little attention. His reputation was made by *Main Street* (1920), a novel satirizing both the narrowness of life in the Main streets of the Middle West and the hollowness of a superficial intellectualism that despised Main street without having anything better to offer. *Main Street* was born of the new mood of national self-consciousness which followed the World War, and became a text for attacks upon provincialism from coast to coast. In 1922, Lewis published *Babbitt,* a study of the complacent American, whose individuality had been sucked out of him by rotary clubs, business ideals and general conformity. The name Babbitt promptly passed into general usage, and it is probable that this novel had more effect upon public consciousness than any other written in English in this decade. *Babbitt* is not only Lewis's most important novel, but it is, so far, his best.

He followed this success with *Arrowsmith* (1924), a satiric study of the medical profession, with emphasis upon the frustration of fine scientific ideals. His next book, *Elmer Gantry* (1927), was more violent, a pamphleteering attack upon the ignorant, gross and predatory leaders who had crept into the Protestant Church. It is perhaps a reflection of the animosity aroused in many American minds by the enforcement of prohibition and the political manoeuvering by religious bodies that accompanied it. While it aroused wide controversy, it is far less successful as a work of art and as sheer story than the earlier books. *The Man Who Knew Coolidge* (1928) is a return to the theme of Babbitt in a series of pointed monologues. *Dodsworth* (1929) concerns the experiences of a retired American automobile manufacturer and his wife on a European tour and offers Lewis a chance to present effectively the contrasting values and manners of Europe and America and study the reactions on the very different temperaments of the man and his wife.

Sinclair Lewis is primarily a satirist of the people. His subject and his theme of attack is the bourgeoisie of a democracy, with their characteristic vices. He is better at caricature than at character, and his style, while vigorous, is seldom beautiful or refined. He has remarkable powers of observation and a gift of mimicry in dialogue that recalls Dickens whom, in other ways except in humour, he often resembles. Essentially he is a pamphleteer of genius, like H. G. Wells, but his creation of figures, instantly recognized as summaries of their period, as in the case of Babbitt, gives him a claim upon literature. In spite of his deficiencies in art, as a novelist he is an important figure in the early 20th century. He received the Nobel Prize in literature in 1930. (H. S. C.)

LEWISBURG, a borough in the central part of Pennsylvania, U.S.A., 65 mi. N. of Harrisburg, on the west branch of the Susquehanna river; the county seat of Union county. It is served by the Pennsylvania and the Reading railways. The population was 3,308 in 1930 and 3,571 in 1940. It has a large chair factory and other industries and is the seat of Bucknell university (Baptist) and Northeastern (federal) penitentiary. Founded in 1785 by Ludwig Derr, a German, it was called Derrstown until about 1805. It was incorporated as a borough in 1812.

LEWIS GUN: *see* GUN, MACHINE.

LEWISHAM, a southeastern metropolitan borough of London, England. Pop. (1938) 229,000. Area, 11 sq.mi. It includes the districts of Blackheath and Lee, Hither Green, Catford and Brockley, Forest Hill and part of Sydenham. In the last named residential districts, hills rise above 300 ft. Medicinal springs were discovered in 1640 on Sydenham common. The borough contains 144 ac. of Blackheath, 51 ac. in Ladywell recreation ground, 45 ac. in Hilly Fields, besides 642 ac. of other open spaces.

Among institutions are the Horniman museum, Forest Hill; Morden's college, on the south of Blackheath, founded at the close of the 17th century by Sir John Morden for Turkey merchants who were received as pensioners. The parliamentary borough of Lewisham returns two members. Some metal working and furniture making are carried on, but the most important occupation is gardening.

LEWISITE: *see* CHEMICAL WARFARE.

LEWISTON, a city on the western boundary of Idaho, U.S.A., 750 ft. above sea-level (the lowest point in the state), at the head of navigation on the Snake river; the county seat of Nez Perce county. It is on Federal highways 95, 195 and 410; and is served by the Northern Pacific and the Union Pacific railways, and by river steamers to the mouth of the Columbia. The population was 6,574 in 1920 (91% native white), and was 10,548 in 1940 by the federal census. It is the commercial centre of a wheat and fruit-growing, lumbering and mining (gold, silver and lead) region, and the seat of the Lewiston State Normal school (established 1893). The State agricultural colleges of Idaho and Washington are at Moscow and Pullman, 40 mi. N. and 30 mi. N.W. respectively.

Lewiston is built on the site where Lewis and Clark camped in 1805 and in 1806. It was founded in 1861, following the discovery of placer gold in the Clearwater district, and was organized as a town in 1862. The Spalding mission, established in 1836 and continued until 1860, was 12 mi. east of Lewiston.

LEWISTON, city, Androscoggin county, Maine, U.S.A., on the east bank of the Androscoggin river, opposite Auburn, 35 mi. above Portland. It is on federal highway 100, and is served by the Grand Trunk and the Maine Central railways. The population was 31,791 in 1920 (32% foreign-born white); 34,948 in 1930 and was 38,598 in 1940 by the federal census. Within the city limits of Lewiston is the seventy-three-acre campus of Bates college, established by the Free Baptists in 1864 (on the foundation of a seminary chartered in 1855), and named for a cotton manufacturer of Boston whose gifts made it possible. Lewiston is the seat of the Central Maine General hospital (1888), and has an armoury (completed 1927) which houses the largest auditorium in the State. Industrially the two cities (Lewiston and Auburn) are practically one community. They have one of the largest potential water-powers in New England, and with the completion in 1927 of the Gulf Island hydro-electric development 60,000 h.p. was available. In Lewiston the textile industry predominates, with many plants making blankets, suitings, damask, ginghams, yarns, sheeting, bed spreads and rayon goods. The aggregate output of its factories in 1927 was valued at $23,002,202. Its banks have resources amounting to $52,465,028, and the assessed valuation of property in 1940 was $31,674,509. The surrounding country is hilly and picturesque, and numerous streams and lakes afford good fishing.

Lewiston was settled in 1770, incorporated as a town in 1795, and chartered as a city in 1861.

LEWISTOWN, a city in the central part of Montana, U.S.A., 30 mi. N. of the Snowy mountains, at an altitude of 3,960 ft., with the Judith mountains to the east and the Belt mountains to the west; the county seat of Fergus county. It is on Federal highway 87E and on the Chicago, Milwaukee, St. Paul and Pacific and the Great Northern railways. The population was 5,358 in 1930; and was 5,874 in 1940 by the federal census. Lewistown is the trading and shipping centre for a large wheat region (originally a buffalo range, and later devoted to cattle and sheep-grazing), and for the oil-fields and mines (coal, gold and silver and gypsum) in the vicinity. There are oil refineries in the city and sundry other manufacturing industries. About 50 mi. W. is one of the greatest sapphire mines in the world. The city was founded in 1898 and incorporated in 1899.

LEWISTOWN, a borough of south-central Pennsylvania, U.S.A., on the Juniata river, 60 mi. N.W. of Harrisburg; the county seat of Mifflin county. It is on federal highways 22, 322

and 522 and is served by the Pennsylvania railroad. The population was 13,357 in 1930 and 13,017 in 1940 (97% native white) by federal census. It is picturesquely situated in a narrow valley of the Allegheny mountains. There are large rayon mills, steel, iron and overhead door plants, machine shops and tool works specializing in axes. Lewistown was one of the pioneer iron manufacturing centres of the state. It was founded in 1762, and was named for William Lewis, one of the early ironmasters. Two miles west of the city is a stone marker on the site of Ft. Granville, built by the Scotch-Irish settlers in the region before the town was established, and destroyed by the French and Indians in 1756. Lewistown was incorporated as a borough in 1795.

LEWIS-WITH-HARRIS, sometimes called the Long Island, the most northerly island of the Outer Hebrides, Scotland, 24 mi. from the mainland, from which it is separated by The Minch strait. It is 60 mi. long, its extreme breadth is 28 mi., and average breadth 15 mi. It is divided by a line roughly drawn between Loch Resort on the west and Loch Seaforth on the east, of which the larger or more northerly portion, known as Lewis, belongs to the county of Ross and Cromarty and the lesser, known as Harris, to Inverness-shire. Area 492,800 ac. or 770 sq.mi., of which 575 sq.mi. belong to Lewis. Pop. of Lewis (1931) 24,685; of Harris 3,357, or 28,042 for the island. In 1921, 5,103 spoke Gaelic only, and 25,134 Gaelic and English, but Gaelic speaking is declining.

There is communication with Glasgow, Mallaig and Kyle of Lochals by steamer via Stornoway and weekly with Belfast, Leith and Liverpool. The coast is deeply indented, the principal sea-lochs in Harris being East and West Loch Tarbert; and in Lewis, Loch Seaforth, Loch Erisort and Broad bay on the east coast and Loch Roag and Loch Resort on the west. The mainland is dotted with fresh-water lakes. Most of Harris is hilly, there being more than 30 summits above 1,000 ft. high. Lewis is comparatively flat, save in the southeast, where Ben More reaches 1,750 ft., and in the southwest, where Mealasbhal is the highest point. The rivers are small and unimportant. The principal capes are the Butt of Lewis, in the extreme north, where the cliffs are crowned with a lighthouse; Tolsta Head, Tiumpan Head and Cabag Head, on the east; Renish Point, in the extreme south; and, on the west, Toe Head and Gallon Head.

The following are inhabited islands in the Inverness-shire division: Berneray (331), Ensay (8), Killegray (5) and Pabbay (3), Scarp (95), Taransay (33), Scalpay (636). Belonging to the county of Ross and Cromarty are Great Bernera (514) and the Shiant Isles. The southeastern base of Broad bay is formed by the peninsula of Eye, attached to the mainland by a very narrow isthmus. Much of the surface of Lewis and Harris is of peat and swamp; there are scanty fragments of an ancient forest.

There is little cultivable land. Sir James Matheson (1796–1878), who purchased the island in 1844, spent nearly £350,000 in reclamation and improvements. Lord Leverhulme, who bought it in 1918, also made efforts to introduce modern methods of fishing and agriculture with small success. Subsequently he offered Lewis as a gift to the crofters, but it was declined owing to the heavy taxation, with the exception of the Stornoway section. The larger part of the island was again put up for sale in 1924, but only a small part was bought, and the rest was afterwards managed by the Lewis Islands Crofters Ltd. In Harris, Lord Leverhulme's schemes for development met with more success.

Barley and potatoes are the chief crops. Black cattle are reared and some sheep farming is carried on. Harris has obtained great reputation for tweeds made by the crofters. The fisheries are the principal mainstay of the people. Most of the crofters still live in poor huts. The island affords good sporting facilities. Many streams abound with salmon and trout; otters, seals, deer and hares, game birds and waterfowl are plentiful. Whaling is carried on from Harris.

There are many antiquarian remains, including duns, megaliths, ruined towers and chapels. At Rodel is a church, the remains of an Augustinian monastery. The foundation is Norman and the superstructure Early English. On the towers are curious carved figures and in the interior several tombs of the Macleods, the most remarkable being that of Alastair (Alexander), son of William Macleod of Dunvegan, dated 1528. Stornoway (*q.v.*), pop. (est. 1938) 4,557, is the chief town. At Callernish, 13 mi. W. of Stornoway, are several stone circles, one of them consisting of 12 huge monoliths with a pillar 17 ft. high in the centre. There are also an avenue and two single lines of stones branching from the circle.

At Carloway there is a fine example of a broch, or fort. Rory, the blind harper who translated the Psalms into Gaelic, was born in the village. Port of Ness, where there is a harbour, is engaged in the ling fishery. Loch Seaforth gave the title of earl to a branch of the Mackenzies, but in 1716 the 5th earl was attainted for Jacobitism and the title forfeited. In 1797 Francis Humberston Mackenzie (1754–1815), chief of the Clan Mackenzie, was created Lord Seaforth and Baron Mackenzie of Kintail.

LEWKOWITSCH, JULIUS (1857–1913), British chemist, was born at Ostrów Wielkopolski in 1857. He studied at Breslau, the Berlin agricultural high school and Heidelberg University. About 1888 he became a naturalized British subject. He devoted much time to stereo-chemistry and to developing the industrial technology of fats and oils, becoming the first living authority in that branch of chemistry. He died at Chamonix on Sept. 18, 1913. His most important work is: *Chemical Technology and analysis of oils, fats and waxes* (5th ed. rewritten and enlarged, 3 vols. 1913–15), the standard work on the subject.

LEXICON, a dictionary (*q.v.*) (Gr. λεξικόν, *sc.* βιβλίον, a word-book). Lexicon, rather than dictionary, is used of word-books of the Greek language, and sometimes of Hebrew.

LEXINGTON, BARON, a title borne in the English family of Sutton from 1645 to 1723. Robert Sutton (1594–1668), son of Sir William Sutton of Averham, Nottinghamshire, was elected M.P. in 1625 and in 1640. He supported Charles I. during the Civil War with funds and personal service, and in 1645 the king created him Baron Lexington (a variant of the Nottinghamshire village of Laxton). His estate suffered during the Commonwealth. He died on Oct. 13, 1668. His only son, Robert, 2nd baron (1661–1723), was employed by William of Orange on diplomatic business, and is chiefly known as the British envoy during the negotiations for the Treaty of Ryswick at Vienna, and the treaty of Utrecht at Madrid. He died on Sept. 19, 1723. His letters from Vienna were published as the *Lexington Papers* (ed. H. M. Sutton, 1851).

LEXINGTON, a city in the heart of the "bluegrass" region of Kentucky, U.S.A., 85 mi. S. of Cincinnati; the county seat of Fayette county. It is on federal highways 25, 27, 60 and 68, and is served by the Chesapeake and Ohio, the Louisville and Nashville, and the Southern railways. The population was 45,736 in 1930; and was 49,304 in 1940 (30% Negroes) by the federal census. Lexington is one of the largest loose-leaf tobacco and bluegrass-seed markets in the country; the headquarters for many coal producers of eastern Kentucky; and the chief centre in America for the breeding of thoroughbred standard-bred and saddle horses. It has a large wholesale and retail trade. Natural gas and hydroelectric power are available. The city has a city-manager form of government. Bank debits in 1940 amounted to $287,994,000, and the assessed valuation of property in 1940 was $50,211,027. There are two race tracks (for running and for trotting) and the semi-annual horse shows and race meets are brilliant events. Man-o'-War and many other noted racers were bred and raised on the celebrated stock farms roundabout. Lexington is the see of a Protestant Episcopal bishopric. It is the seat of the Eastern State Kentucky hospital for the insane (established in 1815), the state reform schools for girls and for boys; Transylvania college (established 1783), the oldest institution for higher education west of the Alleghenies; the university of Kentucky (1865); and the U.S. Public Health Service hospital for narcotics, largest institution of its kind in the world. Lexington was named by a party of hunters who were encamped here in 1775 when news of the battle of Lexington reached them. Permanent settlement (largely from Virginia and North Carolina) began in 1779. The town was incorporated in 1782 and was chartered as a city in 1832. The first newspaper published west of the mountains, the *Kentucky Gazette,* was established here in 1787, to further the movement for the separation of Kentucky from

Virginia. The first State legislature convened here in 1792. Lexington was the home of Henry Clay from 1797 until his death in 1852. His estate, "Ashland," is one of many beautiful homesteads in the environs.

LEXINGTON, a town of Middlesex county, Massachusetts, U.S.A., on the Boston and Maine railroad, 11 m. N.W. of Boston. The population in 1940 was 13,187. It is primarily a spot of historic interest and a residential town. Truck-gardening and dairying are the principal industries, and there are a few factories. It was on the green of the village of Lexington that the first armed conflict of the Revolution took place (April 19, 1775). A monument was erected by the State in 1799, and a large boulder marks the position of the minute-men when they were fired upon by the British. In the old burying-ground (with stones dated as far back as 1690) are the graves of Captain John Parker and other patriots. The Hancock-Clarke house (built in part in 1698), where Paul Revere warned John Hancock and Samuel Adams, is now the museum of the historical society. The Buckman tavern (1690) and the Munroe tavern (1695), headquarters respectively of the Americans and the British, are still standing, and several other houses antedate the Revolution. Lexington was settled as part of Cambridge as early as 1642. It was organized as a parish in 1691 and became an independent town in 1713. The first public training-school for teachers in the United States (now the State normal school at Framingham) was opened here in 1839.

See Charles Hudson, *History of the Town of Lexington* (Boston, 1868); revised and continued to 1912 by the Lexington Hist. Soc. (Boston, 1913).

LEXINGTON, a city of Missouri, U.S.A., 43 mi. E. of Kansas City, on the south bank of the Missouri river; the county seat of Lafayette county. It is on federal highways 24 and 13 and is served by the Missouri Pacific railroad. The population was 4,595 in 1930; 5,341 in 1940. Lexington is in a rich agricultural region and there are many coal mines in the vicinity, employing over 1,000 men. Hand-made handkerchiefs are made here for shops in the principal cities of the country. Lexington was founded in 1819, laid out in 1832, and chartered as a city in 1845. It succeeded Sibley as the eastern terminus of the Santa Fe trade, and was in turn displaced by Independence. At the opening of the Civil War it was the most important town on the Missouri river between Saint Louis and Saint Joseph, and commanded the approach by water to Ft. Leavenworth.

After the Confederate success at Wilson's Creek (Aug. 10, 1861), Gen. Sterling Price advanced northward, and with about 15,000 men arrived in the vicinity of Lexington on Sept. 12. Here he found a Federal force of about 2,800 men under Col. James A. Mulligan throwing up intrenchments on Masonic College hill, an eminence adjoining Lexington on the north-east. An attack was made on the same day and the Federals were driven within their defences, but at night Gen. Price withdrew to the Fair-grounds not far away and remained there five days waiting for his wagon train and for reinforcements. On the 18th the assault was renewed, and on the 20th the Confederates, advancing behind movable breastworks of water-soaked bales of hemp, forced the besieged, now long without water, to surrender. The losses were: Confederate, 25 killed and 75 wounded; Federal, 39 killed and 120 wounded. At the end of September Gen. Price withdrew in face of Fremont's approach with 40,000 men, leaving a guard of only a few hundred in the town, and on the 16th of the next month a party of 220 Federal scouts under Maj. Frank J. White surprised this guard, released about 15 prisoners and captured 60 or more Confederates. Another Federal raid on the town was made in December of the same year by Gen. John Pope's cavalry. Again, during Gen. Price's last raid into Missouri in 1864, there was some fighting on Oct. 19 about 4m. S. of the town.

LEXINGTON, a city in the Piedmont region of North Carolina, U.S.A., at an altitude of 804 ft., 20 mi. S. of Winston-Salem; the county seat of Davidson county. It is on federal highways 29, 52, 64 and 70, and is served by the Southern and the Winston-Salem Southbound railways. The population was 9,652 in 1930 and was 10,550 in 1940 (82% native white) by the federal census.

It has important industries, which include cotton and silk textile mills, furniture factories and dairying. The city was settled about 1750 and incorporated in 1827.

LEXINGTON, a town of western Virginia, U.S.A., near the headwaters of the beautiful Shenandoah valley, 1,050 ft. above sea level; the county seat of Rockbridge county. It is on the Lee highway, and is served by the Baltimore and Ohio and the Chesapeake and Ohio railways. The population was 3,752 in 1930; 3,914 in 1940. Natural Bridge is 15 mi. S.W., and there are mineral springs at several near-by points. Lexington is the seat of Washington and Lee university and of the Virginia military institute, each of which has a long and eventful history. The two campuses, connected by a short avenue, lie on a ridge above the town. In the valley 90 ft. below flows the North river, a small tributary of the James. The university grew out of an academy founded in 1749, which took Washington's name in 1798 (in recognition of a gift), became a college in 1813, and a university under its present name in 1871. Gen. Robert E. Lee was the president from the close of the Civil War until his death in 1870, and he is buried in the crypt of the Lee Memorial chapel on the campus. The Virginia military institute was established by the state in 1839, to provide a garrison for the state arsenal at Lexington, and has been an important training centre ever since. Over 2,000 officers in the War of 1914–18 had been cadets at the institute. From 1851 to the outbreak of the Civil War Gen. "Stonewall" Jackson was a professor here. A fine statue of him by Sir Moses Ezekiel stands on the grounds, silhouetted against the southern sky, and his tomb is in the Lexington cemetery. The first permanent settlement at Lexington was made about 1778. The town was occupied by Federal troops in 1864.

LEYDEN or LEIDEN, a city in the province of South Holland, the kingdom of the Netherlands, on the Old Rhine, and a junction station 18 mi. by rail S.S.W. of Haarlem, 10 mi. from The Hague and 35 mi. from Utrecht. It is connected by steam tramway with Haarlem and The Hague respectively, and with the seaside resorts of Katwijk and Noordwijk. There is also regular steamboat connection with Katwijk, Noordwijk, Amsterdam and Gouda. The population, which reached about 100,000 in 1640, had sunk to 30,000 between 1796 and 1811, and in 1939 was 77,099.

Leyden is an ancient town. It was the Roman *Lugdunum Batavorum,* and was governed until 1420 by burgraves, representatives of the courts of Holland. The most celebrated event in its history is its siege by the Spaniards in 1574. Besieged from May until October, it was at length relieved by the cutting of the dikes, thus enabling ships to carry provisions to the inhabitants of the flooded town. The weaving establishments (mainly broadcloth) of Leyden at the close of the 15th century were very important, and after the expulsion of the Spaniards Leyden cloth, Leyden baize and Leyden camlet were familiar terms. These industries afterwards declined, and in the beginning of the 19th century the baize manufacture was altogether given up. Linen, carpets and woollen (blankets) manufactures and printing are now the most important industries, while there is a trade in butter and cheese.

Katwijk, 6 mi. N.W. of Leyden, is a popular seaside resort and fishing village. Close by are the great locks constructed in 1807 by the engineer, F. W. Conrad (d. 1808), through which the Rhine (here called the Katwijk canal) is admitted into the sea at low tide. The shore and the entrance to the canal are strengthened by huge dikes. In 1520 an ancient Roman camp known as the Brittenburg was discovered here. It was square in shape, each side measuring 82 yds., and the remains stood about 10 ft. high. By the middle of the 18th century it had been destroyed and covered by the sea. Noordwijk is the most fashionable summer resort in Holland.

The two branches of the Rhine which enter Leyden on the east unite in the centre of the town. There is a large open space, the Van der Werf park, named after the burgomaster, PieterAndriaanszoon van der Werf, who defended the town against the Spaniards in 1574. This open space was formed by the accidental explosion of a powdership in 1807, hundreds of houses being demolished, including that of the Elsevier family of printers. At the junction of the two arms of the Rhine stands the old castle (De

Burcht), a circular tower built on an earthen mound in Roman or Saxon times. Of Leyden's old gateways only two—both dating from the end of the 17th century—are standing. The Hooglandsche Kerk, or the church of St. Pancras, was built in the 15th century and restored in 1885–1902. The most interesting buildings are the town hall (Stadhuis), a 16th century Dutch building; the Gemeenlandshuis van Rynland (1596, restored 1878); the weighthouse built by Pieter Post (1658); the ancient gymnasium (1599) and the so-called city timber-house (Stads Timmerhuis) (1612), both built by Lieven de Key (*c.* 1560–1627).

Leyden is essentially an academic city. The university was founded by William of Orange in 1575 as a reward for the heroic defense of the previous year. Originally located in the convent of St. Barbara, the university was removed in 1581 to the convent of the White Nuns, the site of which it still occupies, though that building was destroyed in 1616. The presence within half a century of the date of its foundation of such scholars as Joseph Scaliger, Hugo Grotius, Jacobus Arminius and Daniel Heinsius at once raised Leyden university to the highest European fame, a position which the learning and reputation of Jacobus Groenhovius, Herman Boerhaave, Tiberius Hemsterhuis and David Ruhnken, among others, enabled it to maintain down to the end of the 18th century. Among the institutions connected with the university are the national institution for East Indian languages, ethnology and geography; the fine botanical gardens, founded in 1587; the observatory (1860); the natural history museum; the museum of antiquities (Museum van Oudheden), with valuable Egyptian and Indian departments; a museum of Dutch antiquities from the earliest times; and three ethnographical museums, of which the nucleus was P. F. von Siebold's Japanese collections. The university was closed in 1940 by the Germans after their invasion of the Low Countries.

The municipal museum, founded in 1869 and located in the old cloth-hall (Laeckenhalle) (1640), contains a varied collection of antiquities connected with Leyden, as well as some paintings. Jan van Goyen, Gabriel Metsu, Gerard Dou and Rembrandt were natives of this town. The Thysian library occupies an old Renaissance building of the year 1655. Two miles from Leyden is the picturesque resort village of Warmond. The mediaeval castle of Duivenvoorde is three miles south of Leyden.

LEYDEN JAR. A device for storing quantities of static electricity discovered accidentally by P. van Musschenbroek of the University of Leyden in 1745, and, independently, by von Kleist of Kammin in Pomerania about the same time. The name appears to have originated in the writings of the Abbé Nollet. In its earliest form the Leyden jar consisted of a glass phial, partly filled with water, whose orifice was closed by a cork pierced by a wire or nail which dipped into the water. To charge the jar the phial was held in the hand and the exposed end of the wire brought into contact with the prime conductor of an electrical machine. On removing the phial from the machine and touching the wire with the other hand a violent shock was experienced. Improvements in the construction were made by Benjamin Wilson, John Bevis and Sir William Watson. In its present form the jar is made of thin flint glass of high dielectric strength, coated for part of its height, inside and out, with tinfoil. The outer coating is connected to earth and contact is made with the inner coating through a central brass rod which projects beyond the mouth of the jar. For further details *see* CONDENSER (ELECTRICAL).

LEYGUES, GEORGES (1858–1933), French politician, was born at Villeneuve-sur-Lot, on Nov. 28, 1858, and educated at Toulouse and Bordeaux. He was minister of public instruction in the Dupuy Government of 1894, and in the Waldeck-Rousseau Government of 1899–1902. He held office under Sarrien (1906) and Clemenceau (1917). In 1920–21 he was prime minister, retaining for himself the portfolio of foreign affairs. He was minister of marine in various cabinets from 1925 to 1933, and was minister of the interior in the Steeg cabinet, 1930–31. Leygues, in his early days, was one of the Parnassian group of poets.

LEYS, HENDRIK, BARON (1815–1869), Belgian painter, was born at Antwerp on Feb. 18, 1815. He studied under Wappers at the Antwerp Academy. In 1835 he went to Paris where he was influenced by the Romantic movement. Leys was an imitative painter in whose works may rapidly be detected the schools which he had been studying. In 1862 Leys was created a baron. At the time of his death, which occurred on August 26, 1869, he was engaged in decorating with fresco the large hall of the Antwerp Hôtel de Ville. *See* Muther, *Hist. of Modern Painting,* I, xv.

LEYSIN (4,418 ft.), a town in the canton of Vaud, Switzerland, 7 mi. S.E. of Montreux. It is a famous health resort for the treatment of tuberculosis, sheltered from the north winds, and is reached by a rack railway from Aigle. It is a centre for winter sports and has 4,135 inhabitants, the majority French-speaking and Protestant.

LEYTON, a municipal and parliamentary borough forming one of the northeastern suburbs of London, England, in Essex. Pop. (1938) 117,200. Area, 4.05 sq.mi. It lies on the left bank of the Lea. Leyton is in the main a residential as distinct from a manufacturing locality. Some metal working, and also manufacture of textiles, leather, food and paper are carried on as well as printing, bookbinding, furniture and coach building. Its name is properly Low Leyton, and the parish includes the district of Leytonstone to the east. Roman remains have been discovered here, but no identification with a Roman station by name has been made with certainty. Leyton was incorporated in 1926. It returns two members to parliament.

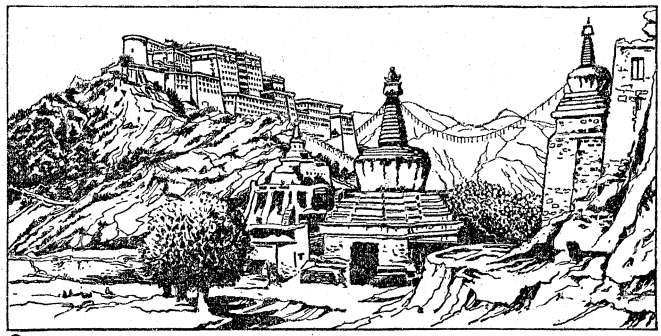
LHASA, the capital of Tibet. It lies in 29° 39′ N., 91° 5′ E., 11,830 ft. above sea-level. Owing to the inaccessibility of Tibet and the political and religious exclusiveness of the lamas, Lhasa was long closed to European travellers, all of whom during the latter half of the 19th century were stopped in their attempts to reach it. It was popularly known as the "Forbidden City." But its chief features were known by the accounts of the earlier Roman Catholic missionaries who visited it and by the investigations, in modern times, of native Indian secret explorers, and others, and the British armed mission of 1904. (*See* TIBET.)

Site and General Aspect.—The city stands in a tolerably level plain, which is surrounded on all sides by hills. Along its southern side, about ½ m. south of Lhasa, runs a considerable river called the Kyichu (Ki-chu) or Kyi, flowing here from the east-north-east, and joining the great Tsangpo (or upper course of the Brahmaputra) some 38 m. to the south-west. The hills round the city are barren. The plain, however, is fertile, though in parts marshy. There are gardens scattered over it round the city, and these are planted with fine trees. The city is screened from view from the west by a rocky ridge, lofty and narrow, with summits at the north and south, the one flanked and crowned by the majestic buildings of Potala, the chief residence of the Dalai lama, the other by the temple of medicine. Groves, gardens and open ground intervene between this ridge and the city itself for a distance of about 1 m. A gate through the centre of the ridge gives access from the west; the road thence to the north part of the city throws off a branch to the Yutok sampa or turquoise-tiled covered bridge, one of the noted features of Lhasa, which crosses a former channel of the Kyi, and carries the road to the centre of the town.

The city is nearly circular in form, and less than 1 m. in diameter. It was walled in the latter part of the 17th century, but the walls were destroyed during the Chinese occupation in 1722. The chief streets are fairly straight, but generally of no great width. There is no paving or metal, nor any drainage system, so that the streets are dirty and in parts often flooded. The inferior quarters are unspeakably filthy, and are rife with evil smells and large mangy dogs and pigs. Many of the houses are of clay and sun-dried brick, but those of the richer people are of stone and brick. All are frequently white-washed, the doors and windows being framed in bands of red and yellow. In the suburbs there are houses entirely built of the horns of sheep and oxen set in clay mortar. This construction is in some cases very roughly carried out, but in others it is solid and highly picturesque. Some of the inferior huts of this type are inhabited by the Ragyaba or scavengers, whose chief occupation is that of disposing of corpses according to the practice of cutting and exposing them to the dogs and birds of prey. The houses generally

are of two or three storeys. Externally the lower part generally presents dead walls (the ground floor being occupied by stables and similar apartments); above these rise tiers of large windows with or without projecting balconies, and over all flat broad-eaved roofs at varying levels. In the better houses there are often spacious and well-finished apartments, and the principal halls, the verandahs and terraces are often highly ornamented in brilliant colours. In every house there is a kind of chapel or shrine, carved and gilt, on which are set images and sacred books.

Temples and Monasteries.—In the centre of the city is an open square which forms the chief market-place. Here is the great temple of the "Jo" or Lord Buddha, called the Jokhang, regarded as the centre of all Tibet, from which all the main roads are considered to radiate. This is the great metropolitan sanctuary and church-centre of Tibet, the St. Peter's or Lateran of Lamaism. It is believed to have been founded by the Tibetan Constantine, Srong-tsan-gampo, in 652, as the shrine of one of those two very sacred Buddhist images which were associated with his conversion and with the foundation of the civilized monarchy in Tibet. The exterior of the building is not impressive; it rises little above the level of other buildings which closely surround it, and the effect of its characteristic gilt roof, though conspicuous and striking from afar, is lost close at hand.



GATEWAY TO LHASA, UNTIL 1890 CLOSED TO FOREIGNERS. IN FOREGROUND IS THE CHORTEN, OR SHRINE, WHICH FORMS ENTRANCE TO THE CITY, AND ON THE HILL IS THE POTALA, FORTRESS PALACE OF THE DALAI LAMA

The main building of the Jokhang is three storeys high. The entrance consists of a portico supported on timber columns, carved and gilt, while the walls are engraved with Chinese, Mongolian and Tibetan characters, and a great prayer-wheel stands on one side. Massive folding doors, ornamented with scrollwork in iron, lead to an antehall, and from this a second gate opens into a courtyard surrounded by a verandah with many pillars and chapels, and frescoes on its walls. On the left is the throne of the grand lama, laid with cushions, together with the seats of other ecclesiastical dignitaries, variously elevated according to the rank of their occupants. An inner door with enclosed vestibule gives access to the quadrangular choir or chancel, as it may be called, though its centre is open to the sky. On either side of it are three chapels, and at the extremity is the rectangular "holy of holies," flanked by two gilded images of the coming Buddha, and screened by lattice-work. In it is the shrine on which sits the great image of Ṣakya, set about with small figures, lamps and a variety of offerings, and richly jewelled, though the workmanship of the whole is crude. In the second and third storeys of the temple are shrines and representations of a number of gods and goddesses. The temple contains a vast accumulation of images, gold and silver vessels, lamps, reliquaries and precious bric-à-brac of every kind. The daily offices are attended by crowds of worshippers, and a sacred way which leads round the main building is constantly traversed by devotees who perform the circuit as a work of merit, always in a particular direction. The temple was found by the members of the British mission who visited it to be exceedingly dirty, and the atmosphere was foul with the fumes of butter-lamps.

Besides the convent-cells, halls of study and magazines of precious lumber, buildings grouped about the Jokhang are occupied by the civil administration, *e.g.*, as treasuries, customs office, courts of justice, etc., and there are also private apartments for the grand lama and other high functionaries. No woman is permitted to pass the night within the precinct.

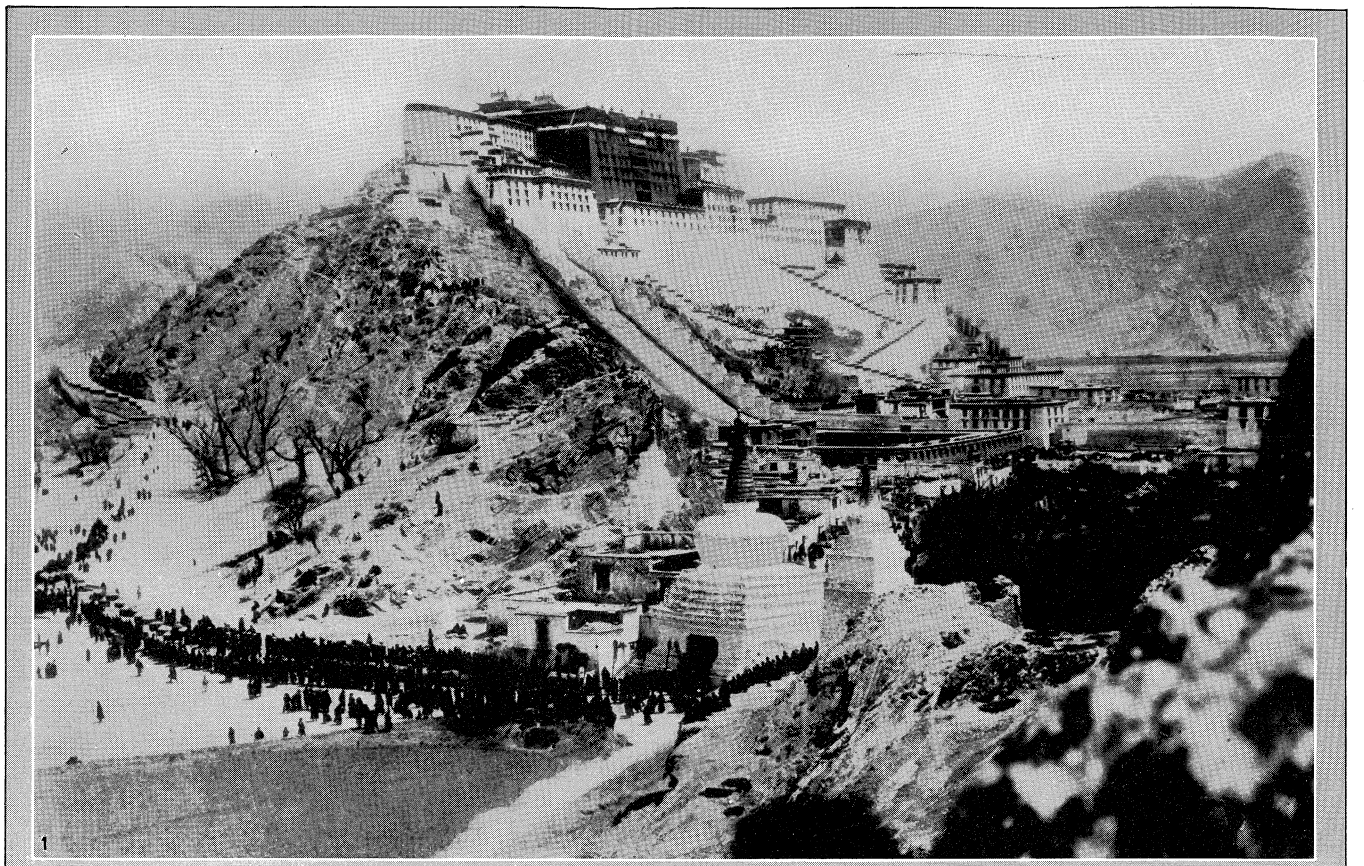
In front of the main entrance to the Jokhang, in the shadow of a sacred willow tree, stands a famous monument, the Doring monolith, which bears the inscribed record of a treaty of peace concluded in 822 (or, according to another view, in 783) between the king of Tibet and the emperor of China. Before this monument the apostate from Lamaism, Langdharma, brother and successor of the last-named king, is said to have been standing when a fanatic recluse, who had been stirred by a vision to avenge his persecuted faith, assassinated him.

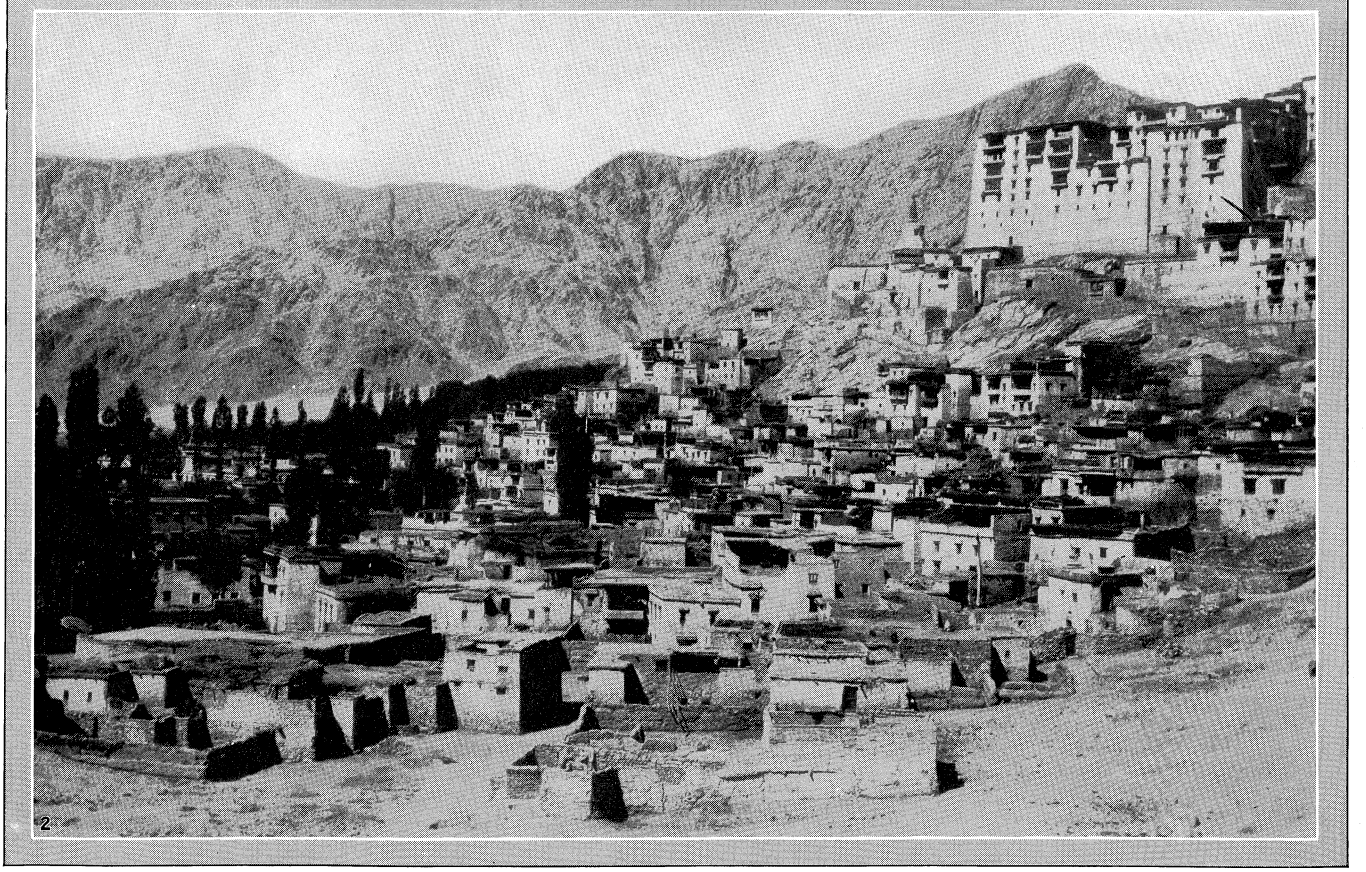
Potala.—The famous Potala hill, covered by the palace of the Dalai lama, forms a majestic mountain of building; with its vast inward-sloping walls broken only in the upper parts by straight rows of many windows, and its flat roofs at various levels, it is not unlike a fortress in appearance. At the south base of the rock is a large space enclosed by walls and gates, with great porticoes on the inner side. This swarms with lamas and with beggars. A series of tolerably easy staircases, broken by intervals of gentle ascent, leads to the summit of the rock. The whole width of this is occupied by the palace. The central part of this group of buildings (for the component parts of Potala are of different dates) rises in a vast quadrangular mass above its satellites to a great height, terminating in gilt canopies similar to those on the Jokhang. Here on the lofty terrace is the grand lama's promenade, and from this great height he looks down upon the crowds of his votaries far below. This central member of Potala is called the red palace from its crimson colour, which distinguishes it from the rest. It contains the principal halls and chapels and shrines of past Dalai lamas. There is in these much rich decorative painting, with jewelled work, carving and other ornament, but the interior of Potala as a whole cannot compare in magnificence with the exterior. Among the numerous other buildings of note on or near Potala hill, one is distinguished by the Chinese as one of the principal beauties of Lhasa. This is a temple not far from the base of the hill, in the middle of a lake which is surrounded by trees and shrubberies. This temple, called Lu-kang, is circular in form, with a *loggia* or portico running all round and adorned with paintings. Its name, "the serpent house," comes from the tradition of a serpent or dragon, which dwelt here and must be propitiated lest it should cause the waters to rise and flood Lhasa.

Another great and famous temple is Ramo-ché, at the north side of the city. This is also regarded as a foundation of Srong-tsan-gampo, and is said to contain the body of his Chinese wife and the second of the primeval palladia, the image that she brought with her to the Snow-land; whence it is known as the "small Jokhang." This temple is noted for the practice of magical arts. Its buildings are in a neglected condition.

Another monastery within the city is that of Moru, also on the north side, remarkable for its external order and cleanliness. Though famous as a school of orthodox magic, it is noted also for the printing-house in the convent garden. This convent was the temporary residence of the regent during the visit of the British mission in 1904. Other monasteries in or near the city are the Tsamo Ling or Chomoling at the north-west corner; the Tangyä Ling or Tengyeling at the west of the city; the Kundä Ling or Kundeling about 1 m. west of the city, at the foot of a low isolated hill called Chapochi. Three miles south, beyond the river, is the Tsemchog Ling or Tsecholing. These four convents are known as "The Four Ling." From their inmates the Dalai lama's regent, during his minority, was formerly chosen. The temple of medicine, as already stated, crowns the summit (Chagpa) at the end of the ridge west of the city, opposite to that on which stands the Potala. It is natural that in a country possessing a religious system like that of Tibet the medical profession should form a branch of the priesthood. "The treatment of disease, though based in some measure upon a judicious use of the commoner simple drugs of the country, is, as was inevitable amongst so superstitious a people, saturated with absurdity" (Waddell, *Lhasa and its Mysteries*).

The three great monasteries in the vicinity of Lhasa, all claiming to be foundations of Tsongkhapa (1356–1418), the medieval





PHOTOGRAPHS, EWING GALLOWAY

LHASA, TIBET, "FORBIDDEN CITY" OF THE LAMAS

1. Potala Hill and the Palace of the Dalai-Lama, Lhasa. The palace is the chief residence of the Grand Lama of Lamaism
2. View of a section of Lhasa, religious and political capital of Tibet. On the hill at the right is the Lama's palace

reformer and organizer of the modern orthodox Lama Church, "the yellow caps," are the following:—

1. **Debung** (written *'Bras spungs*) is 6 m. west of Lhasa at the foot of the hills which flank the plain on the north. It is one of the largest monasteries in the world, having some 8,000 monks. In the middle of the convent buildings rises a kind of pavilion, brilliant with colour and gilding, which is occupied by the Dalai Lama when he visits Debung once a year and expounds to the inmates. The place is frequented by the Mongol students who come to Lhasa to graduate, and is known in the country as the Mongol convent; it has also been notorious as a centre of political intrigue. Near it is the seat of the chief magician of Tibet, the Nachung Chos-kyong, a building picturesque in itself and in situation.

2. **Sera** is 3 m. north of the city on the acclivity of the hills and close to the road by which pilgrims enter from Mongolia. From a distance the crowd of buildings and temples, rising in amphitheatre against a background of rocky mountains, forms a pleasing picture. In the recesses of the hill, high above the convent, are scattered cells of lamas adopting the solitary life. The chief temple of Sera, a highly ornate building, has a special reputation as the restingplace of a famous *Dorjē, i.e.*, the *Vajra* or Thunderbolt of Jupiter, the symbol of the strong and indestructible, which the priest grasps and manipulates in various ways during prayer. The emblem is a bronze instrument, shaped much like a dumbbell with pointed ends, and it is carried solemnly in procession to the Jokhang during the New Year's festival.

The hill adjoining Sera is believed to be rich in silver ore, but it is not allowed to be worked. On the summit is a spring and a holy place of the Lhasa Mohammedans, who resort thither. Near the monastery there is said to be gold, which is worked by the monks. "Should they . . . discover a nugget of large size, it is immediately replaced in the earth, under the impression that the large nuggets . . . germinate in time, producing the small lumps which they are privileged to search for" (Nain Singh).

3. **Galdan.**—This great convent is some 25 m. east of Lhasa, on the other side of the Kyichu. It is the oldest monastery of the "Yellow" sect, having been founded by Tsongkhapa and having had him for its first superior. Here his body is said to be preserved with miraculous circumstances; here is his tomb, of marble and malachite, with a great shrine said to be of gold, and here are other relics of him, such as the impression of his hands and feet.

Samyé is another famous convent intimately connected with Lhasa, being said to be used as a treasury by the government, but it lies some 36 m. south-east on the left bank of the great Tsangpo. It was founded in 770, and is the oldest extant monastery in Tibet. It is surrounded by a very high circular stone wall, 1½ m. in circumference, with gates facing the four points of the compass. On this wall Nain Singh, who was here on his journey in 1874, counted 1,030 votive piles of brick. One very large temple occupies the centre, and round it are four smaller but still large temples. Many of the idols are said to be of pure gold, and the wealth is very great. The interiors of the temples are covered with beautiful writing in enormous characters, which the vulgar believe to be the writing of Ṣakya himself.

Population and Trade.—The total population of Lhasa is estimated at 15,000 to 20,000, mostly members of religious orders. The permanent population embraces, besides Tibetans, settled families of Chinese (about 2,000 persons), as well as people from Nepal, from Ladak, and a few from Bhotan and Mongolia. The Ladakis and some of the other foreigners are Mohammedans, and much of the trade is in their hands. Desideri (1716) speaks also of Armenians and even "Muscovites." The Chinese have a crowded burial-ground at Lhasa, tended carefully after their manner. The Nepalese (about 800) supply the mechanics and metal-workers. There are among them excellent gold- and silversmiths; and they make the elaborate gilded canopies crowning the temples. The chief industries are the weaving of a great variety of stuffs from the fine Tibetan wool; the making of earthenware and of the wooden porringers (varying immensely in elaboration and price) of which every Tibetan carries one about with him; also the making of certain fragrant sticks of incense much valued in China and elsewhere.

As Lhasa is not only the nucleus of a cluster of vast monastic establishments, which attract students and aspirants to the religious life from all parts of Tibet and Mongolia, but is also a great place of pilgrimage, the streets and public places swarm with visitors from every part of the Himalayan plateau, and from all the steppes of Asia between Manchuria and the Balkhash Lake. Naturally a great traffic arises quite apart from the pilgrimage. The city thus swarms with crowds attracted by devotion and the love of gain, and presents a great diversity of language, costume and physiognomy; though, in regard to the last point, varieties of the broad face and narrow eye greatly predominate. Much of the retail trade of the place is in the hands of the women. The curious practice of the women in plastering their faces with a dark-coloured pigment is less common in Lhasa than in the provinces.

During December especially traders arrive from western China by way of Tachienlu bringing every variety of silk-stuffs, carpets, china-ware and tea; from Siningfu come silk, gold lace, Russian goods, carpets of a superior kind, semi-precious stones, horse furniture, horses and a very large breed of fat-tailed sheep; from eastern Tibet, musk in large quantities, which eventually finds its way to Europe through Nepal; from Bhotan and Sikkim, rice; from Sikkim also tobacco; besides a variety of Indian and European goods from Nepal and Darjeeling, and *charas* (resinous exudation of hemp) and saffron from Ladakh and Kashmir. The merchants leave Lhasa in March, before the setting in of the rains renders the rivers impassable.

The tea importation from China is considerable, for tea is an absolute necessary to the Tibetan. The tea is of various qualities, from the coarsest, used only for "buttered" tea (a sort of broth), to the fine quality drunk by the wealthy. This is pressed into bricks or cakes weighing about 5½ lb., and often passes as currency. The quantity that pays duty at Tachienlu is about 10,000,000 lb., besides some amount smuggled. No doubt a large part of this comes to Lhasa.

Lhasa Festivities.—The greatest of these is at the new year. This lasts fifteen days, and is a kind of lamaic carnival, in which masks and mummings, wherein the Tibetans take especial delight, play a great part. The celebration commences at midnight, with shouts and clangour of bells, gongs, chank-shells, drums and all the noisy repertory of Tibetan music; whilst friends exchange early visits and administer coarse sweetmeats and buttered tea. On the second day the Dalai Lama gives a grand banquet, at which the Chinese and native authorities are present, whilst in the public spaces and in front of the great convents all sorts of shows and jugglers' performances go on. Next day a regular Tibetan exhibition takes place. A long cable, twisted of leather thongs, is stretched from a high point in the battlements of Potala slanting down to the plain, where it is strongly moored. Two men slide from top to bottom of this huge hypothenuse, sometimes lying on the chest (which is protected by a breastplate of strong leather), spreading their arms as if to swim, and descending with the rapidity of an arrow-flight. Occasionally fatal accidents occur in this performance, which is called "the dance of the gods"; but the survivors are rewarded by the court, and the Grand Lama himself is always a witness of it. This practice occurs more or less over the Himalayan plateau, and is known in the neighbourhood of the Ganges as *Barat*. It is employed as a kind of expiatory rite in cases of pestilence and the like. Exactly the same performance is described as having been exhibited in St. Paul's Churchyard before King Edward VI., and again before Philip of Spain, as well as, about 1750, at Hertford and other places in England. (*See* Strutt's *Sports*, etc., 2nd ed., p. 198.)

The most remarkable celebration of the new year's festivities is the great jubilee of the *Monlam* (*sMon-lam*, "prayer"), instituted by Tsongkhapa himself in 1408. Lamas from all parts of Tibet, but chiefly from the great convents in the neighbourhood, flock to Lhasa, and every road leading thither is thronged with troops of monks on foot or horseback, on yaks or donkeys,

carrying with them their breviaries and their cooking-pots. Those who cannot find lodging bivouac in the streets and squares, or pitch their little black tents in the plain. The festival lasts six days, during which there reigns a kind of saturnalia. Unspeakable confusion and disorder reign, while gangs of lamas parade the streets, shouting, singing and coming to blows. The object of this gathering is, however, supposed to be devotional. Vast processions take place, with mystic offerings and lama-music, to the Jokhang and Moru convents; the Grand Lama himself assists at the festival, and from an elevated throne beside the Jokhang receives the offerings of the multitude and bestows his benediction.

On the 15th of the first month multitudes of torches are kept ablaze, which lighten up the city to a great distance, whilst the interior of the Jokhang is illuminated throughout the night by innumerable lanterns shedding light on coloured figures in bas-relief, framed in arabesques of animals, birds and flowers, and representing the history of Buddha and other subjects, all modelled in butter. The figures are executed on a large scale, and, as described by Huc, who witnessed the festival at Kunbum on the frontier of China, with extraordinary truth and skill. These singular works of art occupy some months in preparation, and on the morrow are thrown away. On other days horse-races take place from Sera to Potala, and foot-races from Potala to the city. On the 27th of the month the holy *Dorjē* is carried in solemn procession from Sera to the Jokhang, and to the presence of the lama at Potala.

Of other great annual feasts, one, in the fourth month, is assigned to the conception of Sakya, but appears to connect itself with the old nature-feast of the entering of spring, and to be more or less identical with the *Hūlī* of India. A second, the consecration of the waters, in September-October, appears, on the confines of India, to be associated with the Dasehra.

On the 30th day of the second month there takes place a strange ceremony, akin to that of the scapegoat (which is not unknown in India). It is called the driving out of the demon. A man is hired to perform the part of demon (or victim rather), a part which sometimes ends fatally. He is fantastically dressed, his face mottled with white and black, and is then brought forth from the Jokhang to engage in quasi-theological controversy with one who represents the Grand Lama. This ends in their throwing dice against each other (as it were for the weal or woe of Lhasa). If the demon were to win the omen would be appalling; so this is effectually barred by false dice. The victim is then marched outside the city, followed by the troops and by the whole populace, hooting, shouting and firing volleys after him. Once he is driven off, the people return, and he is carried off to the Samyé convent. Should he die shortly after, this is auspicious; if not, he is kept in ward at Samyé for a twelvemonth.

Nain Singh, whose habitual accuracy is attested by many facts, mentions a strange practice of comparatively recent origin, according to which the civil power in the city is put up to auction for the first twenty-three days of the new year. The purchaser, who must be a member of the Debung monastery, and is termed the *Jalno*, is a kind of lord of misrule, who exercises arbitrary authority during that time for his own benefit, levying taxes and capricious fines upon the citizens.

History.—The seat of the princes whose family raised Tibet to a position among the powers of Asia was originally on the Yarlung river, in the extreme east of the region now occupied by Tibetan peoples. It was transplanted to Lhasa in the 7th century by the king Srong-tsan-gampo, conqueror, civilizer and proselytizer, the founder of Buddhism in Tibet, the introducer of the Indian alphabet. On the three-peaked crag now occupied by the palace-monastery of the Grand Lama this king is said to have established his fortress, while he founded in the plain below temples to receive the sacred images, brought respectively from Nepal and from China by the brides to whom his own conversion is attributed.

Tibet endured as a conquering power some two centuries, and the more famous among the descendants of the founder added to the city. This-rong-de-tsan (who reigned 740–786) is said to have erected a great temple-palace of which the basement followed the Tibetan style, the middle storey the Chinese, and the upper storey the Indian—a combination which would aptly symbolize the elements that have moulded the culture of Lhasa. His son, the last of the great orthodox kings, in the next century, is said to have summoned artists from Nepal and India, and among many splendid foundations to have erected a sanctuary (at Samyé) of vast height, which had nine storeys, the three lower of stone, the three middle of brick, the three uppermost of timber. With this king the glory of Tibet and of ancient Lhasa reached its zenith, and in 822, a monument recording his treaty on equal terms with the T'ang emperor of China was erected in the city. There followed dark days for Lhasa and the Buddhist church in the accession of this king's brother Langdharma, who has been called the Julian of the lamas. The king rejected the doctrine, persecuted and scattered its ministers, and threw down its temples, convents and images. It was more than a century before Buddhism recovered its hold and its convents were rehabilitated over Tibet. The country was then split into an infinity of petty states, many of them ruled from the convents by warlike ecclesiastics; but, though the old monarchy never recovered, Lhasa seems to have maintained some supremacy, and probably never lost its claim to be the chief city of that congeries of principalities, with a common faith and a common language, which was called Tibet.

The Arab geographers of the 10th century speak of Tibet, but without real knowledge, and none speaks of any city that we can identify with Lhasa. The first passage in any Western author in which such identification can be probably traced occurs in the narrative of Friar Odoric of Pordenone (*c.* 1330). This remarkable traveller's route from Europe to India, and thence by sea to China, can be traced satisfactorily, but of his journey homeward through Asia the indications are very fragmentary. He speaks, however, on this return journey of the realm of Tibet, which lay on the confines of India proper: "The folk of that country dwell in tents made of black felt. But the chief and royal city is all built with walls of black and white, and all its streets are very well paved. In this city no one shall dare to shed the blood of any, whether man or beast, for the reverence they bear a certain idol that is there worshipped. In that city dwelleth the *Abassi, i.e.,* in their tongue the pope, who is the head of all the idolaters, and has the disposal of all their benefices such as they are after their manner."

We know that Kublai Khan had constituted a young prince of the Lama Church, Mati Dhwaja, as head of that body, and tributary ruler of Tibet, but besides this all is obscure for a century. This passage of Odoric shows that such authority continued under Kublai's descendants, and that some foreshadow of the position since occupied by the Dalai Lama already existed. But it was not till a century after Odoric that the strange heredity of the dynasty of the Dalai Lamas of Lhasa actually began. In the first two centuries of its existence the residence of these pontiffs was rather at Debung or Sera than at Lhasa itself, though the latter was the centre of devout resort. A great event for Lhasa was the conversion, or reconversion, of the Mongols to Lamaism (*c.* 1577), which made the city the focus of sanctity and pilgrimage to so vast a tract of Asia. It was in the middle of the 17th century that Lhasa became the residence of the Dalai Lama. A native prince, known as the Tsangpo, with his seat at Shigatse, had made himself master of southern Tibet, and threatened to absorb the whole. The fifth Dalai Lama, Nagwang Lobzang, called in the aid of a Kalmuck prince, Gushi Khan, from the neighbourhood of the Koko-nor, who defeated and slew the Tsangpo and made over full dominion in Tibet to the lama (1641). The latter now first established his court and built his palace on the rock-site of the fortress of the ancient monarchy, which apparently had fallen into ruin, and to this he gave the name of Potala.

The founder of Potala died in 1681. He had appointed as "regent" or civil administrator (*Deisri,* or *Deba*) one supposed to be his own natural son. This remarkable personage, Sangye Gyamtso, of great ambition and accomplishment, still renowned in Tibet as the author of some of the most valued works of the native literature, concealed the death of his master, asserting

that the latter had retired, in mystic meditation or trance, to the upper chambers of the palace. The government continued to be carried on in the lama's name by the regent, who leagued with Galdan Khan of Dzungaria against the Chinese (Manchu) power. It was not till the great emperor Kang-hi was marching on Tibet that the death of the lama, sixteen years before, was admitted. A solemn funeral was then performed, at which 108,000 lamas assisted, and a new incarnation was set up in the person of a youth of fifteen, Tsangs-yang Gyamtso. This young man was the scandal of the Lamaist Church in every kind of evil living and debauchery, so that he was deposed and assassinated in 1701. But it was under him and the regent Sangye Gyamtso that the Potala palace attained its present scale of grandeur, and that most of the other great buildings of Lhasa were extended and embellished.

For further history and bibliography, *see* TIBET. Consult also LAMAISM. *See* also Sir Charles Bell, *The People of Tibet* (1928).

(H. Y.; L. A. WA.)

L'HÔPITAL (or L'HOSPITAL), **MICHEL DE** (*c.* 1505–1573), French statesman, was born near Aigueperse in Auvergne (now Puy-de-Dôme). His father, who was physician to the constable Charles of Bourbon, sent him to study at Toulouse, whence at the age of eighteen he was driven, a consequence of the evil fortunes of the family patron, to Padua, where he studied law and letters for about six years. On the completion of his studies he joined his father at Bologna, and afterwards, the constable having died, went to Rome in the suite of Charles V. For some time he held a position in the papal court at Rome, but about 1534 he returned to France, and becoming an advocate, his marriage, in 1537, procured for him the post of counsellor to the parlement of Paris. This office he held until 1547, when he was sent by Henry II. on a mission to Bologna, where the council of Trent was at that time sitting; after sixteen months of inactivity there, he was by his own desire recalled. L'Hôpital was now chancellor to the king's sister, Margaret, duchess of Berry. In 1553, on the recommendation of the Cardinal of Lorraine, he was named master of the requests, and afterwards president of the chambre des comptes. In 1559 he accompanied the princess Margaret, now duchess of Savoy, to Nice. In 1560 he was chosen to succeed François Olivier (1487–1560) as chancellor of France.

One of his first acts was to cause the parlement of Paris to register the edict of Romorantin, of which he is sometimes, but erroneously, said to have been the author. Designed to protect heretics from the secret and summary methods of the Inquisition, it certainly had his sympathy and approval. In accordance with his consistent policy of inclusion and toleration he induced the council to call the assembly of notables, which met at Fontainebleau in August 1560 and agreed that the States General should be summoned, all proceedings against heretics being meanwhile suppressed, pending the reformation of the church by a general or national council. The States General met in December; the edict of Orleans (January 1561) followed and finally, after the colloquy of Poissy, the edict of January 1562, the most liberal, except that of Nantes, ever obtained by the Protestants of France. Its terms, however, were not carried out, and during the war which was the inevitable result of the massacre of Vassy in March, L'Hôpital, whose dismissal had been for some time urged by the papal legate Hippolytus of Este, retired to his estate at Vignay, near Étampes, whence he did not return until after the pacification of Amboise (March 19, 1563).

It was by his advice that Charles IX. was declared of age at Rouen in August 1563, a measure which really increased the power of Catherine de' Medici; and it was under his influence also that the royal council in 1564 refused to authorize the publication of the acts of the council of Trent, on account of their inconsistency with the Gallican liberties. In 1564–1566 he accompanied the young king on an extended tour through France; and in 1566 he promulgated an important edict for the reform of abuses in the administration of justice. The renewal of the religious war in September 1567, however, diminished the influence of L'Hôpital, and in February 1568 he obtained his letters of discharge. Henceforward he lived in seclusion at Vignay, his only subsequent public appearance being by means of a *mémoire* which he addressed to the king in 1570 under the title *Le but de la guerre et de la paix, ou discours du chancelier l'Hospital pour exhorter Charles IX. à donner la paix à ses sujets.* He died either at Vignay or at Bellébat on March 13, 1573.

After his death Pibrac, assisted by De Thou and Scévole de Sainte-Marthe, collected a volume of the *Poemata* of L'Hôpital, and in 1585 his grandson published *Epistolarum seu Sermonum libri sex.* The complete *Oeuvres de l'Hôpital* were published for the first time by P. J. S. Dufey (5 vols., Paris, 1824–25). They include his "Harangues" and "Remonstrances," the *Epistles,* the *Mémoire* to Charles IX., a *Traité de la réformation de la justice,* and his will. *See* also A. F. Villemain, *Vie du Chancelier de l'Hôpital* (Paris, 1874); R. G. E. T. St-René Taillandier, *Le Chancelier de l'Hospital* (Paris, 1861); Dupré-Lasalle, *Michel de l'Hospital avant son élévation au poste de chancelier de France* (Paris, 1875–99); Amphoux, *Michel de l'Hospital et la liberté de conscience au XVIe siècle* (Paris, 1900); C. T. Atkinson, *Michel de l'Hospital* (London, 1900), containing an appendix on bibliography and sources; A. E. Shaw, *Michel de l'Hospital and his Policy* (London, 1905); and Eugène and Émile Haag, *La France protestante* (2nd ed., 1877 *seq.*).

LIADOV, ANATOL (1855–1914), Russian composer, was born at St. Petersburg (Leningrad) on May 11, 1855. He came of a family of professional musicians and his early training was given him by his father. He then entered the Petersburg conservatoire and became a pupil of Rimsky-Korsakoff. Later he was appointed professor there and also at the Imperial chapel. During his tour as an official collector of folk-songs for the Imperial Geographical society he discovered many treasures of traditional melody, many of which he has arranged with admirable effect. His best work is to be found in his short pieces for piano, which are like delicate miniatures in their fine finish and piquancy. One of these, *A Musical Snuff-box,* has become widely known through its adoption by the Russian Ballet. The most important of Liadov's collections is his three-volume edition of 120 national songs. He also wrote choral and orchestral pieces. He died at Novgorod on Aug. 18, 1914.

LIANES or **LIANAS,** a term applied originally to the climbing plants—often of great size and with massive stems—of tropical forests. Schimper extended the term to include all climbing plants wherever occurring; the ivy, the honeysuckle and the traveller's joy (*Clematis vitalba*) of the English hedges would thus all fall into this class. The term is still, however, mainly used in its restricted sense and applied to tropical climbers. Climbing plants as a whole are those which take advantage of some other structure (other plant, wall, etc.) for the purpose of support, with the result of economy in the production of strengthening material in the stem; more material is thus available for the production of foliage and so for the production of food supplies. Plants differ very much in the degree of adaptation to this mode of life. Some may be described as ramblers since they merely scramble over the surrounding vegetation. Good examples of this class are the bramble or blackberry (*Rubus fructicosus*) and cleavers or goose grass (*Galium Aparine*) which raise themselves on plants associated with them in hedges. They are aided thereto by the thorns or prickles they possess which prevent the stem being pulled back once it has pushed itself upwards.

Others are root climbers. These are not very common in the European flora but ivy (*Hedera Helix*) is a familiar example. Large numbers of roots (adventitious in nature) are produced on the non-illuminated side of the shoot. These roots are not sensitive to gravity and are negatively phototropic; as a result they penetrate any crevices in the wall and the bark of the tree on which they may be growing. These roots are "anchoring" roots; they do not, as is commonly held, suck any nourishment from the tree on which they grow; they may absorb a little rain water when they are young but they soon lose this power and become mere mechanical supports. Many members of the family Araceae and species of *Ficus, Hoya, Norantea, Piper, Tecoma* are root climbers.

Another form may be described as twining plants. These climb by winding their stems round suitable supports which must not be very thick nor too smooth, and must not be too far removed from the vertical position. Twiners generally possess long and thin stems and large internodes, and they show marked *circum-*

nutation, i.e., the apex of the stem, owing to regular cyclic variation in the rate of growth of its different sides, executes a circling movement in the air under the influence of gravity. Such a wide circling movement increases the chances of meeting a suitable support. When such a support is found the circumnutation causes the plant to wind round it in loose coils. Later the coils become tightened, *i.e.,* their diameter is decreased, by the elongation of the stem. The spiral formed may be right- or left-handed according to the plant. It is best defined as "clockwise" or "counter-clockwise," *i.e.,* whether, when seen from *above,* the tip of the stem twists round in the same or opposite direction as the hands of a clock.

LIANES ON A TROPICAL TREE

In the British flora twiners are found in *Humulus* (hop), *Tamus* (black bryony), *Calystegia* (convolvulus), *Lonicera* (honeysuckle), *Solanum* (bittersweet).

Another form is seen in the tendril climbers. These plants climb by means of slender whip-like organs known as tendrils which are sensitive to contact and sometimes extremely so. If the tendril of vine (*Vitis*) or bryony (*Bryonia*) or *Passiflora* is lightly stroked on the lower side it will in a minute or two curve towards this lower side.

As a result of this sensitiveness to a contact-stimulus (haptotropism as it is called) the growth rate on the side touched is decreased and that on the other side increased, and so the tendril winds round the support if of appropriate thickness, the act of winding bringing fresh surfaces into contact.

Later strong mechanical tissue (sclerenchyma) develops in the tendrils, but only in those which have attached themselves to a support.

The portion of the tendril between the support and its point of attachment to the plant frequently becomes coiled, the direction of the twist being reversed in the middle. This coil acts like a spring and renders the plant less liable to be torn from its support by a storm.

Tropical Climbers or Lianes.—Climbing plants reach their extreme development in the rain forests of the tropics where the high temperature and the high saturation of the air are eminently suitable for rapid growth.

Furthermore the shade in these forests is very great and climbing on tree trunks is the most economical way of reaching the light above the forest canopy. It is thus not surprising to find that tropical climbers are very numerous; the number has been estimated at 2,000 or more.

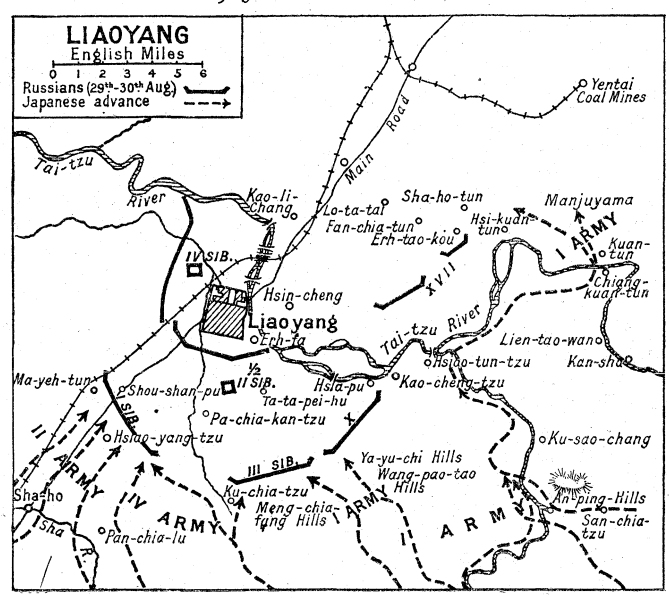
Certain botanical families, as Leguminosae, Bignoniaceae, Malpighiaceae, Menispermaceae and Sapindaceae are peculiarly rich in species which are climbers.

The behaviour of tropical climbers is well described by A. R. Wallace in his *Tropical Nature* (1878). "Next to the trees themselves the most conspicuous and remarkable feature of the tropical forests is the profusion of woody creepers and climbers that everywhere meet the eye. They twist around the slender stems, they droop down pendent from the branches, they stretch tightly from tree to tree, they hang looped in huge festoons from bough to bough, they twist in great serpentine coils or lie entangled in masses on the ground. Some are slender, smooth, and root-like; others are rugged or knotted; often they twine in veritable cables; some are flat like ribbons, others are curiously waved and indented. . . . They pass overhead from tree to tree, they stretch in tight cordage like the rigging of a ship from the top of one tree to the base of another, and the upper regions of the forest often seem full of them. . . . In the shade of the forest they rarely or never flower, and seldom even produce foliage, but when they have reached the summit of the trees that support them they expand under the genial influence of light and air, and often cover their foster parent with blossoms not its own."

These lianes usually have thick woody stems and as the stems wind round their supports they also twist on their own axes. Associated with this we find that secondary thickening of the wood frequently occurs in an anomalous way. Instead of a single ring of cambium developing a continuous cylinder of secondary wood we have irregular layers of cambium developing irregular masses of wood. The stem may be flattened with bands of wood in the form of arcs of a circle or the stem may be composed of a number of rounded strands of wood. Climbers generally, owing to the narrowness of the cross section of the stem compared with its length, have large and wide wood vessels to facilitate water transport. This reaches its height in the lianes of the tropics, which show in their wood the widest and largest vessels known. *Calamus* (the rattan) and *Desmoncus* among the palms are typical tropical ramblers or scramblers. Their stems are usually thin and reed-like but the leaves possess spines. These spines act like the smaller hooks of the bramble and hold the stem in position among the surrounding plants. The stem of *Calamus* may reach the enormous length of 600 feet and the plants are a serious bar to progress in a tropical forest.

See: A. R. Wallace, *Natural Selection and Tropical Nature* (1891); T. Schenk, *Beitrage zur Biologie und Anatomie der Lianen im besonderen der in Brasilien einheimischen Arten,* 2 vols. (Jena, 1922–3); G. Haberlandt, *Eine botanische Tropenreise* (Leipzig, 1893); A. F. W. Schimper, *Plant Geography upon a Physiological Basis* (1903); E. Warming, *Ecology of Plants* (1909); M. Skene, *The Biology of Flowering Plants* (1924). (V. H. B.)

LIANG SHIH-YI (1869–1933), Chinese statesman, was born in Samshui, near Canton, and, unlike many other Chinese leaders of his time, was educated wholly in China and knew no other language than his own. Graduating with honours in classics, he was appointed secretary to Tang Shao-yi when that statesman led a mission to India in 1906, and then began a successful career in the civil service. He was appointed director of railways and assistant director of the Chiao T'ung Bank in 1907, acting director of Imperial Chinese Posts in 1911, acting minister of communications in 1912, acting vice-minister of finance in 1913, and a member of the council of state and director-general of customs and taxes in 1915. The failure of Yuan Shih-kai's monar-



chical *coup d'état,* of which he was one of the supporters, compelled him to resign, but in 1918 he became Speaker of the Senate. Throwing in his lot with Chang Tso-lin in the contest between the latter and Wu Pei-fu, he became Prime Minister on Dec. 24, 1921. The defeat of Chang, however, resulted in his fall, and he left Peking in 1922 to escape Wu's vengeance and retired from active politics.

LIAOYANG, a city of China, formerly the chief town of the province of Liaoning (southern Manchuria). It is 35 mi. S. of Mukden, situated in a rich cotton district in the fertile valley

of the Liao river. Pop. (est.) 100,000.

Battle of Liaoyang.—This was the first of the three great battles which marked the main advance of the Japanese armies in Manchuria during the RUSSO-JAPANESE WAR, and is described under the latter heading. It lasted from Aug. 25 to Sept. 2, 1904, when it ended in a Japanese victory that narrowly missed being decisive.

LIAPTCHEFF, ANDREA (1866–1933), Bulgarian statesman, was born on Nov. 30, 1866, in the town of Ressen, Macedonia. He received his secondary education at Monastir, Salonika and Philippopolis and his university education at Zürich, Berlin and Paris. He took a prominent part in the movement for the unification of Northern Bulgaria and Eastern Roumelia of 1885. (*See* BULGARIA.) After editing jointly with D. Risoff the papers *Christo Botefj* and *Young Bulgaria,* A. Liaptcheff founded and edited the *Reforms,* a paper expounding the cause of Macedonia. In 1896 he joined the staff of the *Zname* and later on that of the *Priaporetz,* the organ of the Democratic party, of which he eventually became editor.

An eminent economist and financier, Andrea Liaptcheff took particular interest in the co-operative movement of which he was a pioneer, and was regularly elected to the post of president of the Supreme National Co-operative Council. For many years, until his appointment as prime minister in 1926, he was also president of the Union of the Popular Co-operative banks.

A. Liaptcheff sat in parliament almost uninterruptedly since 1908. He held successively the posts of minister of agriculture and commerce and minister of finance in the Malinoff Democratic cabinet of 1908–11. The treaty of Bulgaria's independence was signed by him at Constantinople in 1908; he also concluded the armistice at Salonika in 1918 after the collapse of the Bulgarian front in Macedonia. After occupying for several months the Finance Ministry, he took in Nov. 1918 the Ministry of War, being the first civilian in Bulgaria to hold that post. He was imprisoned by Stamboliiski in 1922, together with many other statesmen of pre-war days, whose elimination from political life was aimed at. His release from prison came with the *coup d'état* of June 9, 1923.

Andrea Liaptcheff became chairman of the Governmental majority in the parliament elected after the downfall of Stamboliiski. On Jan. 3, 1926, he succeeded Prof. Tsancoff as premier. He shared with his predecessor and Atanas Bouroff the leadership of the Democratic union, the party founded after June 9, by fusion of several party groups. He was premier until 1931.

The policy of appeasement and conciliation in internal and Balkan politics pursued by Liaptcheff inspired confidence in Bulgaria abroad and helped to secure financial assistance from the League of Nations for the settlement of the refugees and for the financial and economic reconstruction of Bulgaria.

LIAPUNOV, ALEXANDER MIKHAILOVICH (1857–1918), Russian mathematician, was born April 25 (old style) 1857. In 1901 he was made a member of the Russian academy of science and later was appointed professor at Kharkov university. He died Oct. 31, 1918 in Odessa. His mathematical research belongs mainly to hydrodynamics and his chief work is *Sur les figures d'équilibre peu différentes des ellipsoïdes d'une masse liquide homogène douée d'un mouvement de rotation* (1909–12). He made important advances in this subject and his voluminous investigations are of great value to specialists.

LIBANIUS (A.D. 314–393), Greek sophist and rhetorician, was born at Antioch, the capital of Syria. He studied at Athens, and spent his earlier manhood in Constantinople and Nicomedia. His private classes at Constantinople were more popular than those of the public professors, who had him expelled *c.* 346 on the charge of studying magic. He removed his school to Nicomedia, where he remained five years. After another attempt to settle in Constantinople, he finally retired to Antioch (354). Though a pagan, he enjoyed the favour of the Christian emperors. Among his pupils were John Chrysostom, Basil (bishop of Caesarea) and Ammianus Marcellinus. His works, consisting chiefly of orations (including his autobiography), declamations on set topics, letters, life of Demosthenes, and arguments to all his orations are voluminous. He devoted much time to the classical Greek writers, and had a contempt for all things Roman. His speeches and letters throw considerable light on the political and literary history of the age.

Editions: Orations and declamations, J. J. Reiske (1791–97); letters, J. C. Wolf (1738); two additional declamations, R. Förster (*Hermes,* ix. 22, xii. 217), who has published in the Teubner series a complete edition 12 vols. (1903–22); *Apologia Socratis,* Y. H. Rogge (1891). *See* also E. Monnier, *Histoire de Libanius* (1866); L. Petit, *Essai sur la vie et la correspondance du sophiste Libanius* (1866); G. R. Sievers, *Das Leben des Libanius* (1868); R. Förster, *F. Zambeccari und die Briefe des Libanius* (1878). *See* further J. E. Sandys, *Hist. of Classical Scholarship* (3rd ed., 1921).

LIBATION, a drink offering, the pouring out of a small quantity of wine, milk or other liquid as a ceremonial act (Lat. *libatio,* from *libare,* to taste, to pour out as offering). Such an act was performed in honour of the dead, in making of treaties (Gr. σπονδή, σπένδειν, *libare,* whence σπονδαί, treaty), and particularly in honour of the gods. Such libations to the gods were made as part of the daily ritual of domestic worship, or at banquets or feasts to the Lares (*q.v.*) or to special deities, as by the Greeks to Hermes, the god of sleep, when going to rest.

LIBAU: *see* LIEPAJA.

LIBEL and **SLANDER.** The law recognizes in every man the right to have his reputation unassailed by false and defamatory imputations. A defamatory imputation is one which tends to lower a man in the estimation of right-thinking men, or cause him to be shunned or avoided, or expose him to hatred, contempt, or ridicule. Such imputation, if conveyed by written or printed words, or by picture or effigy, is called libel; if conveyed by mere spoken words, or by significant looks, signs or gestures, is called slander.

The difference, then, between libel and slander is to be found in the medium through which the defamatory imputation is conveyed to the mind of the reader or hearer. It is transitory in slander; it is more or less permanent in libel. The difference is important, for in England an action for libel will lie without proof of special damage, whereas an action for slander will not lie unless damage can be proved, except in the four following cases: (1) where the words impute a crime punishable corporally, *e.g.,* by imprisonment; (2) where the words impute a contagious or infectious disease; (3) where the words are spoken of, and reflect on, a man in the way of his office, profession or trade; (4) where the words impute unchastity or adultery to a woman or girl (Slander of Women act, 1891). Unless the plaintiff can bring his case within one of these four heads he can only maintain an action if he can prove that he has suffered special damage, *i.e.,* actual loss—the loss of some material or temporal advantage which is either pecuniary or capable of being estimated in money —as the direct and natural and reasonable result of the slander, and this is so however disgraceful the imputation may be, and however certain it is that it will injure his reputation. A striking example of this rule is afforded by the decision in *Jones* v. *Jones & Wife* (1916) 2 A.C. 381, where it was held that a schoolmaster could not (in the absence of special damage) maintain an action for a verbal imputation of immorality, as the imputation was not in any way connected with his calling as a schoolmaster, and this although the jury found that the words imperilled the retention of his office and imputed that he was unfit for it.

It is not easy to discover why the law makes this distinction between an action for libel and an action for slander. The origin of the distinction is to be found in the different histories of the remedies for the two wrongs. The reason usually advanced for the distinction is that a greater degree of mischief is probable in the case of a libel than in the case of a slander owing to the more durable publicity of libel and the fact that it can be more easily disseminated. But the soundness of this reasoning was disputed by Lord Mansfield over 100 years ago, and may well be disputed with even greater force in these days of world-wide broadcasting.

It is immaterial whether the defamatory imputation is conveyed by words of assertion or suggestion, or whether it is conveyed by words used in a declarative or interrogative form. In-

sinuation may be as defamatory as direct assertion, and sometimes even more mischievous. The effect, the tendency of the language used, not its form, is the criterion. The libeller cannot defame and escape the consequences by any dexterity of style. It is, however, often very difficult to determine whether a given statement is defamatory. It may depend entirely on circumstances known to the persons who heard or read it. In slander, it may depend on the manner in which the words were pronounced. Accent, emphasis, intonation, gesture may all have an influence in determining the meaning. There are no words, however serious on the face of them, which may not be explained away by evidence that in the particular circumstances of the case they were not understood in a defamatory sense, but by way of jest, or in a secondary and innocent meaning. Conversely, words in themselves apparently innocent, may, with reference to certain circumstances and to persons knowing those circumstances, be shown to have been understood in a secondary and defamatory meaning. For example, the statement that Smith is "no better than his father" is on the face of it not defamatory. But if Smith's father is known by the persons to whom the words were used to have been a criminal the words would convey to them the meaning that Smith also is a criminal. In such cases the plaintiff must make the defamatory sense clear by an averment in his pleading, called an innuendo, and must prove the facts necessary to satisfy the jury that the words were understood in the defamatory sense averred.

It is for the jury, not the judge, to determine whether the words are defamatory. Libel or no libel is of all questions peculiarly one for a jury. It is the duty of the judge to tell the jury what in law is a libel, and then leave it to them to decide whether the particular words complained of fall within that definition or not. Where, however, the judge is of opinion that the words are incapable of any defamatory meaning, it is his duty to direct the jury as a matter of law to find that there is no libel. (*Capital and Counties Bank* v. *Henty* [1882] 7 app. cas. 741). But he should only do this when he is satisfied that a finding by the jury that the words are defamatory would be set aside as wholly unreasonable (*per* Kelly, C. B., in *Cox* v. *Lee* [1869] *L.R.* 4 *Ex.* 284, at p. 288).

It is immaterial whether or not the defendant intended the words to be defamatory. The question is, not what the defendant intended the words to mean but what reasonable men, knowing the circumstances in which the words were published, would understand to be their meaning. (*Hankinson* v. *Bilby* [1847] 16 M. and W. 492). Libel consists in using language which others knowing the circumstances would reasonably think to be defamatory of the person complaining and injured by it. A person charged with libel cannot defend himself by showing that he intended in his mind not to defame, although he may properly urge such fact in mitigation of damages. A striking illustration of this rule is to be found in the Scottish case of *Morrison* v. *Ritchie & Co.* (1902) 4 Fraser 645, where damages were recovered against the proprietors of a newspaper who in all innocence had announced in the paper that a lady, who had in fact been married only a month, had given birth to twins.

It is also immaterial whether or not the defendant intended to refer to the plaintiff. The question is: Would the words be understood by reasonable people who knew the plaintiff to refer to him? If so, they are published of and concerning the plaintiff no matter what the intention of the defendant may have been (*Hulton & Co.* v. *Jones* [1910] A.C. 20).

An action cannot be maintained for libel unless there has been a "publication," *i.e.*, a making known of the defamatory matter to some person other than the person of whom it is written. A communication of the defamatory matter only to the person defamed cannot injure his reputation though it may wound his self-esteem. A man's reputation is not the good opinion he has of himself but the estimation in which others hold him. So in the case of slander the words must be uttered in the presence and hearing of some third person. If they are uttered in the presence and hearing of the person slandered only there is no publication, and therefore no action will lie.

It is not, however, necessary in every case to prove directly that the defamatory matter was brought to the actual knowledge of some third person. If facts are proved from which such inference can be reasonably drawn a primâ facie case will be established. For example, proof that a letter was posted is sufficient primâ facie evidence that it reached the addressee, and of a publication to him. Similarly, if a libel be written on the back of a postcard and then sent through the post there is evidence of a publication, for the writing is necessarily visible to every person through whose hands the postcard passes, and the court will presume, in the absence of evidence to the contrary, that others beside the person to whom the postcard is addressed, *e.g.*, employees of the post office, will read, and have in fact read, it. (*Huth* v. *Huth* [1915] 3 K.B. 32). There is also evidence of publication if the libel is contained in a telegram, for the contents of a telegram is necessarily communicated to the clerk and telegraph operators whose duty it is to transmit it. (*Williamson* v. *Freer* [1874] L.R. 9 C.P. 393).

If A writes a letter defamatory of B and sends it to B and the letter is opened and read by C, A is not responsible for the publication to C unless it can be proved that A knew that the letter would be likely to be opened and read by some person other than B, *e.g.*, that A knew that B was blind or could not read. (*Powell* v. *Gelston* [1916], 2 K.B. 615).

A husband is civilly liable for a libel or slander published by his wife, even though she is living apart from him under a deed of separation. But he is not liable for a libel or slander published by her after the granting of a decree of divorce or judicial separation. A master is civilly liable for a libel or slander published by his servant in the course of his authorized employment, even though he was expressly forbidden to publish any defamatory matter. (*Citizens' Life Assurance Co.* v. *Brown* [1904] A.C. 423).

Every re-publication of defamatory matter gives rise to a fresh cause of action. It is no defence to the re-publisher of a libellous letter that he received the letter from another and believed the statements contained in it to be true, though the fact that he disclosed the name of the person from whom he received the letter at the time when he re-published it may mitigate the damages. So in the case of a slander it is no defence to a person who has repeated a slander that he did not originate it, but only repeated what some other person had told him. The existence of a slanderous rumour is no justification for repeating it.

A person who utters a slander or publishes a libel is not responsible for any mischief caused by its repetition or re-publication save in the following cases: (1) where he authorized or intended the person to whom he published the words to repeat or re-publish them; (2) where the repetition or re-publication of the words was the natural and probable result of the original publication; (3) where the person to whom the words were published was under a legal or moral duty to repeat or re-publish them. (*Speight* v. *Gosnay* [1891] 60 L.J., Q.B. 231).

Where a libel is contained in a newspaper the author of the libel, and the proprietor, printer, publisher, editor and vendor of the newspaper are prima facie liable for the damage caused by it, and any or all of them can be made defendants in one action. The vendor, however, will escape liability if he can prove that he did not know that the newspaper—and the same rule applies in the case of a book—contained, or was of a character likely to contain, a libel, and that such ignorance was not due to any negligence on his part. But the burden of proving this fact lies strictly on him, and the question of publication or non-publication in such a case is one for the jury. In the case of a book the jury may rightly infer that the vendor was negligent in not knowing that the book contained libellous matter from the title or general nature of the book itself, or from the recognized propensity of the author or publisher to publish libellous matter. But in the absence of such evidence the mere fact that the vendor did not have the book read through before he offered it for sale is not in itself evidence of negligence. (*Welldon* v. *Times Book Club Ltd.* [1911] 28 T.L.R. 115).

The plaintiff in an action for libel or slander need not prove that the words are false, for the law presumes this fact in his

favour. Nor need he prove malice on the part of the defendant. When a man says or writes anything defamatory of another he is assumed to do so maliciously. The law presumes malice from the defamatory nature of the statement, unless the occasion on which it is made is what is termed a privileged occasion, in which case the plaintiff must, in order to succeed, prove that the defendant was actuated by malice (see *infra*). Nor need the plaintiff prove that he has suffered any damage as the result of the words complained of—except in the case of slander not falling within one of the four heads above-mentioned—for the law presumes such damage without proof.

There are several defences open to a defendant in an action for libel or slander. He may contend that there has been no publication of the words, or that the words published are not defamatory, or do not refer to the plaintiff. Where special damage is an essential element of the action—as in the case of slander not falling within one of the above four heads—he may contend that no such damage has been suffered by the plaintiff, or that such damage, if any, is too remote. He may also rely on one or other of the following defences.

Justification.—To succeed in this defence the defendant must prove that the words used are substantially true. A slight inaccuracy as to some detail will not prevent his succeeding if such inaccuracy in no way alters the character of the imputation (*Edwards* v. *Bell* [1824] 1 Bing. 403). But if the words which the defendant cannot prove to be true materially aggravate the main imputation or insinuate some further charge in addition to it, the plaintiff will be entitled to a verdict (*Morrison* v. *Harmer* [1837]). The test always is: Would the words as published have a different effect on the mind of the reader from that which the actual truth would have produced? (*Alexander* v. *North-Eastern Railway Co.* [1865] 6 B. & S. 340).

Fair Comment.—In order to establish this defence the defendant must prove (1) that the words are the expression of an opinion (not the allegation of a fact); (2) that they are the fair and honest expression of an opinion based on true facts; and (3) that the subject commented on is one of public interest, *e.g.*, the public conduct of a man who holds some public office, or a book issued to the general public, or a work of art publicly exhibited, or a play publicly performed. It should be noted that the comment must be *both* fair *and* honest. (*McQuire* v. *Western Morning News* [1903] 2 K.B. 100, 110). The word fair refers to the language employed. The word honest refers to the mind of the critic. The defendant will fail in his defence, even though the language used by him does not in itself exceed the limits of fair criticism, if it can be shown that he was not expressing his honest opinion but was writing from some indirect motive, *e.g.*, in the case of a play, with the intention of injuring the author or the producer (*Thomas* v. *Bradbury, Agnew & Co.* [1906] 2 K.B. 627).

Absolute Privilege.—There are certain occasions on which public policy and convenience require that a man should be free from responsibility for the publication of defamatory words, even though he knew them to be false and spoke or wrote them with the express intention of injuring the plaintiff. Parliamentary, judicial and State proceedings are occasions of absolute privilege. No action will lie against a member of either house of parliament for defamatory statements made by him in the course of any parliamentary debate or proceeding, however injurious they may be. Statements contained in a petition addressed to parliament, or made by a person when giving evidence before a parliamentary committee, are absolutely privileged. Parliamentary papers published by the authority of either house are protected by a special statute, and the court will at once stay any proceedings commenced in respect of defamatory matter contained therein upon delivery of a certificate, properly verified by affidavit, setting forth that they were published by the authority of parliament (Parliamentary Papers act, 1840). No action will lie for defamatory statements made by any judge, juror, counsel, party or witness in the course of any proceedings before a court of justice, nor for defamatory statements contained in any pleading, affidavit, proof of a witness, or other document properly used in the course of such proceedings. An absolute privilege also attaches to defamatory statements contained in any newspaper report of judicial proceedings provided that such report is both fair and accurate and was published contemporaneously with such proceedings (Law of Libel Amendment Act, 1888, s. 1). A similar immunity, resting also on grounds of public policy, is accorded to official statements made, and official letters written, by an officer of State in the course of the performance of his official duties, and to all acts of State and the official notification thereof in the *London Gazette*.

Qualified Privilege.—There is a much larger class of occasions on which the interests of society require that a man should be protected in stating what he believes to be the truth about another, but only if he makes the statement honestly and not for any indirect or wrong motive. Such occasions are called occasions of qualified privilege, for the defendant is only entitled to protection if he uses the privileged occasion for the purpose for which it arose. He is not entitled to the protection of the privilege if he uses the occasion for some indirect or improper motive, *e.g.*, to gratify his spite against the plaintiff. The law makes the motive with which the occasion is used the true test of the defendant's liability.

The guiding principle by which occasions of qualified privilege may be ascertained was laid down by Lord Atkinson, in *Adam* v. *Ward* (1917) A.C. 309, as follows: "A privileged occasion is an occasion where the person who makes a communication has an interest or a duty, legal, social or moral, to make it to the person to whom it is made, and the person to whom it is made has a corresponding interest or duty to receive it. This reciprocity is essential."

A common illustration of privilege under this head is the character of a servant. It is the moral duty of a master on enquiry being made as to the character, fitness or capacity of a servant who has been in his employ to state all that he knows either for or against the servant, and if he does so honestly and without malice towards the servant his answer will be privileged, for the intending employer has clearly an interest in the subject-matter of the enquiry. There is a reciprocal duty and interest.

The privilege which attaches to information given in answer to an enquiry as to a servant's character applies to every answer to an enquiry of a confidential nature made by a person who has an interest in the subject-matter thereof, *e.g.*, an answer to the enquiry of a tradesman with regard to the credit or solvency of a person with whom the tradesman proposes to deal. The person, however, who makes the enquiry must have a legitimate interest in the subject-matter thereof, not merely an interest which springs from idle curiosity. It is no part of a man's duty to go into the confessional to every chance person who may choose to ask impertinent questions about another.

There are some cases in which it is the moral duty of a man, unasked and of his own accord, to give information to another, *e.g.*, where a confidential relationship exists between them. For instance, a father or near relative of a woman may warn her about the character of a man whom she proposes to marry. And even though no confidential relationship exists between the parties information given may nevertheless be privileged. The rule at the present day may be broadly stated as follows: a person who has information materially affecting the interests of another is entitled to tell that other what he knows with the honest purpose of protecting his interests, and if he does so with that honest purpose and in the full belief that his information is true, such communication, though volunteered and made to a complete stranger, is privileged (*Stuart* v. *Bell* [1891] 2 Q.B. 341).

Statements made by a man in the bona fide protection of his own interests, or in answer to an attack made upon him, are privileged, provided they are fairly relevant to the matter in hand (*Adam* v. *Ward* [1917] A.C. 309). And where two or more persons have a legitimate common interest in any matter any communication passing between them in reference to that matter is privileged, *e.g.*, communications between directors of the same company or ratepayers of the same parish (*Hunt* v. *Great Northern Railway Co.* [1891] 1 Q.B. 601).

The scope of the defamatory matter must not exceed the exigency of the occasion. If a person on a privileged occasion goes into matters not in any reasonable sense germane to the subject-matter of the occasion no privilege will attach to his statement in so far as such matters are concerned (*Adam* v. *Ward,* p. 997). And so where a man wrote a letter to the manager of some property in which he and A were jointly interested, principally about the property and the conduct of A in reference thereto, but also containing a charge against A of ill conduct towards his mother, it was held that, although the part of the letter about A's conduct as to the property was privileged, such privilege did not extend to that part of the letter which reflected on A's conduct to his mother, for the manager of the property could have nothing to do with that (*Warren* v. *Warren* [1834] 2 Cr. M. & R. 250).

Similarly the sphere of publication must not extend beyond the exigency of the occasion. If a person transmits by telegram defamatory matter which would have been privileged if sent by letter the privilege is lost, for the defamatory matter is necessarily published to the clerks through whose hands the telegram passes and such publication is wholly unnecessary (*Williamson* v. *Freer* [1874] L.R. 9 C.P. 393). It would be otherwise if transmission by telegram was the necessary or reasonable course to adopt in the circumstances (*Edmondson* v. *Birch & Co.* [1907] 1 K.B. 371). So where a slanderous charge is unnecessarily made in the presence of persons who have no interest in the matter no privilege will attach thereto. But where a man, in making a statement on a privileged occasion, as a reasonable precaution and in order to protect his own interests calls in some third person to hear what he says, the presence of such third person will not destroy the privilege. And so where a master, who was about to dismiss a servant for dishonesty, called in a friend to hear what passed it was held that the presence of such third party did not destroy the privilege, for it was material to the master's interest that a third person should be present who could bear witness to the dissolution of the contract, and so safeguard the master against any imputation of having dismissed the servant for reasons other than those he then gave (*Taylor* v. *Hawkins* [1851] 16 Q.B. 308).

Privileged Reports.—A report of judicial proceedings is privileged if it is fair and accurate and not published maliciously, although such report may contain matter defamatory of an individual. It is of great importance to the public that the proceedings of courts of justice should be universally known. The general advantage to the community in having such proceedings made public more than counterbalances the inconvenience to the private persons whose conduct may be the subject of such proceedings. It is not necessary that the report should be verbatim; an abridged report will be privileged, provided it gives a correct and just impression of what took place in court. But if the report is garbled so as to produce misrepresentation, or by suppression of some portion of the evidence has the effect of giving an entirely false impression to the prejudice of one of the parties concerned, it will not be privileged.

A report of the proceedings of either house of parliament is privileged, provided that it is fair and accurate and is not published maliciously.

At common law no reports other than reports of judicial and parliamentary proceedings were privileged; but by s. 4 of the Law of Libel Amendment act, 1888, a report published in a newspaper of the proceedings of a public meeting, or (except where neither the public nor any newspaper reporter is admitted) of any meeting of a vestry, town council, school board, board of guardians, board or local authority constituted by act of parliament, is privileged unless it is proved that such report was published maliciously. It is, however, provided that this section shall not protect (*a*) a defendant who was requested, and who has refused or neglected to insert in his newspaper a reasonable letter or statement by way of contradiction or explanation of such report; (*b*) the publication of any blasphemous or indecent matter; (*c*) the publication of any matter not of public concern, and the publication of which is not for the public benefit.

Apology.—An apology is no defence to an action for libel or slander, but may be given in evidence in mitigation of damages. To be effectual, an apology should not only be made promptly, but should amount to a full and frank withdrawal of the charges or suggestions conveyed, and contain an expression of regret that such charges or suggestions were ever made. It should be given a publicity equal to that of the libel. If the libel appeared in a newspaper, the apology should be inserted in the same newspaper in as large a type and in as conspicuous a position as the libel, so as plainly to attract the attention of readers to it.

In any action for libel contained in a newspaper, it is a good defence that such libel was inserted without actual malice and without gross negligence, and that before the commencement of the action, or at the earliest opportunity afterwards, the defendant inserted in such newspaper a full apology for the libel, or, if the newspaper in which the libel appeared was published at intervals exceeding one week, that he offered to publish the apology in any newspaper selected by the plaintiff. This defence must be accompanied by the payment of a sum of money into court by way of amends, otherwise it will be deemed a nullity.

Criminal Law.—Libel is not only an actionable wrong: it is also a criminal offence punishable with fine and imprisonment. Slander is not a criminal offence, though the words uttered may come within the criminal law as being blasphemous, seditious or obscene.

But although libel is a criminal offence as well as an actionable wrong, a man whose private character has been attacked should not institute criminal proceedings unless the words are of a kind calculated to provoke a breach of the peace. If he does so, the judge will direct the grand jury to throw out the bill of indictment and leave the prosecutor to pursue his civil remedy.

In a civil action the person defamed must, as we have seen, prove a publication to some third person, as without that there is no injury to his reputation. But in criminal proceedings this is not essential; it is sufficient to prove a publication to the actual person defamed provided the words might reasonably tend to provoke him to a breach of the peace (*R.* v. *Adams* [1888] 22 Q.B.D. 66). Again, as we have seen, the truth of the matters charged is a complete defence to a civil action for libel. But in criminal proceedings, until 1843, the fact that the words were true was regarded as wholly irrelevant. No evidence was admitted of the truth of the matters charged, not even in mitigation of sentence. But now, by s. 6 of Lord Campbell's Libel act, 1843, the defendant is entitled to give evidence of the truth of the matters charged, but such evidence will not amount to a defence to the indictment unless it was for the public benefit that the matters charged should be published. If the defendant is convicted, the court, in pronouncing sentence, will consider whether his guilt is aggravated or mitigated by his plea of justification and by the evidence given to prove or disprove the plea.

In accordance with the principle of English law that a master is liable for all acts of his servant done in the ordinary course of the servant's employment, the proprietor of a newspaper is civilly liable for any libel which appears in its columns, even though the libel may have been published in his absence, without his knowledge and contrary to his express orders, for the editor is his servant and it is within the scope of the editor's employment to send to the printers of the paper whatever matter he thinks ought to be published. But the proprietor of a newspaper is not liable to criminal proceedings in respect of any libel which appears in its columns if he can prove that such publication was made without his authority, consent or knowledge, and did not arise from want of due care or caution on his part (Lord Campbell's Libel act, 1843, s. 7). The mere fact that he has given the editor a general authority to publish what he thinks proper is not in itself evidence that he authorized or consented to the publication of the libel (*R.* v. *Holbrook & Others* [1877] 3 Q.B.D. 35).

Criminal proceedings will sometimes lie where an action will not. Thus it is a crime, though not actionable, to write and publish defamatory words of a deceased person, provided it is done with intent to injure and bring contempt on his posterity, and so provoke them to a breach of the peace (*R.* v. *Topham* [1791] 4

Term R. 126). So it is a crime, though not actionable, to write and publish words injurious to the reputation of any class or body of persons (*e.g.*, the Durham police), provided that the words tend to excite the angry passions of the class or body libelled, or of the general public against the class or body libelled, and so lead to a breach of the peace (*R.* v. *Osborne* [1732] 2 Swanst. 503, n.).

Scots Law.—The Scots law of defamation differs in many respects from the English law in so far as questions of procedure and pleading are concerned. To take one example: in Scottish practice the question of libel or no libel, in so far as it is a question for the court only, is not left to be raised at the trial but is decided at the stage when the issues are adjusted by the lord ordinary. In so far, however, as the substantive law is concerned, the only differences between the two systems are that in Scotland (1) the law makes no distinction between written and oral defamation; (2) publication is not essential to found an action: a defamatory letter sent to the person defamed, or a slander uttered in his presence only, entitle him to that element, at least, of damages which is called *solatium;* (3) a husband is not liable for defamatory words published by his wife; (4) there is no criminal remedy for defamation.

American Law.—American law differs in very few respects from that of England. In so far indeed as the common law is concerned they may be said to be substantially identical. In some jurisdictions, *e.g.*, Delaware, Florida, Nebraska and Louisiana, the fact that a libel is true is in itself no defence; the defendant must go further and show that it was published under such circumstances as justify the conclusion that he acted with good motives and for justifiable ends. In Massachusetts the fact that a libel is true is a complete defence unless a malicious intention on the part of the defendant can be proved. These statutory provisions do not apply to slander.

See generally Gatley, *Law and Practice of Libel and Slander;* Fraser, *Law of Libel.* For the early history of the law of defamation *see* F. Carr, "The English Law of Defamation, with especial reference to the distinction between Libel and Slander," *Law Quarterly Review,* vol. xviii., pp. 255, 388; W. S. Holdsworth, "Defamation in the Sixteenth and Seventeenth Centuries," *ibid.* vol. xl., pp. 302, 397, and vol. xli. p. 13. (C. GA.)

LIBELLATICI, the name given to a class of persons who, during the persecution of Decius, A.D. 250, evaded the consequences of their Christian belief by procuring documents (*libelli*) which certified that they had satisfied the authorities of their submission to the edict requiring them to offer incense or sacrifice to the imperial gods.

See E. W. Benson, *Cyprian* (London, 1897); and art. NOVATIANUS.

LIBERALE, ANTONIO (*c.* 1445–1526), Italian painter of the Veronese school. He was educated as a miniature painter. Leaving Verona soon after 1465, he worked three years at Monte Oliveto, near Siena, on the illustration of liturgical books. These are now preserved at Chiusi. From 1470 to 1476 he was employed on similar work for the cathedral of Siena. He was back in Verona in 1488 and worked there until his death. His earliest known picture is the "Madonna with Saints," in the Berlin gallery. It is dated 1489 and is the only signed work of the master extant. In 1490 he completed the "Adoration of the Magi" for the Cathedral of Verona. Another early work is the predella with the "Nativity," the "Epiphany" and the "Death of the Virgin" in the bishop's palace at Verona. These works are executed in the style of miniature painting, both as regards line and colour. Other notable works are: St. Anthony of Padua in S. Fermo, Verona, and the St. Jerome in the Museo Civico. Of three or four versions of "Christ entombed," the fresco in S. Anastasia at Verona, and the altar-piece in S. Leo at Venice are the most impressive. The Munich Pinakothek contains a "Pietà" full of genuine pathos. The master's delight in architecture is displayed in the "St. Sebastian," standing against the background of a Venetian canal, in the Brera gallery, and in the "Dido on the Pyre" surrounded by Renaissance arcades in the National Gallery, London. Especially notable among the many and varied peculiarities of his style are his strongly defined outline and the rounded character of his contours. His figures are inspired with intense emotion. Liberale's position in the school of Verona is similar to that of Mantegna in the school of Padua, of Cosimo Tura in that of Ferrara; like these masters he was at the head of a large body of pupils and disciples.

See Vasari, *Vite* (Milanese ed.); Crowe and Cavalcaselle, *History of Painting in North Italy* (2nd ed., 1912); J. P. Richter, *Old Masters of the Italian School, Villa Doccia, Fiesole* (1907). (I. A. R.)

LIBERAL PARTY, in Great Britain the lineal successor of the historic Whig Party. (*See* WHIG AND TORY.) The change of name represented a widening of scope, due to the association with the aristocratic Whigs of new elements, forces and ideas which rose into prominence during the first three decades of the 19th century. The democratic movement stimulated by the French Revolution, the new political philosophy of the Benthamite school, the teachings of the economists who developed the ideas of Adam Smith, and the emergence of new social classes and new problems, all led to demands for a far-reaching reconstruction and gave birth to a radicalism that was widely different from, though not incompatible with, the Whigs' sedate loyalty to their traditional creed of "civil and religious liberty." Soon after Waterloo the word "Liberal" began to be used to express all this movement of change. At first it had a foreign tinge: it was used by hostile critics of the English movement to suggest its kinship with the revolutionary movements of France and Spain, as when Southey (1816) used the Spanish form, speaking scornfully of "the British *Liberales*"; or as when Scott (1826) described the Canningites as "a mitigated party of *Liberaux.*" During the '20s the word passed into current use, but not yet as the official designation of a party. In 1822 Leigh Hunt called his ill-fated paper *The Liberal;* in 1825 Hazlitt described Byron as "a Liberal in politics"; in 1827 Macaulay wrote of "the Liberal parties on both sides of the House." When in 1830 the Radicals joined with the Whigs in the agitation for the Reform bill, and, still more, when in 1832 a host of spokesmen of the new ideas found their way into the House of Commons and ranged themselves behind the Whig Ministry, it became necessary to find a common designation for Whigs and Radicals, each of whom hated the others' name. The need became more obvious when in 1834 the Whigs were weakened by the secession of Stanley, Graham and others, and had to cultivate their Radical allies. In that year Greville wrote of "Reformers and Liberals of all denominations" sinking their differences in a common hostility to the Tories. Lord John Russell, leader of the discordant party in the Commons, seems to have been responsible for the official adoption of the new name. In 1839 he repeatedly refers to "the Liberal Party" in his daily letters to Queen Victoria. From that date it may fairly be said that "the Liberal Party" was the official designation of one of the two great parties in the State—the only term that covered all the supporters of the Whig Governments. But the real beginning of the party (as distinct from its name) should be assigned to 1832, when the Whigs were reinforced by an army of industrialists, nonconformists (emancipated by the repeal of the Test Act in 1828), Benthamites and economists. The Whig aristocrats still manned the ministries but the driving force of the reform movement came from these new elements; they were further strengthened by the triumphs of the Anti-Corn Law League (1839–46); and another modifying element was introduced with the gradual absorption of the Peelite intellectuals who for a time denominated themselves "Liberal-Conservatives." With the death of Palmerston (1865) and the succession of Gladstone to leadership, the transformation from Whiggism to Liberalism was completed. Thereafter the word "Whig" was largely used as a term of reproach. In the 83½ years between the formation of the Whig Government in 1830 and the outbreak of the World War (which opened a new epoch in British politics) Liberal Governments held office for 52½ years, under nine prime ministers, among whom Melbourne and Russell each held office for 6½ years, Palmerston for 9½ years, Gladstone for 12½ years and Asquith for 7½ years.

There has never been an authoritative definition of the doctrine or aims of Liberalism. The party has always included various schools of thought, united only by a desire for progress in the

direction of emancipation. For this reason it has, at all stages in its career, been far more subject to dissensions than the Conservative Party. The following definition or description, however, probably covers all the shades of Liberal opinion: Liberalism is a belief in the value of human personality, and a conviction that the source of all progress lies in the free exercise of individual energy; it produces an eagerness to emancipate all individuals or groups so that they may freely exercise their powers, so far as this can be done without injury to others; and it therefore involves a readiness to use the power of the State for the purposes of creating the conditions within which individual energy can thrive, of preventing all abuses of power, of affording to every citizen the means of acquiring mastery of his own capacities, and of establishing a real equality of opportunity for all. These aims are compatible with a very active policy of social reorganization, involving a great enlargement of the functions of the State. They are not compatible with Socialism, which, strictly interpreted, would banish free individual initiative and responsibility from the economic sphere.

The Whig Period: 1830–1865.—The history of the Liberal Party between 1830 and the World War may be divided into three periods. In the first (1830–65), which may be called the Whig period, the Whig aristocracy still filled all the cabinets, but the driving force came from other elements, notably the Benthamites (the Mills, Chadwick, Place, Parkes, etc.), the radical imperialists (Durham, Wakefield, Molesworth, etc.), and the Manchester industrialists (Cobden, Bright, etc.). The foreign policy of this period was marked by a warm sympathy with the liberal and nationalist movements on the Continent, and a spirited opposition to the repressive policy still maintained by the monarchies of Eastern Europe. Palmerston was the chief representative of this view. In imperial affairs the period was of supreme importance; it completely transformed the character of the British empire. The English-speaking colonies were systematically settled, they were also equipped with the full machinery of self-government. India was thrown open to western traders, teachers and missionaries (1833), the bar against the employment of Indians in responsible positions was removed, and a system of western education was introduced. Slavery was abolished throughout the empire (1833); and in the government of backward peoples the principle was established that the first duty of administration was to protect the rights of native populations and safeguard them against exploitation. In fiscal policy the agitation of the Anti-Corn-Law League brought about the establishment of free trade, which was completed by the budgets of Gladstone. In the political sphere the Reform Act of 1832 was followed by the creation of elected municipalities (1835) and boards of guardians (1834), as well as many other *ad hoc* local bodies. In the social sphere the foundations of the factory code were laid by the act of 1833, which set up a body of factory inspectors whose reports led to later acts—mostly passed by Liberal Governments. The State regulation of education was begun (1839), and systematic provision for public health began with the Public Health Act of 1848. The new municipalities were given large social duties. The press was freed and the penny post established. The railway monopolies were brought under control; joint-stock companies were regulated; savings-banks were instituted, and friendly societies and other thrift organizations brought under State supervision.

The Gladstone Period: 1865–1895.—The second period (1865–95) was the Gladstonian era, so completely dominated by the personality of Gladstone that Liberalism almost became Gladstonianism. In this period the catchword "peace, retrenchment and reform" pre-eminently expresses the character of Liberal policy. Gladstone was profoundly pacific: in a famous speech at West Calder (1878) he laid down the principles of foreign policy in terms that almost anticipated the ideas of the League of Nations. He and his foreign ministers strove to avoid foreign entanglements, and "splendid isolation" became the note of British foreign policy. Nevertheless Gladstone retained a passionate sympathy with struggling nationalities (*e.g.*, in the Balkans). He had little interest in imperial affairs and distrusted the school of radical imperialists, represented in this period by Forster, Dilke and Chamberlain. He disliked imperial expansion; held aloof from the race for African possessions; adopted a magnanimous but misunderstood policy of withdrawal in South Africa; and though he was drawn into Egypt, hated the entanglement and bungled the situation. In India, under Ripon and Lansdowne, the first steps were taken towards a system of self-government. Gladstone's main interests lay in finance, where he established exacting standards of economy under Treasury control, and in constitutional reform. From 1868 to 1894 he was preoccupied with Ireland, where he strove to heal an age-long sore. This crusade aroused intense bitterness and severed from the Liberal Party most of the Whig aristocracy who had hitherto clung to it; but Gladstone has been justified by the later course of events. One aspect of his Irish policy—the Land Acts—involved a very sweeping departure from *laissez-faire* in the establishment of rent-fixing courts. The period of his dominance also saw the establishment of a national system of education (1870); an extension of democracy by the introduction of ballot-voting (1872) and the enfranchisement of the agricultural labourers (1884); the legalization of trade unions (1871); a reconstruction of the army and the abolition of purchase of commissions; a complete reorganization of the judicial system; and the abolition of religious tests in the universities.

Before the end of the Gladstonian regime the long ascendancy of the Liberal Party was waning. Apart from the short and embarrassed Ministry of 1892–95, there was a continuous period of Conservative government from 1886 to 1905. A fresh inspiration was needed. An educated democracy was beginning to resent its position in the industrial order. The service of liberty demanded not merely the removal of restrictions, but the creation of the positive conditions in which the healthy development of individual faculty would be possible. The stir of ideas led, on the one hand, to a revival of Socialism and to the organization of the Labour Party. On the other hand, it brought about a steady change in the orientation of the Liberal Party; and the third period in the history of Liberalism (1895–1914) was pre-eminently a period of social reorganization.

1906–1914.—In 1906—largely as a result of Chamberlain's challenge to free trade—the Liberals returned to power with an overwhelming majority, and the next eight years were perhaps the most strenuous in the history of British politics. The whole period was overhung by the menace of Germany; and though Grey strove resolutely for peace, Britain was forced out of her traditional isolation and drawn into the vortex of European politics. At the same time a remarkable reorganization of the navy and the army was carried out—not without misgiving among the pacifist elements of the party. Without Haldane's work in the creation of the expeditionary force, of the territorial army, of the imperial general staff, and of the officers' training corps, Britain could not have played her part in the coming struggle. In imperial affairs the action of Campbell-Bannerman (who first gave currency to the phrase "British commonwealth of nations") in granting autonomy to the Boer States, made possible the Union of South Africa and healed an ancient sore; in India the Morley-Minto reforms marked a long advance towards self-government. The self-governing members of the empire were drawn closely together—and in the series of conferences which began in 1907 their representatives were for the first time admitted to the arcana of foreign policy and imperial defence, and helped to reorganize their military system, with results that were of the highest importance during the World War. But in spite of these preoccupations, the main work of these years was one of social reorganization in a series of novel enactments which implied the adoption of a new view of the functions of the State. These enactments included universal workmen's compensation, a system of old age pensions, State insurance against sickness and unemployment, the establishment of a network of labour exchanges, the institution of trade boards for the fixation of wages in sweated trades, the creation of a large system of small holdings, the conferment upon municipalities of large powers and duties for housing and town-planning. The means for carrying out these reforms were formed by a system of progressive taxation of the rich,

through graduated income-tax, super-tax and death-duties, which involved a substantial redistribution of wealth. These financial methods are now a part of the established system of British government. But they aroused bitter opposition, which culminated when the budget of 1909 not only tightened the screw at many points, but threatened an attack upon the existing land-system through taxes on land values. The rejection of this budget by the House of Lords led to an acute constitutional crisis, which (after two general elections in 1910) brought about the destruction of the Lords' veto by the Parliament Act (1911). The first use made of this act was to pass a Home Rule bill, against fierce opposition. At the same time a huge land-campaign was in preparation. The whole character of the legislation of these strenuous years shows that the outlook of the Liberal Party had undergone a great change. It had never been more confident or more militant than in 1914.

Post-war Period.—The war and the events which followed it shattered the party. This sudden *débâcle* is not difficult to explain. The party was hopelessly split when, in 1916, Lloyd George displaced Asquith from the premiership, and when at the election of 1918 those who stood aloof from Lloyd George were displaced by the "coupon." The small remnant of Independent Liberals were so obsessed by their grievance that they made themselves appear a querulous and negative party; they had no constructive policy to preach; and this was a grave weakness at a time when millennial expectations were being created and immense promises made to the electorate. After the break-up of the coalition in 1922, there were for a time two mutually distrustful Liberal groups in parliament. They reunited in 1923, to resist a new attack upon free trade, and returned as a solid body of 150. But they were substantially smaller than the Labour Party, and the tactical blunder of putting that party into office without conditions involved a dilemma, which ended in the disaster of the election of 1924. What was worse, their internal dissensions were redoubled. On the occasion of reunion, Lloyd George was urged to put into a common fund the large financial resources separately acquired by the coalition Liberals in the previous years. He refused to go so far. On this subject a bitter feud raged. It was intensified when in 1926 a difference between Lord Oxford (formerly H. H. Asquith) and Lloyd George in regard to the general strike of that year led to a formal excommunication of the latter, which the bulk of the party refused to accept. These dissensions seemed to make a revival of Liberalism all but impossible. But the party refused to accept sentence of death. After World War I, and especially since 1924, important elements in the party were at work upon a series of enquiries into the various problems of the post-war period. Their reports—*Coal and Power* (1924), *The Land and the Nation* (1925), *Towns and the Land* (1926) and, most notable of the series, *Britain's Industrial Future* (1928)—amount to a restatement of the Liberal position. In 1924 the party polled 3,000,000 votes, though candidates were only put up in little more than half of the constituencies; if the seats won had been in proportion to the votes cast, the Liberal Party in the Commons would number 110 instead of 40. Since 1927 a systematic reorganization has been undertaken.

The organization of the party is as follows. In each active constituency there is an association, and usually also separate organizations for women and young people. The local associations select their own candidates, and in many cases maintain an agent. Some of them are self-supporting; others are helped by the candidate or by headquarters. The number of self-supporting associations has been considerably increased in the last few years. The associations are federated into ten districts in England and Wales: Scotland maintains a separate organization. They are all also combined in the National Liberal Federation, which holds at least one annual conference; and resolutions adopted at these conferences are held to constitute the official policy of the party. The executive of the National Liberal Federation is composed of delegates from the districts. With the addition of representatives of the parliamentary party and some others, it constitutes the supreme administrative committee of the party, and controls all the party funds. It appoints a small organization committee, the chairman of which (in 1928 Sir Herbert Samuel) is the working head of the party machine, and shares the functions of leadership with the leaders of the party in the two houses. (R. Mu.)

LIBER AND LIBERA, a pair of deities of uncertain origin, worshipped in Italy. The name Liber is probably connected with the adj., *liber,* free, less likely with the root of *libare,* to pour drink-offering. Both etymologies were current in antiquity. Modern authorities differ. The name cannot be a mere translation of Λύσιος or Ἐλευθέριος, well-known epithets of Dionysus (*q.v.*), for the Liberalia is of the oldest cycle of Roman festivals, and therefore older than Greek influence; but the resemblance may have helped to identify the two gods. The question cannot be considered decided whether he is an offshoot of Iuppiter Liber (so Wissowa), or an originally independent deity (so Preller and others). At all events, he was identified with Dionysus, and the triad Ceres, Liber and Libera represent in Rome, from fairly early times, but always under Greek influence, the Eleusinian Demeter, Iacchus-Dionysus and Persephone. At the Liberalia, held at Rome on March 17, we know that the *toga virilis* was commonly assumed for the first time, with appropriate ceremonial, by boys who were of age to do so; that cakes (*liba*) were provided by old women in the service of Liber who sat in the streets and sacrificed on behalf of anyone who chose to buy their wares; and that meals were taken in the open air. At Lavinium a whole month was consecrated to Liber, and at this and other country towns a festival was held, comprising a procession, the garlanding of a phallus, and all manner of songs and jokes were used; all this was supposed to make the seeds grow. It closely resembles Greek ritual, but may be a parallel Italian development.

See Preller-Jordan, *Römische Mythologie* (vol. ii., 1883), p. 47 ff.; G. Wissowa, *Religion und Kultus,* 2nd ed., p. 298 ff.; Roscher's *Lexikon, s.v.*

LIBER DIURNUS ROMANORUM PONTIFICUM or "Journal of the Roman Pontiffs," the name given to a collection of formulae used in the papal chancellery in preparing official documents, such as the installation of a pope, the bestowal of the pallium and the grant of papal privileges. For politic reasons the papal authorities would not allow it to be published, as the book asserted the superiority of a general council over the pope. It was, however, published in France by the Jesuit, Jean Garnier, in 1680, and other editions quickly followed.

The best modern editions are one by Eugène de Rozière (Paris, 1869) and another by T. E. von Sichel (Vienna, 1889), both of which contain critical introductions.

LIBEREC or Reichenberg, a town of northeast Bohemia, on the right bank of the Neisse in an upland region. It is a very important manufacturing centre, whose staple industries include the manufacture of cloth, the spinning, weaving and dyeing of wool and cotton and printing, and has wide commercial interests as a market for cotton goods. The cloth industry was introduced in 1579 and the town reflects its centuries of prosperity in a wealth of fine buildings, notably the 16th century Erzdekanatskirche, the 17th century castle, the cloth-workers' hall and the 19th century Protestant church and town hall. Pop. (1930) 38,528, of whom most were Germans. The town was a centre of the Sudeten German movement and came under German rule in 1938.

LIBERIA, a Negro republic in West Africa, extending along the coast of northern Guinea, between the British colony of Sierra Leone on the northwest, and the French colony of the Ivory Coast on the southeast. It has a coast line of about 350 mi., its greatest depth is 150 mi. and the area is about 43,000 sq.mi. Population uncertain; estimates run as high as 2,000,000, consisting of a few thousand Americo-Liberians and about 28 indigenous tribes.

At the southern extremity of Liberia, Cape Palmas, the West African coast turns somewhat abruptly eastward and faces the Gulf of Guinea. As the coast of Liberia thus fronts the sea route from Europe to South Africa, and also lies opposite the shoulder of Brazil, it possesses considerable strategical importance. It is a terminus for air traffic across the so-called narrows of the south Atlantic and a way station for West African coastal air services. Liberia has no natural harbour but construction was started in 1945 on a port in the vicinity of Monrovia, the capital.

Physical Features.—Liberia is a plateau country—with a general level of 1,500 ft., and is in large part densely forested. It is traversed by a number of rivers, mostly with a southwest direction, and is everywhere well watered. The coast has many small indentations and a good deal of the seaboard is dangerous. It has few lagoons compared with the adjoining littoral of Sierra Leone or that of the Ivory Coast. The coast, in fact, rises in some places rather abruptly from the sea. Cape Mount (on the northern side of which is a large lagoon—Fisherman lake) at its highest point is 1,050 ft. above sea level. Cape Mesurado is about 350 ft., Cape Palmas about 200 ft. above the sea. Although little of the coast belt is actually swampy, a kind of natural canalization connects many of the rivers near their mouths with each other.

Going from north to south the chief rivers are the Mano, the Lofa, St. Paul's (which runs through the centre of the country), St. John's, Cestos (in its upper course called Nuon) and Kavalli (Cavalla). The Kavalli and other rivers rise (in French territory) in the Nimba mountains. The Kavalli is navigable from the sea for some 80 mi. and after a long series of rapids is again navigable. But there is a bad bar at its mouth. None of the other rivers, owing to rapids near their mouths, are navigable from the sea.

The climate and rainfall over the coast region for about 120 mi. inland are equatorial, the rainfall in the western half of the country being about 150 in. per annum, and in the eastern half about 100 in. The dry season lasts from mid-November to the end of March. Further inland the climate is not quite so rainy, and the weather is much cooler during the dry season.

The settlements of the Liberians are along the coast belt and the rising ground beyond, where the clayey soil is suitable for coffee cultivation. The forest begins at the foot of the mountains and covers the rest of the country, except where the natives have cleared the land for cultivation. In many districts the land has been cleared and cultivated and then abandoned, and has relapsed into scrub and jungle which is gradually returning to the condition of forest. The densest forest of all would seem to be that known as Gora, which is almost uninhabited and covers about 6,000 sq.mi. between the Pō hills (which run west of the St. Paul's river), and the frontier of Sierra Leone. There is another very dense forest stretching with little interruption from the eastern side of the St. Paul's river nearly to the Cavalla. The Nidi forest is noteworthy for its magnificent growth of *Funtumia* rubber trees. It extends between the Duobe (a western tributary of the Cavalla) and the Kavalli. In the main Liberia is the forest country *par excellence* of West Africa.

The fauna of Liberia offers certain peculiarities, at least as regards vertebrates. It is probable that the Liberian chimpanzee may offer one or more distinct varieties; there is an interesting local development of the Diana monkey, sometimes called the bay-thighed monkey (*Cercopithecus diana ignita*) because of its brilliant orange-red thighs. One or more species of bats are peculiar to the country—*Vespertilio stampflii* and perhaps *Roussettus buttikoferi;* two species of shrew (*Crocidura*), one dormouse (*Graphiurus nagtglasii*); the pygmy hippopotamus (*H. liberiensis*)—differing from the common hippopotamus by its much smaller size and by the reduction of the incisor teeth to a single pair in either jaw, or occasionally to the odd number of three; and two remarkable *Cephalophus* antelopes peculiar to this region so far as is known—these are the white-shouldered duiker, *Cephalophus jentinki,* and the zebra antelope, *C. doriae,* a creature the size of a small goat, of a bright bay brown, with broad, black zebralike stripes.

Among birds there is the interesting white-necked guinea fowl *Agelastes;* one peculiar species of eagle owl (*Bubo lettii*) and a very handsome sparrow-hawk (*Accipiter büttikoferi*); a few sunbirds, warblers and shrikes are peculiar to the region. The other birds are mainly those of Senegambia and of the West African forest region generally.

As regards reptiles, there are at least seven poisonous snakes—two cobras, two puff-adders and three vipers. The brilliantly coloured red and blue lizard (*Agama colonorum*) is found in the coast region of eastern Liberia. There are three species of crocodile, at least two chameleons, the large West African python (*P. sebae*) and a rare Boine snake (*Calabaria*). On the sea coast there is the leathery turtle (*Dermochelis*) and also the green turtle (*Chelone*). In the rivers and swamps there are soft-shelled turtle (*Trionyx* and *Sternothaerus*). The land tortoises chiefly belong to the genus *Cynyxis*. The fresh-water fish seem in their affinities to be nearly allied to those of the Niger and the Nile. As regards invertebrates, few species or genera are peculiar to Liberia. The gigantic scorpions (*Pandinus imperator*)—more than 6 in. long—are a common feature in the forest.

Nowhere, perhaps, does the flora of West Africa attain a more wonderful development than in Liberia and in the adjoining regions of Sierra Leone and the Ivory Coast. This is partly due to the equatorial position and the heavy rainfall. The most striking trees in the forest region are in the basin of the Kavalli; the giant *Funtumia elastica,* which grows to an altitude of 200 ft.; various kinds of *Parinarium, Oldfieldia* and *Khaya;* the bombax or cotton tree, giant dracaenas, many kinds of fig; *Borassus* palms, oil palms, the climbing *Calamus* palms, and on the coast the coconut. The most important palm of the country, perhaps, is the *Raphia vinifera,* which produces the piassava fibre of commerce. There are about 22 different trees, shrubs and vines producing rubber of more or less good quality. Coffee of several species is indigenous and grows wild. The best known is the celebrated *Coffea liberica.* The kola tree is also indigenous. Large edible nuts are derived from *Coula edulis* of the order Olacineae. The country is exceedingly rich in aroids, ground orchids and tree orchids.

The cultivated trees and plants include, besides coffee, the manioc or cassava, the orange tree, lime, cacao, pineapple (which now runs wild over the whole of Liberia), sour sop, ginger, papaw, alligator apple, avocado pear, okra, cotton (*Gossypium peruvianum*—the kidney cotton), indigo, sweet potato, capsicum (chillie), bread-fruit, arrowroot (*Maranta*), banana, yam, "coco"-yam (*Colocasia antiquorum,* var. *esculenta*), maize, sorghum, sugar cane, rice and eleusine (*Eleusine*), besides gourds, pumpkins, cabbages and onions.

As to minerals, iron is smelted and worked by most of the tribes; the richest deposits occur in the Bomi hills area, about 40 miles from the coast. Gold is increasingly mined; in 1942 exports, under a government monopoly, amounted to $697,510. Diamonds and mica have been found. With the exception of an iron ore reconnaissance by the U.S. geological survey, no systematic examination of Liberia's mineral resources was made up to 1944.

Towns, Trade, etc.—Monrovia (pop. 10,000) is the capital and the second chief port. It has a few fairly good public buildings and business premises. Marshall (300), nearest to the increasingly important Firestone rubber plantations, is the chief port, pending the construction of the harbour at Monrovia. Robertsport (700), Buchanan (1,800), Greenville (850), and Harper (1,200) are lesser ports. Leading town in the interior is Kakata (600), where the first inland post office was opened in 1939.

Liberia's foreign trade in 1938 was valued at $4,178,815. The U.S. ranked first in both imports and exports, the bulk of the trade, however, representing supplies for and shipments of rubber from the Firestone Tire and Rubber company's plantations. The United Kingdom, Germany, Japan, and the Netherlands were the principal suppliers of other Liberian imports, consisting mainly of cotton textiles, hardware, tobacco, fish and salt. Germany, the Netherlands, and the United Kingdom were the chief markets for the Liberian-owned exports of palm kernels, piassava, coffee, gold, cacao, palm oil, ivory and calabar beans.

Disruption of normal commercial channels after the outbreak of war in 1939 forced Liberia to dependence on the U.S. for nearly all its essential requirements. With the loss to the Japanese of rubber producing areas in the far east, the Firestone plantations in Liberia were intensively cultivated until, in 1944, rubber was exported to the U.S. at the rate of 19,120 short tons annually; preliminary statistics for 1945 indicate exports of about 22,000 short tons. Wild rubber was also gathered on an increasing scale. Total imports in 1942 amounted to $4,732,446 while exports, including rubber, totalled $8,280,366. Revenue is derived chiefly from customs, supplemented by a "hut tax." Native industries include cotton spinning and weaving, pottery, woodwork, and

basket making. Large tracts of timber exist, so far unexploited. In 1944 an economic mission was sent to Liberia by the U.S. government to stimulate the production of palm oils and other war materials and to survey the country's resources.

An agreement was entered into in 1943 between the government of Liberia and a U.S. company for the construction and operation of a seaport near Monrovia costing several million dollars. It was expected that this project would materially aid in the economic development of the country. The agreement accorded to the U.S. the right to establish and operate naval, army and air installations for the protection of the strategic interests of the U.S. in the south Atlantic.

HISTORY

There is a tradition that the Liberian coast was reached by the Dieppois merchant adventurers in the 14th century. In the 15th century Pedro de Sintra and other Portuguese navigators mapped the whole coast, and nearly all the prominent features—capes, rivers, islets—off that coast still bear Portuguese names. From the 16th century onward English, Dutch, German, French and other European traders contested the commerce of this coast with the Portuguese and finally drove them away. At the end of the 18th century, when the tide was rising in favour of the abolition of slavery and the repatriation of slaves, the Grain Coast (so-called from the old trade in the "Grains of Paradise" or *Amomum* pepper) was suggested once or twice as a suitable home for repatriated Negroes. Sierra Leone, however, was chosen first on account of its possessing an admirable harbour. In 1821 Cape Mesurado was selected by the American Colonization society as an appropriate site for the first detachment of American freed Negroes, who had been driven away from a still slave-holding America through difficulties in regard to extending the suffrage in that country. From that date, 1821, onward to the present day, Negroes and mulattos—freed slaves or the descendants of such—have crossed the Atlantic in small numbers to settle on the Liberian coast. The "great" migrations took place during the first half of the 19th century, but by 1925 the Americo-Liberians did not number more than 20,000; and half of them lived in Monrovia.

The real founder of Liberia was Jehudi Ashmun, a white American, who at the request of the Colonization society went out in 1822 to aid the infant settlement at Cape Mesurado (where Monrovia, the capital, is now). Ashmun inspired the colonists with courage, and fought and defeated the natives who molested them. He was joined for a time, in 1824, by the Rev. Robert Gurley (another white American), who invented "Liberia" as the name of the settlement. As the colony was seen to grow, other and independent settlements of Negroes from the United States were made, and in 1833 the "independent African state of Maryland" was founded at Cape Palmas. Eventually, in 1857, it was by consent annexed to Liberia and is now known as Maryland county. Meanwhile, in 1836, Thomas Buchanan (a cousin of James Buchanan, sometime president of the United States) went to Liberia as governor and helped to consolidate the young state, which was trying to establish itself on lines totally at variance with those of the aborigines, with whom they were repeatedly in conflict. Buchanan, the last of the white governors of Liberia, died at Grand Basa in Sept. 1841. He was succeeded by Joseph Jenkins Roberts, an octoroon, from Virginia, U.S.A., and a man of much ability. Roberts enlarged the boundaries of the colony and improved economic conditions.

Republic Proclaimed.—When the American Colonization society intimated that Liberia should now cease to be dependent upon it, Roberts decided that the only thing to do was to declare it an independent republic. He had had trouble both with his British and French neighbours, who had denied the right of the colonists to exercise sovereign power. Independence was proclaimed in 1847, and was recognized in 1848–49 by most of the great powers, though formal recognition by the United States did not come until 1862.

At the time independence was declared a constitution based on that of the United States was drawn up, but the attempt of the immigrants from America and their descendants—who then numbered fewer than 3,000—was not very successful. Some of the tribes of the coast region adopted the religion (Protestant forms of Christianity) and the language (English) of the Liberians, but most of the natives retained their paganism and their freedom. Roberts, who had been elected the first president of the republic, retained that office till 1856; it was during this period that the slave trade, hitherto illicitly carried on from various ports nominally Liberian, was at length ended by the activity of the British navy.

From about this time (1856) there was a notable growth of the "Whig" party, which distrusted Europeans and sought development on "national" lines, and, later, co-operation with the natives, as against the liberals or republicans, who wished, broadly, for the co-operation of Europeans in the development of the state. In 1871 the first foreign loan was raised, being negotiated in London nominally for £100,000. The loan was unpopular, and still more unpopular was the president E. J. Roye, who was seemingly aiming at a dictatorship. Roye was deposed and imprisoned at Monrovia; he escaped, but in attempting to reach an English ship in the anchorage was drowned. The ex-president, J. J. Roberts, was called back to office. He served to the end of 1875, dying the following year.

Frontier Disputes.—After this the difficulties of the Liberians increased. British and other traders flouted their authority and dealt direct with the independent native tribes (chiefly in palm oil). There were constant frontier troubles with the French on the Ivory Coast and the British at Sierra Leone. The Liberians tried to extend their authority inland while still unable to control all the coast line they claimed. The Americo-Liberians, with mixed traditions of slavery, puritanism and Anglo-Saxon ideals of civilization, proved indeed hardly able to govern themselves. With the era of the partition of Africa an effort was made to end the frontier disputes, by treaties with Great Britain in 1885 and with France in 1892. In the event, Liberian territory was made continuous, with a coast line of some 350 miles from the Mano river on the west to the Kavalli (Cavalla) river on the east. By this time the wealth of rubber in the Liberian forests was being exploited, though the staple industry was the cultivation of coffee. In 1904 Arthur Barclay, a man of pure Negro blood, born in Barbados, became president, and he initiated a policy of direct co-operation with the native tribes; he obtained in 1907 a loan from London and made real efforts at reform. His task was hard. The foreign debt was a burden, the government was unable to control the regions in which it had granted concessions to foreigners; its authority indeed rarely extended more than 20 miles inland. The frontier regions adjoining French territory remained disturbed; in consequence malcontents took refuge in the Liberian forests and thence raided across the border. The French insisted on security and in 1910 an agreement was signed transferring to France some 2,000 sq.mi. of hinterland which Liberia had claimed but could not control.

U.S. Intervention.—It appeared as if the experiment of "running" the country by American Negroes—as alien to the bulk of the natives as are white men—on the lines of the constitution of the U.S. would collapse. However, as on previous occasions of trouble, the intervention of the U.S. government led to a financial reorganization which gave the Liberians a new start. In 1909 a commission appointed by President Theodore Roosevelt visited Liberia to investigate political and economic conditions and to recommend such help as its examination of the situation warranted. There was some trouble with Germany in settling finances, and the German gunboat "Panther" was anchored for a month off Monrovia with its guns trained on the executive mansion (1911). A loan of $1,700,000, secured by customs revenue, was raised by an international consortium of bankers in 1912 and a receivership of customs set up, administered by appointees of the British, French and German governments and a U.S. receiver general. A frontier police force was also organized by officers of the U.S. army, with the result that Liberian authority was better maintained. Unfortunately this promising new regime was upset by the consequences of World War I. Revenues dropped to one-fourth of normal and the financial situation steadily deteriorated. In these circumstances Liberia turned again to the U.S. A loan credit of $5,000,000 was established by the U.S. treasury department to rehabilitate Liberian finances and to provide a balance for certain internal improvements. However, the U.S. senate in 1922 failed to approve the agreement covering this loan credit. In 1923 the Firestone company began an investigation of the rubber growing possibilities in Liberia. Finding the soil and climate favourable for the cultivation of rubber on a large scale, the company in 1926 obtained a concession of

1,000,000 acres of land for this purpose. At the same time a loan of $5,000,000 was arranged through the Finance Corporation of America, similar in its terms to the proposed credit from the U.S. treasury. With this private loan, only half of which had been taken up by 1945, the Liberian government consolidated and bonded all its external and internal debts and placed the country's finances on a relatively stable basis. Administration of the customs and internal revenue was placed in the hands of a U.S. financial adviser assisted by five fiscal experts, with certain powers over the Liberian budget and expenditures. Amortization payments on the loan had reduced the outstanding balance at the end of 1942 to $1,275,000.

An opponent of Germany in World War I, Liberia was a signatory of the Treaty of Versailles and joined the League of Nations. An investigation of forced labour and slavery in Liberia, involving particularly the shipment of natives to the Spanish plantations in Fernando Po, brought about the resignation of President Charles D. B. King and Vice President Allen N. Yancy and the election of Edwin Barclay to the presidency in 1931. Liberia appealed to the council of the League of Nations for financial aid and a commission of enquiry was established. The next three years were marked by unsuccessful attempts to work out a plan of assistance involving the appointment of foreign administrators, the declaration of a moratorium on the Firestone loan, and suspension of diplomatic relations with Great Britain and the U.S. After the league council finally withdrew its plan of assistance, the Liberian government reached a satisfactory agreement with Firestone along lines similar to the league recommendations and a fresh start was made under the progressive administration of President Barclay.

The new significance of Liberia became apparent shortly after the outbreak of war in 1939. On March 31, 1942, the government of Liberia signed a defense agreement with the U.S. for the operation of strategic airports and military protection of the installations. American Negro troops were sent to Liberia for the duration of the war emergency and assisted in a program of strategic road building. A large modern airport was constructed not far from the capital and a seaplane base developed at Fisherman lake. President Roosevelt stopped in Liberia following the Casablanca conference in 1943 and on his invitation President Barclay and President-elect William V. S. Tubman visited the U.S. shortly afterward. Because of Liberia's role in World War II as part of the vital defense of the U.S., the country was declared eligible to receive lend-lease assistance and on June 8, 1943, the two governments signed a mutual aid agreement in New York. U.S. money was declared legal tender in Liberia in 1943, replacing British West African currency. On Jan. 27, 1944, the Liberian legislature declared war against the axis, and on April 10, 1944, Liberia signed the declaration of the United Nations. The inauguration of President Tubman on Jan. 3, 1944, was attended in behalf of the U.S. by Vice Admiral William A. Glassford, special representative of President Roosevelt at Dakar.

Native Races.—Of the 28 indigenous tribes in Liberia, the principal ones are the Vai, Mende, Mandinga, Gora and Kru, the latter being a seafaring people inhabiting the coastal area. Large areas of Liberia appear to be uninhabited forest, but other parts are well peopled owing to the high fertility of the soil. Some of the indigenous races are of very fine physique, being handsome, well-proportioned Negroes. The native population must be considered one of the most potentially valuable assets of Liberia.

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LIBERIUS, pope from 352 to 366, the successor of Julius I., was consecrated according to the *Catalogus Liberianus* on May 22. His first recorded act was, after a synod had been held at Rome, to write to Constantius, then in quarters at Arles (353–354), asking that a council might be called at Aquileia with reference to the affairs of Athanasius; but his messenger Vincentius of Capua was compelled by the emperor to subscribe a condemnation of the orthodox patriarch of Alexandria. In 355 Liberius was one of the few who, along with Eusebius of Vercelli, Dionysius of Milan and Lucifer of Cagliari, refused to sign the condemnation of Athanasius, which had anew been imposed at Milan by imperial command upon all the Western bishops; the consequence was his relegation to Beroea in Thrace, Felix II. (antipope) being consecrated his successor. On his agreeing to give up the "homoousios," to abandon Athanasius, and to accept the communion of his adversaries, the emperor recalled him from exile; but, as the Roman see was officially occupied by Felix, a year passed before Liberius was sent to Rome. It was the emperor's intention that Liberius should govern the Church jointly with Felix, but on the arrival of Liberius, Felix was expelled by the Roman people. Neither Liberius nor Felix took part in the council of Rimini (359). After the death of the emperor Constantius in 361, Liberius annulled the decrees of that assembly, but, with the concurrence of SS. Athanasius and Hilarius, retained the bishops who had signed and then withdrawn their adherence. He died on Sept. 24, 366.

His biographers used to be perplexed by a letter purporting to be from Liberius, in the works of Hilary, in which he seems to write, in 352, that he had excommunicated Athanasius at the instance of the Oriental bishops; but the document is now held to be spurious. *See* Hefele, *Conciliengesch.* i. 648 *seq.*

(L. D.; X.)

LIBER PONTIFICALIS, or GESTA PONTIFICUM ROMANORUM (*i.e.*, Book of the Popes), consists of the lives of the bishops of Rome from the time of St. Peter to the death of Nicholas I. in 867. A supplement continues the series of lives almost to the close of the 9th century, and several other continuations were written later. A considerable part of it is obviously legendary. It assumes that the bishops of Rome exercised authority over the Christian Church from its foundation.

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LIBERTAD or **LA LIBERTAD,** a coast department of Peru bounded north by Lambayeque, Cajamarca and Amazonas, east by San Martín, south by Huánuco and Ancash and west by the Pacific. Pop. (1940) 404,024; area 10,206 square miles. The Western Cordillera, parallel with the coast, divides it into two parts, the western consisting of an arid, sandy coast zone and western slopes of the Cordillera, and the eastern, a high, inter-Andine valley lying between the Central and Western Cordilleras through which flows the upper Marañón, which at one point is less than 100 mi. in a straight line from the Pacific ocean. The coast zone is traversed by several short streams, fed by melting snows of the Cordillera and extensively used for irrigation. These are, from north to south, the Jequetepeque (Pacasmayo), in whose valley rice is an important crop, the Chicama, in whose valley the sugar plantations are among the largest and best in Peru with up-to-date industrial equipment, the Mache, Virú, Chao and Santa, the last, with its northern tributary, the Tablachaca, forming part of the southern boundary of the department. Cotton, coffee, rice and other crops as well as sugar are raised in several of these valleys. In the upland regions (*sierra*) with moderate rainfall and cool, healthy climate, agriculture is practised on a small scale, while sheep and especially cattle have been raised since early colonial times. The llama and alpaca were reared throughout the *sierra* long before the Spanish conquest and still are. Copper and silver mines are worked in the provinces of Otusco, Huamachuco and Santiago de Chuco, gold mines in Patás. Coal of excellent quality is mined on a small scale in Otusco and Huamachuco. Libertad has about 250 mi. of railway. In the north, a line runs from Pacasmayo to Chilete (Cajamarca) with a branch to Guadalupe; another from Salaverry to Trujillo and beyond, to Ascope and other towns in the Chicama valley, while a short spur extends up the valley of the Mache. The Pan-American highway follows the coastal plain throughout the entire length of the department, and roads to the interior extend from Trujillo to Santiago de Chuco, Huamachuco and Cajabamba and from Chicama to Cajamarca. The principal ports are Pacasmayo and Salaverry; others are open roadsteads. The capital of the department and chief city is Trujillo (pop. 1940, 38,961), situated about nine miles northwest of the port of Salaverry. It is the seat of a university, a division of the supreme court and a bishopric. Other towns in which there are industries, mostly of a primitive nature, are San Pedro, Otusco, Huamachuco and Santiago de Chuco.

LIBERTARIANISM, in ethics, the doctrine which maintains the freedom of the will, as opposed to necessitarianism or determinism (*q.v.*) (Lat. *libertas,* freedom). It has been held in various forms. In its extreme form it maintains that the individual is absolutely free to choose this or that action indifferently (the

liberum arbitrium indifferentiae), but most libertarians admit that acquired tendencies, environment and the like, exercise control in a greater or less degree. (*See* FREE-WILL.)

LIBERTINES, the nickname, rather than the name, given to various political and social parties. The word seems first to have been applied, as a stigma, to Anabaptists in the Low Countries (Mark Pattison, *Essays,* ii, 38). It has become especially attached to the liberal party in Geneva, opposed to Calvin and carrying on the tradition of the Liberators in that city; but the term was never applied to them until after Calvin's death (F. W. Kampschulte, *Johann Calvin*). The Libertines against whom Calvin wrote were the Anabaptists above mentioned, whose doctrines he denounces as pantheistic and antinomian.

See Choisy in Herzog-Hauck's *Realencyklopädie* (1902).

LIBERTINES, SYNAGOGUE OF THE, a section of the Hellenistic Jews who attacked Stephen (Acts vi, 9). The structure of the sentence in the Greek most naturally suggests that one synagogue is referred to which was used in common by the Libertines, Cyrenians, Alexandrians and "them of Cilicia and Asia," though it is possible that Luke intended to distinguish the Jews of Cilicia and Asia from the preceding. Some hold that three synagogues are intended, corresponding to geographical distinctions, viz. (1) Rome and Italy, (2) northeast Africa, (3) Asia Minor. Then the synagogue of the Libertines would be the assembly of "the Freedmen" from Rome, descendants of Jews enslaved by Pompey (63 B.C.). If, however, "Libertines" is taken closely together with "Cyrenians and Alexandrians," the first name ought to have a geographical connotation, and Blass has suggested that Λιβυστίνοι should be read "Libyans." In this case two synagogues are meant (1) that of the Libyans, Cyrenians and Alexandrians; (2) that of the Cilicians and Asiatics.

See Krauss, *Synagogale Altertümer,* Berlin, 1922, p. 201.

(G. H. B.)

LIBERTY, SIR ARTHUR LASENBY (1843–1917), knighted 1913, English merchant, was born at Chesham on Aug. 13, 1843, the son of a Nottingham lace manufacturer. In 1862 he became manager of the shop in Regent street, London, which he developed into an important adjunct of the art world of the period. In 1875 he became independent and at once began to adapt eastern art in weaving and design to western requirements, becoming famous both for his textiles and for his colourings. He died on May 11, 1917, at Great Missenden, Buckinghamshire.

LIBERTY, as a state of freedom, is especially opposed to political subjection, imprisonment or slavery. Its two most generally recognized divisions are civil and political liberty. Civil liberty is the absence of arbitrary restraint and the assurance of a body of rights, such as those found in bills of rights, in statutes and in judicial decisions. Such liberty, however, is not inconsistent with regulations and restrictions imposed by law for the common good. Political liberty consists of the right of individuals to participate in government by voting and by holding public office. Because of the proletarian or socialist movement and the economic dislocations after World War I, liberty has been increasingly defined in terms of economic opportunity and security. In Anglo-American countries liberty has often been identified with constitutional government, political democracy and the orderly administration of common law systems.

In a more particular sense, a liberty is the term for a franchise (*q.v.*), a privilege or branch of the crown's prerogative granted to a subject, as, for example, that of executing legal process; hence, the district over which the privilege extends. These liberties are exempt from the jurisdiction of the sheriff and they have separate commissions of the peace. In the United States a franchise is a privilege, the term liberty not being used in such cases. The concept of liberty as a body of specific rights found in English and United States constitutional law contrasts with the abstract or general liberty enunciated in the French Revolution and in the French Declaration of Rights. However, modern liberty involves in theory both the support of specific rights of the individual, such as civil and political liberty, and the guarantee of the general welfare through democratically enacted social legislation.

In nautical phraseology various usages of the term are derived from its association with a sailor's leave on shore, *e.g.,* liberty-man, liberty-day, liberty-ticket.

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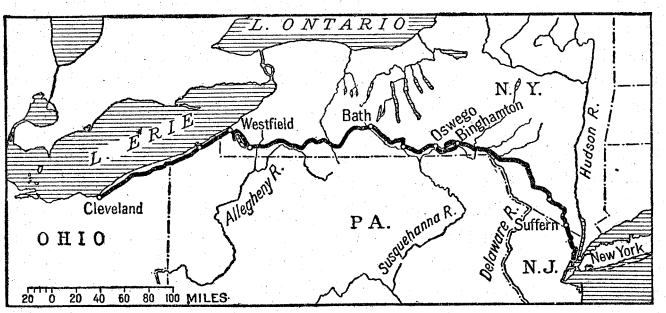
(F. G. W.)

LIBERTY, STATUE OF, statue on Bedloe's Island in New York harbour. Soon after the establishment of the French Republic, following the Franco-Prussian War, 1870–1871, Frederic Auguste Bartholdi was commissioned to design a gigantic statue as a present from the French people to the American people. Congress authorized the use of Bedloe's Island, already suggested by Bartholdi. The French people contributed $450,000 for the statue and the Americans $350,000 for the pedestal. The corner stone of the pedestal was laid Aug. 5, 1884, and the statue was unveiled Oct. 28, 1886.

The statistics of the statue and pedestal are as follows: Total height of statue and pedestal 305 ft. 6 in.; of the statue alone 151 ft. 1 in.; length of right arm 42 ft.; of hand 16 ft. 5 in.; head 17 ft. 3 in. by 10 ft.; weight of statue 450,000 lb.; 40 persons can stand in the head and 12 in the torch. Bedloe's Island is 2,950 yards southwest of New York city and incoming and outgoing vessels pass near it.

LIBERTY HIGHWAY, a U.S. highway connecting New York city and Cleveland, O., a distance of 600 mi. and the shortest way between these points. It is hard or paved throughout



LIBERTY HIGHWAY

and skirts the southern boundary of New York state through a beautiful hilly and rolling country to Lake Erie, which it follows within view of the lake to Cleveland. It passes through New Jersey to Suffern, N.Y., and thence to Westfield, N.Y., through Binghamton, Oswego and Bath.

LIBERTY LOANS, the name given to the four loans floated by the United States of America during World War I. A fifth loan, floated after the Armistice, was called officially the Victory Liberty loan, but more generally the Fifth Liberty loan. Between May 14, 1917, when the First Liberty loan was offered to the public, and May 10, 1919, when the campaign for the fifth loan was brought to a close, the people of the United States subscribed $24,072,257,550. Of this amount, $21,435,370,600 was finally accepted by the secretary of the treasury. The Fourth Liberty loan, concluded Oct. 18, 1918, was the largest single loan issued by any of the belligerents, and realized a total of nearly $7,000,000,000. The number of subscribers to this loan was more than 22,000,000, or more than one-fifth of the total population of the United States. Moreover, the government was able to dispose of the Liberty bonds on very favourable terms: they were issued at par, the rate of interest varying from $3\frac{1}{2}\%$ on the first loan to $4\frac{3}{4}\%$ on the fifth. There were a number of reasons for the favourable terms obtained. The United States was immensely wealthy, and had just passed through a period of great prosperity; its record for quick payment was unique; patriotic spirit was at a high pitch; advertising on an unexampled scale was undertaken; and the rate offered, while lower than those of European countries, was high as compared with the 3% and 2% paid in recent years on its government bonds.

When the U.S. entered World War I the government realized that, in addition to the money needed to prosecute the war by the

United States itself, large sums must be raised to relieve the already overstrained credit of the European allies. The total amount of these loans to foreign countries (not including later sales of war material) was $9,598,236,575. This money was part of the amounts raised in the Liberty loans. The financial policy of the government was to raise from one-fourth to one-third of the necessary funds from taxation, the remainder from loans. The government strove also, not only to extend the debt over a period of years, but to distribute it as widely as possible. The success of the policy was indicated by the facts that 59.13% of the individual subscriptions for the fourth loan were for $50 bonds, and that approximately 25,000,000 persons were, at the end of the war, holders of Liberty bonds. Before the United States entered the war it was estimated that there were only about 350,000 bond investors in the nation. Many who bought Liberty bonds were not wealthy, but borrowed, often at high rates of interest, the money with which to pay for them.

Under the act of April 24, 1917, the secretary of the treasury was authorized to issue bonds to the extent of $5,000,000,000 at a rate not to exceed 3½%, these bonds to be convertible into bonds of a higher rate if such should be issued before the end of the war. The secretary of the treasury made the first issue, $2,000,000,000 and proceeded to create a war loan organization in the treasury department. The 12 federal reserve banks were used as the central agencies in the 12 federal reserve districts, and each of these banks formed Liberty Loan committees. To each district a "quota" or proportional part of the whole issue was allotted, and the treasury department made use of every available means of publicity. As a result the first loan was over-subscribed by more than $1,000,000,000. In subsequent campaigns the methods employed in placing the first loan were developed and extended. In each city an organization known as Four-Minute Men was formed; these men visited places of public resort, including the theatres and cinemas, and spoke for four minutes on behalf of the loans. The government assisted local authorities in organizing street parades in which men from the training camps participated; captured German war material was displayed; distinguished soldiers and other visitors from Great Britain, France and the other allied nations were given elaborate receptions. These campaigns were of great value as a means, not only of selling the war bonds, but of keeping up morale. The following are the figures of the number subscribing to each of the loans, the total amount asked for, the subscriptions and allotments:—

Loan	Subscribers	Amount asked	Subscriptions	Allotments
		$	$	$
First (1917) .	4,000,000	2,000,000,000	3,035,226,850	1,989,455,550
Second (1917)	9,400,000	3,000,000,000	4,617,532,300	3,807,865,000
Third (1918) .	18,376,815	3,000,000,000	4,176,516,850	4,175,650,050
Fourth (1918)	22,777,680	6,000,000,000	6,993,073,250	6,964,581,250
Fifth (Victory, 1919) . .	11,803,895	4,500,000,000	5,249,908,300	4,497,818,750

Between 1927 and 1935 all these loans were paid off or converted into lower rate loans. (F. H. H.)

LIBERTY PARTY, the first political party organized in the United States to oppose the spread and restrict the political power of slavery, and the lineal precursor of the Free Soil and Republican parties. It originated in the old northwest. Its organization was preceded there by a long antislavery religious movement. James G. Birney (*q.v.*), to whom more than to any other man belongs the honour of founding and leading the party, began to define the political duties of so-called "abolitionists" about 1836; but for several years thereafter he, in common with other leaders, continued to disclaim all idea of forming a political party. In state and local campaigns, however, nonpartisan political action was attempted through the questioning of Whig and Democratic candidates. The utter futility of seeking to obtain in this way any satisfactory concessions to antislavery sentiment was speedily and abundantly proved. There arose, consequently, a division in the American Antislavery society between those who were led by W. L. Garrison (*q.v.*), and advocated political nonresistance, and those who were led by Birney and advocated independent political action. The sentiment of the great majority of "abolitionists" was, by 1838, strongly for such action. Accordingly, the political abolitionists, in a convention at Albany, in April 1840, launched the "Liberty party," and nominated Birney for the presidency. In the November election he received only 7,069 votes, or the support of probably less than one-tenth of the professed abolitionists.

After 1840 the attempt began in earnest to organize the Liberty party thoroughly, and unite all antislavery men. The northwest was the most promising field, but though the contest of state and local campaigns gave morale to the party, it made scant political gains (in 1843 it cast hardly 10% of the total vote); it could not convince the people that slavery should be made the paramount question in politics. In 1844, however, the Texas question gave slavery precisely this pre-eminence in the presidential campaign and the Liberty men again nominated Birney. He received 62,263 votes—many more than enough in New York to have carried that state and the presidency for Clay, had they been thrown to his support. The Whigs, therefore, blamed the Liberty party for Democratic success and the annexation of Texas; but—quite apart from the issue of political ethics—it is almost certain that though Clay's chances were injured by the Liberty ticket, they were injured much more outside the Liberty ranks, by his own quibbles. After 1844 the Liberty party made little progress. Indeed, no party of one idea could hope to satisfy men who had been Whigs or Democrats. At the same time, antislavery Whigs and Democrats were segregating in state politics, and the issue of excluding slavery from the new territory acquired from Mexico afforded a golden opportunity to unite all antislavery men on the principle of the Wilmot Proviso (1846). The Liberty party reached its greatest strength (casting 74,017 votes) in the state elections of 1846. Thereafter it rapidly became ineffective. In Oct. 1847, at Buffalo, was held the third and last national convention. John P. Hale—whose election to the United States senate had justified the first successful union of Liberty men with other antislavery men in state politics—was nominated for the presidency. But the nomination by the Democrats of Lewis Cass shattered the Democratic organization in New York and the northwest; and when the Whigs nominated Gen. Taylor and showed hostility to the Wilmot Proviso, the way was cleared for a union of all antislavery men. The Liberty party, then, abandoning its independent nominations, joined in the first convention and nominations of the Free Soil party (*q.v.*), thereby practically losing its identity. The Liberty party has the unique honour among third-parties in the United States of seeing its principles rapidly adopted and realized.

See T. C. Smith, *History of the Liberty and Free Soil Parties in the Northwest* (Harvard University Historical Studies, 1897), and lives and writings of all the public men mentioned above; also of G. W. Julian, J. R. Gidding and S. P. Chase. Consult also E. E. Robinson, *The Evolution of American Political Parties* (1924).

END OF VOLUME THIRTEEN

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